STATE OF THE MINERALS INDUSTRY

HEARINGS

BEFORE THE

SUBCOMMITTEE ON
MINING, MINERALS, AND FUELS

OF THE

COMMITTEE ON
INTERIOR AND INSULAR AFFAIRS
UNITED STATES SENATE

EIGHTY-EIGHTH CONGRESS

FIRST SESSION

ON

EXPLORATORY AND INFORMATIONAL HEARINGS ON THE CONDITIONS WITH RESPECT TO THE DOMESTIC MINERALS

MAY 9 AND 10, 1963

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

U.S GOVERNMENT PRINTING OFFICE
98 989 WASHINGTON : 1963

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS

HENRY M. JACKSON, Washington, *Chairman*

CLINTON P. ANDERSON, New Mexico	THOMAS H. KUCHEL, California
ALAN BIBLE, Nevada	GORDON ALLOTT, Colorado
FRANK CHURCH, Idaho	LEN B. JORDAN, Idaho
ERNEST GRUENING, Alaska	MILWARD L. SIMPSON, Wyoming
FRANK E. MOSS, Utah	E. L. MECHEM, New Mexico
QUENTIN N. BURDICK, North Dakota	PETER H. DOMINICK, Colorado
LEE METCALF, Montana	
CARL HAYDEN, Arizona	
GEORGE McGOVERN, South Dakota	
GAYLORD NELSON, Wisconsin	

JERRY T. VERKLER, *Staff Director*
STEWART FRENCH, *Chief Counsel*

SUBCOMMITTEE ON MINERALS, MATERIALS, AND FUELS

ERNEST GRUENING, Alaska, *Chairman*

ALAN BIBLE, Nevada	LEN B. JORDAN, Idaho
FRANK E. MOSS, Utah	E. L. MECHEM, New Mexico
LEE METCALF, Montana	PETER H. DOMINICK, Colorado
GAYLORD NELSON, Wisconsin	

CONTENTS

STATEMENTS

COMMUNICATIONS

ADDITIONAL EXHIBITS

STATE OF THE MINERALS INDUSTRY

THURSDAY, MAY 9, 1963

United States Senate,
Subcommittee on Minerals, Materials, and Fuels
of the Committee on Interior and Insular Affairs,
Washington, D.C.

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

Present: Senators Ernest Gruening (Alaska), Frank E. Moss (Utah), Gaylord Nelson (Wisconsin), Frank Church (Idaho), and Peter H. Dominick (Colorado).

Also present: Hon. Gordon Allott, Hon. Ed Edmondson, Hon. John M. Kelly, Dr. Thomas B. Nolan, Marling J. Ankeny, George Fumich, Jr., Hon. G. Griffith Johnson, Hon. Herbert Waters, and Dr. James Boyd.

Senator Gruening. The committee will please be in order. This is an open public hearing by the Minerals, Materials, and Fuels Subcommittee of the Senate Interior Committee on the state of our domestic minerals industry.

The subcommittee hopes to find out the facts and circumstances with respect to the discovery, production, processing and utilization of minerals and metals in the United States, what our relative position in minerals security is with respect to countries behind the Iron and Bamboo Curtains, and, in those areas of the industry where action by the Federal Government is indicated, suggestions as to what that action should be. In other words, the subcommittee is asking both for facts and for ideas.

These hearings originally were scheduled to be held last month, but several important bills which had been reported by this committee were the subject of action on the Senate floor, and my presence and that of the other Senators on the subcommittee was required. Hence the hearings had to be postponed to this time.

Necessarily, in determining what governmental action, if any, is indicated in the domestic minerals field we will have to be informed on what now is being done by the Federal Government to protect and stimulate the mineral production within our borders that manifestly is so vital to our security and economic development.

Accordingly, the subcommittee has asked representatives of the several agencies of the executive branch to inform us as to current programs relating to mining and mineral production. We want to have information as to the efficacy of these current programs, honest criticism of their shortcomings—without prejudging the case I assume these programs are not perfect, nor the final answer—and recommendations for improvement.

The agencies most directly concerned with mineral production and use are the Departments of Interior and Commerce. The Secretary of the Interior, the Honorable Stewart L. Udall, who is himself from a great mining State, Arizona, is out of the city, but his Assistant Secretary of the Interior for Minerals, Hon. John M. Kelly, of New Mexico, is here to present the Interior Department's role and views. Secretary Kelly is accompanied by officers of the bureaus and services under his jurisdiction.

The responsibilities of the Commerce Department with respect to domestic minerals can be said to begin where those of Interior end. Commerce has submitted a statement of its programs, activities, and needs in the domestic minerals field, and I will direct that this statement appear in the record at the conclusion of Interior's presentation.

Inevitably imports of metals and minerals have an impact of far-reaching importance indeed on domestic production. A tragic aspect of this situation, from the point of view of our small domestic producers, is that a substantial part of the foreign production that is forcing the shutdown of so many of our own mines, is the direct result of the billions of dollars of U.S. taxpayers' funds that have been poured into foreign aid.

With respect to our own security in essential mineral production, our action in leaving the situation as it is could be regarded as a form of national suicide.

Since mineral imports are tied in so closely with domestic mineral production, we asked the Department of State to send a representative to this hearing, and Mr. G. Griffith Johnson, Assistant Secretary of State for Economic Affairs, will appear as a witness.

We hope Secretary Johnson will enlighten us with respect to importation of foreign minerals.

A hearing on the state of the minerals industry would, of course, be incomplete if we heard only from people who necessarily spend most of their time at desks in Washington. We need to hear from actual producers, present or past, and men who get their knowledge at firsthand from working in the field with mineral production. Happily, we have a number of witnesses who have such firsthand knowledge.

From the foregoing brief sketch, I hope it is patent that these hearings are intended to be general in nature. That is, at this time, we are not making inquiry, in depth, into the problems of specific minerals, such as gold, or lead and zinc.

The subcommittee intends to make such in depth inquiries and studies as soon as possible and we will welcome any and all suggestions respecting them.

This particular hearing, however, is general in scope and nature. We want to get what might be called the "big picture" with respect to the minerals industry of the United States. We want to know what the situation is, what is being done about it, and what should be done about it.

To that end, witnesses are asked not to confine their ideas and suggestions solely to matters that might be regarded as within our committee's jurisdiction. In the 88th Congress, we learned again to our sorrow that even where quotas and tariffs are a relatively minor, ancillary part of a bill, the Committee on Finance will insist on having a final say, as it did in the ill-fated lead and zinc bill.

Nevertheless, if indicated remedies do involve tariffs, quotas, or changes in Government-fixed prices, we want to hear and consider them. Therefore, let no cloture be imposed upon anyone who may have any facts or ideas that will be helpful to the subcommittee's understanding of the state of the minerals industry in the United States.

However, I think I should point out that in view of the still pending fuels and energy study before the Interior Committee, we should not try to go into the complex, highly charged issues involved in the coal versus oil controversy, and the concomitant issue of oil imports.

Such issues are burning ones, and are legitimately matters of concern to our committee. But as I say, an especially authorized study has been partially completed and is awaiting further action by our parent committee.

With these broad, general guidelines for the hearing now in the record, I will call our first witness. Before doing so, however I wish to announce that the subcommittee has received a number of statements which are pertinent to our inquiry, and without objection, I will direct that they appear in the record at the conclusion of the oral testimony.

I would like particularly to call attention to the statement prepared for these hearings by the distinguished Governor of Alaska, the Honorable William A. Egan.

Also, we have a scholarly study, prepared for us by Dr. Hans H. Landsberg, of the Resources for the Future organization here in Washington. Dr. Landsberg was to have appeared as a witness at the time this hearing was originally scheduled last month, but now is on a mission overseas for Resources for the Future.

Another presentation to which I would call special attention is that of the Stanford Research Institute of California, which discusses the organization's work in research planning with particular applicability to minerals.

Other statements which have been submitted to us and which will go into the record include that of the Independent Domestic Fluorspar Producers Association, by J. Blecheisen, the association's chairman, and one from the Arizona Small Miners Association.

The subcommittee will welcome other statements from persons who have facts or ideas that might be helpful, and the hearing record will be kept open a reasonable time for that purpose.

There will also be inserted in the record a series of statistical tabulations prepared by the Department of Interior: (1) Tables showing metal and nonmetal mines in the United States; (2) showing values of mineral production in the United States over the period 1940–62; (3) a tabulation of U.S. imports of metals and metallic minerals, 1940–61; (4) a tabulation of U.S. exports of principal metals and metallic minerals, 1940–61; and (5) the value of direct U.S. investment abroad and net capital outflows of the mining and smelting industries over the period 1959–61.

Now it is my privilege and pleasure to call as our first witness the distinguished senior Senator from Colorado, the Honorable Gordon Allott. Senator Allott.

STATEMENT OF HON. GORDON ALLOTT, A U.S. SENATOR FROM THE STATE OF COLORADO

Senator ALLOTT. Thank you, Mr. Chairman.

Mr. Chairman, I appreciate very much the opportunity to appear before this subcommittee of which I am not a member. However, I think I have attended most meetings of the mining subcommittee since I first became a member of the Interior Committee in 1957.

The fact is as I look out over the people who are here, there are faces that I have seen at these hearings so many times and on so many occasions that I cannot but feel that it is sort of like old home week.

I noted particularly, Mr. Chairman, your remarks about not limiting the scope of these hearings to a discussion of those metals and minerals other than gold and silver. In this I think you are eminently wise. I agree with this. However, I do feel that I must state frankly that my own personal feelings are that it is rather futile to discuss gold and silver to any extent in this committee.

Upon almost every occasion that we have discussed gold and silver and even attempted to get legislation of one sort or another which we thought would obviate the rules of the Senate with respect to those metals we have always ended up with the legislation in the hands of another committee, and I suppose it will always be that way.

What I would like to suggest this morning is a very rational and slow approach to this matter. There are four basic ways that we can help any industry. That is, any mineral industry. These are the three general ways of tariffs, quotas, subsidies, and by international agreements. We have tried almost everything in the last few years and have seen a steady and constant deterioration of our metals industry in this country.

I recall the bill offered by Secretary Seaton in the previous administration whereby he proposed an import tax upon certain metals, and I have never been quite certain how he ever got this by the Bureau of the Budget but he managed to in some way, which died aborning in Congress.

Then I remember his subsequent subsidy bill. I also have a very keen recollection of the present subsidy bill which I regard simply as akin to trying to cut out the lesions of a tubercular man in the hopes that you are going to cure him. You cannot cure this whole basic problem, in my opinion, with a subsidy, and of all methods of attack, subsidy is the least desirable because a subsidy promotes a subsidy and there is no end to it.

The time has passed, I believe, for a piecemeal approach to this, for legislation to help lead, for legislation to help zinc, for legislation to help mercury, for legislation to help antimony, or for legislation to help this or for legislation to help that.

I would like to look beyond this at what I consider to be the basic ills of the metal world which arise chiefly from the fact that we have had no protection in this country, that the costs constantly keep rising in this country, and that the costs of imported metals do not rise in a corresponding range.

I looked at the American Metal Market this morning and I believe if I recall correctly that the price of lead was 10.50 in New York, the price of zinc was 12, making a total of 22½ cents. From the very extensive and exhaustive hearings we have had before this committee the general preponderance of the testimony over a period of years has been that our producers cannot produce lead and zinc for less than anywhere from 29 to 30, 31 to 32 cents, and of course this depends upon whom you are talking to at the time.

So what do we do in this country? First of all we have to recognize the causes. We are not going to be able to reduce the cost of labor in this country. Therefore, we cannot compete in this sense with the cheap imports of other countries which do not pay a comparable wage.

Even Canada, which is the chief importer of lead into this country, does not have wages which are comparable with the wages in the United States. The next greatest importer in the case of lead is Mexico, almost as high as Canada; Peru, almost as high; and then other Latin American countries.

In the case of zinc, we start out with Australia again where we do not have a comparable wage rate, and then go to Canada and then to Mexico. So that we will never hope and can never hope to accomplish an equal cost of production with these people, particularly since in the West many of our mines are deep and they encompass the type of mining which is going to be very expensive.

There are areas in this country where other types of mining can be employed, and it is possible that they would be or can be brought into a more nearly competitive position. But for the deep mines of the West, this is going to be somewhat difficult. Long ago I introduced, Mr. Chairman, a bill which I called a bill to establish a national mining and minerals policy. I am not bringing forth anything new today for you, but I am calling to your attention S. 164 of the 88th Congress, which does establish a mining and minerals policy. It is not an answer to the minerals question. But it is the springboard from which a solution of our mining problems might spring.

It is a fact that no one can answer the question. "What is the mineral policy of the United States?" There is no one who can answer because no one knows. Is the policy a protectionist policy? The history does not seem to bear this out. Is the policy of the United States to preserve the minerals of the United States a la the old Paley report for ever and ever?

The history hardly bears this out either. What is the policy of the United States? The answer is that not one knows. So it seems to me that before we talk about protecting or developing our mining industry in any way, the first thing we have to do is to declare to the public, declare to ourselves, decide for ourselves, what the mineral policy of this Government is.

What do we intend to do with our basic mining and minerals industry? So this is a simple little bill which, as I say, is not the solution to the problem, but it could well be the springboard from which we could solve the problem. It simply says that the Congress declares that it is the continuing policy of the Federal Government in the national interest to foster and encourage, (1) the development of an economically sound and stable domestic mining and minerals industry.

(2) The orderly development of domestic mineral resources and reserves necessary to assure satisfaction of industrial and security needs. And (3) mineral and metallurgical research to promote the wise and efficient use of our mineral resources. It goes on to say that it

shall be the responsibility of the Secretary of the Interior to carry out this policy in such programs as may be authorized by law other than this act.

For this purpose the Secretary of the Interior shall include in his annual report to the Congress a report on the state of domestic mining and minerals industry, including a statement of the trend and utilization and depletion of these resources, together with such recommendations for legislative programs as may be necessary to implement the policy of this act. Now I can almost hear the wheels turning—how can such a simple little thing as this bill possibly help?

Well, folks, we have tried the tariff, and I don't think I have to mention the Tariff Commission particularly to the mineral people and I don't have to mention them either to agricultural producers and many other people in this country. We have tried quotas. We haven't gotten any quota relief of any significance. We have tried subsidies and I don't need to tell the mineral people in this room that it is impossible to get the people of the United States to approve a subsidy bill for each and every mineral product, and particularly a subsidy of any significant value or use.

You all remember our experience with tungsten. I hope this experience, while it was a sad one and one which I tried to avoid personally as did most of our western Senators—all of them—nevertheless, it was a sad day and a sad time. Now, what would a bill like this do? I say it would do this.

It would provide the way and the opportunity for international understanding or agreements with respect to production.

Now let us take a country like Mexico, which produces zinc, for example. If in the implementation of this bill we would pass another resolution saying that it is the policy of this country, under the general policy of protecting our mining industry, that we do retain for the United States our historical production of zinc, we accomplish two results.

First of all, we take the Tariff Commission out of a position of a fence in the solution of this matter. If this is then the policy the Tariff Commission is not going to circumvent it. We then say in effect to the rest of the world—and I use the figures from last year in the production of zinc, estimated, as an example—the United States is going to consume a million tons of zinc.

The United States has produced 498,000 of that 1 million, and it is our intention to preserve and keep this much of the market for us. The answer to that immediately from the internationalists is, "Oh, my heavens, you can't do that."

Mexico would be up in arms against us. Actually we would be doing Mexico and the other importers of the free world a real favor. Because we first put them on guard that they are going to have to limit their production if they expect to find a market for it.

They can hammer at our doors with cheap zinc if they want to. In a way this will act as a quota. But they can hammer as loud and as hard as they want to, but they have been put on prior notice that we intend under this bill to preserve our minerals industries in a healthy, economic, stable condition.

This is where we have to begin. Then we can implement this later with bills which indicate our specific intentions, either as to the whole area or as to specific metals one by one. Mr. Chairman, I have taken

15 minutes, and I did not intend to do so, but I feel so strongly that what we have to do is look to the basic facts here and start at a basic point in order to solve our problem.

All of the talks about tariffs and quotas and subsidies will not solve it. We have first of all to decide just exactly what our intentions are with respect to the minerals industry. If there is anybody here who can tell me what the basic mineral policy of the United States is with respect to minerals, except one of drifting, drifting, drifting, then I will be happy to yield the floor to them.

I want to thank you, Mr. Chairman and members of the committee, for this opportunity to discuss this matter and to discuss the particular bill which I think is the beginning wedge with which we might eventually forge a sound minerals policy.

Senator GRUENING. Thank you very much, Senator Allott. While I can't speak for other members of the subcommittee, it seems to me that your proposed bill is a very reasonable start in stopping the policy of drift and getting us somewhere on a track and in the right direction. We will certainly hold hearings if necessary.

Senator ALLOTT. I appreciate that. Mr. Chairman, might I say I would be happy to answer any questions but at the conclusion of them I am due in the defense appropriations subcommittee, as you know, and I am going to have to leave for that. It doesn't indicate my lack of interest.

Senator GRUENING. Before you leave since you are appearing as a witness and not as a member of the committee, I want to ask our colleagues if they have any comments or questions to ask.

Senator DOMINICK. Thank you, Mr. Chairman. I want to thoroughly endorse what my colleague has said concerning the mineral policy. I have been connected with the mining industry in one form or another in my legal practice for a number of years and this drifting policy is self evident when you are in that game.

It doesn't make any difference whether we are talking about uranium, whether we give an incentive to produce uranium and suddenly find out that our domestic producers are cut back while the Canadians and Belgians are left with their original contracts to bring in ore, or whether we are talking about trying to get a small subsidy bill through for lead and zinc, while the basic problem we have with lead and zinc is too much ore hanging over the market and depressing the price, or whether we are talking about gold when we don't have enough and can't get any policy through to determine how we can give an incentive to the gold producers to produce more.

It seems to me that the basic condition of doing anything substantially beneficial for a very necessary segment for our economic source of our country is to endorse and put through what my senior colleague has been talking about, a basic mineral policy for the country.

Senator GRUENING. Thank you very much, Senator. If there are no further questions, thank you very much, Senator Allott, and we will certainly bring this up at an early date. We have a great galaxy of witnesses here. I would like to call on our colleague from the House, the Honorable Ed Edmondson of Oklahoma who appears in his own capacity and can perhaps also speak for his brother who is a distinguished Member of the Senate.

Will you go ahead and present your statement.

STATEMENT OF HON. ED EDMONDSON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OKLAHOMA

Mr. EDMONDSON. Thank you very much, Mr. Chairman and members of the committee. My remarks will be brief but I do want to say that the brevity of the remarks is no measure of my estimate of the importance of these hearings and of the task you are undertaking because I think the problem of maintaining a sound and vital domestic minerals industry is one of the major problems before the country today.

I certainly recognize the role of this committee in that area and the leadership of the chairman of the committee. No careful students of the field can avoid the conclusion that we are continuing to drift disastrously in policy with regard to many important segments of this industry, even though the past year has witnessed welcome domestic production increases in some minerals.

At this point I would like to state I have been aware for some time of the feeling of the distinguished senior Senator from Colorado about the need for a bill clearly spelling out some guidelines for policy. I certainly can endorse wholeheartedly the principles stated in the bill which he read a few moments ago.

I would like to call the attention of the committee, however, to a point merely for the record because I know all the members of the committee are acquainted with it, to House Concurrent Resolution 177, known as the Aspinall resolution which was passed by both Houses of the Congress several years ago, and which spelled out pretty strongly and pretty definitely the feeling of the Congress that it was vital to the interests of the United States, both economic and military, that a sound and healthy domestic mining industry be preserved.

I think this record of expression by the Congress is very clearly before this administration just as it was before the previous administration. Where we run into difficulty is when we start playing down specific methods to implement this policy. Here I think your committee can perform a most useful function if it can come up with some definite ideas and some definite proposals.

I think personally that the uncertainty in stockpiling policy and the threat of large stockpile disposals continue to hang like cyclone clouds over the domestic industry. The failure to establish more definite postwar requiremetns for stockpile items is regrettable, but I am told progress is being made in this area at this time.

I think this is one area in which anything that your great committee can do to expedite some findings in this area, where we have just about a total vacuum right now in findings by Government, would be very useful. On this score I am certainly cognizant of the study that has been made by the distinguished Senator from Missouri, Senator Symington, but I think Senator Symington has encountered, just as our committee has encountered, when we tried to find out what the definite goals were for post-nuclear-attack requirements of the United States, that there are no well-defined goals at all in Government today.

I believe the President's demand which was publicized the other day for acts to improve minimum safety and end the tragic loss of lives in mine explosions should be strongly supported by the Congress. It seems incredible that in this miraculous age of science and electronics no effective device to locate and warn of dangerous gas accumulations, in advance of the actual presence of miners with their caps, has apparently been perfected.

I believe continuing special study is needed in the use of other minerals as well as petroleum by the Soviets, as a weapon in the cold war. Many Americans remain uninformed on this point, which emphasizes even more I believe the need for a strong domestic mining industry.

Finally, I hope and trust your great committee will lend its support in early passage of the bills already acted on by the House. Specifically they are H.R. 3845 by Mr. Aspinall and H.R. 3120 by Mr. Udall to hold the small domestic lead and zinc producers program within the limits of its original legislative purpose and to avoid the participation of large producers of other metals, as well as unreasonable regulations which operate to prevent or limit participation by some bona fide small lead and zinc producers.

Hundreds of miners have gone back to work as a result of this program and it should be kept as free from criticism and attack as possible. The cooperation of this great committee in that endeavor will certainly be deeply appreciated. Mr. Chairman, I thank you for this opportunity to appear.

Senator GRUENING. What happened as the result of the passage of the House Concurrent Resolution 177? Do I understand that it was enacted but nothing has followed? There has been no subsequent acts to implement it.

Mr. EDMONDSON. It was a statement of congressional beliefs and goals and intended as a statement of policy in the field of the domestic minerals.

Senator GRUENING. Was it similar to the proposal of Senator Allott to establish a national minerals policy?

Mr. EDMONDSON. I am quite confident that some who supported it felt that it had a similar function. It did not, if I recollect correctly, assign to any particular individual Government agency the responsibility of implementation. If this is a part of the bill by Senator Allott, that in my judgment would be an added advantage to be gained by its passage.

Senator GRUENING. I think it might be well in view of Senator Allott's testimony and your testimony, if House Concurrent Resolution 177 of the 86th Congress and his bill, S. 164, be introduced at this point in the record so that it may be clear that the effort has been made to establish a mineral policy and an indication has been given by the Congress in the past and again by one of our distinguished Senators now for that purpose.

(The bills referred to are as follows:)

[H. Con. Res. 177, 86th Cong., 1st sess., Rept. No. 968]

CONCURRENT RESOLUTION

Whereas the Constitution empowers the Congress to make all needful rules and regulations respecting the territory or other property belonging to the United States, to regulate commerce with foreign nations and among the States, and to provide for the common defense and general welfare; and

Whereas mining and the extraction of minerals from Federal, State, and privately owned lands situated within the United States and its Territories and possessions are basic industries upon which the transporting, processing, and distributing industries and the consumers of the Nation depend; and

Whereas the interests of national security have brought about Government programs for the establishment and maintenance of national stockpiles of strategically important metals and minerals and for the development of mine and plant capacities for the production thereof; and

Whereas the administration of these and related programs, through Government purchases, contracts, loans, grants, technical assistance, barter, and other means, has resulted in the abnormal and artificial stimulation of foreign metal and mineral exploration and development and the expansion of foreign capacities for the production of metals and minerals; and

Whereas increased foreign production of certain metals and minerals, together with downward revision of national stockpile requirements, has resulted in depressed domestic prices for these materials, drastic curtailment of domestic production, economic disaster to individual firms, hardships for dependent industries, extensive unemployment, and severe contraction of business in the affected communities; and

Whereas an emergency exists since further delays in the recovery of the domestic mining and mineral industries would cause irreparable damage to mining and mineral properties, wastage of human and natural resources, and loss of productive capacity, and would have a depressing effect upon the national economy and threaten national security; and

Whereas all governmental efforts to date have not been effective in alleviating these detrimental effects: Now, therefore, be it

Resolved by the House of Representatives (the Senate concurring), That the President is requested—

(a) to have reviews made at once of the existing programs of the departments and agencies of the executive branch with the purpose of using them more effectively to provide for increased production and employment in critically depressed domestic mining and mineral industries;

(b) to advise the Congress at the earliest possible date as to the actions taken or proposed to be taken to this end; and

(c) to submit any reorganization plans or recommendations for legislation that may be necessary to accomplish this objective.

SEC. 2. It is the sense of the Congress that it is in the national interest to foster and encourage (a) the maintenance and development of a sound and stable domestic mining and minerals industry; (b) the orderly discovery and development of domestic mineral resources and reserves on Federal, State, and privately owned lands; and (c) mining, mineral, metallurgical, and marketing research to promote the wise and efficient uses of domestic metal and mineral resources.

SEC. 3. It is the sense of the Congress that the maintenance and development of a sound and stable domestic mining and minerals industry, without critical dependence upon foreign sources, is essential to national security and the welfare of the consuming public, and that this objective is independent of and cannot be accomplished by the maintenance of national stockpiles for planned defense needs in a single emergency or the existence of productive capacity based upon the importation of foreign materials.

Passed the House of Representatives August 26, 1959.

Attest: RALPH R. ROBERTS,
Clerk.

[S. 164, 88th Cong., 1st sess.]

A BILL To establish a national mining and minerals policy

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Mining and Minerals Policy Act of 1959".

SEC. 2. The Congress declares that it is the continuing policy of the Federal Government in the national interest to foster and encourage (1) the development of an economically sound and stable domestic mining and minerals industry, (2) the orderly development of domestic mineral resources and reserves necessary to assure satisfaction of industrial and security needs, and (3) mining, mineral, and metallurgical research to promote the wise and efficient use of our mineral resources. It shall be the responsibility of the Secretary of the

Interior to carry out this policy in such programs as may be authorized by law other than this Act. For this purpose the Secretary of the Interior shall include in his annual report to the Congress a report on the state of the domestic mining and minerals industry, including a statement of the trend in utilization and depletion of these resources, together with such recommendations for legislative programs as may be necessary to implement the policy of this Act.

Senator GRUENING. We are certainly either going to hold hearings, if necessary, or take committee action without them on Senator Allott's bill. I think this would be an appropriate time to indicate that this matter has been given consideration before and it is time that we followed it out with something more specific than a general statement of purpose and principles.

Mr. EDMONDSON. It might well be.

Senator GRUENING. Are there any questions?

Senator MOSS. I have no questions, Mr. Chairman. I am very happy to have Congressman Edmondson come here. He is the chairman of the Mines and Minerals Subcommittee in the House and, as such, has been concerned with this problem and knows that we have been seeking to find some guidance here on what we can do for the mining industry in this country. I appreciate your appearance here.

Mr. EDMONDSON. Thank you, Senator.

Senator GRUENING. I just want to say what everybody else knows about Ed, that he is the one man who headed up the effort that constitutes the single breakthrough in the stalemate in the minerals industry for many years in the small lead and zinc subsidy bill that we managed to pass in the Congress.

Mr. EDMONDSON. Thank you, Senator.

Senator GRUENING. I am wondering whether the appropriations that have been made since to implement that legislation have been sufficient?

Mr. EDMONDSON. Senator, the appropriations have been more than sufficient for it. We haven't had the level of participation in the program that we had hoped to have. I think a great number of small producers had gone broke during the period 1957 to 1961 that they found it impossible to get back into operation under the program. Your State is one State in which there are a number of participating mines and in which quite a few miners have gone back to work, I am glad to note. I certainly want to acknowledge, with thanks, the help and support which you gave in that bill which was most critical and most helpful at a very critical time.

I can say that, with certainly a full heart, to every member of this committee because we had help from every member of this committee in connection with that legislation. One thing that has to be kept in mind about that program is that it is scheduled to terminate in 1965. Under the commitments and understandings we have with the administration, certainly this Member of the House does not intend to press for any extension beyond the agreed time on it.

It was intended principally as a bailout and a stopgap proposal while something of a permanent nature was developed for the lead and zinc mining industry, something in which all producers, large and small alike, could have some security and stability of operation for the future. I appreciate your kind remarks about what has been done in that direction; I think that the hearings being held here can be a useful step toward something of a more enduring and permanent nature for our mining industry, and, in that effort, you surely have my wholehearted support.

Senator GRUENING. It is a pleasure to have you appear before us, Congressman. You certainly have proved yourself to be one of the most effective friends of the mining industry. In any effort that this committee makes we know it will have your support on the other side of the Capitol.

Mr. EDMONDSON. Thank you very much.

Senator GRUENING. Senator Dominick.

Senator DOMINICK. I just want to join my colleagues in welcoming the Congressman as a witness. I participated in his subcommittee in the House, on the bill he mentioned, and other problems, and I know how hard he has worked.

Mr. EDMONDSON. Thank you very much. The gentleman was very helpful when we needed his help. I appreciate it.

Senator GRUENING. Thank you very much, Congressman Edmondson. We will be very happy to hear you at any time you have further thoughts. Thank you very much for coming.

PREPARED STATEMENT OF HON. J. HOWARD EDMONDSON, A U.S. SENATOR FROM THE STATE OF COLORADO

Mr. Chairman, I am privileged to have the opportunity to submit this statement to the Minerals Subcommittee of the Committee on Interior and Insular Affairs. In these times of grave concern over our Nation's economy, it is fitting that this committee hold hearings on the general condition of the mineral industry for here one can find foretastes of what might happen to the rest of our economy. I am particularly concerned today with the conditions which exist in the lead and zinc industry.

Although mine production of lead and zinc in the United States increased last year over 1961, production remains much lower than it has been. The 505,648 short tons of zinc ore produced last year was 8 percent less than the 1952–56 average production, and 20 percent under the 1947–51 yearly production average.

The record of the lead industry is even worse. Despite a slight increase in 1961 in the amount of lead produced over the preceding year, production in 1962 was the lowest in any year of this century. This past year approximately 237,000 short tons of lead were produced in the United States. This is some 112,400 short tons less than the 1952–56 yearly average of 349,815 short tons.

The decreasing production in these two important industries has been reflected in the number of people employed in their mining operations. Employment in the lead industry has decreased from 8,570 in 1955 to approximately 4,100 in 1961. This is a decrease of more than 4,400, or more than 50 percent in only 6 years. The picture is just as gloomy in the zinc industry. There, with the 1961 employment only 5,530, we find a decrease of 57 percent from the 1952–56 average of 12,740 persons employed. Since lead and zinc mining is, for the most part, carried on as one operation, the cumulative effect of these unemployment figures is staggering to the small communities where these mines are located.

I could continue to enumerate statistics which would reflect the severe problems besetting these industries. However, I do not feel that is necessary, since it is quite obvious that these problems do exist. It is easy to list the ills of the lead and zinc industry but infinitely more difficult to list the means of remedying them.

I do wish to commend for your attention several things which I hope you will consider during your discussion. I hope the committee will look into the effect of imports on the production of lead and zinc. The domestic mine production has been lower than imports for several years, and the possibility of recommending a change in the present import quota method to include items such as litharge and zinc oxides should be considered.

Also, I hope the committee will consider the effect on the minerals market if the proposals to dispose of surplus Government inventories of zinc and lead are carried out precipitously, and without due regard for producers of these metals.

Lastly, I want to urge this committee to consider the importance of the lead and zinc industries to the defense structure of the United States. In the event this country is engaged in extensive military operations there will be a large and immediate need for lead and zinc in defense production. If our domestic zinc and lead industry is not kept strong, it will not be able to provide the metals vital to our defense efforts. Mines closed for more than a few months will cave in and fill with water, thus making it impossible to resume operations on short notice and sometimes necessitating abandonement of the entire mine. I am confident that this committee will see the wisdom in taking action to prevent such a possibility from occurring. We must maintain our available capacity to produce lead and zinc.

Certainly these problems are difficult and complex. They are not, however, completely insoluble. I am hopeful that this committee will be able to point the way to a solution of the problems that plague the mineral industry.

Senator GRUENING. We have now a representative from the executive branch, the Honorable John F. Kelly, Assistant Secretary of Interior for Minerals, accompanied by Dr. Thomas B. Nolan, Director of the Geological Survey, Marling J. Ankeny, Director. Bureau of Mines and George Fumich, Jr., Director of Office of Minerals Exploration.

We are very happy to have you here, Secretary Kelly. If you would like to have your assistants join you at the table or be available whenever you desire, you may do so. Will you please go ahead. I notice you have a prepared statement.

STATEMENT OF HON. JOHN M. KELLY, ASSISTANT SECRETARY OF THE INTERIOR FOR MINERALS; ACCOMPANIED BY DR. THOMAS B. NOLAN, DIRECTOR OF THE GEOLOGICAL SURVEY; MARLING J. ANKENY, DIRECTOR, BUREAU OF MINES; AND GEORGE FUMICH, JR., DIRECTOR OF OFFICE OF MINERALS EXPLORATION

Mr. KELLY. Thank you, Senator. It is a pleasure to be here with you. As I understand your schedule it might be that you would wish to defer statements by Dr. Nolan and Mr. Ankeny and Mr. Fumich to a later date in order to accommodate some other witnesses and they will be available at your convenience.

As I have stated, it is indeed a pleasure and a privilege for me to be reporting to you on the state of the domestic minerals industry. It is my understanding that our discussions exclude fuels, and our presentation to you is planned accordingly.

Accompanying me are Dr. Thomas Nolan, the Director of the U.S. Geological Survey, Mr. Marling Ankeny, the Director of the U.S. Bureau of Mines, and Mr. George Fumich, the Director of the Office of Minerals Exploration. These gentlemen will inform you, in any degree of detail that you desire, of the programs of their respective bureaus.

In the Department of the Interior, we take great pride in our stewardship over the Nation's mineral resources and in the services that we have been able to render to the American public since 1849 when the Department was founded. The year 1849—the year of the gold rush to California—is significant in American mining history.

Government has changed vastly since the days of '49 and so has the minerals industry. If I leave you with only one thought today, it should be this: The minerals industry is no longer confined to mining alone, it is a vast economic complex embracing sophisticated processes and dozens of products, it is closely interrelated with all other segments of our modern corporate and technical establishments, and it is as dependent upon basic research, science, and technological improvements as is any other modern industry.

The Federal role in relation to our modern minerals industry, and especially that of the Department of the Interior, is best understood through its functions of providing advice and information and of stimulating discovery, production, and conservation through research programs which cannot be undertaken by industry because of their economic extent or scale of operations.

Our programs involve the mapping and delineation of the Nation's mineral resources, the identification of new horizons through geological and mineralogical investigations, mining, mineral processing and metallurgical research, and direct assistance to small prospectors. Interior has pioneered in many fields of mineral endeavor and is continuing this work under the authority granted by the Congress.

Before I discuss further the Department's work in minerals, you may be interested in a brief summary of the minerals economy during this last year. In 1962 all industrial production climbed from a low in January to a high plateau in the fall, and declined slightly at the close of the year.

Mining production followed this pattern closely and most sectors achieved record highs. Minerals gained both in value and in volume of production, with the exception of the steel-associated minerals which sustained a net loss during 1962.

Nonferrous metal-mining gains offset the loss in ferrous metal mining, and the same pattern held in metal production. A substantial increase in production of nonmetals (excluding fuels) resulted from the greatly increased demand for construction materials.

The net supply of minerals, metals, and fuels generally increased, while both imports and exports made slight gains. Generally there was a small increase in consumption of all mineral and related products, excepting the small decline in the steel-associated minerals. Despite weaker prices, domestic production made gains, and the value of mineral production was up 3.3 percent over 1961.

Income generated by mining industries remained behind the national upward trend. Metal mining income continued to decline significantly, whereas nonmetal mining income made modest gains. Employment declined through the year, reaching a new low at year's end.

Mining labor productivity continued its gradual upward trend, and although total earnings and total employment continued to drop, the average annual earnings for all mining employees increased slightly during the year.

In the event you may not have seen our latest issue of "Commodity Data Summaries," I will request that at the end of my presentation there be distributed to you the 1963 issue of this annual review. Later in the year, the Bureau of Mines "Minerals Yearbook" will largely supplant this booklet which contains some preliminary figures and estimates that may require revision.

The minerals industry complex is well exemplified by this summary. Some materials have production and consumption figures measured in tons, others are measured in ounces. Some are raw materials that are used as extracted, others require complicated processing. In the case of some, we produce more than we consume and are net exporters; with others we are net importers. Some, such as iron, copper, lead, and tin have been known and used since the dawn of history. Others, such as beryllium, thorium, germanium, and molybdenum, were unknown or largely unused only a few years ago and in some instances existed only as mineral or metal curiosities. A hundred years ago, aluminum was a rare and precious metal; a few privileged guests were permitted to dine from aluminum dishes at banquets given by Napoleon III. Today aluminum is in everyday use as one of our most plentiful metals.

One of the oldest known metals, interestingly enough, is having a revival. I refer to the new era in silver which has developed primarily as a result of the President's late 1961 order halting Treasury sales of silver, a move which we in Interior strongly recommended. Since then the price of silver has increased more than 35 percent. Free-world mine production of silver is growing about 2 percent per year, while industrial consumption and coinage requirements are expected to grow as much as 5 percent annually. The total yearly deficit in domestic supply is about 115 million ounces. With this in view, the exploration assistance program of the Office of Minerals Exploration has noted a quickening interest in silver in recent months. There is talk in the industry of reopening some of the old silver camps in response to the increasing demand for this highly useful metal.

While some of the traditional industrial uses of silver—such as jewelry, tableware, and photographic film—are not showing any startling growth in metal consumption; silver is coming into increasing demand for use in metal joining. Assemblies capable of withstanding high-temperature operating conditions, such as occur in aircraft and space vehicles and in some electronic devices, are creating a sizable new market for silver. Compact, lightweight batteries for military and space use also absorbed more than 5 million ounces in 1962. Despite its high cost, silver's unique properties of thermal and electrical conductivity, its malleability, reflectivity, and corrosion resistance are being found ideal for metallurgical research in problems of space technology.

I recognize the committee's interest in gold. This monetary metal has played an important role in the history of many of the States that you represent. In the early days of mining in the United States there were periods when gold was the most important product of our minerals industry. With the passage of time, other industries have been developed which overshadow gold as a source of mineral wealth.

This administration considers that the principal national interest in gold is in its use as a monetary metal. Because of this, we in the Department of the Interior defer to the Treasury Department in policy matters which could affect gold's monetary function. The Geological Survey and the Bureau of Mines maintain an interest in gold from the standpoint of its commodity characteristics. The Department's Office of Minerals Exploration has recently expanded its program of financial assistance to exploration to include gold. Mr. George Fumich, Director of the Office of Minerals Exploration, will provide the details of this program. In matters that go beyond the commodity aspects of this metal, however, policy is established elsewhere within the administration.

Members of the committee have expressed concern over the volume of mineral imports.

There are, of course, a number of minerals in which the position of the United States has shifted during the past 30 years or so from that of net exporter to that of net importer. But during the past 10 years there has been a noticeable improvement. Imports have declined while exports have risen.

We have to realize that a substantial proportion of our mineral imports is comprised of minerals which are not found in the United States in commercial quantities, such as tin, nickel, and industrial diamonds. In 1961 these noncompetitive imports were 50 percent of our total mineral imports. (We are excluding the fuels and gold in these calculations.)

In 1961, 4 minerals accounted for 78 percent of our total imports of ores and concentrates. They were iron ore, copper, bauxite, and manganese.

Three metals—nickel, copper, and tin—accounted for two-thirds of all imports of metals in 1961.

If we may look briefly at the overall picture of imports and exports of minerals and metals, we find that between 1956 and 1961 competitive imports declined from $1.2 billion to $837 million while exports—and here I have omitted the large item of iron scrap—increased from $519 million to $736 million.

Our net imports in 1956 were approximately $700 million. In 1961 they were down to $100 million.

I think, Mr. Chairman, these figures testify to the growing strength of our mineral industries.

Mineral deposits are by no means evenly distributed on the earth's surface: some nations have an excess of specific commodities and others must import them. An analysis of the U.S. mineral position was completed during this last year for the National Academy of Sciences by Mr. Dean F. Frasche. His report on "Mineral Resources" is a brief and concise summary that is most informative. Essentially, he points out, our domestic minerals position should be assessed on both a short-term and a long-term basis.

If we consider the short term as 10 years, the United States should not suffer serious minerals shortages unless war or other oversea developments curtail imports of critical commodities. In the event of a national emergency, provision has been made through the stockpiling of critical minerals and metals to tide us over a period of 3 or more years.

The long-term outlook points to the need for and importance of a continuous dynamic research program at all levels of technology. Included in this are the nationally important programs of the Geological Survey and the Bureau of Mines. This long-term outlook stems from the existence of multiple forces at work on the mineral industry. Among these forces are pressures resulting from an expanded base of minerals use, the demand for improved quality, the constant merging of industry into larger units, the pace of technological advance in fields related to the minerals industry, and the competition for persons knowledgeable in the minerals field. In addition, there are forces of historical and local origin, operating primarily at the State level, which have a bearing on the industry.

I have given you a specific illustration of the expanded use for silver. This exemplifies what happens as our scientific economy seeks to build new devices, explores new fields, or creates new products.

Through research we acquire knowledge and understanding that enables us to use materials that were not usable before. In this sense today's essential industrial materials are not only found, they are created.

The taconites of Minnesota, beryllium, aluminum, molybdenum, and helium are but a few of the many new substances in this category. One may predict that our expanding science will find a use for every mineral of the earth's crust.

Many of these new uses not only require new and unfamiliar minerals but also require improvement in quality or degree of purity. The application of a new or hitherto unused substance may depend upon the quality level at which it can be supplied. In many of our more sophisticated processes for translating mineral raw materials into finished product, the control of quality requires a regulation of the environment equal to that of a modern hospital. It takes only a small impurity to destroy the effectiveness of some materials for use in the special instruments, computers, or other devices of our age.

Our future technology is dependent upon the vigor with which we find and appraise new sources of ores and minerals and devise more effective methods for handling and processing ores and waste. This also includes the effectiveness with which we use scrap or secondary metals. There is a tendency to forget the importance of scrap as a means for conservation of metals and materials that otherwise would be wasted.

The technology of finding, extracting, and processing minerals has greatly changed during the past 30 years. Indeed, the changes have been almost revolutionary. Most mineral deposits that have eluded surface search by the prospector, using conventional methods of ore finding, probably repose beneath soil, valley fill, or barren rock at depths where detection requires the application of scientific techniques and special instrumentation. Also, the list of minerals for which we search is no longer confined only to the precious and the base metals. The oldtime prospector is vanishing, being replaced by trained fieldmen equipped with the techniques of geophysics and geochemistry, and utilizing new methods of geological analysis. His burro is replaced by the jeep, the airplane, or the helicopter.

The mining, handling, and processing of ores has ceased to be a relatively simple matter; the mining of progressively lower grade materials, especially where great tonnages are involved, has necessitated the use of more and heavier machinery at the mine, coupled to the more complex applications of metallurgical and chemical engineering at mills, smelters, and refineries. The fundamental nature of mining is changing; the small independent miner, who has contributed so much to the building and development of our Nation, gradually is being displaced as more and more mines are integrated with vast operations embracing a flow of materials from ore to fabricated products. I do not imply that there is no place remaining for the small mine operator or the independent prospector. Both are needed and both should be encouraged, and the Office of Minerals Exploration has this mission.

Even today, in conjunction with the large exploration companies, the independent prospector has an important function in the search for new mineral resources. Because of his independence, persistence, and mobility, he can supply to an exploration effort a certain momentum that often is lost where large corporate enterprise is involved. This was demonstrated not too long ago when individual prospecting was responsible for uranium developments on the Colorado Plateau.

Through the Office of Minerals Exploration, we maintain a financial assistance program for the exploration of domestic mineral reserves, sharing with private operators the risk and cost of searching for new ore deposits. This exploration stimulus has put men to work in our mining communities and has aided the economy of the Nation through adding to its wealth. Valuable geological information has been obtained, and new ore deposits have been added to our known reserves.

The OME program is proving increasingly useful in stimulating exploration but there are some limitations inherent in the program as it now stands which restrict its usefulness, especially to small prospectors whose financial resources are limited. Under the present program we cannot give any assistance in mine development beyond that related to the actual discovery. If the applicant wants to go ahead with development, he has to get funds elsewhere. This is sometimes difficult.

The OME program has additional limitations: Its maximum assistance in any one contract may not exceed $250,000. Its authority to permit use of modern geophysical and geochemical techniques is not clear. Furthermore, the program does not now provide needed technical assistance in development work. Sometimes the difference between a successful operation and a failure is a bit of technical assistance.

Eventually we must decide whether it is desirable for the Government to go beyond exploration into these other areas of effort. We've made no decision as yet on this.

We have been asked to comment on Federal programs and policies affecting the minerals industry. Because the industry is so interwoven into our overall economy, its problems—with few exceptions—cannot be treated in a special and separate category. The Department of the Interior, operating within the framework of its legislative sanction, is only one of many agencies influencing minerals policy. Tariffs, stockpiling, the antitrust laws, labor laws, defense contracts, foreign relations, monetary policy, taxes, and even the requirements of our space programs have their impact upon the mineral industry. Thus, those of us present today from Interior are prepared to comment on and discuss with you only the programs and policies within our own jurisdiction.

Before going on, however, I should point out that there are government matters of importance to the minerals industry that are not within the realm of Federal activity. Traditionally, the Federal Government has remained on the sidelines in matters involving State mining laws. The industry obviously must bear its portion of the State taxes. At the same time, however, the minerals industry must be able to cope with foreign competition, price fluctuations, and shifting industrial patterns. With this in mind, and recognizing that the production of mineral raw materials is a mainstay to our industrial structure, I would hope that some of the State laws and regulations affecting mineral development might be reviewed by the respective legislatures to determine whether or not they fit the economic needs of the State. Obsolete laws inhibit rather than aid minerals conservation and production; unemployment and lack of tax revenue from the minerals industry can be symptomatic of outdated tax policies.

The case of taconite ore in Minnesota may well illustrate this problem and one means for its solution. There, over the years, iron ore has been a major source of tax revenue in the iron range communities but it was possible that the scale and structure of State and local taxes was such that they inhibited the competitive position of Minnesota mines. Now the State is taking steps to equalize this situation for new taconite developments through modifications of the tax law which will treat the producer in a manner corresponding to that of other industries. These changes, in conjunction with the recent revisions in Federal depreciation schedules, could have a major effect on future iron ore development in the region.

Your chairman requested that we advise you as to the relative status of our minerals situation and that of the Soviet Union.

Comparisons of this sort I find difficult, because our two countries are so different. We are a great industrial nation and have been for years. Russia on the other hand, has only recently experienced an industrial awakening.

Total mineral output in the United States is well ahead of Russian output. Russia is, of course, putting a tremendous effort into the development of her mineral resources to serve as a base for industrial growth, and her output may come to surpass that of the United States. She is now the world's leading producer of iron ore—in fact she now accounts for 23 percent of the world's total output as against 10 percent in 1941. She produces a number of commodities for export, including chrome, lead, zinc, aluminum, manganese, and tungsten.

Russian mineral resources are very great. Her landmass is 2½ times that of the United States and is about 17 percent of the land area of the world. The requirements of Russian industry until recently were very modest as compared with the United States. Her mineral deposits, therefore, have not been worked nearly so much as in the United States and are in some cases much richer.

Should industrial development continue its present pace in the Soviet Union, she will undoubtedly increase her imports of such commodities as copper, tin, industrial diamonds, and perhaps other minerals in which her resources are limited. In spite of the vast area of the country, not all minerals have been found in abundance.

In the United States, the proximity of our rich coal and iron ore resources has made possible the development of an efficient steel industry. Russia's mineral resources, on the other hand, are distributed over a vast area, many of them in the Arctic. This poses production and transportation problems which can impede rapid development. Nevertheless, the record shows that Russia has the technologic capability to make outstanding progress in the development of her mineral resources.

If we want to hold our own in the contest for industrial might in the world, we should look carefully at three aspects of our minerals program—its nature as a total system, its basic research and its creative people.

We have learned in recent years that interrelationships between parts of a problem demand a total problem approach. This is no less true for the exploration and development of minerals than it is for the exploration of the ocean or the atmosphere. The crust of the earth in which minerals were formed and are found ought to be studied and understood as a unit.

If we are to apply scientific knowledge to minerals technology on a scale commensurate with the magnitude and complexity of earth science, and if the application of this knowledge is to be useful and available as emergencies arise, we must possess far greater insight into the minerals environment as well as a greater comprehension as to how such materials originated and were formed. To cite examples from recent research history, the synthesis of diamonds, mica, quartz crystals, and the manufacturing of certain ceramics and alloys, require information of this nature. This will require a much more comprehensive geological effort than we have mounted to date, including the use of all types of scientific techniques for measuring and understanding the crust of the earth. Much of this will be of the nature of basic research; much will be of a field exploratory nature.

This approach cannot, of course, be realized without creative people—and the scarcity of creative people is one of the major forces affecting the minerals industry today. The manpower pattern developed in America of a working partnership between Government, universities, and industry has somehow passed by the minerals industry, particularly in the areas of exploration and development. There is not a really sustained effort within the minerals industry and the universities for basic research or for the development of creative and knowledgeable people. In a period when much has been done to take advantage of university resources and talents, the schools of mines in America have been allowed to languish. As a consequence, the minerals industry today is at a disadvantage when competing in the market for creativity.

The Federal Government should do two things: It should first provide a stable base of fundamental research, and secondly it should take the leadership in stimulating both industry and the universities to improve and enhance the quality of their respective research efforts.

In closing, may I assure all of you of my deepest interest, and that of Secretary Udall and all our colleagues in the Department of the Interior, in the well-being of the minerals industries of the United States. The minerals position of our Nation is a matter of high concern to all of us and we are doing our utmost to assure that this is fully recognized. If my presentation serves to emphasize to you the importance of the Department's minerals effort, our time at this hearing will be indeed well spent in service to the Nation. As Charles Kettering, the genius of General Motors, said a few years back—

> If we just don't become stupid, we'll never run out of anything.

Senator GRUENING. Thank you very much, Secretary Kelly, for your very comprehensive presentation. There are many things that call for questioning and I have a good many questions to ask. But Senator Church has another engagement and he would like to ask a few questions.

Senator CHURCH. Mr. Secretary, I want to ask a few questions about silver. Two years ago I was very much interested in and worked very hard to bring about the decision to stop the sale of free silver from the dwindling Treasury supply. That decision was made in November 1961 and immediately there was a jump in the price of silver to about a dollar or a dollar and 1 cent, about a 10-cent jump.

Since that time it has gone to $1.27 or $1.28. This represents, as you have indicated, an increase in the neighborhood of 35 to 40 percent in the price of silver. My first question is, To what extent has this very substantial increase in price—few industries are favored by that kind of increase in price—stimulated new production, first of all in existing mines?

Secondly, to what extent has it resulted in the opening of new mines?

Secretary KELLY. Senator, of course in the minerals field there is always a timelag due to the nature of the industry. It stimulated some increased production in existing mines immediately. That became evident.

The mines were able to mine a lower grade of silver and therefore increase their total silver output. It has also stimulated, in conjunction with the lead-zinc subsidy bill, a little increase in lead-zinc mines that have a silver content, because these mines were able to obtain a part of their revenue from the silver content of their ores.

It has also stimulated an increase in requests to our Office of Minerals Exploration for exploration contracts in the silver field. This, of course, would not show up in the statistics of 1962 as increased production, but we hope it will show up in statistics in future years.

Senator CHURCH. When you say in your statement free world mine production of silver is growing about 2 percent per year—while industrial consumption and coinage requirements are expected to grow as much as 5 percent anually—has there yet been time to show any perceptible increase in what has been a rather steady trend upward in silver production, which can be tied to the increased price?

Secretary KELLY. Yes, I think it can be tied to the increased price. But the increase has not been enough yet to narrow the gap between industrial consumption and production. We have a deficit of supply in the United States of around 115 million ounces a year. So the domestic industry has quite a chore on its hands if the gap is to be closed.

Senator CHURCH. Is there any prospect or any danger, in your opinion that silver may suddenly appear from Chinese or Russian sources in quantities that would affect the free market price?

Secretary KELLY. Senator, I do not frankly believe we will see much Russian silver put on the market because their industrial consumption of silver is also going up. If there is a so-called dumping of silver it will come from Chinese sources.

With this gap, and with the apparent increased industrial demand, I cannot see where it would materially affect the market for any length of time. It might cause a minor price fluctuation while that quantity was being absorbed. We have to realize that the Chinese have been putting onto the market a substantial quantity of silver over the past 4 or 5 years.

Senator CHURCH. Do you expect the market price of silver will soon exceed the monetary value of $1.29 an ounce?

Secretary KELLY. It is knocking on the door right now, Senator

Senator CHURCH. There is every prospect that it will continue to rise.

Secretary KELLY. As the industrial demand rises and if our production does not pick up the gap, the competitive market price will more than likely rise also.

Senator CHURCH. Did your department take a position on the present bill that is pending to repeal the Silver Purchase Act?

Secretary KELLY. Yes.

Senator CHURCH. What was its position?

Secretary KELLY. We recommended it.

Senator CHURCH. Did you give any consideration to the possibility of amending the bill to provide that the Treasury should be limited in the use of its silver for coinage purposes only?

Secretary KELLY. No, sir, we felt that was a Treasury position. Our interest in the bill stemmed from the commodity use of the silver and the rise in industrial demand for the product.

Senator CHURCH. That is so, but under the terms of the present bill there is nothing that would prevent the Treasury from selling the silver back into the open market for industrial use?

Secretary KELLY. I believe it is limited, though.

Senator CHURCH. As long as it is sold for $1.29?

Secretary KELLY. It is limited to the $1.29.

Senator CHURCH. That is right. You have just testified that you anticipate that the price will soon go above that level.

Secretary KELLY. It could go above the level.

Senator CHURCH. Which means the Treasury will be selling the silver into the open market for industrial use, which seems to me to be a concern that is properly within your province. You say you have not taken a position. You have left that to the Treasury to decide?

Secretary KELLY. That is right, Senator. As I understand it, the Treasury will not necessarily sell at $1.29.

Senator CHURCH. No, but when the price reaches that level it can sell into the open market and I anticipate it will sell into the open market in such quantities as to continue to peg the price at $1.29 as long as the silver supply lasts in the Treasury. This seems to me to be a matter that is important to this committee and also legitimately within the jurisdiction of your Department.

Secretary KELLY. The concern we would express there, Senator, would be the same concern we expressed a year ago when they were selling the so-called free supply of silver at 91 cents an ounce, that pretty soon they would run out of silver. The continuing sale was not a good policy.

With a gap of 115 million ounces industrially today, if the Treasury felt it should fill this gap I personally would not think that would be a good policy. We would express concern then. Whether or not the Treasury expects to enter the market is something that I don't know.

Senator CHURCH. It is something that is within the control of Congress. If Congress chooses to amend the law in such form to prevent the Treasury from entering the market, that is. If the Treasury does enter the market, two things are obvious.

One, the price will be pegged at $1.29 as long as the Treasury has silver to sell. Secondly, it will greatly accelerate the depletion of the remaining silver reserves in the Treasury with the result that we will soon have to be going into the free market to buy silver for coinage needs, which would seem to me to be very much against the taxpayer's interests in view of the supply that we could otherwise retain in the Treasury to meet our coinage needs in the future. I think this matter vitally affects all of us, and I am glad to have your statement on the record that insofar as the Interior Department is concerned, your position today is the same as your position 2 years ago, which would be against the Treasury sales of silver in the open market in substantial quantities.

Secretary KELLY. In substantial quantities.

Senator CHURCH. For price pegging purposes. I am hopeful, Mr. Chairman, that members of this committee can address themselves to this question because the Finance Committee will soon be reporting to the floor of the Senate a bill that has already passed the House which contains this open door permitting the Treasury to sell in the open market substantial quantities of silver which I personally feel would not be in the public interest.

Senator GRUENING. I might point out that there is no reason why the Interior Department should necessarily defer to any other department if it has convictions of its own and in the public interest. I notice that the Treasury Department has had the jurisdiction on gold.

I think it is the Interior's duty to have an independent view on the matter and to fight for such a view. I hope we can bring that out in our discussion. We have to do something for these depressed industries. I hope the Interior Department will be in contact with the State Department which has a tendency to favor the foreign interests over the domestic interests.

If this is heresy, I am guilty of it. It seems to me it is time to pay a little more attention to the folks at home than we have been doing. Senator Dominick has been called to the floor because legislation affecting his State is under consideration so I will recognize him now.

Senator DOMINICK. Thank you, Mr. Chairman. I wanted to refer you to your statement, Mr. Secretary, which I think on the whole is excellent, but your particular statement on page 4 with reference to gold. I recall that you indicated here that by preventing sales of silver by the Treasury that the price has gone up, which probably will increase production over a period of time and stimulate a lot of interest in silver.

I have had a bill in for 3 years now to prohibit the Government from selling gold as a commodity in competition with domestic producers, leaving the gold producers the available commodity markets for gold. What would your position be on that type of a proposal?

Secretary KELLY. Senator, of course, if this affects the monetary value of gold, either directly or indirectly, we would have to take the advice of the Treasury Department. We do find that there is a little difference in gold for commercial uses than the commercial uses of silver.

The commercial uses of gold are mainly in the decorative arts. I think roughly 5 percent of the total commercial uses of gold are in defense uses.

Senator DOMINICK. Do you have a breakdown of that because I know a large amount of it is now being used in the defense and space industry.

Secretary KELLY. We have no statistical breakdown, Senator. These are assumptions that our gold statisticians have made in the Bureau of Mines.

Senator DOMINICK. Mr. Secretary, I want to say that first of all I do not subscribe to your statement that you can't say anything in view of the Treasury Department. But secondly, it seems to me that when we are talking about gold as a commodity for industrial or artistic uses that we have a situation here which can be made analogous to the silver situation and really give some push behind the opportunity of gold producers to make us have the only free market they have.

It would seem to me that the bureau in its interest in the overall mineral development of the country would strongly support a bill of that kind. I gather from the fact that there is no comment coming that you are not ready to make a statement on that at this time. In your presentation on page 5, you say that mineral deposits are by no means evenly distributed.

With that I agree. You also say that some nations have an excess of specific commodities and others must import them. Why? Why should we use the United States, for example, as the mechanism by which we provide a market for minerals for other countries to the detriment of our own industry?

Secretary KELLY. To take the first part of the question, why we should import them, certain minerals we have very limited supplies of, such as tin and nickel. Therefore, our industrial economy really demands that we import these minerals into our economy until substitutes can be found.

Senator DOMINICK. Therefore, in this context you are only talking about those of which the United States does not have a supply; is that correct?

Secretary KELLY. In my statement I have pointed out both competitive and noncompetitive imports. In the noncompetitive field until substitutes can be found within the country we naturally should have an import policy to encourage the imports of these noncompetitive minerals to benefit our economy.

On the competitive side we have pointed out that our mineral position has improved greatly over the past few years. I have a table here that shows that in 1953 we had a net imbalance of imports vis-a-vis exports of $771 million. This net imbalance had decreased in 1961 to $101 million.

Competitive imports were reduced from a billion dollars to $830 million, but our competitive exports—and this is excluding iron and steel scrap—increased from $250 million to $735 million. So that the interrelationship of imports and exports of competitive mineral products has been trending over the past few years in our favor.

Senator DOMINICK. I hope this is the fact. I have a feeling that you are talking in terms of trade relationships rather than the question of what this is doing with the development of our own mineral industry.

Secretary KELLY. This is our trade balance in the minerals and metals field except fuels and gold. I would be happy, Senator, to supply the committee with a copy of this table.

Senator DOMINICK. At the present time, through your good offices, we are getting OME loans wherever possible or those who are interested in this are. I gather you say that if an operator wants to go ahead with development he has to get funds elsewhere. I think most of us realize this is the fact and this is one of the problems we have.

But coincident with that it seems to me is the question of whether or not one has a valid claim. I gather that the interpretation of the Department at the moment is that you only have a valid claim in the event that it is a commercially profitable operation.

This makes it awfully difficult to determine whether you are putting your money down a rathole or whether you are putting something down that you think can be retained from a possessory point of view. Have there been any actions in the Department in order to try to review the wisdom of this kind of a decision?

Secretary KELLY. You are referring to the patenting of claims?

Senator DOMINICK. Yes.

Secretary KELLY. Yes, the Department is reviewing the concept of what constitutes the conditions under which the Department would issue a patent. The Solicitor's office, in conjunction with the Bureau of Land Management, is looking into this problem at the present time.

Senator DOMINICK. Do you know whether the Bureau of Mines is working on this, too? Have they been discussing the effect of this kind of a ruling in connection with mineral development?

Secretary KELLY. Through my office, not necessarily the Bureau of Mines itself but through my Office of Minerals we are looking into it as to the effect on exploration and exploitation.

Senator DOMINICK. I certainly hope you come up with something on that because this is one of the most adverse problems that I think the miners now face.

Secretary KELLY. This is on the public lands.

Senator DOMINICK. Mr. Chairman, I am going to have to go, I am sorry. I have a lot more questions but I have to go.

Senator GRUENING. There will be other opportunities this afternoon and tomorrow morning. I would like to pursue the remarks that Senator Dominick made on gold. I find myself in agreement with his views on this subject. I realize that it is a difficult problem.

You say that the administration considers that the principal national interest in gold is in its use as a monetary metal. Because of this you in the Department of the Interior defer to the Treasury

Department the policy matters which would affect gold's monetary function.

We feel that this gold situation is a very tragic one. Under our free enterprise system gold is the victim of a unique and unprecedented discrimination. The people who mine gold are compelled to adhere to a price that was fixed 29 years ago, whereas in the meanwhile the costs of materials, labor, and supplies have gone up. Every other industry has been free to adjust its prices to the increased cost.

In addition to that the mining industry is compelled and restricted and hamstrung in a way that it leads to its extinction. Within a very short time no gold will be produced in the United States except as it may be produced incidental to the production of other minerals. There are those of us who think this is very unjust and unfair to those in gold mining and we think it is unwise as a national policy.

In the last Congress, hearings were held on this gold question and we had before us the Under Secretary of the Treasury Department, who is known as the Under Secretary for Monetary Affairs. We were then discussing a proposal before us, a proposal introduced by Senator Engle from California, who had a good deal of experience in gold mining in his State which was a solution somewhat analogous to how we are meeting the proposal in agriculture.

In other words, it was to give the gold miner a subsidy to compensate him for his great disparity between the present-day costs and the price he was allowed to charge. The position of the Treasury Department was that if this were done it would create a panic in the world. There would be a run on the dollar and we would have serious consequences.

I would say that no member of the subcommittee at that time was able to follow that reasoning. Since that time I think I have had communication with several bankers abroad who are knowledgeable in these matters who find themselves in complete disagreement with Mr. Rosa.

We intend to pursue this matter. It seems to me that it would be very desirable if the Department of the Interior, particularly your part of it, would try to meet informally with officials of the Treasury Department and see if we cannot work out some solution.

There must be some way of overcoming this arbitrary attitude on the part of the Treasury Department. That was the view of the committee or the subcommittee which met last year with somewhat different personnel but only slightly different. I believe there is no assignment that the Interior Department could more usefully follow.

There are increasing demands for gold in connection with the space program. It seems to me that there must be some solution, if the Treasury Department is adamant in its attitude that a subsidy to gold miners, even with a clear declaration and there was no intent whatever to increase the price of gold, would still cause panic.

If the officials tremble at the very thought of a subsidy, then it is up to them and your branch of the Government to come up with some alternative solution. I would strongly request that you take this matter under serious advisement and see whether in the next 30 days you and other officials cannot meet with the Treasury Department officials and come up with some solution.

If we can send a man into orbit, if we can send a man to the moon as we propose to do there ought to be some way by which we can reduce this unjust treatment of the gold mining industry. I think it would be a reflection on our lack of ingenuity, our ability to solve our problems, if we can't come up with some solution.

I have written letters now to bankers throughout this country and abroad, and while not all of them will accept a different view from the Treasury Department, we may get some light on the subject. In the meanwhile I ask you to explore the industrial and other aspects of this with the Treasury Department.

It can be done informally in such a way that when we have a meeting on gold which I hope to have in the course of the next few weeks we can have the results of such discussions from you and the Treasury Department. Would you be kind enough to take this seriously and to proceed with it?

Secretary KELLY. Yes, Senator, we will follow your suggestion and request a meeting with Treasury and explore with them the industrial or commercial uses of gold. As you know, we have been trying to establish figures that we would have some confidence in.

Senator GRUENING. I suspect no lack of willingness on the part of the Interior Department but I think we have to pursue this actively in every way possible and confront the Treasury Department, which should be interested even if in a secondary way with the prosperity of our country, with the prosperity of its industries.

This is a historic industry. At one time it was the major industry in some of our major States, Colorado, California, and Alaska and which some of us think still has great value apart from its industrial uses. This is an attitude which our Treasury Department does not share for some reason or another.

We find other countries are accumulating gold and considering it a very useful weapon in the struggle between nations. There are one or two other things. I notice in connection with the point raised by Senator Dominick about the assistance to small miners on page 7, you say that the OME program is proving increasingly useful and especially to small prospectors whose financial resources are limited.

Under the present program we cannot give any assistance to mine development beyond that relating to actual discovery. Are you familiar with what the United States is doing with mining in foreign countries?

Secretary KELLY. No, I am not.

Senator GRUENING. Are you aware of the fact that we are doing abroad precisely what we apparently are not able to do at home?

Secretary KELLY. In assisting in the development of mines and explorations?

Senator GRUENING. I will introduce into the record a summary of the multiple ways in which American dollars are going to aid countries in the Far East, Near East, Africa, South Asia, in Europe, Latin America, oversea territories, even in colonies of old world powers not yet independent such as British Guiana. It will appear at the end of this Department's testimony.

We are pouring money into Cambodia, Nationalist China. We are subsidizing Indonesia which is pretty much in the Communist orbit by our mining operations, and so forth. I am going to introduce this into the record and I will have some discussion about it further. I think it is positively shocking that the United States would use a policy of pouring our dollars to develop the mining industry in the foreign countries and yet deny that same type of assistance to our own miners.

I would like to suggest that the Interior Department study this proposal, study this foreign aid, and produce some legislation for our committee that will give the miners of the United States the same treatment that we are giving miners in 50 or 60 foreign countries. We will then find out whether the policy of the United States is to definitely discriminate against our own people in favor of those abroad.

If that is the case, the country should know it. I regret to say that while I have many other questions, there are a couple of witnesses here who have to leave and will not be available later. So with your kind permission, I will suspend.

I am going to ask some of these questions of other members of your staff. I want to tell you how very much we appreciate your testimony. If you would be kind enough to concentrate in the next 30 days on those two aspects, gold in consultation with the Treasury Department, and legislation which will be specifically directed to do for U.S. mining what we are doing for foreign countries and send us up a proposed draft of a bill we will be very happy to consider it. I think perhaps we can act on it favorably.

Secretary KELLY. Thank you, Senator.

Senator GRUENING. Thank you very much, Secretary Kelly.

I believe that this is a very good place in the record to insert your communication and the five tables to which I alluded at the beginning of the hearing.

(The exhibits are as follows:)

U.S. DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D.C., April 5, 1963.

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

DEAR SENATOR GRUENING: In response to your letter of March 29, the Bureau of Mines is preparing five tables, four of which are enclosed with the last to follow shortly.

Table I (enclosed) covers your points one and two and presents the number of active metal and nonmetal mines and employment for the years 1940, 1950, 1960 and an estimate for 1961, the last year for which data are available.

Table II (also enclosed) covering your point three presents the value of mineral production exclusive of mineral fuels for the years 1940 through 1960 with estimates for 1962.

Table III and IV (also enclosed) covering your point four present data on U.S. imports and exports, respectively, of metals for years you listed.

Table V presents data on the total direct U.S. investments abroad and the annual net capital outflow in the mining and smelting industries for selected countries for the years 1950–61.

Because of the shortness of time available to us, these data are not as comprehensive as we would like to have made them. However, we trust that they will prove serviceable to you and your committee.

The Bureau of Mines has been instructed to send table V direct to you by special messenger as soon as it is completed.

Sincerely yours,

JOHN M. KELLY,
Assistant Secretary of the Interior.

TABLE I.—*Metal and nonmetal mines:*[1] *Number of active mines and average number of men employed in the United States*

	1940	1950	1960	1961	1962[2]
Number of mines:					
Metal mines	10,491	2,599	3,207	2,866	----------
Nonmetal mines[3]	2,743	2,976	6,954	7,245	----------
Total	13,234	5,575	10,161	10,111	----------
Average number of men employed:					
Metal mines	110,340	68,292	60,595	54,251	----------
Nonmetal mines[3]	43,158	50,256	56,519	55,523	----------
Total	153,498	118,548	117,114	109,774	----------

[1] Mine data only, excludes metal ore-dressing plants, nonmetal mills, and stone-processing plants.
[2] Not available.
[3] Includes stone quarries.

Source: Branch of Accident Analysis, Bureau of Mines.

TABLE II.—*Value of mineral production, metals, and nonmetals, (excluding fuels) in the United States 1940–62*

[Millions]

Years	Nonmetals	Metals	Totals	Years	Nonmetals	Metals	Totals
1940	$784	$780	$1,564	1952	$2,178	$1,628	$3,806
1941	992	915	1,907	1953	2,350	1,811	4,161
1942	1,060	1,017	2,077	1954	2,630	1,518	4,148
1943	921	991	1,912	1955	2,957	2,055	5,012
1944	840	903	1,743	1956	3,266	2,358	5,624
1945	896	778	1,674	1957	3,267	2,137	5,404
1946	1,245	740	1,985	1958	3,346	1,594	4,940
1947	1,345	1,096	2,441	1959	3,721	1,570	5,291
1948	1,559	1,230	2,789	1960	3,732	2,022	5,754
1949	1,567	1,112	2,679	1961	3,846	1,927	5,773
1950	1,830	1,365	3,195	1962[1]	4,073	1,931	6,004
1951	2,087	1,685	3,772				

[1] Preliminary figures.

Source: Division of Minerals, Bureau of Mines.

98-989—63——3

TABLE III.—*U.S. imports for consumption of principal metals and metallic minerals*

[Values in thousands of dollars]

	Physical unit [1]	1940		1950		1960		1961	
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Aluminum:									
Metal	Short ton	17,435	4,629	255,692	67,533	154,706	75,808	199,223	91,187
Bauxite (dried equivalent)	1,000 short tons	690	4,299	2,843	15,719	8,739	78,024	9,206	88,821
Scrap	Short ton	698	108	(2)	(2)	5,042	1,598	6,002	1,738
Plates, sheet, bars, etc	do	1	1	(2)	1,032	36,677	25,872	49,310	33,062
Antimony:									
Ore (antimony content)	do	15,846	2,047	9,746	1,850	6,455	1,214	6,713	1,389
Metal	do	209	50	4,651	2,213	5,437	2,495	4,912	2,347
Oxide	do	5	2	1,160	428	2,368	972	1,980	935
Arsenic White (As_2O_3 content)	do	9,929	453	14,774	1,426	12,825	1,046	19,483	1,422
Beryllium: Ores and metal	do	349	48	4,683	1,182	8,943	2,864	8,516	2,786
Bismuth: Metals	do	62	118	391	1,287	854	2,131	399	1,498
Boron carbide	do	4	9			43	172	6	37
Cadmium:									
Flue dust (cadmium content)	do	945	844	801	1,519	930	778	120	112
Metal	do	14	10	315	1,504	471	1,157	540	1,473
Calcium: Metal	do	6	7	38	66	6	15	9	23
Chromium:									
Chromite (Cr_2O_3 content)	do	301,672	8,754	581,804	23,288	571,007	24,313	563,140	26,444
Ferrochromium (chromium content)	do	(2)	(2)	13,768	4,530	34,186	14,313	18,698	7,611
Metals	do	(2)	(2)	(2)	(2)	908	1,645	692	1,150
Cobalt:									
Metal	do	65	207	3,353	10,953	5,400	17,093	5,018	14,867
Ores and concentrated (gross weight)	do	5,249	3,661	(2)	2,240	780	1,520	340	663
Salts and compounds	do	384	1,132	471	1,040	165	104	80	59
Columbium: Ores and concentrates	do	298	211	863	753	2,533	3,696	1,487	2,527
Copper:									
Ores and concentrates (copper content)	do	15,996	2,600	87,800	33,015	24,438	14,407	24,501	14,042
Semirefined metals and alloys	do	37,192	7,511	121,469	41,894	671	391	6,024	3,065
Refined metals and alloys	do	32,582	7,100	326,606	131,807	171,021	109,490	87,206	51,852
Scrap	do	135	26	34,243	11,100	2,145	1,290	2,033	1,043
Gold:									
Ore and base bullion	1,000 troy ounces	3,188	110,935	906	31,645	461	16,080	456	15,938
Bullion	do	117,704	4,115,289	3,746	131,099	8,861	318,952	1,159	40,273
Iron and steel:									
Iron ore	1,000 long tons	2,479	6,204	8,448	44,027	34,578	321,919	25,805	250,226
Pig iron, sponge iron, and scrap	1,000 short tons		876	1,550	45,012	510	24,624	646	29,596
Iron product	do	5	597	511	37,556	41	8,688	31	5,794
Crude steel	do	3	386	195	11,719	3,528	485,802	3,277	418,268

Lead:									
Ore, concentrates, flue dust, etc., (lead content)	Short ton	70,027	4,659	95,068	21,045	132,303	27,816	136,860	24,347
Metal, alloy, and scrap	do	46,898	3,203	471,502	114,644	227,520	63,851	261,476	62,694
Manufactures	do	201	36	342	157	2,097	710	2,319	807
Magnesium: Alloys, metals, and scrap	do	(2)	(2)	843	218	433	551	1,041	733
Manganese:									
Ores (manganese content)	1,000 short tons	691	18,346	922	41,880	1,082	82,307	1,031	78,144
Ferromanganese (manganese content)	Short ton	9,601	1,321	87,692	16,280	92,594	19,008	170,199	34,396
Mercury: Metal	76-pound flasks	171	18	56,080	2,694	19,488	3,510	12,313	2,048
Nickel:									
Ore, matte, oxide	Short ton	21,939	6,398	27,442	18,097	24,769	27,723	14,614	14,138
Metal, compounds and scrap	do	70,530	35,346	86,100	69,308	79,797	116,680	116,263	169,831
Platinum-group:									
Ores and concentrates and other materials (platinum-group metal content).	Troy ounce	13,653	314	628	26	33,834	2,443	44,716	2,975
Refined metals	do	181,992	5,434	427,006	23,186	646,812	31,688	839,747	33,865
Radium salts and substitutes			754	(2)	1,236	(2)	1,758	(2)	1,694
Silver:									
Ore and base bullion (silver content)	1,000 troy ounces	59,982	21,069	33,899	24,494	43,404	38,164	34,559	30,832
Bullion	Troy ounces	106,170	36,916	74,150	54,979	17,253	15,797	15,697	14,173
Silicon metal and alloys (silicon content)	Short ton	2,469	446	14,998	810	4,972	1,533	2,307	803
Tantalum ores	Pound	490,460	258	164	244	695,222	1,127	808,082	1,780
Selenium salts	Short ton	67	198	182	768	82	972	64	738
Tin:									
Ore (tin content)	Long ton	3,000	2,687	26,432	47,163	14,026	31,104	8,917	21,923
Metals and scrap	do	124,810	128,294	84,343	152,903	40,347	87,976	40,510	98,208
Titanium:									
Ilmenite	Short ton	221,641	751	216,459	1,199	265,645	5,067	195,836	4,604
Rutile	do	156	15	3,427	150	29,235	3,611	27,497	2,544
Metal	1,000 pounds	(2)	(2)	(2)	(2)	4,462	4,866	4,980	5,352
Ferrotitanium	Short ton			130	81	84	41	182	93
Compounds and mistures	do					6,179	2,413	9,022	3,536
Tungsten:									
Ore and concentrates (tungsten content)	do	2,805	4,691	8,074	15,309	1,763	3,478	1,062	1,983
Metal and carbide (tungsten content)	do	18	41	106	322	80	370	28	139
Ferrotungsten (tungsten content)	do	(1)	750	690	1,083	102	269	175	437
Vanadium: Ore, alloy, and concentrates (vanadium content).	do	1,288	1,217	729	709	5	9		
Zinc:									
Ore and concentrates (zinc content)	do	45,137	1,108	237,564	24,314	382,938	38,704	357,653	31,920
Metals	do	10,146	801	155,804	38,840	120,929	29,941	126,369	27,894
Scraps and dust	do	520	36	(1)	688	1,224	196	1,496	206
Manufactures			3	(2)	235	(2)	837	(2)	787
Zirconium: Ores and concentrates	Short ton	16,845	252	16,826	431	34,280	1,234	33,805	873
Uranium: Ores and concentrates	Short ton gross	1,320	2,488	6,618	21,977	19,446	363,576	15,917	276,123
Total			4,556,162		1,353,675		2,567,794		2,060,868

[1] Metallic content.
[2] Not available.

Sources: U.S. Minerals Yearbook, Foreign Commerce and Navigation of the U.S. Department of Commerce, 1940, U.S. Imports and Exports by Commodities, Department of Commerce.

TABLE IV.—*U.S. exports of principal metals and metallic minerals*

[Values in $1,000 current]

	Physical unit [1]	1940		1950		1960		1961	
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Aluminum:									
Crude metal	Short ton	12,227	5,352	20,484	10,936	284,979	128,199	128,861	57,638
Scraps	do	950	332	800	93	79,513	26,905	82,005	26,452
Bauxite	Long ton	81,913	1,543	73,005	1,144	29,317	2,588	150,683	12,189
Compounds	Short ton	45,535	1,267	17,403	1,205	37,430	6,847	69,823	8,595
Semimanufactured	do	14,659	12,235	(1)	11,124	19,288	19,115	26,444	27,535
Antimony: Metals and alloys (crude)	do	276	75	148	86	59	47	34	21
Beryllium: Metals and alloys	do	(1)	(1)	110	308	66	1,344	62	645
Bismuth: Metals and alloys	do	(1)	(1)	100	387	78	276	84	268
Cadmium: Metals and alloys	do	(1)	(1)	181	807	1,224	3,014	351	983
Calcium chloride	do	8,907	195	15,624	403	26,792	1,068	22,047	1,091
Chromium:									
Chromite ore and concentrate	do	(1)	(1)	2,044	63	5,184	320	10,465	516
Ferrochrome (chromium content)	do	(1)	(1)	347	134	15,588	5,249	7,844	2,838
Chromic acid	do	(1)	(1)	315	147	982	546	1,068	604
Cobalt: Metal	do	(1)	(1)	80	82	899	1,313	1,038	1,881
Columbium: Metal, alloy, and other forms	do	(1)	(1)	55	50	159,309	157	69,863	151
Copper:									
Unrefined and semirefined	do	294	80	616	233	11,111	6,832	4,478	2,475
Refined copper and semimanufactured	do	377,108	87,008	192,339	86,712	510,494	327,936	486,359	295,397
Other copper manufacturing	do	50,542	23,031		1,503	5,181	4,006	7,362	5,260
Copper sulfate	do	27,740	2,294	30,149	4,151	14,841	3,377	7,575	1,542
Copper base alloys	do	90,907	30,802	16,256	17,189	130,140	69,564	124,938	70,240
Ferroalloys:									
Ferrosilicon	1,000 pounds	[2] 27,401	[2] 7,065	3,966	242	11,003	867	69,529	6,105
Ferrophosphorus	do	(1)	(1)	83,578	868	95,795	2,095	60,120	1,307
Gold:									
Ore and base bullion	Troy ounce	2,920	103	725	34	9,196	322	13,717	480
Bullion refined	do	29,031	1,016	14,633,000	514,249	37,676	1,326	22,132,692	774,521
Iron and steel:									
Iron ore	1,000 long tons	1,386	4,625	2,597	15,717	5,273	57,899	4,916	53,823
Pig iron and scrap	1,000 short tons	3,779	51,371	277	12,525	8,151	246,746	10,131	373,250
Steel mill products	do	1,886	104,810	2,864	443,183	(1)	416,130	(1)	413,199
Crude steel (semimanufactured)	do	6,173	309,813	62	4,963	2,337	445,167	1,428	274,888
Lead:									
Ore, matte, base bullion, metal, and alloy	do	23,755	1,795	6,666	2,319	3,264	916	6,570	966
Compounds	do	5,732	836	3,496	1,166	3,062	1,060	2,766	947
Scrap	do	(1)	(1)	(1)	(1)	2,579	361	5,163	940
Magnesium: Metal and alloy	do	859	583	908	459	5,125	3,695	6,648	4,519

Manganese:									
Ore and concentrate	do	(1)	(1)	8,962	458	5,139	719	7,528	1,054
Ferromanganese	do	14,600	1,366	943	161	751	202	469	146
Mercury metal	Flask, 76 pound	96,168	1,743	447	38	357	83	285	71
Molybdenum:									
Ore and concentrate	Short ton	3,292	4,904	3,117	5,454	15,125	39,847	77,832	48,758
Metal, alloys, crude scrap	do	(1)	(1)	73	115	248	368	221	433
Ferromolybdenum	do	(1)	(1)	589	927	212	489	180	501
Manufactured	do	(1)	(1)	(1)	(1)	12	384	16	551
Nickel:									
Ore and matte	do	(1)	(1)	6	2	1	4	1,766	495
Metals and alloys, scrap	do	10,923	7,416	6,939	4,062	52,468	27,128	51,631	24,969
Manufactured	do	2,143	1,664		877	879	3,191	7,291	5,059
Platinum:									
Ore, concentrate, crude, and alloys	Troy ounce	55,027	2,820	36,470	1,798	49,497	3,212	41,385	2,089
Refined metal	do	1,800	97			15,652	504	20,460	820
Silver:									
Ore and base bullion	1,000 troy ounces	11	4	(1)	(1)	291	266	654	597
Bullion refined	do	9,400	3,343	4,598	3,563	26,302	24,236	39,174	36,361
Tantalum: Ore, metal, alloys, powder	Short ton	(1)	(1)	1	61	26	604	119	1,230
Tin:									
Metal	Long ton	(1)	(1)	292	595	608	1,294	543	1,264
Tin scraps and other tin-bearing metal	do	383,328	44,375	(1)	869	4,397	1,355	10,506	3,352
Tin cans	do	(1)	(1)	28,946	10,448	32,875	17,362	30,929	15,093
Titanium:									
Ore and concentrate	Short ton	(1)	(1)	600	58	1,260	167	1,436	190
Ferrotitanium	do	(1)	(1)	171	43	245	157	212	93
Compounds	do	4,962	868	32,660	8,800	33,655	10,001	31,104	9,216
Sponge and scraps	do	(1)	(1)	(1)	(1)	879	869	886	927
Semimanufactured	do	(1)	(1)	(1)	(1)	426	3,238	384	2,702
Tungsten:									
Ore and concentrate	do	(1 2)	(2)	7	16	633	1,251	207	250
Ferrotungsten	do	(1 2)	(2)	166	409	(2)	(2)	1	2
Metal, alloys, and other semimanufactured	do	119	1,298	76	1,394	485	2,040	183	1,962
Vanadium: Ore, concentrate, metal, and alloys	do	(2)	(2)	3	19	3,690	14,124	2,081	7,658
Zinc:									
Ore and concentrate	do	448	42	1,140	265	13	3	7,670	124
Metal (all forms) and scrap	do	89,625	11,260	24,445	7,150	92,726	23,259	62,210	15,655
Compounds	do	17,537	1,585	12,451	2,124	777	287	717	224
Zirconium:									
Ore and concentrate	do	(2)	(2)	525	26	1,382	317	1,277	278
Metal and alloys (all forms)	do	(2)	(2)	29	19	192	2,595	89	1,472
Other metal ores and concentrates (nonferrous concentrates).			3,008						
Other metal and alloys in primary form			2,795						

[1] Not available, is negligible, or none.

[2] Includes all ferroalloys except ferromanganese and spiegeleisen.

TABLE V.—*Value of direct U.S. investments abroad and net capital outflows in the mining and smelting industries for selected countries, 1950–61* [1]

[In millions of dollars]

Area and country	1950		1951		1952		1953		1954		1955	
	Direct investment	Net capital outflow	Direct investment	Net capital outflow	Direct investment	Net capital outflow	Direct investment	Net capital outflow	Direct investment	Net capital outflow	Direct investment	Net capital outflow
All areas, total	1,129	87	1,292	101	1,622	287	1,920	257	2,066	106	2,197	46
Canada	334	29	406	41	564	142	698	118	822	94	904	42
Latin American Republics, total	628	29	719	55	845	121	968	124	954	3	961	−4
Mexico, Central America and West Indies, total	135	−8	139	−4	142	−3	152	8	152	22	167	10
Cuba	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Dominican Republic	---	---	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Guatemala	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Honduras	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Mexico	121	−8	126	−5	128	−5	138	8	135	19	143	5
Panama	---	---	---	---	---	---	---	---	---	---	---	---
Other countries	3	(3)	3	(3)	4	1	3	(3)	3	(3)	7	2
South America, total	493	38	580	59	703	124	816	116	801	−19	795	−14
Argentina	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Brazil	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Chile	351	17	382	30	423	39	452	26	418	−34	421	2
Colombia	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Peru	55	3	107	24	129	29	150	24	150	−2	154	(3)
Uruguay	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Venezuela	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Other countries	6	(3)	2	−1	1	−1	−1	2	−2	(3)	−2	(3)
Western Hemisphere dependencies	38	3	32	1	55	16	69	3	78	−5	86	−3
Europe, total	31	2	32	(3)	34	(3)	36	(3)	40	(3)	45	1
Common Market, total	3	(3)	4	---	5	---	6	---	7	---	8	(3)
France	3	(3)	3	---	4	---	4	---	5	---	6	(3)
Germany	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Italy	---	---	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Netherlands	(2)	(2)	(3)	---	(3)	---	(3)	(2)	(3)	---	(3)	---

Other Europe, total	28	2	27	(3)	29	(3)	30	......	34	(3)	38	(3)
Norway	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Spain	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Sweden	......	......	......	......	......	......	......	......	......	......	......	......
Switzerland	......	......	......	......	......	......	......	......	......	......	......	......
Turkey	......	......	(2)	......	(2)	......	(2)	......	(2)	(3)	(2)	(3)
United Kingdom	3	(3)	1	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Other countries	15	2	16	......	18	(3)	18	(3)	21	(3)	24	(3)
Africa, total	64	15	70	3	87	9	108	11	125	15	146	8
North Africa	1	......	1	(3)	2	(3)	2	1	2	(3)	2	(3)
East Africa	......	......	......	......	......	......	......	......	(3)	(3)	(3)	......
West Africa	4	1	5	2	7	2	10	3	13	3	19	2
Central and South Africa, total	59	14	64	2	78	6	96	8	110	11	125	7
Rhodesia and Nyasaland	25	(3)	29	1	32	1	37	(3)	41	2	49	2
Union of South Africa	33	14	35	1	47	6	58	7	68	9	76	4
Other countries	1	(3)	(3)	......	(3)	......	1	(3)	1	......	1	......
Asia, total	21	8	22	......	23	(3)	25	1	27	(3)	29	1
Middle East	10	8	11	......	11	......	12	1	12	(3)	12	1
Far East, total	11	(3)	11	......	12	......	13	......	15	......	17	......
India	(3)	(3)	(3)	......	(3)	......	(3)	......	(3)	......	(3)	......
Philippine Republic	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Other countries	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Oceania, total	12	1	13	......	15	(3)	16	......	21	(3)	26	3
Australia	11	1	12	(3)	14	(3)	15	......	20	(3)	25	3
New Zealand	(2)	(2)	1	......	1	......	1	(3)	1	......	1	......
Other countries	(2)	(2)	......	......	......	......	......	......	......	......	......	......

[1] Compiled from balance of payments, Statistical Supplement Revised Edition, U.S. Department of Commerce, Office of Business Economics, Washington, D.C., and Survey of Current Business, U.S. Department of Commerce, Office of Business Economics, Washington, D.C., August 1962. Cuba excluded for 1961.

[2] Combined in other industries.

[3] Less than $500,000.

TABLE V.—*Value of direct U.S. investments abroad and net capital outflows in the mining and smelting industries for selected countries, 1950–61* [1]—Continued

[In millions of dollars]

Area and country	1956		1957		1958		1959		1960		1961	
	Direct investment	Net capital outflow	Direct investment	Net capital outflow	Direct investment	Net capital outflow	Direct investment	Net capital outflow	Direct investment	Net capital outflow	Direct investment	Net capital outflow
All areas, total	2,419	116	2,361	199	2,558	177	2,848	231	3,011	158	3,061	72
Canada	1,002	46	856	60	938	78	1,089	120	1,329	202	1,380	12
Latin American Republics, total	1,039	58	112	131	1,180	76	1,254	73	1,153	−73	1,105	34
Mexico, Central America and West Indies, total	192	12	193	35	224	30	249	22	243	26	181	−2
Cuba	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	--	--	--
Dominican Republic	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	--	(2)	(2)
Guatemala	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Honduras	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Mexico	158	4	139	17	139	−1	137	−4	130	26	130	1
Panama	1	--	5	(3)	8	2	16	7	17	--	17	--
Other countries	11	4	13	1	11	(3)	12	1	12	1	12	(3)
South America, total	847	45	918	96	956	46	1,005	51	910	−99	924	36
Argentina	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Brazil	(2)	(2)	10	−1	6	−2	5	(3)	10	2	14	1
Chile	454	31	483	27	498	24	526	29	517	−10	503	−14
Colombia	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Peru	178	23	196	27	218	22	242	24	251	9	242	18
Uruguay	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Venezuela	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Other countries	−1	(3)	−2	(3)	1	3	2	1	3	(3)	7	5
Western Hemisphere dependencies	106	6	120	6	137	5	158	17	176	13	179	1
Europe, total	51	2	55	1	52	1	50	(3)	49	(3)	48	(3)
Common Market, total	8	(3)	9	1	8	(3)	9	--	9	--	9	(2)
France	6	(3)	8	--	8	--	8	--	9	--	9	--
Germany	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Italy	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Netherlands	(3)	--	--	--	--	--	--	--	--	--	--	--
Other Europe, total	43	1	43	(3)	44	1	42	(3)	40	(3)	39	(3)
Norway	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Spain	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Sweden	--	--	(3)	--	(3)	--	(3)	--	(3)	--	(3)	--
Switzerland	(3)	(3)	--	--	(3)	(3)	(3)	--	(3)	--	(3)	--
Turkey	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
United Kingdom	1	(3)	(3)	--	(3)	(3)	(3)	--	(3)	--	(3)	--
Other countries	28	1	30	−1	28	1	26	--	24	(3)	22	--

Africa, total	164	6	181	(3)	212	18	249	21	247	14	285	27
North Africa	3	(3)	2		1		2	1	2		3	
East Africa	(3)	(3)	1	(3)	1	(3)	1	(3)	1	(3)	1	(3)
West Africa	25	1	44	4	68	17	97	20	125	18	155	25
Central and South Africa, total	135	5	135	−3	141	1	150	1	119	−4	127	1
Rhodesia and Nyasaland	55	1	52	−4	57	1	63	(3)	72	1	75	−1
Union of South Africa	80	4	82	1	84	(3)	87	1	46	−6	50	2
Other countries	(3)	(3)	(3)		(3)		(3)		2	2	2	
Asia, total	27	−3	15	(3)	18	1	20	(3)	24	2	27	(3)
Middle East	9	−3							(3)	(3)	(3)	(3)
Far East, total	18		15	(3)	18	1	20	(3)	24	2	27	(3)
India	(3)								2	2	(3)	(3)
Philippine Republic	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(3)
Other countries	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(3)
Oceania, total	30	(3)	22	(3)	22	(3)	28	(3)	33	(3)	36	(3)
Australia	29	1	22	(3)	22	(3)	27	(3)	33	(3)	36	(3)
New Zealand	1											
Other countries	(3)		(3)		(3)		(3)		(3)	(3)	(3)	

(The summary pertaining to foreign aid, referred to by Senator Gruening, is as follows:)

[From the Congressional Record, Mar. 16, 1963]

Mining and Minerals

Industry and mining, fiscal year 1955

	Amount
FAR EAST	
China:	
Coal exploration	$5,000
Petroleum exploration, CPC	715,000
Hard rock mining	5,000
Coal production techniques	2,000
Geological techniques	4,000
Mining engineering	2,000
Indonesia: Mining operations	32,500
Philippines:	
Nonmetallic minerals survey	28,000
Strategic minerals survey	37,000
Technical assistance to Bureau of Mines	22,000
Coal surveys	35,000
Thailand: Geological survey	52,500
Vietnam: Coal strip mining survey	7,000
NEAR EAST, AFRICA, AND SOUTH ASIA	
Afghanistan: Mineral resources and coal production	67,000
Egypt:	
Industry and mining—mining and minerals	8,000
Industry and mining—photogeology training	4,500
Greece:	
Technical support to mining industry	22,624
Study of mining methods and ore dressing	34,300
India:	
Exploratory lignite excavation and development	519,600
Minerals survey and development	83,873
Iran: Mineral resources development plans	17,124
Israel:	
For petrochemistry	4,000
Economic geologists	43,600
For the appraisal and development of mineral resources	12,500
Mineral technologists	38,034
For mineral development	40,000
Mineral resources, potash and salt extraction participantship	3,000
Dead Sea brines survey	15,000
Petroleum exploration methods participantship	3,000
Liberia:	
Mining and minerals exploration	50,000
Mines and geology	20,000
Nepal: Project for mineral deposit surveys	20,000
Pakistan: Metal mining engineering	5,450
Turkey:	
Cobalt recovery processes	10,000
Zonguldak coal basin development, P-1	204,400
Oversea territories:	
United Kingdom: U.S. bituminous coal mining methods	4,000
EUROPE	
Austria: Coal mining experts	10,000
France: Iron mining experts	6,000
Spain: coal mining study	8,640
Bolivia: Geology	10,828

Industry and mining, fiscal year 1955—Continued

EUROPE—continued

	Amount
Brazil: U.S. Geological Survey mineral resources investigations	$190,213
Chile: Geology	64,400
Colombia: Development of coal resources of Department of Cauca and the Cauca Valley	19,238
Cuba:	
Mineral analysis and development	38,000
Basic geological research	28,700
Honduras: Coal resources survey and development	7,950
Mexico: USGS—Instrument calibration technician	850
Peru:	
Advisory services, mineral resources	78,961
Advisory services, mining and metallurgy	81,905

OVERSEA TERRITORIES

British Guiana: Mining and minerals project	10,400

Fiscal year 1956 projects

FAR EAST

Cambodia: Mineral development	$25,000
China:	
Coal mine improvement	103,000
Solid fuels and minerals exploration survey	10,182
Coal exploration	25,000
Petroleum exploration, CPC	7,000
Coal mine demonstration	100,000
Geological equipment	27,000
Indonesian: Mining operations	154,959
Korea:	
Coal mining operations and management	1,800
Development of Hambeak coalfields	550,000
Development of Hambeak coalfields	500,000
Philippines:	
Nonmetallic minerals survey	53,000
Strategic minerals survey	240,000
Technical assistance to the Bureau of Mines	29,500
Coal surveys	53,000
Thailand:	
Geological survey	45,900
Experimental metal mining operations	10,000
Minerals experimental center	30,500

NEAR EAST AND SOUTH ASIA

Afghanistan: Mineral resources and coal production	93,000
Egypt:	
Industry and mining—mining and minerals	1,500
Minerals resources development	58,750
Greece: Technical training in the minerals field	13,720
India:	
Exploratory lignite excavation and development	9,100
Minerals survey and development	133,723
Iran: Mineral resources	2,500
Israel:	
Petrochemical research	39,000
Mineral exploration and development	105,200
Department of metallurgy (technion)	40,000
Conservation techniques in oilfield development	45,000
Jordan: Dead Sea mineral resources	51,200
Lebanon: Mineral survey	30,000

Fiscal year 1956 projects—Continued

NEAR EAST AND SOUTH ASIA—continued

	Amount
Nepal:	
Nepal American Minerals Cooperative Service	$5,000
Minerals deposit surveys	74,000
Pakistan:	
Development of Makarwal Colleries	502,000
Bureau of Mines and Geological Survey advisory service	53,700
Surveys of chemical and industrial potential of Sui gas	75,000
Turkey:	
Zonguldak coal basin development	661,000
Murgul copper mine expansion program	401,000
Murgul copper mine sulfuric acid sea line	100,000

AFRICA

Liberia:	
Mining and minerals exploration demonstration and training project	20,000
Mines and geology	23,000
Oversea territories:	
Italian: Mineral survey (contract with World Mining Consultants, Inc.)	485

EUROPE

Spain:	
Coal mining productivity study	3,840
Coal mining consultants	11,925
Lead and iron ore mining productivity study	12,800
POL laboratory equipment, 1956 fiscal year	100,000
Yugoslavia:	
Nonferrous metals and metallurgy	35,700
Fuels	12,700

LATIN AMERICA

Bolivia: Mining survey	162,000
Brazil:	
U.S. Geological Survey mineral resources	204,500
Mineral resources development (USBM)	85,400
Chile: Geology	86,500
Colombia: Coal resources development in the Department of Cauca and in the Cauca Valley	23,000
Cuba:	
Mineral analysis and development	32,000
Basic geological research	29,900
Honduras: Industry, mining coal resources survey	29,107
Mexico:	
Minerals technology cooperation (Bureau of Mines)	38,000
Industry and mining (U.S. Geological Survey)	116,800
Peru:	
Advisory services mineral resources	98,338
Advisory services mining and metallurgy	49,390

OVERSEA TERRITORIES

British Guiana: Mining and minerals	6,000

Industry and mining, fiscal year 1957

FAR EAST

Cambodia: Mineral development	$15,000
China:	
Coal mine improvement	782,000
Solid fuels 7 and mineral exploration survey	25,000
Petroleum exploration, China Petroleum Corp	5,000
Indonesia: Mining operations	122,000

Industry and mining, fiscal year 1957—Continued

FAR EAST—continued

	Amount
Korea:	
Test drilling, Ham Raik coalfield	$139,000
Test drilling, Han Kook Geological Industrial Co	100,000
Geophysical survey and test drilling, ROK Office of Geological Survey	475,000
Mine development, monazite ore separating plant	150,000
Mine development, Dae Han coal mines	3,247,000
Geophysical survey and test drilling, Hwasun & Eunsung coalfields	136,000
Laos: Mining and minerals survey	8,000
Philippines:	
Nonmetallic minerals survey	41,000
Technical assistance to the Bureau of Mines	25,000
Coal surveys	24,000
Thailand:	
Geological survey	58,000
Minerals experimental center	22,000
Airborne geophysical survey	130,000
Vietnam: Nong Son coal exploration survey	56,000

NEAR EAST AND SOUTH ASIA

Afghanistan: Mineral resources and coal production	875,000
Ceylon: Minerals exploration	56,000
Egypt: Mineral Resources Department	22,000
Greece: Technical training in the mineral fields	14,000
India: Minerals survey and development	113,000
Israel:	
Minerals development	78,000
Department of Metallurgy	25,000
Conservation techniques in oilfield development	2,000
Nepal: Project for mineral deposits surveys	137,000
Pakistan:	
Makarwal colleries	593,000
Bureau of Mines and Geological Survey	50,000
Turkey:	
Zonguldak coal basin development	380,000
Murgul copper mine expansion program	178,000
Western lignite mines	450,000
Private mining development	500,000
Preventive maintenance adviser	20,000

AFRICA

Liberia: Mines and geology	10,000
Libya:	
Minerals investigation	24,000
Minerals investigation	42,000

OVERSEA TERRITORIES

United Kingdom: Southern Rhodesia, metallurgical chemistry	3,000

EUROPE

Spain:	
Civil aviation (fiscal year 1957) POL laboratory equipment	90,000
Iron ore mining productivity study	6,000
Yugoslavia: Industry, mining, and minerals	138,000

Industry and mining, fiscal year 1957—Continued

LATIN AMERICA	*Amount*
Bolivia: Mining survey	$199,000
Brazil:	
U.S. Geological Survey mineral resources investigation (nonferrous project)	44,000
U.S. Geological Survey mineral resources investigation (ferrous project)	209,000
Mineral resources development (U.S. Bureau of Mines)	44,000
Chile: Geology	130,000
Colombia: Coal resources development in the Department of Cauca and the Cauca Valley	13,000
Cuba:	
Mineral analysis and development	18,000
Basic geological research	19,000
Honduras: Industry mining coal resources development	75,000
Mexico:	
Minerals technology cooperation (Bureau of Mines)	35,000
Industry and mining (U.S. Geological Survey)	59,000
Peru:	
Advisory services mineral resources geology	76,000
Advisory services in mining and metallurgy	42,000

Industry and mining, fiscal year 1958

FAR EAST	
China (Taiwan):	
Coal mine development	**$689,000**
Coal mine development	689,000
Mineral development, other than coal	13,000
Indonesian Republic: Mining operations	154,000
Korea:	
Coal mine development	245,000
Development metals and minerals mining	630,000
Mining and geological training	79,000
Philippines:	
Nonmetallic minerals survey	52,000
Strategic minerals survey	397,000
Technical assistance to the Bureau of Mines	25,000
Thailand: Mining development	52,000
Vietnam: Nong Son coal exploration survey	12,000

NEAR EAST AND SOUTH ASIA	
Afghanistan: Mineral resources and coal production	164,000
Ceylon: Mineral exploration	14,000
India:	
Exploratory lignite excavation and development	18,000
Geological survey, India	279,000
Oil and gas commission	41,000
Assistance to coal industry	10,000
Israel:	
Minerals exploration and development	82,000
Conservation techniques in oil field development	6,000
Nepal: Project for mineral deposit surveys	130,000
Pakistan: Geogolical Survey advisory service	246,000
Turkey:	
Zonguldak coal basin development	62,000
Preventive maintenance adviser	20,000

AFRICA	
Ghana: Geological training project	8,000
Libya: Minerals investigation	66,000

OVERSEA TERRITORIES	
United Kingdom: Increasing productivity of Wolfram mining industry	15,000

Industry and mining, fiscal year 1958—Continued

	Amount
EUROPE	
Spain:	
Civil aviation POL laboratory equipment	$12,000
Copper mining productivity study	11,000
Yugoslavia:	
Mining and minerals (coal mining, coke, and coke byproducts)	308,000
Mining and mineral (nonmetallic minerals, asbestos)	33,000
Mining and minerals (cement production)	20,000
Mining and minerals (industrial and household ceramics)	3,000
Mining and minerals (nonmetallic minerals, chromium)	33,000
Technical inquiry service support (technical literature and film program)	10,000
LATIN AMERICA	
Argentina: Geology and mining training	24,000
Bolivia: Mining industry improvement program	120,000
Brazil:	
Geological education project	23,000
U.S. Geological Survey mineral resources investigations (nonferrous project)	62,000
U.S. Geological Survey mineral resources investigations (ferrous project)	246,000
Mineral resources development (USBM)	28,000
Chile: Geology	217,000
Colombia: Coal resources development in the Department of Cauca and the Cauca Valley	25,000
Cuba:	
Mineral analysis and development	21,000
Basic geological research	6,000
Honduras: Coal resources development	13,000
Mexico:	
Minerals technology cooperation (Bureau of Mines)	38,000
Geological Survey	19,000
Peru:	
Advisory services, mineral resources	66,000
Advisory services, mining and metallurgy	60,000
OVERSEA TERRITORIES	
British Guiana: Training in prospecting for minerals	2,000

Fiscal year 1959 projects

FAR EAST	
China:	
Coal mine development	$996,000
Mineral development	27,000
Indonesia: Mining operations	162,000
Korea:	
Coal mine development	963,000
Development metals and minerals mining (other than coal)	1,249,000
Mining and geological training	29,000
Laos: Mining and mineral survey	215,000
Philippines:	
Nonmetallic mineral survey	29,000
Strategic minerals survey	228,000
Technical assistance to the Bureau of Mines	38,000
Thailand:	
Mining development	48,000
Airborne geophysical survey	30,000
Vietnam: Nong-Son coal mine development	1,630,000

Fiscal year 1959 projects—Continued

NEAR EAST AND SOUTH ASIA

	Amount
Afghanistan: Mineral resources and coal production	$82,000
Ceylon: Minerals exploration	17,000
India:	
Exploratory lignite excavation and development	8,000
Geological survey in India	137,000
Oil and gas commission	12,000
Assistance to coal industry	27,000
Israel:	
Minerals exploration and development	78,000
Conservation techniques in oilfield development	6,000
Nepal: Mineral resources development	148,000
Pakistan: Geological survey advisory service	164,000
Turkey:	
Undersea coal mining operations	3,000
Institute of applied geology	5,000

AFRICA

Ghana:	
Geological survey project	168,000
Industrial education project	11,000
Libya: Minerals investigation	74,000

EUROPE

Spain:	
POL, laboratory	2,000
USGC School of Photogeology	4,000
Oil exploration and production study	8,000
Yugoslavia:	
Mining and minerals (coal mining, coke, and coke byproducts)	266,000
Mining and minerals (non-metallic minerals—asbestos)	72,000
Mining and minerals (cement production)	81,000
Mining and minerals (nonmetallic) chromium	18,000

LATIN AMERICA

Argentine: Geology and mining training	26,000
Bolivia: Increasing and diversifying mining production (supervised mining credit program)	127,000
Brazil:	
Geological education project	120,000
U.S. geological survey mineral resources investigations	93,000
U.S. geological survey mineral resources investigations	198,000
Mineral resources development	31,000
Chile: Geology	274,000
Colombia: Coal resources development in the department of Cauca and the Cauca Valley	19,000
Cuba: Mineral analysis and development	24,000
Honduras: Coal resources survey	18,000
Mexico:	
Minerals technology cooperation	44,000
Geological survey	37,000
Peru:	
Advisory services, mineral resources	71,000
Advisory services, mining and metallurgy	54,000

OVERSEA TERRITORIES

British Guiana: Phototraining	2,000
The West Indies and East Caribbean: Preliminary survey—pumice and pozzuolanic earth deposits	4,000

Industry and mining, fiscal year 1960

	Amount
FAR EAST	
China (Republic of):	
Coal mine development	$16,000
Mineral development—other than coal	623,000
Indonesia: Minerals advisory services	237,000
Korea:	
Development of coal mines—diamond drilling	1,330,000
Metal and minerals development (other than coal)	1,400,000
Mining and geological training	92,000
Laos: Mining and mineral survey	42,000
Philippines:	
Nonmetallic minerals survey	28,000
Strategic minerals survey	159,000
Bureau of Mines administration improvement	43,000
Thailand: Mining development	86,000
Vietnam: Nong-Son coal mine development	33,000
NEAR EAST AND SOUTH ASIA	
Afghanistan:	
Mineral resources and coal production	163,000
Mineral resources and coal production—reobligation	16,000
Ceylon:	
Minerals exploration	22,000
Minerals exploration—reobligation	2,000
India:	
Geological survey of India	124,000
Oil and gas commission	33,000
Assistance to coal industry	30,000
Israel:	
Minerals exploration and development	81,000
Conservation techniques in oilfield development	38,000
Nepal: Mineral resources development	44,000
Pakistan: Bureau of Mines and Geological Survey advisory	143,000
Turkey:	
Preventive maintenance adviser	1,000
Institute of applied geology	20,000
Central Treaty Organization: CENTO regional mineral meetings	7,000
AFRICA	
Libya: Minerals investigation	99,000
EUROPE	
Spain: POL Laboratory	1.000
Yugoslavia:	
Coal production and utilization	257,000
Mining and minerals (cement production)	135,000
Industrial information service	48,000
Technical inquiry service support	5,000
Minerals development	55.000
Minerals development—reobligation	9,000
LATIN AMERICA	
Argentina: Geology and mining training	103,000
Bolivia:	
Minerals survey	25,000
Minerals management and production study	25,000
Brazil:	
Geological education project	145,000
U.S. geological survey mineral resources—investigations, nonferrous project	87,000
U.S. geological survey resources investigations—ferrous project	201,000
Columbia: Coal resources development	17,000
Cuba: Minerals analysis and development	1.000
Honduras: Coal resources survey	13,000

Industry and mining, fiscal year 1960—Continued

LATIN AMERICA—continued

	Amount
Mexico:	
Minerals technology cooperation	$34,000
Geological survey	49,000
Peru:	
Advisory services, mineral resources	14,000
Advisory services, mining and metallurgy	53,000

Industry and mining, fiscal year 1961

FAR EAST

China, Republic of: Mineral development—other than coal	$841,000
Indonesia: Minerals advisory services	193,000
Korea:	
Development of coal mines—diamond drilling	471,000
Metal and minerals development—other than coal	275,000
Laos: Mining and mineral survey	30,000
Philippines: Mineral devolpment	156,000
Thailand: Mining development	195,000
Vietnam: Nong-Son coal mine development	30,000

NEAR EAST AND SOUTH ASIA

Afghanistan: Mineral resources and coal production	472,000
Ceylon: Minerals exploration	18,000
India:	
Geological survey of India	44,000
Oil and gas commission	26,000
Assistance to coal industry	326,000
Israel:	
Minerals exploration and development	39,000
Conservation techniques in oilfield development	6,000
Pakistan: Bureau of Mines and geological survey—advisory	441,000
Turkey: Institute of applied geology	29,000
Central Treaty Organization: CENTO regional mineral meetings	14,000

AFRICA

Libya: Minerals investigation	360,000
Malagasy Republic: minerals survey	13,000
Uganda: Increase productivity of Wolfram mining industry	1,000

LATIN AMERICA

Argentina: Geology and mining training	21,000
Bolivia: minerals survey	131,000
Brazil:	
Geological education	139,000
U.S. Geological Survey mineral resources investigation (nonferrous project)	230,000
U.S. Geological Survey mineral resources investigation (ferrous project)	167,000
Chile: Geology	277,000
Mexico:	
Minerals technology cooperation	50,000
Geological survey	77,000
Peru: Advisory services, mining and metallurgy	17,000

EUROPE

Yugoslavia:	
Coal—production and utilization	45,000
Minerals development	390,000
Geological institute	47,000

(The Department of Commerce statement of activities, referred to by Senator Gruening, is as follows:)

STATEMENT OF ACTIVITIES OF THE DEPARTMENT OF COMMERCE AFFECTING MINERALS INDUSTRY

The Department of Commerce has a vital concern in the welfare of the minerals industry, just as it has in that of all segments of our national economy. In exercising its statutory functions of fostering, promoting, and developing commerce and manufacturing, the Department carries out a number of activities which are directed toward the maintenance of a healthy minerals industry and its growth within the framework of a prosperous Nation.

The minerals industry is, in a broad sense, not one, but many industries, encompassing not only mining operations but also the several interrelated steps in the concentration, processing, and, to some extent, fabrication of metals and minerals into useful materials. It is in the wider sense of processing and use of minerals that the work of the Commerce Department, through its interest in overall economic growth comes into closest contact with the minerals industry.

In the post-World War II period, to the already heavy dependence upon foreign sources of those raw materials which we have never competitively produced in this country in quantity, has been added an increasing dependence upon foreign sources of those materials for which our former high-grade reserves are being depleted at rather rapid rates.

To help the minerals industry meet these and other problems, the Commerce Department carries out wide and varied programs in many fields. These programs are of two main types: (*a*) those related to technical assistance, research, and development; and (*b*) those related to industrial, marketing, and economic activities.

A. The scientific and technical agencies of the Department carry out many programs of importance to the minerals industry. These programs range from the fundamental research that underlies all mining and subsequent manufacturing technology to the technical work aimed at specific needs of minerals and their utilization.

1. Many of the programs of the National Bureau of Standards are basic to the technological advance of the minerals industry. The Bureau conducts fundamental research leading to a better understanding of minerals, develops precise data on the properties, constitution, and structure of mineral substances, and develops standard measurement techniques used by the minerals industry.

At the transition points in the long processing chain which leads to a finished product, NBS measurement standards, techniques, and precise data are used to characterize the products being processed. Thus, between mine and ore processor, processor and smelter, smelter and rolling mill, mill and fabricator, many physical quantities and properties of the product must be measured and controlled. The procedures by which this is accomplished derive their uniformity and consistency through reference back to a single source, the National Bureau of Standards.

NBS calibrates the standard measuring instruments of industry by serving as the ultimate reference point for the many local standards laboratories in industry. The Bureau also develops new measurement techniques ranging from chemical analyses suitable for application to ore identification problems to methods for determining the thickness of plated coatings on finished metal products. The Bureau also develops methods for measuring at extreme ranges of temperature and pressure, for example, as industrial requirements move into these new regions.

NBS provides standard reference materials to aid in quality control and to check methods of analysis. These reference materials are samples of ores, metals, ceramics, and other materials, whose compositions or properties have been rigorously determined and certified by NBS. Spectroscopic standard samples, for example, permit checking by industry of its methods of analysis of many important materials.

Basic reference data and scientific information made available by NBS are used by the research and development laboratories of the minerals industry to solve production problems and to improve and broaden the use of mineral products. This service takes the form of basic reference handbooks of data and scientific papers. The Bureau's contributions of this type are broad in nature, rather than aimed at specific, limited problems, and lend themselves to general application by large segments of the industry. The dissemination of reliable, standard reference data in particular is an important link in the application of the findings of science to technological problems.

An important aspect of the Bureau's activities is direct cooperation with the minerals industry on specific projects of interest. NBS has made its facilities and scientific competence available for many years to groups in the fields of metals, glass, ceramics, enameled metals, electro-deposition, etc., particularly in the development of standards for the evaluation and classification of the properties of mineral products.

Under the research associate plan, technical, industrial, and commercial organizations can support work at NBS by sending their scientists to work at the Bureau with NBS scientists. Under the donor program, individuals or groups may financially support work at NBS. In both cases, the problems must be of general interest, and the results made available to the public. At the present time, a number of trade and professional societies, including the American Iron and Steel Institute, the American Society for Testing and Materials, the Porcelain Enamel Institute, the American Electroplaters Society, the National Association of Corrosion Engineers, the Corrosion Research Council of the Engineering Foundation, the American Crystallographic Association, the Expanded Shale, Clay, and Slate Institute, and the Edward Orton, Jr., Ceramic Foundation, are engaged in cooperative work with the National Bureau of Standards on projects of interest to the minerals industry.

The current research programs of NBS which are of most direct interest to the minerals industry are carried out in the Inorganic Solids Division and the Metallurgy Division. The work in inorganic solids is directed toward obtaining a better understanding of the fundamental physical properties of inorganic, nonmetallic materials. In general, this involves preparing materials in very pure form nad measuring their properties under carefully controlled conditions. The measurements are frequently extended to extremes of high and low temperature, and to very high pressure. The data which results from such projects are essential to enable industry to develop materials which will undergo extreme environmental conditions such as high temperatures in corrosive atmospheres, or very low temperatures under constant irradiation.

The work in metallurgy is aimed at increasing our understanding of the properties of metals, in order to encourage the optimum use of existing metals and alloys and to stimulate the development of new ones having desirable properties. Crystal structure, the role of dislocations and point defects, electron energy distribution, metal fatigue, plastic deformation, electro-deposition, and corrosion are important areas of interest. Corrosion research is particularly noteworthy, in view of the annual loss of billions of dollars in the country due to corrosion. For example, some of the current corrosion research is directed toward obtaining data which will help explain the fundamental mechanism of corrosion of well-characterized materials under precisely controlled and known conditions, and other work is aimed at obtaining quantitative data on rates of corrosion reactions. Other NBS projects are aimed at applying theoretical advances to the problem of improving the mechanical properties of metals in practical uses.

2. The Bureau of Public Roads conducts and encourages research in minerals used for highway construction which creates important requirements for these materials.

The estimated amount of various minerals used in highway construction for 1960 and for the 15-year period from 1957 to 1972 is shown below:

Material	1960	1957-72
Steel—million tons	2.4	59.4
Bitumens—million tons	8.0	230.0
Petroleum products—million gallons [1]	804	21,080

[1] Includes gasoline, diesel fuel oil, and lubricants used by road-building machinery.

During the past several years, the Bureau of Public Roads has encouraged the petroleum industry to discover new ways, through research, to refine and process asphaltic materials to develop a better quality in their products for highway construction. This research is being undertaken in the industry without the use of any Federal funds, and it is difficult to estimate the expenditures involved. However, better quality materials are becoming available through industry participation in the program. The Bureau's contribution has been made through the sponsorship of regional user-producer conferences, at which industry is made aware of the results of research conducted by the Bureau in cooperation with the State highway departments to determine which refining processes produce the most durable asphalts. Four such conferences have been held during the past year. A test program of the Bureau in cooperation with the State highway departments of California, Michigan, Texas, and possibly other States, is just beginning to study the effect of innovations in the manufacturing and refining of petroleum products.

The Bureau has initiated a modest feasibility study of additional improvements in road tars that will extend their use in the highway field, such as a combination of coal derivatives in construction and maintenance materials now in use to improve their versatility, durability, rejuvenation, etc. A completed report is expected by June of 1963. The various ways in which coal and coal derivatives might be used will be investigated and evaluated as to the feasibility of each use in highway building and maintenance field and the probable amount of coal involved for each use per mile of highway. From this study, the Bureau hopes to determine the items that are the most promising for use by the highway industry and deserve a high priority for further development.

Through the Federal-aid funds made available for planning and research to the States, the States are conducting approximately 500 research projects, of which 42 research projects involving a total cost of approximately $736,000 per year are directed toward new uses of such materials as aluminum, steel, and asphalts in highway construction.

3. The merchant marine is an important user of minerals, and the Maritime Administration sponsors research in the use of minerals.

Ship construction in the United States consumes about 700,000 tons of steel and about 7,500 tons of copper a year. A large amount of aluminum also is consumed, but the amount flowing into shipbuilding is not yet readily identifiable. The shipbuilding program of the Maritime Administration is aimed at a continuing replacement of merchant ships on a schedule which will stabilize the production in the shipyards. For this reason, no change in the volume of the major shipbuilding metal requirements is contemplated.

Merchant ships consume crude oil residuals for fuel. In the foreseeable future, some ships will employ nuclear propulsion. The national growth of water-borne commerce is likely to obscure the inroads of nuclear propulsion on the requirement for fossil fuels to the extent that the most reasonable prediction would indicate a stable requirement for such fuels.

Research and development activities include the use of ships for harvesting ocean botton minerals, and studies of ship steel, crude residuals for fuel, coal slurries, and nuclear reactors. It is difficult to predict the trends resulting from these studies, but it is believed that the ship steel, crude oil, residual, and coal slurry studies will not have an appreciable impact on prevailing supply or demand. Collaborative efforts with the Bureau of Mines on harvesting manganese nodules from the ocean floor could increase the domestic supply in 10 to 15 years. Nuclear reactors for ship propulsion, to some extent, will increase the requirement for uranium fuel. The maximum likely number of ships is about 50, however, and the demand is probably inconsequential in terms if the overall production. Some rare metals are used in the reactor construction. The quantities are small, but are probably quite significant in terms of the production volume. These include enriched boron (BIO), zirconium, cadmium, polonium, beryllium, platinum, and hafnium. Substantial quantities of lead and stainless steel go into these systems. On the supply side, the reactors contemplated at this time produce neptunium 239 and plutonium 239.

Programs of the Coast and Geodetic Survey relate to the discovery and recovery of minerals on land and on the ocean floor. Geodetic control is essential to topographic mapping, which in turn is vital to effective prospecting for mineral resources. Local gravitational anomalies are identified. These provide clues to mineral resources and are highly useful in geophysical prospecting involving gravity methods of mineral exploration.

In addition to research into the nature of the earth's crust, the Survey develops basic techniques and instruments of fundamental value in locating, identifying, and extracting or recovering minerals. The Survey helped private industry develop a new portable geophone that is of great value in locating new oil deposits. The Bureau has also improved seismographic techniques that interpret long-wavelength signals indicating the presence and location of oil resources.

A basic mission of the Coast Survey is the dimensional and topographic description of the sea floor along the coastlines of the United States and its possessions. These hydrographic surveys, using depth sounding, precision position finding, and data-plotting techniques, provide information about the sea floor that is fundamental to technical feasibility, economic, or geological studies directed toward exploitation of minerals on the ocean bottom.

Shallow-water color photography provides a sharper delineation of submarine features and more precise mapping than with other techniques. The increased accuracy is important to offshore test-drilling operations.

The Survey also provides special services to aid in the exploitation of offshore petroleum deposits. A series of 41 maps of the Louisiana coast has been prepared for the Bureau of Land Management and the State of Louisiana. These maps are used in preparing leases covering offshore exploration. Survey triangulation surveys permit the more accurate positioning of offshore drilling rigs. The Survey also helps clarify legal and technical problems connected with Supreme Court decisions and acts of Congress having to do with mineral rights in U.S. tidelands.

Bureau programs and activities in the field of oceanography, including depth sounding, dredging, and core sampling of the ocean bottom and overlying deposits, and deep-sea stereophotographs of the ocean floor, are all of prime importance to future sea-floor mining operations.

5. The Office of Technical Services collects and distributes reports of U.S. Government-sponsored technical research and translations of foreign technical literature. Of the 30,000 technical documents it is currently collecting each year, over one-third relate to minerals. Very little of the technology has to do with exploration, recovery, and basic processing, but is advanced research aimed at improving products, developing new applications, and deriving new materials from minerals. Such research includes development of new and improved metals, crystals for electronic use, and petrochemicals. Fuel studies extend from the fossile fuels to the AEC work on nuclear fuels, Army-Navy-Air Force research on the fuel cell, and development of exotic fuels for powering rockets.

An experimental program of evaluation and pointing up of new commercial applications from promising Government research has also been in progress for the past 2 years. Among the studies to be published are some of interest to mineral related industries, such as explosive metal forming, a new brake fluid corrosion inhibitor, improved silicone lubricants, cellular metals, ultrasonic-assisted grinding, and electronbeam welding.

6. The proposed civilian industrial technology program is an extension and strengthening of the Department's efforts to promote industrial growth through the encouragement of more effective use of technology by industry. The program will support research in selected industrial fields, for example, machine tools, foundries and castings, and building and construction having direct bearing on the minerals industry. The program will also seek to develop a more effective and faster system of disseminating technical information in a form in which it can be profitably used.

Foreign producers in the machine tool industry receive similar assistance from their governments as a result of a high rate of application of technological developments arising from university and industrial research. Germany and Great Britain, for instance, together apply a total research effort in terms of man-years equal to ours in the field of metalworking-production engineering research. In relation to their gross national products, Great Britain and Germany are doing research in this field at a rate approximately three times ours.

The highly fragmented foundry and castings industry is also facing technological competition, especially in the field of large castings. Foreign suppliers now compete in technical quality, as well as price. The research and development effort in the European countries is more intensive than ours, with the aid of financial and other assistance from those governments.

The civilian industrial technology program will seek to encourage additional research and development in these industries as well as in the building and construction and textiles industries which are important users of minerals and fuels and derived products, and to diffuse the latest technology through the mechanisms of industry associations, industry-university technical extension services, professional groups, and the technical press.

7. The Area Redevelopment Administration program was established 2 years ago to alleviate conditions of substantial and persistent unemployment and underemployment in two classes of "redevelopment areas." The first class consists of areas that show an excessive rate of unemployment currently and that

have had excessive unemployment over the past several years. The second consists of other areas, including Indian reservations, that have low family income and that have experienced substantial unemployment or underemployment.

Many mining areas throughout the country have been designated as redevelopment areas. Employment has increased in only a few segments of the minerals industry in recent years. Total employment in the minerals industry has declined about one-third since 1950. The decline has been exceptionally severe in coal mining. Employment in the anthracite industry, has diminished by about three-fourths since 1950 and in the bituminous coal industry, has dropped by two-thirds (or 300,000 persons for the two industries). Employment in the metal mining sector has declined almost one-third in this period. The Appalachian region, southern Illinois, and western Kentucky, which produced 90 percent of the Nation's coal in 1950, have been especially hard hit by employment declines. Employment in iron mining has suffered a sharp and extensive decline in the Lake Superior region and in Alabama. Scattered employment declines have occurred in both the Eastern and Western States in other minerals industries, such as lead and zinc mining, and petroleum production.

The area redevelopment programs have provided for several types of assistance to mining areas, as well as to other areas, that have not been able to make sufficient economic adjustment to avoid substantial and persistent unemployment or underemployment. To the maximum extent possible, ARA avoids overlapping with the programs of other Federal agencies, and so far as practicable, uses the services of other agencies.

The ARA program comprises technical assistance to the mineral industry, loans to industries which produce, process, or consume mineral products, and assistance in various other ways to the economic development of mining areas. Inasmuch as the Department of the Interior already has a program for aiding minerals exploration, technical assistance by ARA in this field has been limited to spot situations connected with promising possibilities for area redevelopment in which the Department of the Interior could not act effectively under its authorization. Technical assistance funds have been provided for exploration of iron ore deposits in Tennessee and Texas, for broad mineral resource surveys in selected counties in Alabama, Georgia, and Texas and in several Indian reservations. A project has been sponsored for exploration of a salt deposit in southeastern Ohio that might become the basis for establishment of certain chemicals manufacture.

The ARA also has a number of technical assistance projects on the mining and utilization of minerals. One project, for example, is concerned with experimentation on hydraulic mining of coal in the State of Washington, where the faulted and steeply pitching coal beds are difficult to mine by conventional methods. This process, if successful, might be applicable to other areas with similar problems in both the western and eastern coal-producing areas. Another project is a study that has been approved for the Colville Indian Reservation in Washington on the feasibility of marketing phosphate and other minerals from saline deposits.

ARA has been especially interested in minerals that might be used locally and regionally in the construction industries. In this field, it has approved a project for studying the possibilities of clay products production in Kentucky and for considering cement and lime production in northwest Florida.

In view of the significance of the iron and steel industry to redevelopment areas and to the country as a whole and the problem of declining use of iron ore, a major effort is being made to determine what can be done to strengthen the utilization of iron resources through testing various new processes. The main problems center around the low iron content in many deposits, the fineness of the ore, and the existence of certain impurities that are troublesome to eliminate by the processes that are now being used. The ARA-financed studies in this field may be applicable to the Lake Superior area, Tennessee, North Carolina, Missouri, Texas, Arizona, Montana, and other States which have iron ore deposits.

ARA loans for investment in mining and utilization of minerals have thus far been confined largely to minerals used in the construction industry. Loans have been approved for lime production facilities in Maine, a synthetic marble and a structural tile plant in Texas, facilities for producing concrete blocks and pipe in Mississippi, two plants for producing tile in Alabama, and a plant for producing high-grade silica sand in Indiana. Loans have also been made for equipping a coal mine in Utah and a pottery plant in Texas. Several loans have been made for metal fabricating plants.

A number of loan applications for facilities to produce, process, and utilize minerals are awaiting the completion of technical assistance or other investigations. These applications pertain especially to iron and steel, coal and nonmetallic construction materials.

ARA has provided extensive assistance to mining areas in programs other than those for direct aid to the minerals industry. A total of 173 projects have been approved for assistance to other industries and public bodies since the Area Redevelopment Act was passed. Of this number, 57 projects have provided for technical assistance, 72 for industrial loans, and 44 for grants or loans for public facilities.

Many mining areas have requested and have received ARA assistance for studying their redevelopment problems. It is expected that most of the studies will result in employment-generating projects that business enterprise or public bodies will undertake later either with or without ARA financial assistance.

ARA has provided loan funds when projects to be undertaken by private enterprise could not be financed by private lenders or other Federal agencies on reasonable terms and when there has been reasonable assurance of repayment. A wide variety of projects have been so financed in mining areas.

Numerous loans and grants have also been made for public facilities in the mining areas. In many cases, the areas have inadequate facilities to attract industry and inadequate financial means for providing the necessary investment. Consequently, ARA has made loans or grants, depending on the financial status of the areas and their repayment capacity, for financing needed public improvements, such as water supply and sewage systems, industrial highways, public buildings, or other public facilities required to enable them to recover economically.

Finally, job retraining programs have been undertaken in many of the mining areas to create new skills and opportunities for the unemployed or underemployed who can no longer expect to find jobs on the basis of their previously acquired skills. So far as possible, this program is geared to the needs of existing industries in the areas and to new industries that are to be developed by private financing or through the ARA redevelopment program.

B. In the industrial, marketing, and economic areas of Department activities, two agencies—the Business and Defense Services Administration and the Bureau of International Commerce—carry out programs which seek to further the growth of the economy, both domestically and internationally, with resultant benefits to all industries, including the minerals industry.

1. The Business and Defense Services Administration conducts specific broad-ranged studies of specific industries and reports on the outlook for these industries to provide a better understanding of their problems and point toward their solutions by industry and Government. A major portion of these studies is in industries which produce or use metals and minerals.

BDSA, in its contact with the Office of Emergency Planning and other interested agencies, has contributed toward the development of an orderly, nondisruptive program of disposal of excess Government stockpiles to assure the least possible detriment to the mineral and other industries involved. Consultation with industry to obtain its advice on such programs has been a prerequisite of the agency.

The maintenance of a mobilization base, that is, adequate industrial facilities to meet both current defense and future mobilization needs, has been a concern of BDSA throughout its existence. In the minerals field, this means adequate plant and equipment for the processing and shaping of metal and mineral products in useful form. The agency also takes an active part in maintaining an effective national defense executive reserve, made up of officials of the metals and minerals industries among others, which stands ready at all times to assist the Government, should an emergency occur, in carrying out such activities as the allocation of materials and the maximization of production.

2. BDSA and the Bureau of International Commerce conduct export promotion programs for the benefit of industry through increasing direct and indirect trade in the products of the minerals and other industries, and for improvement of the balance-of-payments position of the United States. These operations include the dissemination of specific information on particular export trade opportunities and sales agency opportunities, maintenance and dissemination of extensive information on firms in foreign countries, close contact with commercial

officers at foreign posts, the preparation of export potential studies on products and for areas abroad affording market possibilities, the displaying of U.S. made products at trade fairs and trade centers abroad, and sending trade missions abroad to stimulate sales of U.S. products. These activities are concerned both with the direct sale of U.S.-produced raw materials and primary metal products and with the sale of manufactured products containing metals and minerals, thus providing indirect export markets for U.S. minerals and metals.

The two agencies participate in international meetings concerned with trade, and negotiate for the removal of foreign trade barriers in order to stimulate sales of American goods abroad. These agencies, among others, will prepare the commodity information needed by the United States in the forthcoming negotiations under the Trade Expansion Act. They will be working closely with minerals and other industries to obtain a full understanding of industry viewpoint and interests.

In addition to discussions on tariffs and related matters, the two agencies participate in a number of other international organizations, including the Organization for Economic Cooperation and Development (OECD) and various United Nations agencies, such as the Economic Commissions for Europe, Asia and the Far East, and Latin America. In the OECD, of which the United States is now a member, Commerce will be taking an increasingly active part in the work of the Iron and Steel Committee and the Nonferrous Metals Committees. These and the international forums provide opportunities not only for the exchange of information and the development of special studies on specific problems, but also afford the means for bringing U.S. influence to bear on policies and practices of foreign governments.

3. The Bureau of International Commerce, under the Export Control Act of 1949, as amended, exercises control over exports of metals and minerals to the extent necessary (*a*) to protect the domestic economy from the excessive drain of scarce materials and to reduce the inflationary impact of abnormal foreign demand; (*b*) to further the foreign policy of the United States and to aid in fulfilling its international responsibilities; and (*c*) to exercise the necessary vigilance over exports from the standpoint of their significance to the national security of the United States. At present, there are no quantitative restrictions on exports of metals and minerals for reasons of security (as cited in (*a*) above). Controls are being exercised essentially in the interest of national security, to restrict or prohibit the flow of strategic commodities to the Iron and Bamboo Curtain countries.

Senator GRUENING. The Honorable G. Griffith Johnson, Assistant Secretary of State for Economic Affairs is our next witness.

You may proceed, Mr. Johnson.

STATEMENT OF HON. G. GRIFFITH JOHNSON, ASSISTANT SECRETARY OF STATE FOR ECONOMIC AFFAIRS

Secretary JOHNSON. I appreciate this opportunity to appear before the Subcommittee on Minerals, Materials, and Fuels. I understand that the subcommittee is endeavoring to develop background information on conditions in our domestic mining industry with a view to developing facts and ideas upon which to base conclusions and recommendations designed to increase our security and economic growth.

The Department of State in recognition of the fact that our international policies and relations have an important effect on our domestic minerals industry has endeavored to keep abreast of developments in this industry both here and abroad. In doing this we have maintained close liaison with the other specialized executive agencies and with American firms engaged in the production of minerals.

It is our view, that despite the heavy demands which we have made on our minerals resources throughout our history and especially during the past half century, we still have vast and important resources which can be developed and exploited economically for some considerable period ahead and, assuming continued advances in metallurgical technology, these resources can be expected to supply a large proportion of our requirements for many minerals for an indefinite period. I understand that this conclusion is generally supported by the recent study sponsored by the Ford Foundation entitled "Resources in America's Future" just published by the Johns Hopkins Press. Moreover, our neighboring countries to the north and south are heavily endowed with many important mineral resources and having no comparable industrial complex of their own will continue to look to the United States as a logical market for the materials which can be produced in their countries so effectively. Therefore, in considering our future minerals supply and requirements, we should also be thinking of these apparently ever-increasing hemisphere resources and within the framework of reasonable and inevitable adjustments in our own minerals industry welcome an indicated expansion of trade with these and other friendly countries.

More specifically, we have the impression that for many important materials U.S. resources and our ability to compete effectively are second to none. Among the items in this category are perhaps coal, copper, and such materials as molybdenum, and vanadium. For other materials, like industrial diamonds, high grade manganese, metallurgical chrome, and tin the United States has no known commercial resources and must rely almost entirely on imports. In these cases as well as others for which we have an import requirement the Congress has authorized a stockpiling program designed to protect our essential security needs. Despite the fact that our essential security requirements are covered by our stockpiles the Department of State, bearing in mind the importance of our continued access to mineral raw materials, has endeavored to foster investment and development abroad and assure through the diplomatic means available to us continued accessibility to these important raw materials.

Despite the generally favorable prospect for the U.S. mineral industry we are conscious of the fact that in certain categories the U.S. industry is passing through a very difficult period. In this connection I refer specifically to the situation in the lead and zinc industry.

Following the cessation of hostilities in Korea and virtual completion of our stockpile program for lead and zinc, mine production in the United States fell rapidly and drastically beginning in 1951. By 1958 U.S. mine production of lead had declined from 388,000 tons to 267,000 tons or over 30 percent. Zinc output fell from 681,000 tons in 1951 to 412,000 tons in 1958 or a decline of nearly 40 percent. During this period of sharp decline in U.S. production and consumption commercial imports, following the expansion of facilities abroad generated by wartime and stockpiling demands, continued to rise. By 1958 the situation had become so serious that after investigation by the Tariff Commission and report to the President under section 7 of the Trade Agreements Extension Act of 1951 a Presidential proclamation had to modify the concessions on lead and zinc which had been granted under the General Agreement on Tariffs and Trade. Under the terms of the proclamation dated September 22, 1958, the U.S. import duties were not changed but the quantity of imports was limited to 80 percent of the average annual imports during the 5-year period 1953–57. These quotas still remain in effect. The Tariff Commission in three periodic reports, the last dated October 1, 1962, has concluded that "the developments in the trade in lead and zinc do not indicate such a change in the competitive situation as to warrant a formal investigation under the provisions of paragraph 2 of the Executive Order 10401 to determine whether the withdrawn or modified trade agreement concession may be restored in whole or in part without serious injury to the domestic industry." Although quotas are contrary to our general trade policy and objectives, we concur with the conclusion reached by the Tariff Commission.

Despite this conclusion, our experience with the quota system over the past 4½ years has not been entirely satisfactory.

From the narrow point of view of the Department of State, the existence of the quotas and their application has aroused resentment in a number of affected countries. We have received complaints from these countries and their concern has been voiced in various international meetings dealing with trade matters. Moreover, the rigid quotas have not allowed for any flexibility to meet new and changing patterns in world trade in lead and zinc and thus certain inequities which could not be foreseen at the time the quotas were put into effect have developed. For example, the decision of a South African producer to build a smelter will affect the supply of concentrates from that source thus endangering the continued operation of one of our own smelters.

Senator Gruening. Is this South African smelter being built with U.S. funds?

Secretary Johnson. The South African company is partly owned by U.S. companies. I don't believe U.S. Government funds are involved.

Senator Gruening. No part of our aid program?

Secretary Johnson. No, sir.

Senator Gruening. None of the agencies?

Secretary Johnson. I am reasonably confident that there is no aid money there, because I don't believe we have any aid program with South Africa. I cannot say for sure, but I doubt that there are any loan funds involved.

Senator Gruening. None from Export-Import Bank?

Secretary Johnson. I do not believe so, sir, but that can be checked.

Senator Gruening. Would you check on it?

Secretary Johnson. Yes, sir.

(Subsequently, the following communication was received:)

Department of State,
Washington, June 10, 1963.

Hon. Ernest Gruening,
U.S. Senate.

Dear Senator Gruening: During the hearings conducted by the Minerals, Materials, and Fuels Subcommittee on May 9 and in your letter of May 29 you raised the question as to whether or not U.S. Government funds were used in the construction of the new South African lead smelter.

I wish to confirm that no U.S. funds were involved in the construction of this smelter and that its construction was entirely financed by private capital. The operating company, Tsumeb Corp., Ltd., is jointly controlled by American Metal Climax, Inc., and Newmont Mining Corp. According to our information annual production is expected to amount to 35,000 tons of blister copper, 90,000 tons of refined lead, 4,000 tons of arsenic trioxide, 150 tons of cadmium, and 1 million ounces of silver.

Lead concentrates originating in South Africa and currently exported to the United States under the existing lead quota could be affected by the opening of the new smelter, although I understand that negotiations between American Metal Climax, Inc., and the American Smelting & Refining Co. are underway with a view of continuing, at least in part, the exports of South African lead concentrates to the United States.

Sincerely,

G. GRIFFITH JOHNSON,
Assistant Secretary.

Senator GRUENING. I am very much concerned to see whether our foreign aid program is building up industries abroad which compete with ours, sometimes disastrously. Proceed.

Secretary JOHNSON. Also Australia which has a rising and important production of slab zinc but no quota because its exports were relatively insignificant in the base period 1953–57 has long been desirous of having a specific quota. In at least one case the quota established has never been fully utilized.

From a broader and more general point of view and despite the restraints to trade imposed by the quotas the combined price of lead and zinc in the United States has not risen since 1958, although prices here as a consequence of the quotas have been higher than those prevailing in the London Metal Exchange. Furthermore, since 1958 U.S. zinc production has increased only slightly while lead production has suffered further declines.

The quotas have also brought other disadvantages. For example, lead and zinc smelters dependent on foreign ore supplies have had to curtail their operations since the quotas are applicable to both ore and metal and domestic production, especially production of lead concentrates has not expanded sufficiently to make up the shortfall resulting from the quotas. Furthermore, American manufacturers using lead and zinc and dependent on export markets have suffered a price disadvantage due to the existence of the quotas as compared with their foreign competition. If it were not for the rigidity of the established quotas the disadvantage could be offset by permitting exporters of lead and zinc manufacturers to import their requirements ex-quota.

Despite these disadvantages we would not recommend any change in the system at this time but we should, in our opinion, be considering possible other alternatives and solutions. Convinced that the existing imbalance in lead and zinc is global in nature we believe any contemplated solution should be international in scope.

In contrast to this approach suggestions have been made to drastically increase the tariff protection for lead and zinc. We would regard this as extremely unwise and are inclined to oppose such a solution for the following reasons:

1. In our judgment the maximum tariff allowable under existing legislation would not in itself protect the domestic industry from imports originating in certain important producing countries having very low costs of producton which production is today even more competitive as a consequence of the prevailing high price for silver associated with these lead and zinc ores.

2. Any form of tariff protection in excess of that currently allowable or a combination of higher tariffs and quotas designed to give absolute protection would be contrary to the purposes and objectives of the recently enacted Trade Expansion Act. It would jeopardize actions contemplated under this act designed to stimulate the economic

growth of the United States and strengthen our economic relations with foreign countries. It would, in our opinion, be bound to react unfavorably on our exports. This is the opposite of what we are trying to achieve. Moreover, such extreme protectionist measures would in this case be mainly directed against our neighbors in Canada and Mexico since they are our largest suppliers of lead and zinc and therefore would have long-range consequences affecting our overall mineral supply in the years to come. As I have said earlier in this statement, Mexico and Canada must inevitably make an important long-range contribution to our total mineral supply. In this connection we have large export surpluses with the major countries supplying us with lead and zinc, and increased traiffs would expose us to sharp trade retaliation damaging important markets for our exports.

3. Increased tariffs would mean generally higher internal prices, and thus, in addition to placing export industries at a disadvantage, would encourage the tendency to substitute other materials for lead and zinc. This tendency has been especially prevalent in these metals, and their growth has not kept pace with the rise in the general level of industrial activity.

We have sought to consider more promising alternatives based on the global nature of the problem. One such alternative has been given a great deal of attention by the International Lead and Zinc Study Group. This group was established in January 1960 and consists of 25 countries joined together for intergovernmental consultations on the international trade in lead and zinc. During its existence the group has attempted to provide continuous and accurate information regarding the supply and demand position for lead and zinc and its possible development. The group has also had under consideration possible forms of an international agreement in lead and zinc designed to bring about a better balance between supply and demand and thus a general improvement in prices. Among the objectives of any agreement would be the promotion of conditions in which barriers to trade in lead and zinc in all countries would be progressively reduced, enabling producers and consumers to have the widest possible access to markets. Progress in this direction has been relatively modest. Despite this, however, we believe it to be in the best interest of the United States to continue to engage in this activity, since it appears to offer some hope, however modest, that a better international balance can be achieved, if not through a formal agreement, at least through the mechanics of consultation and better information. In our participation at these meetings the Departments of State, Commerce, and the Interior have been ably assisted by representatives from the domestic lead and zinc industry.

Fortunately, we do not regard the future as being entirely bleak. We are not dealing with a static situation but, rather, a dynamic and constantly changing one. The world's demand for lead and zinc is constantly rising, although not at a rate we should like to see achieved. Forecasts over the longer term are, however, encouraging. Industrial development throughout the world, specifically in the underdeveloped areas, is increasing at a rapid rate and this will sooner or later reflect itself in increased demands for all minerals and metals, including lead and zinc. The corrective forces of normal economic developments will thus in themselves tend to bring about a better balance.

That concludes my statement, Mr. Chairman. I might say, if I may, that I am accompanied here today by Mr. Edmund E. Getzin, who is Chief of the Industrial and Strategic Materials Division of the Department and knows something more about the technical aspects of these metals and minerals than I do.

Senator GRUENING. Would he be available? I would appreciate it if he would stay around. We have another witness who is also obliged to leave this morning. I want to thank you for your very excellent testimony. Obviously it is a difficult problem. Perhaps the best approach is through negotiations and meetings with various zinc and lead producers. We will probably hear from some other members of the industry, and they may have other ideas on the subject. But our efforts on the matter of quotas and tariff increases, and so forth, have not been found very fruitful. That would be your opinion as you expressed it?

Secretary JOHNSON. They certainly have not produced the results that were hoped for initially.

Senator GRUENING. You say somewhere in your testimony—on page 4, the second paragraph—from the narrow point of view of the Department of State. Why do you categorize your views as narrow?

Secretary JOHNSON. That was possibly an unfortunate choice of words. I think what I meant there was that the Department of State naturally has in its normal dealings with other countries to face particularly their views and feelings with respect to our policies. But we could certainly not take the position that our interests as reflected in these relationships are the only ones that bear on the questions of national policy with regard to minerals or any other economic matters.

Senator GRUENING. What are the prospects of calling an international conference on lead and zinc?

Secretary JOHNSON. The International Lead and Zinc Study Group had a meeting at the end of March. This is the latest of a series of such a meetings.

This Study Group session indicated some very sharp divergences of view among the countries involved as to the desirable form and content of any possible international agreement. The conference did not result, I think it is fair to say, in any substantial measure of agreement. So in effect we go forward toward the next meeting of this group in October without very much progress having been made in this direction.

It may be that as time goes on we may through informal discussions and otherwise leading up to these more formal meetings achieve a greater identity of viewpoint. But until we do arrive at some agreement as to the basic nature and content of an international arrangement the outlook doesn't look very bright. Mr. Getzin was at this most recent meeting of the lead and zinc study group and Mr. McCaskill represented Interior and I am sure they can give a much more detailed account of the situation in this regard.

Senator GRUENING. Would you say that the difference of opinion was based on a not unnatural pursuit of every nation of its own particular interest?

Secretary JOHNSON. Yes.

Senator GRUENING. That would be expected. Each one wanted to retain its own advantages.

Secretary JOHNSON. That is right.

Senator GRUENING. That is in the nature of human intercourse. Thank you very much.

The Honorable Herbert J. Waters, Assistant Administrator for Material Resources Agency for International Development. I understand you too have to go elsewhere.

STATEMENT OF HON. HERBERT WATERS, ASSISTANT ADMINISTRATOR FOR MATERIALS, AGENCY FOR ECONOMIC DEVELOPMENT

Mr. WATERS. Thank you, Mr. Chairman.

I appreciate this opportunity this morning, because I do have to go out of the country this afternoon. I do have with me, Mr. Chairman, Fred Draper, the Deputy Director of the Office of Industrial Development of our Agency, and Mr. Michael Ching, Chief Industrial Engineer of the Office of Engineering, and they will be available for other parts of the hearing, if there are further questions you desire from our Agency.

I have a prepared statement, Mr. Chairman, if you would like me to present it.

Senator GRUENING. We would like very much. This is a very important subject, and we would be glad to have you read this statement. Of course it will be reproduced in the record in any event, but I would like to hear you and maybe ask you some questions.

Mr. WATERS. Mr. Chairman, I am appearing on behalf of the Agency for International Development at your request to present information with respect to what the AID has done to develop mineral production in oversea countries.

The subcommittee previously received testimony from representatives of the predecessor International Cooperation Administration at its hearings in April and May of 1956. The record of that presentation is, as you know, included in the committee print entitled "Extension of Purchase Programs of Strategic and Critical Minerals," commencing on page 240. The period covered by the information previously submitted was from April 1948 to December 31, 1955.

We have therefore undertaken to present a summary of our activities and the policy framework for the period covering fiscal year 1956 through the first half of fiscal year 1963. The information being presented at this time summarizes project commitments through December 31, 1962.

LEGISLATION AND AGENCY POLICY

Title I under chapter 2 of part I of the Foreign Assistance Act of 1961 provides the basic authority for the President to make loans for economic development. It is in many respects similar to the previous lending authority of the Development Loan Fund established under provisions of the Mutual Security Act, sections 201–206. The purpose of our development loans is to promote the economic development of less developed friendly countries and areas, with emphasis upon assisting long-range plans and programs designed to develop economic resources and increase production capacities.

Section 201 of this title provides further that in making loans under this title, the President shall take into account (among other things) "the possible effects upon the U.S. economy, with special reference to areas of substantial labor surplus, of the loan involved." The application of this provisions is presently covered in the check list prepared for the review of loan applications. A total of six loans in the minerals development field have been made during the 7½-year period I have indicated. Under present policies, the proceeds of loans made after October 1959 are spent predominantly in the United States for American goods and services.

Title II of the same chapter 2 authorizes the President to furnish assistance through development grants and technical cooperation in order to promote economic development, "with emphasis upon assisting the development of human resources through such means as programs of technical cooperation and development." Section 211 of this title also contains a provision similar to that for development loans with respect to the "possible adverse effects upon the U.S. economy, with special reference to areas of substantial labor surplus, of the assistance involved." The application of this provision is achieved in a similar way as for development loans.

Development grants and technical assistance for projects in the mining and minerals field have involved commitments of a total of US$45,558,000 during the same 7½-year period. The U.S. Bureau of Mines and the U.S. Geological Survey have participated heavily in these activities.

Under title III of the same chapter 2, and "in order to facilitate and increase participation of private enterprise in furthering the development of the economic resources and productive capacities of less developed friendly countries and areas, the President is authorized to issue guaranties of investments in connection with projects, including expansion, modernization, or development of existing enterprises."

Investment guaranties in minerals other than oil have totaled 15 in number for a total amount of $155 million. There have been no guaranties in the field of coal production. (See table 6 attached.)

Mr. Chairman, it should be noted that during the period from fiscal year 1956 to the present, there has been no special legislation or policy in the foreign economic assistance area which promoted the oversea production of minerals for U.S. stockpiling purposes or for increasing the free world availability of strategic minerals. Economic development assistance in the minerals production field rendered during this period has been essentially directed to financial and technical assistance which would help the people and the institutions within less developed countries to effectively utilize their own resources in the development of their economies and to encourage U.S. private sector participation in such development.

The existence of an oversupply or depressed international market in any given field of minerals production served generally to retard the flow of financial assistance to these specific categories by reducing the feasibility of new investment. On the other hand, much of the assistance provided on a grant basis was directed to improve the capacity of the less developed countries to contribute to their own economic growth by developing the skills of their peoples and the effectiveness of their institutions. Such assistance was usually directed to the general development of their natural resources and production skills.

Similarly, loans were generally directed to increase production or productivity in specific minerals which were either in good demand in free world markets or were essential to the development of the economies within which they were produced (such as coal).

GENERAL DESCRIPTION OF THE MINERALS PROGRAM

Foreign assistance in the minerals field, including coal, was rendered to 40 countries during the period under discussion. For purposes of clarity and orderliness this presentation will treat the total program separately under the four regions of AID, namely, Far East, Near East, and south Asia, Africa, and Europe, and Latin America. The program in each region will be considered under two principal categories; (*a*) specific coal projects and (*b*) noncoal projects, including technical assistance projects which are of a general nature and provide mutual benefits to both categories.

As indicated in the following table, total funds obligated during the period amounted to $77,858,000 of which $44,085,000 was for coal projects and $33,773,000 for noncoal projects.

TABLE 1.—*Total funds obligated*

[In thousands]

Region	Coal	Noncoal	Total
Far East	$13,147	$9,726	$22,873
Near East and south Asia	29,599	10,921	40,520
Africa-Europe	1,094	2,389	3,483
Latin America	245	10,737	10,982
Total	44,085	33,773	77,858

Total funds obligated may also be divided into development loan funds and grant funds. Development loans in the minerals field have been limited in number and in the above table represent the sum of $32,300,000 divided among six loans, each of which covered a specific capital project. Grant funds ($45,558,000) were used to finance technical assistance programs as well as capital projects and often involved the direct hire of U.S. engineers or technicians, use of contract services, participant training of foreign nationals in the United States, interagency agreements, and procurement of equipment and commodities.

The majority of the programs in the various countries were for technical assistance. Advisory services were provided through the U.S. Bureau of Mines, the U.S. Geological Survey, direct hire of specialists, or contracts with consulting engineering firms. The work often extended over a period of years and generally involved such basic activities as the training of host country nationals; geological and mining industry surveys; organization or improvement of host country geological and mining organizations; establishment of ore dressing and analytical laboratories; advisory services on mineral exploration, development, and exploitation; and project feasibility studies. This type of activity, while providing the basis for future development of the minerals industry in these countries, seldom resulted in an immediate increase in production.

98-989—63——5

On the other hand, all the development loan projects and some of the development grant projects provided equipment and services for specific developmental or production goals, such as increasing ore reserves, maintaining existing production levels at greater mining depths, increasing productivity capacity, or improving the quality of the final product. Some of these projects and objectives are described in the regional presentations that follow:

LATIN AMERICA REGION

Projects in Latin America in the minerals field have concentrated on the training of host country nationals. This training has been carried out through the provision of U.S. technicians to the host country and through participant training in the United States. Limited funds have also been used to supply equipment for research laboratories in several countries. Training has included the fields of geology, mining, and metallurgy.

The most active programs have been in Bolivia, Brazil, and Chile.

In Bolivia the program began with a complete survey of the mining industry by a firm of consulting engineers. Recommendations were made for improving efficiency, reducing costs, increasing production, et cetera. The U.S. Geological Survey assisted in establishing a supervised mining credit program, as well as a National Department of Geology and a well-equiped Geological Laboratory. The U.S. Bureau of Mines also assisted in a training program. A 3-year program for rehabilitation of the tin industry was agreed upon by the Bolivian Government, the German Government, the Inter-American Bank and AID. AID contributed a supporting assistance loan of $3,500,000 as well as local currency assistance during the first year.

A further dollar loan of $5 million (not included in the above table) was recently authorized for the second phase of the program. The objectives include reforms in managament-labor relations, development of new reserves, rehabilitation of mine and mill plants, new installations, administrative adjustments, et cetera, under new management assisted by an international advisory group. The program is expected to increase tin production from 14,830 tons in 1961 to 22,000 tons after 1964. Reduction in cost per ton is a primary objective of this assistance.

The Brazil program has concentrated on the study of iron resources and an estimated $6 million from non-U.S. Government sources has been invested in direct exploration for ore as a result of these studies. Exports of iron ore have increased by 2 million tons annually in the past 5 years. AID support is scheduled to phase out at the end of fiscal year 1964.

The program is Chile has been exclusively in the field of geology and has resulted in the creation of a Geological Institute and a School of Geology at the University of Chile. AID support will terminate at the end of fiscal year 1963.

These are the only three countries in Latin America receiving AID assistance in these fields during this fiscal year 1963.

The attached table No. 2 summarizes the program for the period indicated.

(The table referred to follows:)

TABLE 2.—*Latin American region, fiscal year 1956 through first half of fiscal year 1963*)

Country	Program	Fiscal years	Amount
Argentina	Geology and mining training	1958-61	$138,000
Bolivia	Mining industry survey and improvement	1956-63	1,028,000
Brazil	Mineral resources survey and development	1956-63	3,025,000
Chile	Geological training and surveys	1956-63	1,557,000
Colombia	Coal development—Cauca area	1956-60	97,000
Cuba	Mineral development and geological research	1956-60	150,000
Honduras	Coal resources survey	1956-60	148,000
Mexico	USBM minerals technology; USGS technical assistance.	1956-62	701,000
Peru	Advisory services on mineral resources, mining and metallurgy.	1956-62	624,000
British Guiana	Minerals technology and training	1956-59	10,000
West Indies and East Caribbean.	Pumice and pozzuolanic earth survey	1959	4,000
Development loans:			
Bolivia	Tin industry rehabilitation	1962	3,500,000
Total, coal projects			245,000
Total, noncoal projects			10,737,000
Total, Latin America			10,982,000

FAR EAST REGION

In the Far East region, all assistance during the period under consideration in the mineral field was on a grant basis and was primarily provided as a part of the overall defense support program. The objective was to help meet these countries increasing domestic requirements and to reduce their foreign exchange expenditures. Some assistance to mineral development was provided to all countries in the Far East region except Burma. However, in most cases the assistance was modest, consisting primarily of technical assistance with some commodity aid. For instance, during this period, Cambodia received a total of $40,000 for technical advice and participant training and Laos received a total of $296,000 in technical assistance and some equipment. The bulk of assistance went to two countries, the Republics of China and Korea, which received approximately 70 percent of total U.S. assistance to minerals development in the region. For the region as a whole, the proportion of total project aid allocated to mining fluctuated between 1 and 4 percent during the period. In absolute amounts, minerals assistance has been declining since fiscal year 1960.

In the Republic of China, coal mine development received the major attention in the minerals field. Technical assistance was provided through an interagency agreement with the U.S. Bureau of Mines, and other advisory services were provided through contracts with U.S. consulting firms. A number of Government and private engineers and technicians were given participant training in the United States and on the job. Mining equipment and supplies were provided for purposes of exploration, mine development, operational improvements, research and training. In all, 14 major coal mines were assisted directly and many of the remaining 336 operating mines received indirect benefits. The program helped to increase coal production from

2.5 million metric tons in 1956 to 4.2 million tons in 1961. The program was completed in fiscal year 1960.

Noncoal mineral development received similar assistance but on a lesser scale. With the help of U.S. geologists and mining engineers, geological investigations and exploratory work were done on deposits of copper-pyrite-gold ores, sulfur, ceramic clay, limonite, talc, dolomite and quarts. The main effort was directed toward rehabilitating and improving the principal copper mine by unwatering the lower levels and installing a system of sand filling for the stopes. Production from this mine in 1961 amounted to 385,000 tons of ore from which 2,220 tons of copper, 400 kilograms of gold, and 1,600 kilograms of silver were recovered. Pyrite containing 46 percent sulfur was also recovered. Future production is expected to increase somewhat as improvements and unwatering proceed. This program is expected to be completed by the end of fiscal year 1965.

In Korea, emphasis was again placed on coal mine development, although considerable effort was directed toward development of the ferrous and nonferrous minerals industries. As in China, but on a much larger scale, assistance took the form of advisory services, training programs, and supplies of equipment and commodities for coal and metal mines, coal washeries, an iron ore beneficiation plant, a nonferrous smelter, a mining equipment pool, mineral laboratories, programs of exploratory diamond drilling, an aerial magnetometer survey, and other related activities. In addition, a complete project feasibility study for below-drainage shaft mining at the largest coal mine in Korea has been completed by a firm of U.S. consultants. Partly as a result of this assistance, coal production in Korea has increased from 1.8 million metric tons in 1956 to an estimated 6.5 million tons in 1962. Similarly, iron ore reserves were more than doubled, beneficiation facilities capable of producing 190,000 tons of high grade ore per year were installed, operations of the smelter for nonferrous metals were greatly improved and organizations such as the Korean Geological Survey, Bureau of Mines, and Korean Organization for Minerals Exploration were strengthened.

Technical assistance in the form of participant training and advisory services for exploration planning, geological surveys, and mine examinations and operations was provided in most of the other Far Eastern countries, including Cambodia, Indonesia, Laos, the Philippines, and Thailand.

The program in Indonesia included surveys of tin, gold, nickel, iron, and bauxite deposits as well as coal. Project feasibility studies were made on the State-owned tin properties and the principal coal mine with the possibility in view of development loan financing of the necessary rehabilitation and expansion programs.

In Laos, modest assistance was given in cooperation with other countries, in the establishment of a Bureau of Mines, and a geology laboratory and in drawing up mineral policies and legislation. An airborne magnetometer survey also was completed.

In Vietnam, the United States assisted the Government, through contract services and equipment, in developing the Nong Son Coal Mine, the only commercially exploitable mine thus far discovered in South Vietnam. Annual production reached 71,000 tons in 1962 and should eventually reach the goal of 150,000 tons if the security situation permits.

In the Philippines, advisory services on mineral surveys included investigations of coal, manganese, copper, chrome, iron, nickel, and nonmetallic minerals deposits. Over 1 million tons of good grade chromite ores and 150 million tons of iron-nickel-cobalt-bearing laterites have been blocked out.

In Thailand, with the help of U.S. aid, tin and tungsten mining has been modernized and production of manganese, gypsum, lignite, antimony, and iron ore has been expanded sufficiently to meet domestic requirements. An aerial magnetometer survey was completed.

The attached table No. 3 summarizes the Far East minerals program for the period under discussion.

(The table referred to follows:)

Table 3.—Far East region, fiscal year 1956 through first half of fiscal year 1963

	Program	Fiscal years	Amount
Country:			
Cambodia	Mineral development	1956–57	$40,000
China (Republic)	Coal mine development	1956–60	2,743,000
	Noncoal-mineral development	1958–63	759,000
Indonesia	Mineral development	1956–63	1,416,000
Korea	Coal mine development	1956–63	8,459,000
	Noncoal-mineral development	1959–63	4,442,000
	Participant training	1962	229,000
Philippines	Coal survey	1956–57	77,000
	Noncoal-mineral development	1956–63	1,661,000
Thailand	Mineral development	1956–63	883,000
Laos	Mining and minerals survey	1957–62	296,000
Vietnam	Coal mine development	1957–62	1,868,000
Development loans			None.
Total, coal projects			13,147,000
Total, noncoal projects			9,726,000
Total, Far East			22,873,000

NEAR EAST AND SOUTH ASIA REGION

In the 7½ years under consideration all the development loans in the minerals field, except one, were made in the Near East and south Asia region. These consist of five loans totaling $28,800,000 and represent 70 percent of the AID financing in this field. A brief description of each loan follows.

The Jordan phosphate mines loan for $1,500,000 was made in fiscal year 1959 and disbursements are nearly completed. Funds were for mining equipment, surface installations, and costs of developing the underground mine and initial stripping of the open-cut mine. Existing production was to be expanded from 320,000 tons to 600,000 tons of dry phosphate rock per year.

Senator GRUENING. Your brief description does not include anything about terms of the loan. What were the terms? What was the interest rate?

Mr. WATERS. I will have to check, if I have the interest rates.

Senator GRUENING. I would like to suggest that in all the development loans this committee would like to have a breakdown of not only the amount of the loan, but the terms and the period of non-payment of principal with interest.

Mr. WATERS. I would be glad to provide that, Mr. Chairman.

Senator GRUENING. Sometimes these indicate they are more nearly grants rather than loans, and whether they are repayable in dollars or the soft currencies of the countries to which the loans have been granted.

Mr. WATERS. Yes, sir; we will provide that, Mr. Chairman.

(Subsequently the following statement was submitted:)

SUPPLEMENT TO THE PREPARED STATEMENT OF HERBERT J. WATERS, ASSISTANT ADMINISTRATOR FOR MATERIAL RESOURCES AGENCY FOR INTERNATIONAL DEVELOPMENT

Following are the terms of the six loans in the minerals development field cited in Mr. Waters' statement of May 9, 1963:

Bolivia: Tin industry rehabilitation.—The borrower is the Corporacion Minera de Bolivia, an agency of the Bolivian Government. The loan, not to exceed $3,500,000, is repayable in United States dollars within 10 years from the first disbursement under the loan, including a grace period of 3 years. The interest rate is 4 percent per annum.

Jordan: Phosphate mines.—The borrower is Jordan Phosphate Mines Co., Ltd., whose ownership is approximately two-thirds private and one-third Government. The loan, not to exceed $1,500,000, is repayable in 13 years at 5¾ percent interest in pounds sterling.

Turkey: Zonguldak Coal Mines.—The borrower is Turkiye Komur Isletmeleri Kurumu, an agency of the Government of Turkey. The loan, not to exceed $14,500,000, is repayable in 12 years at 5¾ percent interest in currency of Turkey.

Turkey: Aerial mineral survey.—The borrower is the Turkish Institute of Mineral Research and Exploration, an agency of the Turkish Government. The loan, not to exceed $900,000, is repayable in 5 years at 3½ interest in currency of Turkey.

India: Patherdih Coal Washery.—The borrower is the Government of India. The loan, not to exceed $4,200,000, is repayable in U.S. dollars and requires the payment of a credit fee of three-quarters of 1 percent per annum. It is repayable within 40 years from the date of the first disbursement under the loan, including a grace period of 10 years.

India: Central ropeway F project.—The borrower is the Government of India. The loan, not to exceed $7,700,000, is repayable in U.S. dollars and requires payment of a credit fee of three-quarters of 1 percent per annum. It is repayable within 40 years from the date of the first disbursement under the loan, including a grace period of 10 years.

Mr. WATERS. The Turkish Zonguldak Coal Mines loan for $14,500,000 was made in fiscal year 1959 and final commitments should be made by the end of fiscal year 1964. Funds were for engineering-advisory services, mine equipment, spare parts, and some surface facilities. The objective is to place the various mines in position to maintain a sustained production of 7 million tons of run-of-mine coal per year despite increasing mining depths. The original production rate was approximately 6,500,000 tons per year.

The Turkish aerial mineral survey loan for $900,000 was also made in fiscal year 1959 and the project has been completed. It consisted of an aerial magnetometer and radiometric survey of 130,500 square kilometers of selected area and resulted in complete magnetic and radiometric contour maps, an interpretive report pointing out the most interesting anomalies and subsequently, rather extensive followup by ground parties. At least one (possibly more) worthwhile discovery of a magnetic iron ore deposit has already resulted from this survey.

The Indian Patherdih Coal Washery loan for $4,200,000 was made in fiscal year 1962 and is in process of implementation. Funds are for a complete coal washing plant. The objective is to treat 2 million metric tons of metallurgical coal from the Jharia field per year for the use of steel industry.

The Indian Central Ropeway F project loan for $7,700,000 was made in the first half of fiscal year 1963 and implementation is in the early stages. Funds are for procuring and installing twin ropeways with a combined capacity of 3 million tons of sand per year over a distance of 12 miles or more. The sand is to be used for stowing in old coal mines of the Jharia field so the pillars can be extracted. The project is expected to add 1,500,000 tons of metallurgical coal per year to Indian production.

While the new Turkish steel mill at Eregli, partially financed by AID, has not been included as one of the development loans in the minerals field, the mill will eventually require approximately 800,000 tons of high grade iron ore per year and has taken steps to encourage the private iron ore producers of Turkey to expand and develop their mines for long-range production.

Activities financed by grant funds were limited in Ceylon, Egypt, Greece, India, Iran, Israel, Jordan, Lebanon, and Nepal to technical assistance in the form of participant training, some exploratory and demonstration equipment, and advisory services for geological surveys, diamond drilling and other exploratory operations, and improvement of host country geological and mining organizations.

In Afghanistan expansion of coal production involved the usual technical assistance as well as procurement of a considerable amount of mining equipment, trucks, and repair facilities. The result has been the increase of coal production from 10,000 tons per year to 30,000 tons, with a goal of 100,000 tons.

The Pakistan program consisted of two principal projects: (*a*) providing sufficient equipment, tools, and supplies to enable the Makarwal coal mines to attain a sustained production rate of 900 tons per day and (*b*) providing laboratory equipment and advisory personnel for establishment of mining and geological bureaus similar to those in the United States. The training schedule is expected to extend to the end of fiscal year 1966.

In Turkey, equipment and contract advisory services were provided from fiscal year 1956 to 1959 to improve the operations at the Zonguldak coal mines and draw up plans for the future. Equipment and commodities were provided for development of the western lignite mines. For minerals other than coal, funds were provided for expansion of the Murgul copper mine and related facilities. Also, the bureau of geology and, later, the mining assistance commission were built up to assist private mineowners in developing their properties and marketing their products.

The attached table No. 4 is a summary of the Near East and south Asia minerals program for the period under discussion.

(The table referred to follows:)

TABLE 4.—*Near East–South Asia region (fiscal year 1956 through 1st half of fiscal year 1963)*

Country	Programs	Fiscal years	Dollars
Afghanistan	Mineral resources and coal production	;1956–63	2,173,000
Ceylon	Minerals exploration	1957–61	129,000
Egypt	Mining and mineral resources development	1956–57	81,000
Greece	Technical training in minerals	1956–57	27,000
India	Lignite and coal development	1956–62	548,000
	Minerals development and geological survey	1956–61	830,00
Iran	Mineral resources survey	1956–63	260,000
Israel	Minerals development and metallurgy	1956–62	531,000
Jordan	Dead Sea mineral resources	1956 only	51,000
Lebanon	Mineral survey	1956 only	30,000
Nepal	Mineral resources development	1956–63	625,000
Pakistan	Coal development (Makarwal)	1956–57	1,095,000
	Bureau of Mines and Geological Survey	1956–63	2,134,000
Turkey	Coal development (Zonguldak and Western lignite).	1956–59	1,556,000
	Other mineral development	1956–63	1,650,000
Development loans:			
Jordan	Phosphate mines	1959	1,500,000
Turkey	Zonguldak coal mines	1959	14,500,000
Turkey	Aerial mineral survey	1959	900,000
India	Patherdih coal washery	1962	4,200,000
India	Central Ropeway F project	1963	7,700,000
Total			28,800,000
Total, coal projects			29,599,000
Total, noncoal projects.			10,921,000
Total, Near East and south Asia.			40,520,000

Senator GRUENING. Let me ask a question. When you assist private mineowners, how is that done? Do you just give them this money, or do you make them a loan?

Mr. WATERS. Mr. Chairman, in building up institutions within the Government of Turkey or within Turkey itself to provide advisory technical assistance, it is not money transferred to private owners.

Africa-Europe region: No development loans were made in the minerals field in this region during the period under discussion.

Grant funds were obligated in seven African countries to finance geological surveys, participant training, laboratory and scientific equipment, and preliminary evaluation of mineral deposits.

Senator GRUENING. Would you be kind enough to supply for the record the names of those countries and the amount?

Mr. WATERS. Yes, they are in a table at the end of this portion, Mr. Chairman.

An aerial magnetometer and radiometric survey was made in Ghana which covered 1,800 square miles. The resulting maps, interpretations, and recommendations form the basis for current and future ground surveys.

In Libya, equipment was provided for a chemical laboratory for analysis of mineral samples. Organizations and initial direction were provided by U.S. technicians.

Spain and Yugoslavia were the only European recipients of grant funds for mineral projects. In these countries primary emphasis was placed on projects for improving mining methods and quality of output. Technical assistance was provided in the form of participant training in the United States and on-the-job training in the host country, equipment of demonstration pilot plants for ore treatment, and general advisory services for modernizing the mining industry. In Spain the work was concentrated on procurement of necessary laboratory equipment and improvement of productivity in coal, lead, and iron mines. In Yugoslavia assistance was provided in methods of mining and/or processing asbestos, chromite, magnesite, cement materials, iron ore, coal and lignite.

The attached table No. 5 is a summary of the Africa-Europe minerals program for the period under consideration.

(The tables 5 and 6 referred to follow:)

TABLE 5.—*Africa-Europe region (fiscal year 1956 through 1st half fiscal year 9631)*

Country	Program	Fiscal years	Dollars
Ghana	Geological Survey Project	1958-59	187,000
Liberia	Mining and Geology	1956-57	53,000
Libya	Minerals Investigation	1957-62	333,000
Overseas territories:			
Somalia	Minerals Survey	1956	485,000
Southern Rhodesia	Metallurgical Chemistry	1957	3,000
Uganda	Wolfram Mining	1958	16,000
Malagasy Republic	Minerals Survey	1961-62	21,000
Spain	Laboratory Equip. and Mining Studies	1956-60	260,000
Yugoslavia	Coal Development	1959-62	1,094,000
	Other Mineral Development	1956-62	1,031,000
Development loans			None
Total coal projects			1,094,000
Total, noncoal projects			2,389,000
Total, Africa-Europe			3,483,000

TABLE 6.—*Investment guaranties, minerals*

Country and investor	Purpose	Date issued	Face amount (thousands)		
			Convertibility	Expropriation	Total
1. Bolivia:					
Sonoma Quicksilver Mines, Inc.	Tungsten mining	Nov. 27, 1962	$300	$300	$600
South American Placers, Inc.	Gold dredging	June 20, 1958		3,000	3,000
2. Greece:					
Dresser Industries	Barite-bentonite	June 14, 1957	250	250	500
Do	Barite mining	do	595	595	1,190
R. J. Noble Co	Sand and gravel	Mar. 30, 1959	200	200	400
3. Guinea:					
Olin Mathieson Chemical Corp	Bauxite and alumina	Sept. 25, 1958		32,000	32,000
Omaf Corp	do	do		40,000	40,000
4. Haiti: Continental Copper & Steel Industries Inc.	Copper mining and exploitation.	Aug. 30, 1961	1,770	1,340	3,110
5. Iran:					
Dresser Industries	Barite mining and processing.	Aug. 23, 1960	425	425	850
Philipp Bros	Chrome mining and marketing.	Sept. 30, 1960	523	522	1,045
6. Liberia:					
Bankers International Financing Co., Inc.	Iron ore mining	Oct. 17, 1962		2,621	2,621
First National City Bank	do	do		2,621	2,621
Do	Iron exploitation	May 31, 1961		6,042	6,042
Raymond International	Construction equipment.	Apr. 25, 1962		7,180	7,180
7. Ghana: VALCO (all-risk issued by the Development Loan Fund).	Alumina reduction	Aug. 31, 1961			54,000
Total			4,063	97,096	155,159

Mr. WATERS. This ends my formal statement, Mr. Chairman. I have just three points that I would like to comment on briefly that might be helpful in putting this in context of the general levels of our AID program. I think the first point is that the activities I have reviewed amount to some $77 million over a 7½-year period. More than half of it was for coal development for use in the recipient countries themselves.

More than half of it was for technical assistance rather than capital improvement. Compared with this, however, the bulk of our foreign assistance money is creating a market for American metals that have a vital effect on the mineral producers of this country—80 percent of our AID funds in fiscal 1963 will be obligated for expenditure in the United States.

Out of that amount in fiscal 1963, over $900 million will be for the purchase of hard goods, either raw materials or metals and equipment manufacturing for metals which we feel produces a significant market financed with foreign aid funds for the American mineral industry.

So I do hope that both the committee and the American mining industry will take into account in evaluating what we are investing overseas what we are also investing in greater and much more substantial amounts in creating a new market for this country.

The other point is that it is my conviction that by raising the living standards in these underdeveloped areas of the world with our total programs we are creating new worldwide disappearance of minerals. We are creating a new total market for world consumption of minerals and metals.

I think much of the future potential market of the world is going to be in these areas where the great mass populations of the world lack purchasing power. Looking down the road this may be part of our problems that our own domestic industries need to be concerned about.

The third point is that even if we as our own country stop any support of the technical assistance to the mineral development of these other countries, it would not necesarily mean an expanding market for American minerals and mineral products.

We must be concerned in many of these areas with the Soviet bloc penetration. In many of these countries it might be a judgment it is far better in our interest to have the recipient countries to produce some of their own raw materials rather than possibly become dependent on Soviet bloc sources.

Because of the fact of the state trading pattern and the political pricing of the Soviet bloc makes it very difficult at times for the American industry to compete. Thank you very much, Mr. Chairman.

Senator GRUENING. Thank you very much, Mr. Waters. I appreciate your testimony. It has been very complete and very detailed. I think the only thing we would like to request is the details on all these development costs.

Mr. WATERS. I would be very happy to provide it.

Senator GRUENING. Perhaps we should fix the date by the end of next week.

Mr. WATERS. Yes, sir.

Senator GRUENING. Thank you very much.

Mr. WATERS. Thank you, sir.

Senator GRUENING. Now, it seems we have passed the lunch hour. I understand you are going abroad, Mr. Waters.

Mr. WATERS. I am going to Rome. We have a meeting of the world food program in Rome.

Senator GRUENING. If it is convenient, I think we better continue this afternoon at perhaps 2:30. Dr. Boyd, I understand, will be available. Then we will conclude our hearings, if possible, tomorrow morning.

I am informed I have a delegation meeting at 3:30. Let us meet at 2.

(Whereupon, at 12:30 p.m. the subcommittee was adjourned, to reconvene at 2 p.m. the same day.)

AFTERNOON SESSION

(The subcommittee reconvened at 2 p.m., Senator Ernest Gruening, chairman of the subcommittee, presiding.)

Senator GRUENING. The committee will please be in order.

Mr. Palmer, executive vice president, Colorado Mining Association, will be our next witness.

You may develop what you have to say in whatever way you think best.

STATEMENT OF ROBERT S. PALMER, EXECUTIVE VICE PRESIDENT, COLORADO MINING ASSOCIATION

Mr. PALMER. Mr. Chairman, my name is Robert S. Palmer, and I am executive vice president of the Colorado Mining Association, which incidentally is, I believe, the oldest organized mining group in the country.

It is a great pleasure for me to testify before this committee with the chairman. I enjoyed my trip to Alaska very much.

Senator GRUENING. I never knew anyone who did not.

Mr. PALMER. And had many pleasant days there.

May I say that I wish to assure the chairman that I met with all of the mining officials of the State that I represent just before leaving Denver, and I am sure that I voice their sentiments when I say that we appreciate the statement made by our senior Senator this morning and share his views.

We are delighted to see our junior Senator, Senator Dominick, making such rapid progress in the Senate as he did in the House. We are very happy that our delegation are as vitally concerned with the revival of the basic industry of our State as is the chairman of the House committee, Congressman Aspinall, whom we admire and respect very much.

Colorado has made a significant contribution to the advancement of our national economic well-being through the production from mines, quarries, and wells of more than $6 billion in new mineral wealth. Of this wealth about one-half is from metals, one-third from coal, petroleum, natural gas and one-sixth from the construction materials and nonmetallic mineral products.

This $6 billion represents values of the materials as they came from the ground. It does not account for the increase of values on fabrication nor the enormous growth income produced by any commodity, as the money paid for it in all stages of production and use is passed from hand to hand.

The mineral industry laid the foundation for Colorado's growth and in our opinion is still and will continue to be a cornerstone of the State's economy.

Of this wealth, nearly $4 billion worth came from minerals other than those generally referred to as hydrocarbons. Except for native gold in the rock-forming minerals that comprise construction materials, most of the minerals as such are destroyed soon after they enter the stream of industry. But this does not destroy the fact that they are of enormous economic importance to the well-being of the American people.

Now all minerals known to exist in Colorado have as yet determined economic value. But those listed with production records are commonly considered to be ore minerals and have contributed directly to the State's and the Nation's mineral production to a considerable degree.

There are known to exist within the State's boundaries more than 200 minerals with some degree of economic importance. It is only possible at this time to speculate on the relative abundance of minerals that have yet to be produced in the State.

Here may I interpose the opinion of Mr. Hayes of the New Jersey Zinc Co. on a point that was brought out in the testimony this morning by Senator Dominick. Had the same rules prevailed by the Bureau of Land Management when the Great Climax Molybdenum Co. which produces about 85 percent of the molybdenum was being developed, it is doubtful whether the locations would have been recognized as valid.

It is highly important to the future growth and the economic well-being of the Western part of the United States, in our opinion, that we have access to these mineral reserves, any of which are yet to be discovered. The best reference book including maps of identification on the location of these minerals in Colorado is that fine study made under the direction of Edwin B. Eccle of the U.S. Geological Survey, entitled "Minerals of Colorado, A Hundred Year Record."

In this remarkably fine factual study it is shown that during the past 100 years Colorado has given 42 new or type minerals to the science of mineralogy. More than 400 mineral species have been found in Colorado. The detailed study shows the localities in which these various mineral substances are found.

I am sure that this study is available to the committee. Mineralogical exposures in our area and their studies are, we believe, of major importance to the future growth and advancement of the United States. A neglect of these studies by present generations would in my opinion have a tragic effect upon future generations.

Mining's importance as a basic industry has been emphasized in many hearings before this committee. Total reliance upon foreign production of minerals to maintain our economy in the metallic age has been consistently declared by the Congress to be contrary to the best interests of our national defense and future security.

History has proven beyond all doubt the fallacy of total reliance upon outside production. Here, Mr. Chairman, with your permission I would like to call your attention to the tendency in foreign areas of requiring 51 percent of the stock interest in companies to be held by local citizens. This deprives American citizens of control of production. If my mathematics are correct, 51-percent ownership of the stock entitles those owning that percentage to elect the board of directors and determine policy.

I think there is a dangerous development taking place in many of these foreign countries where formerly American companies were able to use good judgment in directing policy.

In numerous legislative measures it has been declared as a policy of the Federal Government that in the national interest we should avoid a total dependence upon foreign sources for our supply of minerals. Any other policy would be contrary to sound judgment.

Of the greatest importance to our national security is a sound, healthy, and functioning mining industry, equipped and ready to deliver the minerals necessary for our economic growth and any possible emergency which may arise. The deplorable plight of our gold industry can be illustrated by the following figures of production.

From a production record of $13 million-plus in 1941 to a preliminary figure of $1,708,000 in 1962. Silver, from a $5 million-plus figure or 7,301,697 fine ounces to $1,817,000 or 1,000,965 ounces in 1961. A slight increase to 2,026,000 ounces with a preliminary estimated value of $2,168,000 is reported for 1962.

Copper, of course, is not of major importance as yet in Colorado. But copper production fell from 13,496,000 pounds in 1941 with an estimated value of $1,592,522, to approximately 9 million pounds in 1962.

Lead production calculated in pounds fell from 60,672,000 pounds in 1951 with a value of $10.5 million to an estimated 33,570,000 pounds in 1962 valued at $3,088,000.

I will show later, Mr. Chairman, that the values credited to the production of lead and zinc in Colorado are not true values. They are weighted averages issued by the U.S. Bureau of Mines and do not represent the actual income received by the miners.

In like manner zinc production fell from 111,428,000 pounds in 1951 to 86,130,000 pounds in 1962, a difference of approximately $11 million in value. We asked the question, how can any reasonable person belittle these impressive figures—and yet in a recent report in my own State a prophecy is made:

> As a consequence the mining of base and precious metals in Colorado can be expected to decline still further.

With the ridiculous addenda "unless the economic climate for these types of mining activity can be significantly improved through changes in State policies." The welfare of the mineral industry is not determined, as experienced men of industry well know, in State capitals, but on a national and international level.

The only thing that State governments can do is to place heavier, burdens upon producers or lighten these burdens, but to suggest that the mining industry be exempted entirely from taxation is in my judgment unrealistic.

The mining industry in the past has been called upon to maintain communities, to contribute a major share of the tax base, and to employ most of the labor, including those engaged in secondary industrial pursuits vital to the mining industry.

Our industry provides markets for farm and ranch products, manufactured items, power and transportation facilities, professional services and all other items so vital to a healthy economy. My experience with mining people is that we want to pay our rightful share of taxes and it is generally conceded that the Federal laws and Colorado State laws are well designed and properly executed with few exceptions to help mineral production in the United States. We are, however, subjected to severe competition from abroad. Much of this competition has been stimulated and encouraged by international programs well known to the members of this committee.

May I commend the chairman for his interrogation regarding the amounts of money that have been expended by various international agencies financed by the American taxpayer in promoting and developing competition in mining from abroad. Upon the recommendation of one of the former chairmen of this committee, I had an opportunity to go into this matter a little at one time, and I think it is a very interesting field of investigation.

I would like wholeheartedly to suggest that some of the past records of some of these international agencies be thoroughly examined and the expenditures of money involved be published.

One fact should be emphasized here and that is that should we be able to produce metals at a competitive cost with foreign production in my State, we would still be faced with the competitive factor of low cost subsidized water transportation from other producing centers.

Here are our recommendations:

(1) This is based upon the theory that under the Reorganization Act of the Congress that the Congress have an adequate staff to make its own investigations independent of executive agencies.

That the Congress authorize an analytical study showing the comparable costs of foreign producers in transporting metals to markets compared with those in the various producing centers of the United States; that this study include the comparable rates charged by railroads as compared with similar rates charged by water transportation companies.

Not included in the study, of course, would be the costs of maintaining the Navy, charged with the responsibility of protecting our foreign sources of supply en route to the United States.

(2) It is respectfully recommended that the Congress make a project study of the cost per pound of metal of production in the various mining districts in the United States, and that this cost study include mines of different sizes and categories—that these costs be compared with costs of similar production in those areas largely responsible for heavy imports of metals and nonmetallics to the United States.

(3) That a comprehensive study be made of the social advantages realized by workers in those countries supplying our major sources of raw materials.

To illustrate, do they have ton-mile taxes placed upon their trucking companies? Do their freight rates to ports compare with ours? How about their costs of electric power and other types of power?

What are the other comparable social advantages, such as portal-to-portal legislation, time and a half, double time, wage and hour legislation, social security and sales taxes and the numerous other fringe benefits which have been imposed upon the domestic mining industry, many times with the industry's approval, but which have not been imposed on foreign countries?

(4) That the geological studies of our vast mineralized areas be increased so that America's vast mineral storehouses will be more carefully determined. This is in line, I believe, with Governor's pro-

gram in Colorado of making a complete inventory of our mineral resources at the earliest possible date.

In other words, what we are trying to say, Mr. Chairman, is that if we could compete on an equal basis with foreign producers, we are perfectly willing to invite the competition. The terrific economic loss which has been suffered by American mines, American workmen, stockholders, the losses to secondary industries and the effect upon the mining communities of such losses in various parts of the United States are so tragic that they should attract the immediate attention of the Congress.

The stimulation of our industry within the United States directed toward the principle of fair competition from abroad similar to that competition required by administrative agencies of the Common Market is in line with the recommendations made by the industry to the Congress and includes proper protection for American workers and industrial growth.

These recommendations were adopted by our association at its recent meeting and include recommendations of other associations working in cooperation with us, including the National Emergency Lead and Zinc Committee.

We have appreciated greatly the understanding and fine work of the Atomic Energy Commission in the field of uranium production, and it should be emphasized that when profitable operations are encouraged, the mining industry of this country responds in a reputable fashion and delivers the material which many sceptics claimed "was not available." Surely the industry has arisen in times of need to the demands of our people and of our country.

We have here an exhibit, entitled exhibit A, of the number of operations in selected segments of the Colorado mining industry in 1961. It is a sorry picture to most of us who have known the industry when it has been at its best. It is most disheartening and should be improved at the earliest possible date.

EXHIBIT A.—*Number of operations in selected segments of the Colorado mineral industry in 1961* [1]

Commodity group	Number of operations conducting exploration and development or assessment work only (no recorded production)	Total value of product or products [2]			
		$1 to $10,000	$10,001 to $50,000	$50,001 to $100,000	$100,001 and above
Gold, silver, copper, lead, zinc:					
Lode	123	36	13	2	7
Placer	4	[3] 19			
Uranium-vanadium	50	96	20	9	18
Selected nonmetallics: clay, fluorspar, gypsum, perlite, pumice, beryl, feldspar, and mica	23	23	32	9	2
Molybdenum (includes tin and tungsten byproducts)	1				1
Iron ore (for steel and for pigments)		2	1	1	
Total	201	176	66	21	28

[1] Excludes sand and gravel, stone, gem stones, cement, lime, salt, pyrite, and fuels operations.

[2] Gold, silver, copper, lead, zinc: Total value of recoverable metal or metals f.o.b. smelter. Uranium-vanadium: Total value of uranium ore (including allowance for vanadium content) paid to shipper. Selected nonmetallics: Total value of material sold or used. Molybdenum and iron ore: Total value of material shipped.

[3] Includes 11 sand and gravel washing plant operations where gold and silver were recovered as byproducts.

In addition to the studies herein recommended on a national level, it is respectfully suggested that we are living in a rapidly changing era. Scientific advancements are progressing at a rapid rate, and these include many in the fields of chemistry and metallurgy.

Are we witnessing a change in the methods of marketing our metals in this country? With the western movement of population, will the demands for treatment plants designed upon a modern basis be required? In all sincerity we ask the question, will Connecticut Valley points eventually be abandoned as a basis of fixing metal prices?

The coal industry has done much in many sections to solve its problems. The metal mining industry, at least the segment largely contributing to the economy of Colorado, is in no financial position to carry out the programs here suggested for the eventual revival of the basic industry of the Nation. Those who appear before your committee as pessimists are not true miners.

In our opinion professors should teach their students efficient ways of operating mines and saving costs, but their lack of understanding of the practical phases of the industry should not be portrayed in costly reports such as the Paley report mentioned this morning and recent reports unfortunately released in Colorado.

We are on our way to greater achievement in the mining industry. It cannot be otherwise. We did not share in the stockpiling program with few exceptions, nor can we be blamed for any of the alleged effects of that program. We agree wholeheartedly with the assertion that any proposed releases of minerals from the stockpile without congressional approval would be detrimental to the future improvement of our industry.

Surely these supplies of metals and minerals are an investment in the future of our country. Some international companies were benefiting while this program was in progress, but they were cooperating with the Federal Government in doing so.

It was the domestic miner who suffered. The man who employed the American worker and paid the American taxes. We have been negligent in our attention to the requirements of the individual small operators. These are the fellows who primarily built the uranium industry at a time when uranium was vital to our safety and security.

These are the fellows who risked their all, their lives, their savings, and their future to search out and develop the mineral resources of this country.

They are the same type of people who have made other countries rich in natural resources, and I refer particularly to Canada with which I am reasonably familiar. Thousands of these men are friends of mine, both in the United States and Canada and I regret Uncle Sam has given them so little attention.

The exploration allowance in the tax act is a beginning. There is no better incentive in the Dominion Tax Act of Canada regardless of assertions to the contrary. May we emphasize that children are expensive to raise. We spend great sums of money on educational facilities in raising our children to maturity.

But, with the exception of the uranium program we have not done so with our small miners. The little mine of yesterday is the big mine of today. These strong-hearted individuals who have the courage to go out and develop these mines should receive special incentives from their Government if the Nation is to grow and prosper in the future mineralwise.

In conclusion, may I present a final exhibit (exhibit B) showing costs as related by one small operator in Colorado. The ore body—and I have samples of it to distribute to members of the committee if I may have that permission.

Senator GRUENING. The opportunity is furnished.

EXHIBIT B.—*Current profit and cost data for a 150-ton-per-day lead-zinc mine*

[Average per ton of ore, weighted average]

COST DATA PER TON

	Amount	Percent
Smelter treatment charges	$12.25	40.1
Hauling and freight to smelter	3.60	10.8
Mine royalty payment	1.25	3.7
Mining costs:		
Direct labor [1]	7.00	22.8
Material, supplies, and services	1.20	3.9
Maintenance	.85	2.8
Equipment depreciation	.10	.4
Utilities	.26	1.0
Supervision and engineering	.50	1.6
Total mining	9.91	32.5
Milling costs:		
Direct labor [1]	.90	2.9
Material, supplies, and services	.50	1.7
Maintenance	.65	2.2
Equipment depreciation	.20	.6
Utilities	.27	1.0
Supervision	.20	.6
Total milling	2.72	9.0
General and administrative	1.10	3.9
Total operating costs	30.83	100.0

PROFIT AT COMBINED LEAD-ZINC METAL PRICES

	19 cents	21 cents	23 cents	25 cents
Gross ore value per ton	29.75	32.00	34.40	37.40
Total cost per ton	30.83	30.83	30.83	30.83
Profit (or loss) per ton	(1.08)	1.17	3.57	6.57

[1] Average full cost per man-hour: $3.42.

Mr. PALMER. The ore body being mined by this small company is much higher in grade than the average, and no conclusion should be drawn from the figures indicated that it is representative of the average. But, it is presented here to show the committee the cost conditions which prevail in Colorado. We in Colorado are determined to revive and rebuild the industry as indicated by the action taken at the National Western Mining Conference recently held in Denver. We will cooperate with the Federal Government to the utmost.

You will note the figures in the statement marked "Exhibit B" of the costs of mining, smelting, and refining at present in Colorado.

It is interesting to note that better than 40 percent of the cost is for smelter treatment charges. This is why we are recommending

98-989—63——6

that your committee give some attention to cost studies and distribution of costs of metals produced within the United States.

We believe, with modern developments in other fields of activity, that there will be many new and revolutionary developments in the mining industry and in metallurgy in the treatment of ores and concentrates.

Just before leaving Denver, I was advised by one of the companies that some shipments of concentrates are sent to Tacoma, Wash., from Denver before being sent back across the country to Connecticut Valley points and all of these costs are paid by the producer. This hardly seems fair as far as we are concerned, but we have no smelter at the present time in Colorado.

We appreciate the courtesy of your invitation to be present, and I particularly appreciate the opportunity to appear before you.

Senator GRUENING. Thank you very much, Mr. Palmer.

Speaking for myself, I would say that I heartily share the expression of your views. I think the determination of the people of Colorado to build a mining industry should apply to all the States where there is mining. It is my hope that this subcommittee and the full committee can be useful in trying to achieve that purpose.

That is what we are here for. I hope we will be successful. I notice your allusion to what I have referred to at various times on the floor of the Senate as a double standard by which we do all kinds of beneficial acts for mining in foreign countries, but, for some reason or other, do not apply the same beneficial measures to the domestic industry.

Personally, I think that is all wrong. I am old fashioned enough to believe that not charity but legitimate help should begin at home. I am hopeful that we can continue to focus attention upon that situation and try to get it changed. I am very much distressed to see how much of our taxpayers' dollars go to build up mining in foreign countries, but the same effort seems to be difficult to obtain at home.

I am hopeful that this committee can come up with some specific recommendations which can be enacted into law or regulations that would change that situation. Many of these aids are needed here. They are needed just as much, if not more, than abroad.

I hope we can come up with something that will change that situation.

Senator Dominick.

Senator DOMINICK. Mr. Chairman, before I speak to my good friend, Bob Palmer, I do want to tell the chairman that I have had the great pleasure of being in Alaska myself on two occasions, and I have been an admirer of your area and your State. It is a great spot. I hope to be back there.

I do remember the chairman, in the process of another hearing, suggesting that perhaps it would be a good idea for the island of Guam to secede, thereby getting foreign aid, and I suggest that perhaps this is something that the metal industry might think about, to secede from the United States and get aid for the mining industry.

I must say I do not see how we can get it immediately unless we put it in that context somewhere along the line. I appreciate Mr. Palmer's kind words about my progress in the Senate. I hope I do not progress as fast as I did in the House because I was out after a few years in the House. I was interested in his comments on the uranium activities of the AEC. Recently we have been informed, by one of my constituents in Colorado, that the present program of the AEC will put out of business, by 1965, the most efficient small independent company that there is with the highest grade ore body of any uranium mill in the country.

It seems to me that this is part of the problem that we have in the overall policy of the mining industry. You put in a program, or an administrative agency does, and the inevitable effect of it somewhere along the line is to actively harm people who are trying to do something in the metal industry. We did it in the uranium field where we promoted, deliberately, as a national effort, the amount of uranium that was needed, and that we hoped to get for very important national purposes. A great many Americans went into this field.

Now we are cutting down on American mining and milling in the uranium field while we are still retaining the Belgian Congo and the Canadian contracts for uranium. So we are in trouble even there. The policy changes. As we get enough, they say this is the end of the program. I am not quite sure what we can do about it, but I know the chairman and the members of this committee are going to be really pushing on whatever prospects do seem feasible.

I gather that you said that we no longer have any smelters in Colorado, Mr. Palmer.

Mr. PALMER. That is right.

Senator DOMINICK. Maybe I am wrong, but recently we had one reintroduced in the San Juan Basin?

Mr. PALMER. No.

Senator DOMINICK. Is this just a custom mill?

Mr. PALMER. They have reopened the old Shenandoah mill which was operated rather effectively by a very able mining man by the name of Charles Chase. There is also an investigation going on in that area as to the possibilities of using a new type British smelting facility which I understand will cost quite a substantial sum of money to install.

It is still based on pyrometallurgy, however, which may not be in line with modern developments.

Senator DOMINICK. This is one of the things I was going to ask you about. I know application has been made for assistance in pilot plant tests of that British system which would cover not only part of the San Juan area but also part of the front range areas.

I was going to ask you this, and I think it has a bearing. Have there been real technological improvements in mining and smelting methods within the U.S. mining industry within the last 15 years?

Mr. PALMER. Obviously the answer is "Yes." The detailed answer is a bit difficult, because I think you appreciate since you have had contact with the mining people that there are numerous people in the industry who have solutions to many difficult problems, some of whom have verious types of processes that they think will solve problems which are slightly fantastic.

But, it is true that in the chemical industry—processes have been developed which are available for the treatment of refractory ore bodies of the Rocky Mountain region. The problems involved, Senator, are largely marketing after you recover the metals. In other words, there are very difficult marketing procedures which are well established with sales organizations and so forth for the benefit of the users of metals.

But, it is the opinion of many of our people that the movement of population is west, and that some of these precedents will have to be broken and that new processes will have to be established, whether they are in the Middlewest, in the Colorado area or whether on the Pacific coast is a matter of study which may be made by various agencies, and perhaps the Federal Government.

Senator DOMINICK. Let me ask you this question, Mr. Palmer: Do you feel that it would be helpful if this committee should see if we could arrive at a method by which technological developments could be given incentives as opposed to exploration, or in addition to exploration?

Mr. PALMER. I think in addition to exploration. The exploration program is a most commendable program, but it is condemned by a great many people in the industry because they ask why explore and develop new ore bodies if you cannot sell the products after they are uncovered and developed.

Senator DOMINICK. This is why I wondered whether it might not be advisable for us to now concentrate on providing the necessary incentives so that any ore body that is discovered may be marketed more readily either by new concentration processes, new smelting processes, some method for cutting down on tonnage per purity of the ore and so on.

Mr. PALMER. Senator, I think you will find that if you were to call before your committee some of the leading representatives of chemical companies of the country and some of the leading research institute spokesmen that the testimony that could be presented could be descriptive of the new type of approach to the problem which is most complex and would be very helpful to your committee, provided, of course, that the companies are willing to release the information which I feel confident would be helpful.

Senator DOMINICK. Mr. Chairman, it just seems to me that perhaps this is one of the major problems that we face. That is, the ability to try to speed up technological improvements so that we can compete more efficiently even in our high-cost areas.

This is what I was getting at. I appreciate your testimony very much.

Mr. PALMER. Thank you, Senator.

Senator DOMINICK. It has been extremely able as usual.

Mr. PALMER. Thank you, Mr. Chairman.

Senator GRUENING. Senator Jordan.

Senator JORDAN. Mr. Chairman, I have no specific questions of Mr. Palmer. I did appreciate the part of his statement that I heard.

I should like to say to the chairman and my colleagues that I concur fully with your views, Mr. Chairman and those of my colleagues who have expressed themselves here as being concerned about the prospects for the mining industry. Coming from a State that relies heavily on the tax resources and economic resources of the mining industry, our people have felt the cost-price squeeze in no uncertain terms. It has been a very difficult thing for them to contend with. They cannot understand and I cannot understand and the view you expressed yourself that you cannot understand why we go all around the world trying to find people to help with their mining problems to compete with our own domestic producers. I sincerely hope that from our deliberations here there will be some recommendations for a policy for the Federal Government that will be constructive and forward looking and will move toward some beneficial results for our own people. Our people in the mining industry are called upon in times of grave emergency to produce to the utmost in every way that they can.

Yet, this industry is not one that is adapted for speedup overnight. You cannot turn it on and off. It has to be developed over a long time through research and exploration and all the technical improvements that are necessary to make them produce efficiently.

I do hope we can out of our deliberations come up with a good minerals policy.

Senator GRUENING. I think that is what we are here for. Thank you very much, Mr. Palmer.

Mr. PALMER. Thank you.

Senator GRUENING. We are going to continue this hearing. We will adjourn at 3:30 today and continue tomorrow at 10, and if you have any addenda we would be very happy to have them.

Thank you very much for your valuable testimony.

Senator GRUENING. Sam Williston, president of the American Quicksilver Institute, is our next witness.

STATEMENT OF SAMUEL WILLISTON, PRESIDENT, AMERICAN QUICKSILVER INSTITUTE, AND CHAIRMAN, STRATEGIC METALS COMMITTEE, AMERICAN MINING CONGRESS

Mr. WILLISTON. My name is S. H. Williston. I am executive vice president of Cordero Mining Co. I appreciate the opportunity to appear.

I speak as chairman of the strategic mineral committee of the American Mining Congress and as president of the American Quicksilver Institute.

If I may, I will give very briefly the situation of the various strategic metals in the United States, the present source of our strategic metal supplies, the cause of their domestic collapse, and the proposed methods of correction, together with my opinion as to the political expediency of those methods.

ANTIMONY

Byproduct primary antimony production in the United States provides approximately 5 percent of requirements. Much of our supply now comes from Mexico. Up until recently the rest of our supplies came largely from Bolivia and South Africa. In recent years increasing amounts reaching the European market, and hence our own, came through rather devious courses from China and Russia.

ASBESTOS

The Indian lands of Arizona provide the only Western Hemisphere source of low iron, long fiber, strategic grade chrysotile asbestos. Short fiber asbestos of the same quality, but not of the strategic grade, is now being mined extensively in California. Foreign supply of the strategic, long fiber grade is solely from transatlantic and transpacific sources.

CHROME

All Western Hemisphere chrome mining ceased in October of 1961. I might say at that time we were producing almost 15 percent of our requirements. Current supplies of chrome have been coming from Turkish and African sources, the latter operated in large part by American companies. Current marketing activities of Soviet Russia show every evidence of closing almost all African and Turkish chrome mines. We will then be dependent almost 100 percent on Russian material.

MANGANESE

U.S. manganese production makes up not more than 1 percent of our domestic requirements, primarily from the same operators and the same operations that produced the same amounts prior to World War II. At the height of production in the middle fifties it made up about 15 percent.

Current U.S. requirements are coming from Brazil, India, and other transoceanic nations. It would not be at all surprising if the Russians follow the same policy on manganese as they have followed on chrome.

I might say they followed that policy just before the Korean war.

MERCURY

The domestic mercury industry is still supplying something like 35 percent of American requirements. Consumption in this country has reached its all-time high. Prices are falling and the number of domestic mines has declined by 70 percent since 1958.

At the present time three mines supply over 90 percent of U.S. production. There is little or no exploration work, no development work, and little likelihood that all three of the remaining mines will be able to continue. The reported cause of the price weakness in London has to do with offers of mercury below the market from China and Russia.

COLUMBIUM AND TANTALUM

All columbium and tantalum mines in the United States are closed. While there is columbium production from Canada, major supplies are from overseas.

TUNGSTEN

One captive mine is in operation in the United States and it seems almost inconceivable that it can be operating at a profit. In addition, there is one mine producing byproduct tungsten. As a result of large stockpile supplies overhanging the market and a great excess of the world's productive capacity generated by U.S. Government demands during the Korean war, the world price of tungsten has collapsed, and if one were to take into account the depreciated value of currencies I would venture to guess that the world price for tungsten to be the lowest of the century.

To cap the climax, Iron Curtain tungsten is penetrating the European market and making a bad market situation even worse.

COBALT

U.S. production of cobalt has ceased. Present supplies come from Africa, with the major supply in the Congo. Another potential source is Cuba. There is some byproduct production but imports last year were 10 times the present stockpile.

CAUSE

In reviewing these individual strategic metals it is interesting to note that almost without exception they occur in metals which can be operated with a minimum amount of machinery and a maximum amount of hand labor. If we look at the countries from which these materials are imported we almost uniformly find that the source country is one of extremely low labor rates, thus, mica from India, with a wage rate of a few cents a day; chrome from Turkey, with a wage rate 50 cents a day; manganese from Brazil and India, again with very cheap wage rates; antimony from Bolivia and South Africa, again, areas of extremely low wage rates. Even mercury from Italy and Spain enjoys wage rates in Spain per day equivalent to wage rates per hour at U.S. mines.

It is self-evident that without appreciable tariff protection that U.S. operators cannot pay wage rates as much as 50 times that of their competitors and show a profit.

Senator DOMINICK. Mr. Chairman, may I interrupt for one question?

Do I understand that there are U.S. supplies of these minerals available if we could do it on a profitable basis?

Mr. WILLISTON. Yes, almost all of these.

For example, in chrome, the chrome which came out of California and Oregon was premium grade chrome equivalent in quality to that of Turkey and superior to the African stuff which we mainly use in this country. The Montana chrome was slightly lower grade but usable.

CURE

There have been many suggested corrections for this situation. They have all been discussed at great length before this committee. I will merely itemize them together with their principal fault:

INCREASED TARIFF RATES

The Congress, the Republican Party and the Democratic Party believe that utopia can be obtained with free trade. My personal opinion is that there is not the slightest political possibility of attaining sufficient tariff protection to maintain a domestic strategic metal industry.

SUBSIDIES

The payment of subsidies to domestic metal miners could cure the problem but its political possibility is almost infinitesimally small. Any subsidy which calls for a congressional appropriation for funds gives no assurance of continuity to the miner beyond 1 year.

No responsible miner could even consider operating a mine under such circumstances. It is my opinion that no subsidy program could pass the Congress and be approved by the administration except in time of war, and even if it did so, no responsible miner of the current generation would open a property as the result of it. A new generation of miners will have to be born before such a program could show any success.

WOOL PLAN—SAN FRANCISCO PLAN

This method of meeting the problem has been advanced from time to time over the last 16 years. It is, in effect, a 10 percent tariff duty on imported strategic metals with the proceeds of the tariffs distributed to the producers of the same metals in proportion to their production.

It is better than a direct tariff program in that it does not require such high tariffs; it is better than a subsidy program in that there is some likelihood of the continuance of the program since it does not call for annual congressional appropriations. It is, in my opinion, the best of the proposed cures, but the political likelihood of it being adopted at any time in the near future seems infinitely small.

QUOTAS

The problems of the strategic metals can be solved by quotas but, to be effective the quotas must be precisely placed. If they are slightly large they are completely ineffective, and if they are slightly small they cause serious inconvenience to consumers due to shortages.

It is almost necessary that they be adjustable, and if they are adjustable it either involves bureaucratic or political control. There is little likelihood of political adoption of such a basic program and even less possibility of its effectiveness.

There have been other suggestions made but most of them are a modification or adaption of one of the above four, none, to my knowledge, is any better and some may be worse.

There is only one other occurence which I know of that might bring the strategic metal industry in this country back to life. It does not call for administrative action and does not call for congressional action.

It is, in my mind, probably unavoidable so long as national policies follow their present courses. This is a recognition of the inflation which we have already had in this country and a devaluation of the American dollar.

The present policy of the Government encouraging imports and encouraging labor increases in costs can only lead to more and more importation from abroad and less and less exportation from this country. Under these conditions unemployment will increase, the balance of payments must get progressively worse, and at some time, possibly in the not too distant future, the U.S. Government will be called on to live up to the promises of the Bretton Woods agreement and to pay off in gold the foreign dollar balance.

If it keeps faith with its written agreements all gold will leave the country. The American dollar will then be forced to find its own level as to its true worth among the currencies of the world.

If the U.S. Government repudiates its promises and embargoes the export of gold or devalues the dollar unilaterally it will likewise be off the international gold standard and the dollar will again be revalued by foreign nations in accordance with its true worth.

While a great many steps by the Treasury and by the Federal Reserve bank and by the administration have postponed this problem, nothing has been done to correct it.

A great deal of this postponement has been attained by secret agreements with foreign central banks, by secret agreements with the Bank of England in controlling the price on gold bullion market in London, by unpublished activities of the Federal Reserve bank and by State Department pressure on foreign nations: One, to repay their obligations, and two, that the U.S. Government would frown on any foreign country that tended to request gold payments for the paper dollars they own.

I would be greatly interested in the full disclosure of these activities, something which is, at the present time, so far as I know, completely unobtainable. When this time comes, and in my opinion it will come, the price of imported materials, including the strategics, will rise. The value in foreign currency of our manufactured products shipped abroad will fall. Possibly then we can go back to work.

If, on the other hand, we continue on the program which we now follow it can only lead to extensive unemployment, probably to the levels of the 1930's and a concurrent depression which will bring wage rates back to a competitive level.

I do not expect this to happen because any such depression would be political suicide for the party in power, and I have too much respect for the political sagacity of both the Congress and the administration that any such thing would be permitted to occur.

There is only one other matter I might suggest. This committee and other committees of Congress, over the years, have repeatedly requested that the administration, both Republican and Democratic, to decide on a mineral policy and publish it.

These requests have never resulted in any adequate response, but just because there is no published policy on minerals does not mean that our Government does not have a policy—it does—and if we are to interpret the activities of the Federal Government we can only conclude that the Government is not concerned whether there is any domestic mining for any metal.

Tariff reduction can destroy almost any industry; tariffs on metals are reduced.

Mining requires access to large areas of land for exploration; these land areas are denied them.

American miners need an American outlet for their production; the Federal Government buys its supplies when possible under barter from abroad.

Mines, when discovered on Government land, must be patented and patent procedures of the Department of the Interior are such as to almost preclude any patents whatsoever.

The policy has been effective. If I use as an example the State of California alone, statistics are available from official sources that indicate that something over 97 percent of the operating metal mines of California have closed within the last 20 years.

Under these conditions should the American miner continue to hope for better conditions in the United States or should he endeavor to go abroad where he might be welcomed while he still has the power to do so?

Thank you.

Senator GRUENING. Thank you very much, Mr. Williston, for your very useful testimony.

I am going to suggest to the Staff that it get from the State Department any facts bearing on the assistance given to foreign countries in the matter of mining or developing various minerals which Mr. Williston has mentioned such as antimony, asbestos, chrome, manganesse, mercury, tungsten, cobalt and so on.

Likewise it should communicate with the State Department on behalf of the subcommittee requesting information about the secret agreements to which Mr. Williston refers.

Mr. WILLISTON. That is U.S. Treasury agreement, not State Department.

Senator GRUENING. Thank you very much.

(Subsequently the following communication was submitted:)

THE SECRETARY OF THE TREASURY,
Washington, June 17, 1963.

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

DEAR MR. CHAIRMAN: This is in reference to your letter of May 28, in which you ask to be informed with respect to any treaties, agreements, or understandings bearing on the supply and price of gold.

As you are aware, the Bretton Woods Agreement Act committed the United States to certain obligations relative to gold as a member of the International Monetary Fund. Article 4, section 2, of the articles of agreement of the International Monetary Fund provides:

"The Fund shall prescribe a margin above and below par value for transactions in gold by members, and no member shall buy gold at a price above par value plus the prescribed margin or sell gold at a price below par value minus the prescribed margin."

The Fund has prescribed a margin of one-quarter of 1 percent plus actual or computed costs of melting, shipment, and custody, if any, or in the alternative, a margin of 1 percent to include all of these handling costs. Under this provision the United States has an obligation to the International Monetary Fund not to purchase gold at more or sell gold at less than $35, plus or minus the margin prescribed by the Fund under either alternative, unless the par value of the dollar should be changed. Under section 5 of the Bretton Woods Agreement Act (22 U.S.C. 286c), approval of Congress is required for any such change in the par value of the dollar.

The United States has an agreement with the International Monetry Fund which gives the Fund the right to repurchase at $35 per ounce $800 million of gold which the Fund sold to the United States.

The United States does from time to time make gold purchase and resale or sale agreements with certain countries that involve variations in the handling charges on a temporary basis. These changes are made in conditions where the ordinary considerations giving rise to the handling charges are not relevant. Any such arrangements are made on an ad hoc basis and are not reflected in formal agreements or treaties that will affect either the supply or price of gold.

The United States meets regularly in Basle with representatives of a group of central banks. The meetings are informal and are for the purpose of consulting and when possible coordinating actions designed to counter undue speculation in gold. As a byproduct of these meetings, on a very careful, confidential basis, we exchange information as to gold and monetary operations, but there are no definite or continuing understandings or agreements except as to our continuing readiness to purchase and sell gold at the fixed price of $35 per ounce with recognized monetary authorities.

It has been a pleasure to assist you. If there is any additional information you desire I will gladly furnish it upon request.

Sincerely yours,

DOUGLAS DILLON.

Senator MECHEM. I was just hoping, Mr. Williston you were not reading me out of my party.

Mr. WILLISTON. No, I was entirely impartial. The overall policy on minerals unfortunately does not seem to be made at Department head level. It is made in the various and sundry bureaus a little lower than the top. I don't think it makes much difference who is the secretary of this, that, or the other.

The departments seem to go merely along generating policies that suit themselves.

Senator MECHEM. That is true at all levels of Government, is it not?

Mr. WILLISTON. Yes.

Senator MECHEM. I am one of those who does not believe that the word, "tariff" is obscene. You used the two words. You are not using them interchangeably, tariff and quota?

Mr. WILLISTON. No.

Senator MECHEM. Were you using them in the alternative?

Mr. WILLISTON. They were alternatives, yes. A tariff is a duty on imports. A quota is a fixed limitation on the amount of imports, but without regard to the amount of money that might be charged.

Senator MECHEM. Could you use a combination of both successfully or would it require one or the other?

Mr. WILLISTON. The difficulty with quotas, and I think it has been proven in the lead-zinc quotas, if you set a quota that is a little bit too high, the whole thing becomes ineffective because more than enough comes in to supply the market.

If you set a quota which is a little too low, then there is not enough domestic plus imported to take care of the market and the price gets a little bit out of hand. It requires a very precise judgment. It has to be changed from time to time.

I think you undoubtedly heard the lead-zinc people object seriously to the present quotas because they were set just a trifle too high, so they were not effective. That means that the setting of the quota is either set in advance and then it is fixed and not adjustable or if you make it adjustable you either put it in the hands of a bureaucrat who may or may not act correctly, or it may be subject to political pressure one way or the other.

Neither of those are desirable. It is an answer. It will do it. I won't say it won't do it. I say that it is difficult with the quotas.

Senator MECHEM. If you had a recommendation to make, though, I assume you would recommend tariff?

Mr. WILLISTON. Yes, I would prefer tariffs.

On the other hand for the strategics the possibility of getting tariffs high enough to protect some of the strategics is almost impossible. My only preference, if I have one, and I don't know that I do, is the 10-percent tariff with the proceeds of the tariff distributed to the producer.

It works out automatically in a very nice situation. It is a subsidy, and I don't like subsidies. It is a small tariff which may make it politically possible. But as production increases the tariff receipts are spread over more production.

Each producer gets less and it automatically stops about a third of the way up the line. If, on the other hand, the production is cut back, the tariff receipts are distributed on a smaller base of production, increases the subsidy and it is almost impossible to run an industry out of business. It has been suggested over the past years.

It was first suggested by Senator McCarran in 1948 with some 30 Senators on the bill. I don't know. It is one that has been suggested. It may have fewer objections than some of the others, not as to whether it will work or not, but whether it is possible to get it passed.

High tariffs are more difficult for anybody to get approval for in in the Senate and the House. Subsidies are extremely difficult. Maybe this one wouldn't be quite as hard. I don't know.

Senator MECHEM. Thank you, sir.

Mr. WILLISTON. My actual feeling is that none of these things are going to happen.

If I may say, I have been butting my head against stone walls in Washington for 23 years on this mineral program and I am getting pretty discouraged.

Senator GRUENING. Senator Jordan.

Senator JORDAN. Mr. Williston, this is a very strong statement you made here and I might add it has a lot of information in it.

Under your heading "Cure," you go down to the possibility of tariff rates or increased tariff rates, which you discount, and subsidies which you do not like, the 10-percent plan, the wool plan or San Francisco plan which you explained is your preference of those three methods. You do not like quotas. You think quotas are impossible to regulate properly.

Mr. WILLISTON. They are not impossible, but they are most difficult. If they are not done precisely right, they are completely ineffective.

Senator JORDAN. I appreciate that.

Then you say that there is only one other occurrence which I know of which might bring the strategic metal industry in this country back to life. It does not call for administrative action. It is in my mind probably unavoidable so long as national policies follow their present course. This is a recognition of the inflation which we have already had in this country and the devaluation of the American dollar.

You are not recommending that, but you think it is inevitable?

Mr. WILLISTON. The way policies are going at present, in my opinion it is inevitable and maybe unfortunately, but the opinions of a great many bankers of Europe are the same as mine.

We cannot go on forever with an ever-increasing imbalance in the international trade balance.

Senator JORDAN. I agree with you. I think that is entirely correct.

Mr. WILLISTON. A great many things or a great deal of effort in the last 2 years or the last 5 years has been put into postponing that recognition. But, there has been very little change in the actual figures.

In other words, it goes merrily on its way. It is not getting any better. Just a week or so ago there was a meeting in Portland of a Northwest group on gold. They had one of the most interesting meetings there that I have seen and heard in a long time.

They had representatives from Europe and from Africa. We gathered a fair degree of information from those people as to what the real feeling abroad was about the American dollar.

Senator JORDAN. I share your concern. I serve on the Joint Economic Committee and the balance of payments is one of the our studies that we are getting into and I do not know what is going to happen.

Mr. WILLISTON. Actually there is a great deal of fear, you might say, about a reevaluation. Personally, I do not feel that way. I do not think it would mean additional inflation. We have had the inflation. It is an acceptance of inflation we already have had.

The only prices which would have to rise are those which we must import. On the other hand, since the dollar would go down in foreign countries our exports would be increased in value.

Actually, it is my one hope as far as mining is concerned and in my own industry that I will live long enough to see it happen so I can go back to work.

Senator JORDAN. Are you suggesting that this present trend indicates that if we do not devalue our dollar, someone else will?

Mr. WILLISTON. It comes back to the Bretton Woods agreement. We promised under the Bretton Woods agreement to pay off American dollars held by foreign central banks in gold. Right now, if they asked to do it, we would not have enough.

Senator JORDAN. We would have about one-fourth of the amount.

Mr. WILLISTON. The Treasury has told, and I got this from foreign central bank sources, that they would frown on any foreign central bank that attempted to request gold for dollars.

Here is something I cannot prove, but I think I am right. I think a good many people are counting on going to the International Monetary Fund if the dollar gets into trouble. How do you know there are any foreign currencies in it. I am quite sure that the British have turned all the dollars they can back into the IMF and pulled down their own pounds. I am quite sure the French have done the same.

There is no criticism of that because that is secret, that is hidden. But, I would greatly wonder as to how much foreign currency the IMF has and how much of the reserves are in dollars.

If they are all in dollars they cannot possibly help the United States if we get into a currency jam.

Senator JORDAN. If they were genuinely worried in the foreign countries, do you think frowning on their actions would restrain them?

Mr. WILLISTON. To a degree until somebody starts. If you pull the plug out, I do not know what will happen. I think you might very well be in the same situation that Great Britain was when they devalued the pound. On the afternoon of the day they did, the Chancellor of the Exchequer said "we will not under any conditions devalue the pound," yet the notices to the banks were in the mail at the time the statement was made.

The Treasury will have to deny it. Up until 5 o'clock Saturday afternoon, and the repudiation will be accomplished Monday morning. It must.

Any advance notice would bring on the very rush they seek to avoid. When it comes, I do not know. They are either going to have to change policies rather drastically or it is coming.

Senator JORDAN. If it does, would you care to speculate where it might level off?

Mr. WILLISTON. It would be pure speculation on my part.

Senator JORDAN. Have you given it some thought?

Mr. WILLISTON. Yes.

I even went further. This is not particularly new to me. I testified before this committee in the spring of 1959 saying this was coming.

The Treasury denied it at that time. They admitted there was a problem in September. So, I have lived with it a long time.

It is a little interesting to note I have talked to the comptrollers of some of our major corporations in the east and asked them, what would you do if gold were embargoed tomorrow. They had no answer.

They do not know. Bankers do not know. Somebody is going to get caught out in the cold some of these days if it happens as I suspect it will.

Senator JORDAN. I agree.

I have no more questions.

(The following memorandum on quicksilver was transmitted to Senator Bible by Mr. Williston:)

QUICKSILVER MEMORANDUM

The Atomic Energy Commission has recently declared excess to their requirements some 50,000 flasks of mercury and turned this material over to the General Services Administration for disposal. This is a part of the AEC stocks of mercury which it has collected over the last 9 years.

While in 1953 the stockpile authorities professed there was no need of additional mercury for defense purposes, in 1954 the AEC requested that GSA acquire 170,000 flasks of mercury at the earliest possible moment. It is understood that AEC removed from the strategic defense stockpile approximately half of the total mercury in the stockpile. In addition, it contracted through barter for additional amounts of metal from foreign sources (Spain and Italy). Domestic producers were not even given a chance to bid on these requirements.

Industry estimates of total mercury in the hands of AEC would indicate they had something in excess of 225,000 flasks. How much of this material has been lost in processing is unknown but, if it follows general industry practice, an estimate of 25,000 flasks might be an educated guess. Thus, the AEC should still have at least 100,000, and possibly 150,000, flasks in its possession.

The 50,000 flasks declared excess represents almost a normal year's U.S. consumption. It represents 2½ years or more of current U.S. production. Total AEC stocks of 200,000 flasks is close to world consumption for 1 year.

In 1958, according to the U.S. Tariff Commission, 11 domestic mines supplied 90 percent of U.S. production. Today three mines represent over 95 percent of U.S. production, the other eight mines having closed due to steadily declining prices and steadily increasing costs. In the last 4 years production has dropped 50 percent.

An estimated 90 percent or more of the AEC mercury stock is of foreign origin and came into the United States without payment of duty. If any appreciable part of this 50,000 flasks is placed on the domestic market it can only result in declining price and very possibly the forced closure of all domestic mines. Even if it is not placed on the market the mere fact that it overhangs the market will almost certainly result in a reduction of domestic production by 25 percent, or possibly more. In any event, the net result of this surplus disposal will mean an abandonment of almost all exploration and development programs were such programs even being considered.

It is interesting and somewhat amusing to note that the Government is financing one of its largest mercury exploration programs in Alaska at the present time; one branch of the Government endeavoring to increase production of mercury while another branch of the Government, in effect, may well destroy the whole industry.

While California is and has been for almost 100 years the principal producer of mercury in the United States, Nevada, Alaska, Oregon, Idaho, and Texas have been important producers, and Arizona, Arkansas, and Washington have made some contribution to domestic production.

While disposals of strategic metal stockpiles and Defense Production Act stockpile requires congressional approval before such metals can be disposed of, surpluses of material excess to requirements already in the hands of other Government agencies can be disposed of under ordinary surplus property laws and regulations. Thus, if this material is not put back in the strategic stockpile by the AEC it hangs over the market and could be declared surplus and dumped on 24 hours' notice. Manifestly, no industry can continue under such conditions.

The American Quicksilver Institute estimates that probably not more than one mine could last as long as a year, and even this is somewhat problematical.

Over the period of the last several months the mercury market has been weak due to the threat of Russian and Chinese mercury shipments. The domestic industry, facing labor costs five times as high as 20 years ago and prices only two and a quarter times in that same period, has had extreme difficulty to continue under normal circumstances. This Government action in regard to mercury would seem almost inevitably to mean the end of the mercury industry.

The Tariff Commission reports of 1958 and 1962 give an excellent picture of the industry.

Senator GRUENING. I think Dr. Boyd has come into the room.

I understand he was detained. I am obligated to adjourn this meeting at 3:30 to meet a longstanding engagement.

I hope, Dr. Boyd, you will appear tomorrow morning.

We will recess until 10 o'clock tomorrow.

I will have an executive session after that to consider S. 164 but as long as there has been no announcement of the executive session, I think I will announce it now.

(Whereupon, at 3:30 p.m. the committee recessed to reconvene at 10 a.m., Friday, May 10, 1963.)

STATE OF THE MINERALS INDUSTRY

FRIDAY, MAY 10, 1963

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 recess at 10 a.m., in room 3110, New Senate Office Building, Senator Ernest Gruening (chairman of the subcommittee) presiding.

Present: Senators Ernest Gruening (Alaska), Frank Church (Idaho), E. L. Mecham (New Mexico), and Len B. Jordan (Idaho).

Senator GRUENING. The committee will please be in order. This is the third session of the meeting of the Subcommittee on Minerals, Materials, and Fuels.

It will be our pleasure this morning to hear from Dr. James Boyd, very distinguished expert in this field, now president of the Copper Range Co. of New York, and formerly a fellow bureaucrat.

STATEMENT OF DR. JAMES BOYD, PRESIDENT, COPPER RANGE CO. OF NEW YORK, ON BEHALF OF AMERICAN MINING CONGRESS

Dr. BOYD. Thank you, Mr. Chairman.

My name is James Boyd. I am president of the Copper Range Co., which operates copper mines on the Upper Peninsula of Michigan and rolling mills in Pittsburgh, Pa. After teaching geology for several years, I served during World War II in the Army as Chief of the Metals Branch of the Army and Navy Munitions Board and later as Assistant to the Director of Materiel of the Army Service Forces, where my principal function was to claim raw material allocations from the War Production Board to meet the requirements of the Army's production programs. I was Director of Industry in the Office of Military Government for Germany during the early stages of occupation, and later was assistant to the Secretary of the Interior when that Department was helping to develop the Marshal plan. For over 4 years I was Director of the U.S. Bureau of Mines and concurrently Defense Minerals Administrator during the Korean war. For 9 years I directed the exploration program for the Kennecott Copper Corp. before coming to Copper Range.

I am honored that you should invite me to appear before you today. It has been my privilege to appear before this committee on other occasions during my years in Washington, so I am aware of the complexity of the national problems facing it and the difficulty in coming to conclusions when many conflicting pieces of advice are offered.

98-989—63——7

COMPOSITION OF THE MINERAL INDUSTRIES

I am sure that this committee realizes as fully as I do that the minerals industries should be spoken of in the plural advisedly. There is really no such thing as the "minerals industry," although we have a tendency to speak of it as such. The fact is that we are talking about a number of industries, all having separate and distinct problems. In trying to legislate in this field, the Congress is faced with this difficult circumstance and this is one reason why there appears to be more than usual conflict. The table at the end of this testimony lists the separate industries included in this term in order of magnitude. There are, however, many things that all mineral industries have in common, and it is on these that I should like to dwell today.

THE HEALTH OF THE MINERAL INDUSTRIES

We hear from many sources that the mineral industry is sick. This is far from the case. This country is blessed with the largest collection of mineral industries in the world. Some of them are healthy and vigorous, but there are several vital segments of this complex which are experiencing very real difficulties. I should like to emphasize this point, for attempts to rectify the difficulties of some are hampered by a tendency to try to find solutions which apply to all segments of the industry at once. There are no such panaceas, and there is no simple solution to many of these problems. Most attempts at solution in recent years have temporized with the basic problem, and, therefore, have had only temporary effects, and sometimes they even have created more problems than they have solved. This must not deter us from isolating the problems and searching for solutions best suited to each of them. Not the least of these artificially created problems is the reduction of earnings among the mining companies to the point that capital is not being generated fast enough to meet the requirements which lie ahead.

THE PLACE OF THE MINERAL INDUSTRIES IN THE ECONOMY

The mineral industries in themselves contribute a substantial part of the national gross income, and directly affect every human endeavor in our great and complex industrial society. Without the products of these industires, not a single service could be performed in this country, nor a wheel of industry turned. So all pervasive are these products, that the present and future health of the industries producing them is of the deepest concern to everyone. A weakness in any link of this chain can spell dire results to the country as a whole; yet each one is so small a segment of the economy, with the exception of the petroleum, coal, and steel industries, that its voice is not heard very clearly in the halls of Congress nor even in the Executive. Except for the fuels, the individual consumer is hardly aware of the productive side of the industry; very few products are purchased from the mining industry directly. This is why those dealing with the problems of the extractive industries must act with greater than usual statesmanship, for hard decisions have to be made without immediate recognition of their impact by the public in general.

The great difficulties experienced by this country in finding the raw materials to meet demands over the past two decades have almost been forgotten in the past 2 or 3 years of small surpluses. To achieve the present levels of production, these industries have had to find deposits and create facilities at enormous cost; this has taken over 60 years. You have heard testimony from Resources for the Future which suggests the necessity of almost tripling the availability of these products over the next 40 years. Now that deposits are harder to find and the cost of creating facilities is many times greater, the immensity of the task should be evident.

FUNDAMENTAL ECONOMIC FACTS

Before isolating specific problems, I should like to focus your attention on some fundamentals which are sometimes forgotten in the heat of debate on questions in the mineral field. These fundamentals are not necessarily unique to the extractive industries, but most of them are particularly applicable to them.

THE ULTIMATE CONSUMER

The first and foremost fundamental is that the ultimate consumer is the boss. We have not reached a point in this country (and I hope we never shall) where anyone is told what he shall buy and how much of his substance shall be devoted to it—more simply, what price he shall pay. The consumer's decision is final. If he decides that he does not want a commodity at the price at which it is offered, nothing under our system can compel him to buy it.

THE PRODUCER

The second is the converse. If a would-be producer cannot extract and market a commodity profitably at the price the consumer is willing to pay, he cannot survive for long, and this price must consider the cost of replacing depleted assets and creating enough for the growing demand.

If we forget these principles in our deliberations, no solution to any problem can be effective for long. We all have to face the hard taskmaster of the marketplace; hence, every problem has its economic implications. Most minerals are sold on a world market and prices are strongly influenced by it. Even our decisions in the field of national defense have heavy economic overtones.

THE INFLUENCE OF GOVERNMENT ACTION

When the Government, for emergency reasons, interferes or intervenes in the marketplace, the normal relationships of the consumer and the producer are upset. The Government must, therefore, take appropriate action to offset its influence and cushion the shock of its original entry into the area.

LABOR RELATIONS

Management, ownership, and labor are inseparable partners in any successful enterprise of commercial nature. As long as ony one of these groups is permitted to dominate the partnership to the point of interference with its freedom to operate competitively within the markets, the enterprise is doomed to eventual failure. Where Government enters the picture by providing unbalanced regulation, it must act to reestablish equilibrium.

THE SPECIFIC ECONOMICS OF THE MINERALS INDUSTRIES

PERVASIVENESS

These fundamentals are common to all industry, but there are others that are more or less unique to the minerals industries. The first of these I have already mentioned—that the products of these industries are essential to all activities in our society, even those which seem to be purely service. A doctor without his instruments, a lawyer or writer without his typewriter, would be helpless today; the tools necessary to their professions are made of metals or other products of the earth. Therefore, their continued supply to reasonable cost is the sine qua non of our economic well-being and growth.

WASTING ASSETS AND NEED TO REPLACE

Mineral raw materials are wasting assets; they cannot be recreated. Once mined and used, they are gone forever. In some of these materials, such as copper, lead, zinc, and iron, which withstand the ravages of time and are not totally consumed, a varying proportion returns to the system as scrap. With these metals, this is an important consideration which, however, only modifies the basic principle. Hence, the discovery of new sources is a necessity of continually growing magnitude as the demand keeps pace with the growing economy. Most of the deposits which supply our present and immediate future requirements were discovered by comparatively simple methods, but the majority of the deposits that are amenable to simple detection have been found and are now in production, if economic. Our future material wealth, therefore, must come from deposits which can be discovered only by advanced methods of search and from locations of which we have little knowledge today.

LEADTIME

The discovery of a deposit and the creation of a facility for the exploitation of it are much longer and more costly procedures than the creation of a production unit for virtually any other industry. Because of this, the time between the realization of the need for a product and its fulfillment is much greater than for manufacturing industries. This is one of the reasons for the great fluctuations that the supply of raw materials has faced throughout modern economic history.

INFLUENCE OF GOVERNMENT ACTION ON MINERAL SUPPLY

For almost two decades following the beginning of World War II, the United States and, in fact, the world, was plagued by shortages of mineral raw materials. These were largely brought about by disruptions to normal growth arising from national emergency. Strenuous efforts by this committee and the Congress as a whole, the executive departments, and industry have overcome these shortages in almost all commodities. The stimulation of war demands, the reconstruction period, the stockpiling program, and a growing economy pyramided requirements to a level higher than normal peacetime demands. Productive capacity, developed at great effort and cost, temporarily exceeded normal demands so that now the problems in many segments of the mineral industry are those of overabundance of productive capacity but not in overabundance of ore reserves. Overcapacity will remain until the natural growth in demand catches up.

These disruptions to the normal pattern of development in industries that cannot be easily started and stopped have given rise to most of their problems for over two decades. There was a long period of artificial stimulation by Government to increase production to meet temporarily high military and civilian demand, accompanied by measures to prevent runaway prices. Demands receded sharply after reconversion passed its peak, and raw material requirements declined to more normal levels at the same time that stockpile objectives were reached and the Government ceased to buy. The pressure of all of these artificially created capacities on suddenly reduced markets caused the collapse of virtually all mineral raw material prices in the late fifties. In many of these commodities normal demand has not yet caught up with these capacities, and the industries involved are in serious trouble. The time at which normally increasing demands will reach these capacities differs with each commodity. This is why the solutions require different treatment in each case. We must not let our short memories forget that we shall indeed face shortages again unless we prepare for the future. We are searching today for the sources of supply that will be required in 25 years or more. It will take us that amount of time to find and bring them into production, and the pressure to get on with this job is diminished by low prices resulting from the aforementioned artificially stimulated conditions.

It is the action of foreign governments against the lack of compensatory action of our own Government which causes many disruptions to the normal trade in minerals. For many years it has been the policy of our Government to encourage the economies of other countries, frequently at the expense of our own industries. If we are to establish free trade in minerals as well as in other commodities, then this policy must be drastically modified. Despite all we can produce at home, we must depend upon some raw material supplies from abroad. With few exceptions, even among our best friends, restrictions on the flow of U.S. materials to them have been and are being inhibited by every conceivable mechanism. While we talk about tariffs, they impose surcharges, require prior deposits, levy restrictive licenses and quotas, apply discriminatory taxes, impose outright embargoes, or engage in bilateral or trade bloc discrimination. If our industries are to remain competitive and the free world to gain strength through making available the cheapest raw materials, such restrictions must be removed. We cannot depend upon tariff negotiations alone.

EMERGENCY REQUIREMENTS FOR MINERALS

Finally, the requirements for raw materials for defense follow an entirely different pattern from those of more normal civilian pursuits. The preparation for periods of emergency requires a thorough realization of this factor now, and measures must be taken to prepare for the problems that arise from this consideration. The stockpile program constitutes the major policy decision in this direction.

BASIC PROBLEMS FACING THE MINERALS INDUSTRY

With these fundamentals in mind, I should like to proceed to the consideration of the problems that have caused this committee to study the health of the mineral industries.

In a presentation such as this, it is infeasible to go into each of these areas in detail. Each of them has been the subject of months or even years of study within the industry, with various committees of the Congress, and with the executive departments. The consensus of the industry with respect to each is set forth in broad terms in the American Mining Congress' "Declaration of Policy," which was adopted at San Francisco, September 24–27, 1962. It would help this presentation, Mr. Chairman, if you would permit these resolutions to be placed in the record.

Senator GRUENING. That will be done at this point in the record.

(The document referred to is as follows:)

AMERICAN MINING CONGRESS—A DECLARATION OF POLICY. ADOPTED AT SAN FRANCISCO, CALIF., SEPTEMBER 24–27, 1962

In this age of unprecedented scientific and technological advances, we reaffirm our belief that the private enterprise system is the keystone to the continued strength and greatness of the United States. We reemphasize that the mining, production, and utilization of minerals and metals are essential to the national welfare and security. We reassert our implacable opposition to the philosophy of a socialistic state marked by bureaucratic ineptitude, fiat money, burdensome taxation, excessive concentration of Executive power, labor union monopoly, and intimidation of the business community. We are convinced that the welfare of the people of this Nation will best be served by adherence to the American principles on which our constitutional form of government is based.

LABOR RELATIONS

The existence of a national labor policy predicated upon union-influenced executive action has become alarmingly apparent. Unless Congress acts promptly to thwart the further usurpation of its functions, its enforced abdication in the field of labor-management relations will become complete.

It is imperative that Congress reassert its legislative prerogatives. In crisis after crisis, running the gamut from opera performances to industrial production, a partisan Department of Labor has usurped the mediation and conciliation functions which Congress so decisively took from it 15 years ago. Concurrently, a partisan National Labor Relations Board has flatly proclaimed its own power to fashion national labor policy and has proceeded to do so in a wholesale reversal of congressionally approved precedents.

In order that congressional policy in the field of labor-management relations may be effectively implemented, we recommend that the transfer of mediation and conciliation functions from the Department of Labor to an independent Federal Mediation and Conciliation Service be decisively reaffirmed. We recommend further that the jurisdiction of the National Labor Relations Board over unfair labor practices be transferred to the Federal district courts and, with respect to the Board's jurisdiction to determine questions of representation, that legislative rules be prescribed which will assure impartial and consistent administration of the law.

We urge the Congress at the same time to face up to the major problem of labor monopoly power. The mining industry has long advocated and supported a system of free collective bargaining through representative and responsible labor unions. Labor monopoly power is incompatible with such a system and contains the seeds of its destruction. American industry cannot long survive the drastic consequences of this power. One of these consequences, the effect of labor monopoly power on our competitive position both at home and abroad, has already become a grim national reality. We do not agree with those who favor attempting to mitigate the effects of labor monopoly power rather than dealing directly with its causes.

We therefore urge the Congress to reexamine at once the privileges and immunities which are vouchsafed exclusively to labor unions and thereafter to eliminate these basic sources of monopoly power. We recommend the following as the essential elements of effective legislation for that purpose:

1. Application of the principles of the antitrust laws to labor unions.
2. Prohibition of compulsory unionism in any form.
3. Removal of union immunity from injunctions in Federal courts.
4. Elimination of Federal compulsion with respect to the procedures and subjects of collective bargaining.
5. Effective prohibition of mass picketing.
6. Effective prohibition of the use of union funds for political activity.

We oppose the enactment of legislation permitting "common situs" picketing on construction projects. This is a subterfuge to destroy the secondary boycott prohibitions of the Taft-Hartley and Landrum-Griffin Acts. We also oppose the enactment of Federal legislation setting minimum standards for the amount and duration of benefits to be paid under State unemployment compensation laws. Federal control in this field is a cornerstone of labor socialism.

Efforts to obtain legislation giving the executive branch greater and more diversified powers of intervention in national emergency disputes are symptomatic of the tendency to deal with effects rather than causes. The national emergency provisions of the Taft-Hartley Act have operated effectively in almost every instance where they have been promptly invoked. Where politically motivated dalliance has delayed prompt action, their effectiveness has been reduced. We recommend the retention of the present provisions in the law and that their use be made mandatory instead of discretionary.

IMPORT CONTROLS

The extraordinary powers conferred on the President by the Trade Expansion Act of 1962 must be exercised with restraint and only after thorough investigation in order to avoid unfavorable repercussions on domestic industry and commerce.

To maintain certain important segments of the domestic mining industry adequate import duties, properly applied, are needed. We recommend that such duties be imposed or increased automatically when the price falls below a prescribed peril point, and be removed or reduced when a prescribed price is reached or exceeded.

Protection accorded to any metal or mineral can be effective only if equivalent compensatory customs treatment is established on related metal or mineral items, including semifabricated, fabricated, and derivative products.

For metals and minerals the domestic production of which provides only a small percentage of our requirements and where the public interest requires maintenance of such production, appropriate individual programs should be established.

ANTIDUMPING MEASURES

The Antidumping Act is intended to prevent the sale of foreign goods in this country at prices less than sale prices in the country of origin. We recognize that procedures for implementing the act have reduced the time required to obtain a finding on dumping. To make the act effective, however, more vigorous enforcement by the Treasury Department, the Tariff Commission and other Government agencies involved is necessary.

BARTER

We oppose continued use of the barter program for metals and minerals except to fulfill stockpile objectives which cannot be met from domestic sources.

STOCKPILING

The Government's stockpiles of strategic minerals and metals are national assets of great value, and are insurance against future emergency requirements.

The mining industry takes pride in the part it has played in the creation of these important national security reserves.

The current stockpile objectives for strategic minerals and metals, recently made public, in some cases seem wholly unrealistic. This indicates the urgent necessity for congressional redefinition of stockpile purposes and periodic reappraisals of stockpile objectives. Such redefinition and reappraisals should take into account not only military requirements, but also civilian needs in the event of a major emergency or conflict and requirements for postwar rehabilitation. We must also anticipate that our stockpiles will be called upon to meet similar needs on the part of our allies.

Concepts of national defense and civilian recovery requirements change substantially from time to time; an apparent surplus today may develop into a serious shortage tomorrow. The Congress should not abrogate its present control over the disposal of the minerals and metals in the national and supplemental stockpiles.

The minerals and metals in the Defense Production Act stockpiles, not now subject to control of the Congress, present a continuing threat to orderly markets. These DPA stockpiles should not be released except pursuant to a plan formulated in consultation with representatives of the industry involved, and with approval of the appropriate committees of the House of Representatives and the Senate. Any plan for release should provide for disposal through domestic producer-marketing channels and in a manner and at such times that prices and established markets will not be adversely affected.

No single plan of stockpile disposal can be uniformly applied to all minerals and metals. Each must be treated separately with regard to the particular economic and market conditions prevailing at the time.

A carefully considered, practical program of stockpile disposal and wise administration thereof will be required if we are to avoid grave economic and political consequences in many raw materials producing and consuming countries.

Any transfer of minerals or metals from the stockpiles for use by other Government departments or agencies should be subject to the same terms and conditions as Government sales to private industry.

Representatives of the metal and mineral industries in the United States should be consulted and given an active part in any reappraisal of stockpile objectives and any program for stockpile disposal. We again offer our assistance in this work.

SOLID FUELS

Congress should adopt a sound national fuels policy, declaring that all domestic energy industries shall be permitted and encouraged to maintain levels of productive strength that will enable them, in peace and in war, to satisfy the energy needs of the economy.

Our country is blessed with natural strength in coal. Coal's ready accessibility at economic costs is necessary for the continued devlopment and security of the Nation. The proposd national fuels policy should be implemented by all necessary steps, including the following:

1. Adoption of sound economic and conservation principles governing the sale and distribution of energy fuels.
2. Liberalizing the percentage depletion allowance for coal and lignite, in recognition of the greatly increased replacement cost of coal mines.
3. Adequate mandatory restrictions on the importation of residual fuel oil, crude petroleum, and refined products.
4. A requirement that all Government agencies make fuel selections only after fair, impartial evaluations of present and anticipated fuel costs and availability, based on modernized practices with their attendant economies.
5. The fostering of lower cost transportation of coal.
6. Aid from the executive branch in developing expanded export markets for coal and in improving means of transportation into such markets.
7. Provision of adequate funds for coal research by the Department of the Interior.

GOVERNMENT EXPENDITURES

Economic disaster lies ahead if Government expenditures continue indefinitely to exceed revenues. Determined and effective action is needed to bring the budget into balance.

The Federal Government should not, during the period of high defense expenditures, embark on new programs not of immediate necessity. Federal governmental activity should not extend to those matters which the people themselves, through private enterprise or their local or State agencies, are able to carry out.

As one means of restraining the constantly rising cost of Government, there should be a reorganization of Federal agencies, consolidation of bureaus having overlapping functions, and elimination of waste and inefficiency. Economy and efficiency in Government should be a foremost concern of political parties and civic organizations as well as of every citizen.

Government expenditures must be brought under control and substantially reduced, and tax rates lowered to the point of maximum revenue yield.

TAXATION

Our Nation has an important stake in the maintenance of an abundant supply of minerals Our high standard of living and our ability to provide leadership for the free world are directly dependent on the availability of minerals.

The costs, the risks, and the failures in finding, developing, and producing minerals from new reserves to replace those exhausted are constantly increasing. Unless the special problems of the mining industry receive adequate consideration in our tax laws, the consuming public will be faced with a decreasing supply of minerals and increased prices over the long run. To assure a continuing supply of the required minerals, the return, after taxes, must be high enough to attract the necessary risk capital.

Adequate percentage depletion allowances must be provided. The public interest has been well served for more than 30 years by percentage depletion and related provisions of the income tax laws.

Depreciation provisions must be sufficiently liberal to provide the incentive for investment of the funds required for a vigorous economy. They must not stifle economic growth by failure to recognize the problems of inflation and technological absolescence.

We commend the recent administrative promulgation of shorter depreciation "guideline lives," but further action is needed. To preserve the simplicity and the certainty of the principle of guideline lives, this principle should be enacted into law, without limitation through application of the reserve ratio test.

State and local taxing statutes and practices which place a disproportionate share of the tax burden upon the mining industry, or which fail to provide an adequate allowance for depletion, are a deterrent to the investment of risk capital for development of the new revenue-producing properties needed to replace depleted or outmoded reserves.

We particularly urge upon the Congress of the United States the following:

Exploration expenditures, like other research expenditures, should be fully deductible and present limitations on deductibility of exploration expenditures should be removed.

The present high income tax rates should be reduced to restore adequate incentive for investment risk, economic efforts and initiative. Their reduction will benefit the economy and yield increased revenues to the Government.

The limited allowance now made to stockholders on dividends with respect to taxes paid by the corporation should be increased. The depletion allowed to a mining corporation should be carried through to the stockholder on an adequate and equitable basis. Intercorporate dividends should not be doubly taxed.

Our tax laws should be amended to recognize that most capital gains during periods of inflation are a reflection of such inflation rather than taxable income.

The income tax laws of the United States should encourage the economic development of underdeveloped countries by private capital, rather than through the use of Government funds at the expense of our taxpayers. Profits of foreign subsidiaries should be taxed only when they are distributed and attempts to eliminate so-called tax havens should not penalize legitimate foreign business. Where protection of domestic production against imports is necessary, it should be provided by means other than a differential treatment in the income tax laws.

MINE SAFETY

The health and safety of men working in mining operations is, and must continue to be, a major concern of the industry.

We maintain that the mining industry itself is best qualified and able to solve its safety problems. Responsibility for planning and carrying out of safety programs is accepted by the industry. This responsibility and that of encouraging greater safety awareness in the individual worker cannot be abrogated to oustide governmental agencies nor can sound, effective safety programs be maintained if outside agencies, however well intentioned, are permitted to interfere with and usurp this management prerogative.

The effectiveness of this philosophy in mine safety is best demonstrated by the steady progress recorded in recent years. The industry will not, however, sit passively by and rest upon its laurels. There can be no crash programs in safety, and continued progress can be made only through the carefully planned, conscientious and persevering efforts of all segments of the mining industry.

State mining codes or regulations, together with State or local inspections, have proven helpful in meeting area problems, and continued cooperation of these agencies is encouraged. Duplication of the activities through proposed Federal intervention is unnecessary, and can only lead to confusion and interference in the management-employee cooperation which is essential to optimum performance.

We sincerely appreciate the efforts of the U.S. Bureau of Mines in disseminating information on accident prevention, first aid and mine rescue training, and similar activities in the mine safety educational field. These efforts are most helpful in the planning and administration of sound safety programs, and we heartily commend the Bureau for this service.

GOLD, SILVER AND MONETARY POLICY

Stable money is indispenable if our country and the free world are to prosper. Stable money is, however, difficult if not impossible to attain without a drastic change in the value placed on gold in the current monetary system.

Domestically, the dollar is without effective backing by gold and is scarcely more than a fiat currency. On the other hand, dollars held by foreign central banks are redeemable in gold at the prewar price of $35 per ounce. This effort to maintain the dollar as a hard currency in international transactions, and yet retain full freedom to indulge in practices leading to persistent deficits met by monetization of debt, creates conflicts most difficult to reconcile. These conflicts are encountered not only in fiscal procedures but also in policies with regard to trade, full employment of labor and expansion of plant facilities, taxation, foreign aid, governmental expenditures, and control of inflation.

Short-term claims in dollars held abroad that are convertible into gold now exceed the Nation's entire stock of the monetary metal, even including the legal reserve to cover 25 percent of Federal Reserve note and deposit liabilities. Commendable steps have been taken or recommended by the President to reduce the deficit in international payments and to check the loss of gold resulting from such claims, but at best these moves will merely postpone the difficulties until basic changes in our monetary system are made. We still remain highly skeptical of proposals to establish an international currency that would minimize the discipline of gold.

Revaluation of gold in the already depreciated paper currencies is in our judgment an essential step to reduce the dangers of a serious depression arising from the effort to maintain the prewar gold content of the dollar that has already lost more than 50 percent in purchasing power since 1941. Such a step would also impose restraints upon policies, both domestic and international, that now result in persistent deficits and further inflation.

We therefore recommend that:

As to gold—

1. Current efforts to preserve the Nation's gold reserves be intensified.
2. The gold standard be restored, with the dollar and other major currencies redefined in terms of gold and made freely convertible.
3. Treasury sales to industry be discontinued, pending restoration of the gold standard, so that a free market in gold for industrial purposes can be established.
4. A program of bonus payments be authorized as an interim measure to stimulate domestic production of gold and prevent complete destruction of the gold mining industry.

As to silver—

1. The Treasury Department be commended for terminating sales of Treasury silver to industrial users.
2. The Nation's remaining stock of monetary silver be conserved by obtaining the silver required for coinage from the open market.
3. The special tax on silver transactions, now clearly an unwarranted burden, be removed in the interest of stimulating increased production to meet the expanding needs of both the Treasury and industry.
4. Proposals to authorize the issuance of Federal Reserve notes of $1 and $2 denominations be rejected.

URANIUM

We commend the recent activity of the Joint Committee on Atomic Energy and the Atomic Energy Commission which has fostered a closer working relationship with the uranium industry. Howover, time is running against the industry's growing need for guidance in planning an orderly transition into the post-1966 period.

It is essential that the Joint Committee and the AEC accelerate the declaration of a uranium procurement program that will preserve and strengthen the required long-range productive capability of the industry. Present uses of nuclear fuels and new applications for uranium developing out of research phases of the atomic energy program must have the assurance of adequate future supplies of raw materials. Conservation of present reserves as well as development of new productive areas must be planned now if these long-range requirements are to be met.

We strongly urge the announcement of a post-1966 procurement program within the present fiscal year, thus affording the industry the opportunity to make plans for meeting its responsibilities in furnishing the nuclear fuels that our country will need in the future.

FINANCING OF MINING

The growth in numbers and demands of metal and mineral consumers, and the quickening advance of new technological and scientific developments, place increasing responsibilities upon the mining industry to satisfy the world's needs for both new and old minerals and metals. As known reserves are depleted or found to be inadequate in amount or kind, new and additional deposits must be discovered, developed and made available for timely mining and processing.

To discharge these responsibilities will require carefully engineered use of the best know-how and equipment, as well as specially trained and experienced personnel. It will also require larger amounts of investment and risk capital. A considerable part of this money must be made available through adequate depletion allowances, and through depreciation schedules and allowances which are realistic and do not handicap our industries in competition with those abroad.

As governments, including our own, assume a larger role in so many phases of economic life, and thereby influence in an increasing degree the financial climate and the feasibility of mineral development, basic principles of law and administration must be firmly established and consistently followed that encourage and make possible the development by private investment of essential mineral resources. This can best be done under the principles of enlightened free enterprise, with full preservation and protection of private property rights, a reasonable return on investments commensurate with the risks involved, and the firm support of industry by governments at all levels. To follow any other course would create shortages and have disastrous consequences.

We shall continue to oppose measures which discourage, prevent or make more difficult or expensive honest efforts to obtain the money to finance mining ventures and projects. Proper recognition must be given to the particular needs of our industry. We support reasonable measures designed to prevent misrepresentation, misapplication of funds and bad-faith practices in the field of mining financing. The industry will continue to offer suggestions and help to all branches of government on matters of common concern, to insure that only measures which are sound and businesslike are adopted.

We recommend that the Department of the Interior join the mining industry in an effort to strengthen and extend loan and other programs to encourage exploration and development of mineral resources, and engage in a joint study to determine the best plan for integration and coordination of mining research, and for making available the results of such research efforts for use by the mining industry in assuring an adequate supply of minerals and metals for our future needs.

GOVERNMENT AGENCIES—U.S. GEOLOGICAL SURVEY AND BUREAU OF MINES

The work of the U.S. Geological Survey and the Bureau of Mines in the fields of research, mine safety education, mineral exploration, and topographic and geologic mapping is of importance to the strength of our economy and to the mining industry, and should be adequately supported on a continuing basis. The Geological Survey should be provided with larger funds for fundamental research and its application to the needs of industry.

Since the abandonment of the Minerals Advisory Council, there has been no formal contact between the industry and the Secretary of the Interior. The Justice Department has approved a modus operandi for the use of industry advisory committees. We urge that such committees be activated and utilized.

WATER AND AIR POLLUTION

Water and pollution problems are largely local in nature, with their effects limited to nearby areas. We urge the Congress to establish Federal policies which give full support to the principle of local, State, and area responsibility in this field.

PUBLIC LAND POLICY

In order to stimulate and maintain a virile mining industry which will provide materials for military strength, advance and space program, and promote our economic growth, full utilization of our public lands and development of their productivity through private enterprise is essential.

The public interest is best served by keeping the public domain open for the discovery and mining of minerals, both metallic and nonmetallic. To this end, withdrawals of public domain should periodically be reviewed, and reduced where they contain areas in excess of need. Future withdrawals should be kept to a minimum. The recently introduced concept of a "National Land Reserve" is incompatible with the fullest use of our public lands.

The enactment of any measure or the establishment of any rule, regulation, determination or order of any executive agency which would prohibit, preclude, obstruct, or limit access to or utilization of the public domain for the purpose of prospecting, locating, and mining natural resources is vigorously opposed by the American Mining Congress as contrary to the best interests of the States affected and of the Nation, unless it is clearly established by adequate examination and appraisement that such action will far better serve the national welfare than will the full utilization of the lands involved for development of their potential mineral resources.

We support the principle that the public domain should be put to as many compatible uses as its resources permit.

The system established by the general mining laws for the location and patenting of mining claims has proven successful in encouraging the development of the mineral resources of our Nation through private initiative and enterprise. Any attempts to alter this system are contrary to the national welfare.

Exploration of our mineral resources has advanced to the point where future exploration must be directed primarily at nonoutcropping and often deeply buried ore bodies. Hence, appropriate supplementary legislation, in keeping with the intent of our present mining laws, is required to afford reasonable prediscovery protection to one who is in good faith engaged in seeking a discovery. Such protection is needed to encourage future mineral exploration.

The prospector should be encouraged to go upon the public domain in search of mineral wealth. We deplore the attitude of those who regard the prospector as an intruder and despoiler whose presence is dependent upon the beneficient sufferance of those who seek to manage the public domain.

The original concept of "discovery" as developed by judicial decisions should be adhered to by all departments of the executive branch of our Government. Government agencies should follow the decisions of our courts and should not impose their own definitions. We condemn the decisions of the Interior Department and its Bureau of Land Management and examiners which distort and disregard long-standing precedents.

Where a person of reasonable prudence is willing to do substantial work and expend substantial sums in exploration of a mineral deposit, or in development of the means or processes to put the deposit to use, any holding that the deposit is not a "valuable mineral deposit" or that it has no "economic value" is not in accord with the mining laws. It has been demonstrated by experience that value lies in potential as well as in present use, and this fact should again be recognized by administrative agencies.

Before a license is granted for the construction of a dam or reservoir, careful consideration should be given to the effect on mineral resources.

We urge upon the Department of Agriculture and its Forest Service, and upon the Department of the Interior and its Bureau of Land Management, that their regulations be administered fairly and uniformly and that their policies be formulated and carried out in a manner which will encourage the development of our mineral resources.

Dr. Boyd. Behind each of these specific subjects are experts who can provide you with details, even to the point of suggested legislation in some cases.

STOCKPILES

Of immediate concern are purported surpluses in stockpiles. The means of disposing of them have been the subject of hearings in the Armed Forces Committee. For very fundamental economic reasons, although not under the immediate purview of this committee, these activities are of vital concern to your overall deliberations. This is a difficult and complicated problem, and the impact varies markedly between segments of the industry. It affects the very roots of the economy of each segment, for the uncertainties of the disposition of the present stocks hang over the market. The American Mining Congress prepared a detailed study of this problem: "The Stockpile Story." Although every Member of the Senate has been provided with a copy, it has not been made a part of the Congressional Record. Rather than read this extremely important document at this time, Mr. Chairman, perhaps you would like to have it incorporated in the record.

Senator Gruening. I think we can have it as part of the record and refer to it. It may be too long to include in the record in full, especially in view of the fact of the many illustrations. But suppose we take this under advisement.

(The exhibit referred to appears in the appendix.)

Dr. Boyd. Thank you, sir. I commend it to your study, because a thorough understanding of the stockpiling program and its effects upon the mineral industries is vital to the problem at hand. I should like, however, to point out some of the conclusions and recommendations contained in the foregoing document in the context of the discussion. These conclusions and recommendations are the considered and strongly held views of the entire industry, and I speak for the American Mining Congress in presenting them here.

The executive branch has been insisting that it be given a free rein, not only in determining the size of surpluses but also the timing and manner of disposal. If it is determined that there are indeed supplies in the stockpiles which are surplus to all conceivable needs, we strongly recommend that the Congress continue to hold the reins firmly in its own hands, where it has wisely determined many times that they should be. We are not capricious about this, but have sound reasons for our beliefs which are implicit in the fundamentals of the economics of the industry which I have described today. The markets for minerals are world-wide and in delicate balance. Only those who are actively engaged every day in production and marketing can possibly exercise sound judgment in the disposal of large or even small quantities of these commodities. The materials in seeming surplus to emergency needs should not be disposed of until the Congress has determined through its normal procedures that it is in the national interest to do so, and then only under guidelines laid down by the Congress. These should include intimate consultation with those who are expert in marketing each commodity during the formulation of disposal plans, and members of any part of the industry who are not in agreement should be heard while any disposal plan is being considered—not after it has been formulated.

We, however, go further than this. I have described to you briefly the basic problems in finding and creating new sources of supply and the extremely long time required to do this. We are living in uncertain world conditions, which can change very rapidly. Even though we might not be in immediate danger of armed conflict, we are being faced right now with economic warfare activities of the Communist blocs. This is difficult for the average man to see, but those engaged in many fields of foreign trade are faced with the realities of it all too frequently. We must not, therefore, calculate stockpile requirements on military requirements alone; we have little idea where this economic warfare will lead us. Furthermore, as you can see in the chart on page 11 of "The Stockpile Story," objectives can change rapidly over wide ranges. The existing stockpiles, therefore, constitute an invaluable national asset, which we should conserve wisely no matter how large they may appear to some people at the moment. We urge this committee to raise its voice with ours to maintain them adequately in the most readily usable form. They were built at great cost and effort, the results of which are still being felt by many of those who attempted to comply with the desires of the Government. Disposal of stockpile materials, whether sold in the open market or used by Government agencies in lieu of normal procurement, would displace materials that otherwise would be currently produced. Employment, commodity prices, relations with other producing countries, and development of new resources will all suffer. There is no painless way to dispose of them, and even the mention of possible disposal upsets the delicate balance of the markets, giving rise to more problems for this committee. It is for this reason that formal mechanisms for industry consultations should be established during the earliest period of formulation. It is not enough that the executive departments call informal meetings for this purpose.

LAND PROBLEMS

Because the industry must look everywhere and in the most remote place for sources of supply for the future, the problems of all lands, and particularly the access to public lands, are of great interest to this committee. As the population grows and spreads, more and more land comes under private ownership, and it becomes more highly utilized or under tighter control. This is perhaps one reason that the natural resources of the Eastern United States, and particularly the Appalachian mineral belt, have experienced few mineral developments in recent years.

The recent decision of the Senate on the wilderness is a case in point, for if it becomes a law there will be some 114 million acres of public domain which will have been withdrawn from prospecting by one agency of the Government or another. I shall not belabor this point as my views and those of the Mining Congress appear in the record of the Interior and Insular Affairs Committee, which is available to you.

THE MINING LAWS

The present mining laws are basically sound, but they do need improvement. Other members of the industry have appeared from time to time to suggest means of improving these laws, regulations, and policies under which prospecting and mining shall be conducted on the public domain. This committee has been most helpful and constructive. There are, however, several provisions in the present laws which are inhibiting all-out development of such minerals as are being found on the public domain. These principally concern the right of possession of blocks of land of adequate size and for a sufficient length of time to make a satisfactory discovery. Particularly important is the need to streamline the administration of the laws governing the public lands. This comittee has heard testimony from experts in this field, so I shall not dwell on the details. The declaration of policy sets forth the principles in greater detail under the heading "Public Land Policy." I can only say that the future health of the industry will be vitally affected unless both the laws themselves and the administration of them are made to fit modern prospecting techniques and the economics of development and exploration.

TAXATION

As I have pointed out, the problems of mining are as much economic as technical, and hence when they are affected by legislation we run up against questions before almost every committee in the Congress. We, for instance, have never had prospecting accepted for the geologic research it truly is. Every other industry has its search for new products and methods of production treated under the tax laws as research and charged as a cost of doing business. There are still serious limitations to such treatment for geologic research. Those limitations must be removed before the search for new deposits can readily get into high gear.

This, however, involves taxation, which is one of the most important of these questions, and, because of its complexity, is beyond my level of competence. I would prefer to refer you to the section on "Taxation" in the declaration of policy. Studies of these problems have been going on for many years and have been ably presented before the appropriate committees of Congress. Members of these committees, however, need the guidance of you gentlemen who understand the basic problems perhaps more fully.

LABOR COSTS

The domestic mining industry must compete in markets which are worldwide in scope.

The industry's abiilty to compete has been and still is impaired by rising costs—particularly the costs of labor and work interruptions which are a major component in the cost of production. Until free collective bargaining is restored under the law our industry will continue to be subjected to demands which will hamper our competitive position.

RESEARCH

In this relationship, the activities of both the Geological Survey and the Bureau of Mines are vital and deserve far more support than has been forthcoming. Such work is remote from the every day experience of the average man; he does not realize that in the long run it is just as vital to his future of research in medicine, agriculture, and even in weapons for his defense. The very weapons themselves require mineral raw materials in growing quantities and different kinds. Research in mineral products does not offer the glamour which currently surrounds space, medicine, rocketry, etc. It therefore seems unimportant and is neglected.

The extent of our reserves is not only a function of the availability of masses of rock containing valuable minerals; it is also a function of the cost of extraction. Rocks which are not today considered as ore reserves can be turned into them by improvements in the art and science of extraction. This involves mining methods, machines, and metallurgy. Much valuable work is being done by the Bureaus involved, and a great deal more by individual companies. The sciences basic to this field need just as much fundamental work as electronics or atomic energy.

TRANSPORTATION

A major factor of cost to our industry is for transportation of minerals and metals. While data for rail and water transportation are not yet available for 1961, the U.S. Bureau of Mines figures for 1960 show that mineral products accounted for 59 percent of total tonnage carried by rail, of which metal and other nonfuel minerals accounted for 31 percent and mineral fuel for 28 percent. Of the total tonnage shipped by water in 1960, 83 percent consisted of mineral products, of which metal and other nonfuel minerals were 24 percent of the total, and mineral fuels were 59 percent. Ninety-five percent of Great Lakes traffic in 1960 was comprised of mineral commodities.

These figures will indicate to you the substantial revenue carriers received from hauling minerals which are bulk commodities. The major share of the transportation costs, particularly as to rail, is labor. We are all familiar with the current difficulties of the railroads and their endeavors to cut their labor and fringe costs to meet competition. These figures also indicate the extent to which the costs of rail transportation enter into the costs of mineral supplies. The health and efficiency of the railroad industry are therefore vital to the growth and competitive position of our domesting mining industry.

INDIVIDUAL SEGMENTS OF THE INDUSTRY

COPPER

I have so far generalized on the problems of the industry as a whole, and have not touched upon the specific problems of each segment. Because I am not familiar with the industry, I should like to start with copper.

Our industry cannot be said to be (currently at least) in trouble. In the last 2 years, the United States has almost regained its self-sufficiency in copper. The surplus reported to be in stockpile is not so large as to constitute a critical threat if dealt with intelligently and in close consultation with the industry. Although the total capacity of the free world is slightly surplus to total requirements, this is not great enough that it cannot be handled by the individual companies acting alone without outside interference. We must always maintain a certain amount of surplus capacity at all times to meet temporary surges in demand that frequently occur. As I look well down the road, however (as far as we must look if we are doing our job properly), the problems I have mentioned loom large. Copper is very difficult to find in quantities large enough to be mined economically. The areas in which we must search for our future supplies are steadily being reduced by restrictions on prospecting. Although, as a whole, the industry seems to be relatively profitable, its total income is not great enough to justify the expenditures it must make to search for and find deposits to replace those now in production, or to stand the enormous cost of placing them in production when they are found. If the Resources for the Future organization is right, this problem is magnified threefold. This is common to almost all mineral industries.

LEAD AND ZINC

The U.S. lead and zinc industries have been suffering to the point that almost 80 percent of the individual working mines in existence 15 years ago have closed down—mainly because tremendous surpluses of foreign productive capacity stimulated by the pyramided requirements of defense, stockpiling, and reconversion resulted in abnormally low prices. There are no shortages of ore reserves for the immediate future. Therefore, the mines capable of producing at low cost, due either to higher grade or amenability to inexpensive extraction methods, have forced out of production many higher cost mines—even whole districts. It is perfectly true that they are the victims of competition, but they were put into this position through artificial stimulation by the Government, both here and abroad. Production stimulated abroad has led to abnormal imports, and the stockpiles cause real damage to the markets by reason of the fact that the Executive has announced that they are heavily in surplus to the objective. These two industries have been grouped because lead and zinc occur frequently together in nature and the two industries have common problems. They have been subjected to more problems arising from Government action than most others. It is because of this that the Congress has been faced with trying to find ways and means of facilitating the return of industries to more normal operations. You will hear specifically about them, so I shall not say any more at this point.

THE STRATEGIC MINERALS

Some of the so-called strategic minerals, such as chrome, virtually disappeared from the domestic mining scene after the stockpiling activities ceased and low-cost foreign competition forced our mines out of production.

These are the segments of the industry that have suffered most from governmental activities in periods of emergency. You have arranged to hear about these in detail, so I shall leave it to others to be more explicit.

98-989—63——8

GOLD AND SILVER

Because gold and silver have been under particular governmental control for many years, they have special problems which come particularly under the heading of "The Influence of Government Action." The declaration of policy covers each one in more detail.

As to silver, the House has already approved a measure which would repeal the silver purchase acts and the silver transactions tax and provide for the substitution of Federal Reserve notes for $1 and $2 silver certificates. The Senate Banking and Currency Committee has also held hearings on the bill, and we understand that the measure may be brought before the Senate at an early date. As you know, the Mining Congress and industry witnesses have already testified on this measure before the Banking and Currency Committee. The provisions of the pending bill, except for the substitution of $1 and $2 Federal Reserve notes for silver-producing industry with the same problems as those that are common to all parts of the extractive industries.

Gold deserves special mention here today. Gold mining, as an industry, is unique in that there is an unlimited market at a fixed price for the metal produced. Profits tend to decline in times of prosperity and to increase under conditions that are generally adverse to business, as wages and cost of supplies rise or decline.

Senator GRUENING. Dr. Boyd, may I interrupt to ask a question?

Dr. BOYD. Yes.

Senator GRUENING. You say profits tend to decline in times of prosperity, and increase under conditions that are generally adverse to business, as wages and cost of supplies rise or decline. How can there be prosperity as long as the prices are low?

Dr. BOYD. There can't be. When we have had prosperity, as we have had a number of years, the price of gold went up and the profits declined. The only time the gold industry seems to have any advantage is in times of depression when costs go down.

Senator GRUENING. As long as the present governmental policy on gold persists, holding to the price standard of 29 years ago, I don't see how there is any possibility of any prosperity or profit for the industry. There may be prosperity and profit for the industrial gold users who get this very modest price, but how is the industry going to profit?

Dr. BOYD. It cannot, sir.

This is not the place to advance arguments with regard to the need to revalue gold in terms of currencies that have depreciated drastically in value. It must be emphasized, however, that continuation of present monetary policies with regard to gold will inevitably result in the closing of practically all mines dependent on gold alone, unless aid of some sort is provided. Special means to relieve the pinch of profits from gold mining that have been recently proposed in Congress surely deserve careful consideration, even though these measures should be regarded as temporary pending more far-reaching adjustments in the relation between gold and the world's currencies.

Domestic reserves of gold are relatively small. Current output has declined to $56 million (about one-third of the prewar annual output), which is not enough to meet the demands for the metal in the arts and industry. With U.S. costs what they are, gold exploration is certainly not attractive, and the more we depend on imports the more we aggravate the balance-of-payments problem and deplete our gold reserves.

A price to the miner high enough to offset the depreciation of dollars since 1940 is about the least that would keep existing mines in operation and would stimulate prospecting and exploration to the degree necessary to preserve the industry.

SUMMARY

In summary, I should like to say that there are no industries more illustrative of the efficacy of our private-enterprise oriented economy both domestically and on an international basis than those producing minerals. Almost all dictator or socialistics types of governmental systems have failed miserably to find or develop sufficiency in their mineral resources. We can see from the literature that the Soviets have trained large numbers of mineral scientists and engineers, and have expanded prodigious efforts to discover new resources. We can tell from their trading activities, however, in the case of many materials they have met with indifferent success. Our friendly neighbor to the south has virtually destroyed its mineral industries by governmental interference and unwise taxation, even though it has potentially one of the greatest untapped mineral areas in the world. The discovery of new resources is one of the most hazardous and speculative of occupations, for it has not reached the level of an exact science; nor is it likely to soon. Decisions, therefore, must be made on the most meager information and this takes great courage and vast sums of money. Governments find difficulty in operating risky activities for they must account to the electorate for what might be called errors in judgment. Private industry, on the other hand, can more readily take such risks, but because exploration or prospecting does involve great risks, the returns from successful discoveries must be commensurately rewarded. For every success there will be virtually thousands of failures, and, therefore, every possible area must be made accessible to this search. We should not be afraid to say that our system privileges us to succeed or to fail. Those who fail should not expect the Government to make up their losses because they must have known the risks and the rewards before they started. The very nature of mining is dependent upon this attitude if it is to be successful.

The solutions that must be found for our problems must contain the essence of the principles I have touched upon today. They should, therefore, include the greatest freedom within the discipline of the marketplace and good citizenship. Since governments have proved to be inept in commercial enterprise, and particularly in minerals, every step taken should be in the direction of getting out of the way of the individual and regulating him to the least possible extent. We should construct our laws to preserve this principle.

Because the dilemma facing this committee has been brought about largely by Government interference—no matter how right and necessary such interjection was at the time—it must find its solutions in the restoration of the conditions which favor the economic climate for risk taking. We all have tried to find the solutions to problems caused by the dislocations of emergency conditions; perhaps we shall not find a solution to each one. The very nature of this business makes the healing time a long one. We must, however, look hard at the future, get the artificial impediments out of the way, and create the climate for progress. The American Mining Congress stands ready to supply any details in these fields that the committee desires.

Thank you.

(The attachment to Dr. Boyd's statement is as follows:)

The structure of the minerals industry (listed in order of magnitude)

Mineral	Value (thousands)
Petroleum (crude)	$7, 566, 945
Natural gas	1, 996, 241
Coal, bituminous and lignite	1, 844, 563
Cement, portland	1, 048, 832
Stone	950, 560
Sand and gravel	751, 301
Copper (recoverable content of ores, etc.)	699, 093
Iron ore, usable (excluding byproduct iron sinter)	650, 501
Natural gas liquids: Natural gasoline and cycle products	412, 019
Natural gas liquids: LP gases	370, 186
Lime	210, 127
Salt	160, 223
Clays	156, 829
Uranium ore	148, 299
Coal: Pennsylvania anthracite	140, 338
Phosphate rock	130, 535
Sulfur: Frasch process mines	117, 884
Zinc (recoverable content of ores, etc.)	106, 848
Potassium salts	104, 464
Molybdenum	87, 925
Cement, masonry	55, 737
Gold (recoverable content of ores, etc.)	54, 189
Lead (recoverable content of ores, etc.)	53, 956
Boron minerals	46, 936
Bromine	44, 517
Gypsum	34, 950
Silver (recoverable content of ores, etc.)	32, 166
Magnesium compounds from sea water and brine (except for metals)	25, 545
Sodium carbonate (natural)	20, 444
Vanadium (recoverable in ore and concentrate)	19, 076
Bauxite	13, 937
Titanium concentrate: Ilmenite	13, 320
Bituminous limestone and sandstone, gilsonite	12, 818
Tungsten ore and concentrate	10, 565
Helium	10, 263
Barite	9, 315
Sodium sulfate (natural)	9, 296
Fluorspar	9, 275
Pyrites	7, 418
Pumice	6, 799
Mercury	6, 257
Talc, soapstone, and pyrophyllite	5, 267
Feldspar	5, 120
Peat	4, 991
Asbestos	4, 347
Vermiculite	3, 350
Mica, sheet	3, 308
Manganese ore (35 percent or more Mn)	3, 264
Magnesite	3, 129
Chromite	2, 939
Perlite	2, 664
Mica, scrap	2, 417
Sulfur, other mines	1, 694
Manganiferous ore (5 to 35 percent Mn)	1, 480

The structure of the minerals industry (listed in order of magnitude)—Con.

Mineral	*Value (thousands)*
Gem stones	$1,309
Garnet (abrasive)	1,036
Cement, natural and slag	968
Titanium concentrate: Rutile	778
Aplite	651
Abrasive stone	238
Tripoli	225
Emery	106
Carbon dioxide	82

Source: U.S. Bureau of Mines Minerals Yearbook, 1961.

NOTE.—The grand total value (in thousands) of mineral production in 1961, according to the U.S. Bureau of Mines, was $18,131,000. This figure excludes duplications in value of raw materials used in manufacturing cement and/or lime, but includes the value of items that were not disclosed because they might reveal individual company production of particular minerals (such as certain nonmetallic minerals, antimony, beryllium, cobalt, nickel, rare earths, etc.).

Senator GRUENING. Thank you very much, Dr. Boyd, for a very comprehensive and fine statement. There are a number of questions which suggest themselves. You remark in your concluding paragraph that the dilemma which this committee faces is brought about largely by Government interference.

Since we are an agency of the Government and the objective of this hearing is to try to find out how we can help the mining industry we would appreciate specific suggestions how we can diminish Government interference which you think has retarded the industry and get some specific recommendations on what we can do.

I notice in the report of the Mining Congress which we have included in the record in the declaration of policy there are some suggestions on gold which interest me very much. But it is going to be difficult to achieve them. You say that a program of bonus payments be authorized to stimulate domestic production of gold and prevent the complete destruction of the gold-mining industry.

This committee in the last Congress was extremely sympathetic to that view. For a number of years bills have been introduced by Senator Clair Engle who was in the House as chairman of the Interior Committee there and is extremely knowledgeable on this problem. But they always ran on the rock of opposition of the Treasury Department, as you perhaps know, that raised the issue that if any attempt were made to subsidize gold it would cause a panic, it would cause a run on the dollar, and would seriously affect the monetary aspects of gold.

No members of the committee that heard his testimony shared his view. Senator Church made a very telling point that if we are to get anywhere we would either have to go through, around, over, or under the Treasury Department. We are hoping for and exploring ways in which we may do that.

As long as this panicky idea prevails in the mind of the Under Secretary of the Treasury for Monetary Affairs, who apparently makes policy there not only for the Treasury but for the Government, it is going to be difficult to do. I find it impossible and I think that was true of other members of the subcommittee last year to see any logic in that position.

I have taken upon myself to write to a great many bankers and see whether their views were in accord. I find some that can see no merit whatever in the Treasury. I know of nothing more useful that this committee could do than to come up with some solutions for the two or three aspects of the industry that are in trouble.

I am interested in your statement that in general the industry is not in trouble but there are specific weak spots. We know about the difficulties that we encountered and the failure we met in attempting to legislate for lead and zinc and similarly we met with a failure to legislate for gold.

But we are looking for solutions. We welcome any specific recommendations that you might make or that others may make here which have some prospect of being achievable. We would welcome them. That is what we are here for. We want to help those areas in the mining industry where through circumstances beyond the control of those engaged in the industry are in trouble. That is our problem.

I notice earlier in your statement you made the point that in other activities research is chargeable to the Government but here it is largely dependent upon the industry. Is it not so that the Geological Survey has done a lot of research in the area of Government activity in this field.

Dr. BOYD. Yes, sir; I make a point of that in here. The basic fundamental research carried on by the Bureau of Mines and the Geological Survey are fundamental to the mineral industry. Without them we would be in great difficulty to get the basic work done. They do a substantial amount of extremely important work.

We don't think it is enough. Industry however must carry on from there. It must do the detailed research beyond that point.

Senator GRUENING. You think there should be more money for research in both the Bureau of Mines and Geological Survey.

Dr. BOYD. I should certainly if their research is put in the context of the major importance to the total economy and they should have their share of the money that goes into research.

Senator GRUENING. We are going to hear from Dr. Nolan, the Director of the Geological Survey, and Mr. Ankeny, Director of the Bureau of Mines and Mr. Fumich. We certainly hope they will come up with specific recommendations of things we might recommend.

These may be in the field of another committee, the Appropriations Commitee. But certainly if this committee agrees that their recommendations are desirable we can certainly so recommend. I have no other questions at this time. Senator from Idaho.

Senator CHURCH. I was interested, Dr. Boyd, in your reference to silver, and the fact that there is now pending before the Senate Committee on Banking and Currency, and soon before the Senate, the bill to repeal the Silver Purchase Act. I am wondering if you can state for the record the position of the American Mining Congress on that legislation.

Dr. BOYD. Senator Church, the mining congress supports that legislation and has done so before the appropriate congressional committees as to the two major points. It has objected, however, to the removal of the silver backing for the $1 and $2 bills and the substitution of Federal Reserve notes therefor until Congress makes a full study of this problem. I think that is the only objection we have taken to the legislation.

Otherwise we are supporting it fully. It brings silver back into the field as a normal commodity subject to the normal activities of economic development.

Senator CHURCH. If the committee reports the bill to the Senate without change—and I would anticipate that is altogether likely—what would be your opinion of an amendment to the bill that would require the Treasury to hold silver for future coinage needs.

In other words, an amendment which would bar the Treasury from dipping into that silver and selling it out on the open market at a price above its monetary value of $1.29 an ounce.

Dr. BOYD. I think the answer to that from my point of view would be very similar to what I have discussed here for the other materials in the stockpile. As long as the Government holds large stocks of metal whether behind the currency or in the stockpile, and come to influence the market at the will of the executive department, you are going to upset the normal trends of economic competition and development of the market itself.

I think an amendment which would do that would be a valuable thing for the industry in the long range view. What we would like to do is to have these industries become competitive, have the ability to compete on the world markets by adjustments of various things so they can fit themselves into position.

As long as this artificial stock of materials can be placed over the markets, it hangs over the market and upsets the balance of conditions.

Senator CHURCH. I think we both agree that the recent trends in silver have been very much in the right direction, and the price has gone up very substantially responding to the supply and demand on the free market. I should think, too, that such an amendment to the bill as I have suggested would be helpful to the mining industry. But it seems to me it would also be helpful to the public at large, because we have every reason to anticipate that the price of silver will continue to rise.

If we reserve in the treasury the present silver supply to meet future coinage needs, it means that the Government will have bargain silver for years to come to meet coinage needs that we know will be there. Therefore, it seems to me that this would serve the taxpayers' interest, the public interest, as well as the interest of the mining industry.

It would leave the price of silver free to respond to the natural effects of supply and demand, and to reach its natural level in a competitive market, and at the same time it would reserve to the Government a large supply of silver purchased at bargain prices to meet our future coinage needs.

So both from the standpoint of the public interest and from the standpoint of the special interests of the industry, I should think that such an amendment would be supportable.

Dr. BOYD. I am sure it would, sir.

Senator CHURCH. Thank you, Mr. Chairman.

Senator GRUENING. Senator Jordan.

Senator JORDAN. Dr. Boyd, I am very much interested in your views that you expressed here with respect to the stockpile of minerals and metals. I judge you regard it not as an unpardonable sin to have a substantial supply of metals on hand.

Dr. BOYD. No, sir. I think in view of the world situation as it is today the enormous growth in domestic industrial demand these stockpiles are relatively small, even the biggest one, compared to the flow of raw materials. We don't know where we are headed 20 or 30 years from now.

We have this economic warfare in which this would be an extremely valuable tool, including silver, in at least our defense against the economic warfare. They cost a lot of money to put there, and they have no relation to today's prices at all.

Senator JORDAN. You have suggested in fact that you think it would be helpful if the industry was called in to formulate policy with respect to the handling of these stockpiles, so that the threat of their hanging over the market to be assimilated at some time by Executive order would be lessened perhaps by a firm policy of metering them in under a more orderly system.

Dr. BOYD. Yes, sir, I think that is correct. You saw what happened in the last week or two on cadmium where a surplus was declared and preparation for disposal in steps was made. The price of cadmium went up when the Government began to sell.

Senator JORDAN. Dr. Boyd, you speak of some of the strategic metals and we had a very excellent witness yesterday, Mr. Williston, who pointed out the alarming degree to which we must look to foreign sources for many of these strategic metals. I take it you would concur with that view?

Dr. BOYD. Wholeheartedly.

Senator JORDAN. The fact that these strategic metals have a large element of labor in their costs make them almost impossible to mine in this country.

Dr. BOYD. In competition with the world supply.

Senator JORDAN. I know in Idaho we have been forced to close down a very valuable cobalt property because it could not meet the competition of foreign imports. That is the loss of a very fine industry in my State. We are tremendously concerned that some policy be developed to encourage a climate for the development of these strategic metals and minerals.

Dr. BOYD. I agree entirely.

Senator GRUENING. Dr. Boyd, returning to your statement where you say:

> Every other industry has its search for new products and methods of production treated under the tax laws as research and charged as a cost of doing business.

I have asked Mr. Stewart French and my assistant to meet with you and see if we cannot come up with some draft legislation which we can take up with the Treasury Department hoping to get its consent and see if we cannot rectify that situation.

Dr. BOYD. At the present time under the tax laws you may deduct exploration costs up to a limit. That principle has been established in the tax laws, that exploration is, in effect, research. But they limit it. So the limitation should be removed.

Senator GRUENING. It is a discrimination limitation that does not apply in other industries?

Dr. BOYD. Yes, sir. As far as I know there is no such limitation on research in other industries. They don't recognize exploration as research.

Senator GRUENING. That is the point I would like to explore and see if we cannot get legislation. Subsequently I will ask you to get the facts about that with our staff and see if we cannot draw up a bill and get some action. The Treasury will probably oppose it but we will see what we can do.

Dr. BOYD. We have been working for a number of years to get our views across to the Treasury and it is getting near the point of understanding.

Senator GRUENING. We appreciate your help to the Department of Interior. In your statement, you say:

> Until free collective bargaining is restored under the law we will continue to be subjected to demands which will hamper our competitive position.

Do you not have free collective bargaining?

Dr. BOYD. No, sir, I don't think we have free collective bargaining. We have to deal with our local unions on a national scale. There are all kinds of inhibitions in the present conduct of our negotiations with unions which give us a disadvantage that we can't overcome.

Senator GRUENING. Could you specify what they are. I have not heard of any conspicuous absence of free collective bargaining in the mining industry.

Dr. BOYD. It is not any different from us than anywhere else. I am speaking generally.

Senator GRUENING. This is a general statement?

Dr. BOYD. Yes, sir.

Senator GRUENING. Thank you very much, Dr. Boyd.

Dr. BOYD. Thank you, Mr. Chairman.

Senator GRUENING. And you will get together with our staff to see if we can't work on this effort to correct legislation with regard to the tax laws.

Dr. BOYD. Thank you, sir.

Senator GRUENING. Dr. Nolan, we are very happy to have you come forward.

STATEMENT OF DR. THOMAS B. NOLAN, DIRECTOR, GEOLOGICAL SURVEY

Dr. NOLAN. Thank you, Mr. Chairman. I am glad for the opportunity to participate in this committee's examination of the "State of the Minerals Industry" for the subject is one that merits serious and continuing atttention. It is highly complex, of course, and involves a great variety of problems. I wish to confine my remarks today, however, to one of the more important of them; namely, the discovery of future supplies.

For the committee's reference, I will submit as a part of my testimony a table showing available information on domestic and foreign reserves of metals, nonmetals, and industrial minerals, revised slightly from a similar table submitted to the Committee on Natural Resources of the National Academy of Sciences and released late in 1962 in its publication 1000–C.

The figures in this table very likely are liberal estimates of minable reserves, for they include some marginal deposits nonminable under current economic conditions. Even so, the data indicate that large domestic reserves minable at or near present prices are known for only about a third of the mineral commodities on which our economy now depends and that many critical minerals are in short supply.

These and similar data have been interpreted by many people as proof that the United States has all but exhausted its mineral wealth and that we will have to depend to an ever increasing extent on foreign sources for our future supplies. Certainly there is no denying that we have shifted in recent years from an exporter to an importer of several minerals, and it is probable that the trend may continue for a time, for some young, or as yet unindustrialized, nations are offering cheaper sources.

In a well-known paper on cycles of metals production, published in 1929, my colleague Dr. D. F. Hewett, showed that the shift from internal to external sources of minerals is one that happened in European countries several decades ago when the New World began to offer cheaper supplies, and it is precisely this phenomenon we are witnessing now.

Obviously the process cannot continue indefinitely, for the rest of the world is rapidly industrializing and unexplored lands are fast disappearing.

Now, what does this general trend mean for the future? Does it mean that we, followed shortly by the rest of the world, will run out of the minerals needed to support an industrial economy? Does it mean that we will have to start paying increasingly higher prices for minerals as we are forced to mine lower grade and more inaccessible deposits?

Both possibilities have been suggested, but I do not belive that either of these consequences will materialize, at least not if we recognize the need for adequate programs of research and development.

The basis for this belief is easy to supply. First, when we speak of mineral reserves or resources we are thinking specifically of substances that we are able to use, and this in turn is a function of our technology on the one hand and of our knowledge of the earth on the other.

As I have pointed out on a number of occasions, the mineral of chief concern to Stone Age man was flint, and if he had inventoried his resources he would not even have thought about listing any but a few of the several hundred rocks and minerals used in the United States today.

And his extremely limited knowledge of his environment would have led him also to vastly underestimate his potential supplies of even the few minerals he was concerned about.

Our current resources, then have literally been created by the advance of knowledge about our physical environment, about how to use the raw materials available to us, how to find them, how to get them out of the ground, and how to concentrate them or convert them into usable materials.

We have not, of course, changed the amounts of these materials that occur in the ground, and when I say we have created resources, I do not mean to imply that we have fulfilled the alchemist's dream of making new and valuable substances from worthless ones.

But the advance of knowledge has created usable supplies of important raw materials that were not usable previously. Far from having depleted our resources by exploitation, we have extended them by research, and reserves of many minerals are larger now than ever before.

To some degree this has been true in each successive century, but it is important to note that this process of adding to our supplies by extending our knowledge has progressed far more rapidly in recent years. As you know, the exploration of the 1950's demonstrated that we have large minable reserves of uranium whereas a decade earlier it was thought we had almost none.

This of course was a metal not in much demand before, but in a less spectacular way the same thing has happened with the more common metals that have been in use a long time. For example, in 1947 the Geological Survey and Bureau of Mines estimated copper reserves at 20 million tons. We estimate that there are about 32 million tons now.

Lead and zinc reserves were 6.6 million and 16.9 million tons respectively in 1947 compared to about 10 million and 25 million tons now. And since that year, nearly 20 elements not usable before have been brought into commercial use.

These larger reserves reflect some new discoveries of high grade ores, but mainly they represent the addition of lower grade ores that have come within reach of our technology. And, contrary to a popular view, the cost of most raw materials has decreased rather than increased, as the cut-off grade of their ores has decreased.

For example, Charles W. Merrill of the Bureau of Mines showed recently that real prices, measured in constant dollars or in the purchasing power of the wage of one hour's labor, have been going down rather than up, in spite of the decrease in grade and in accessibility of the ore deposits.

Along this line, incidentally, I might point out that it is our advanced technological capability—and I include in that the ability of our labor force to use costly and complex machines intelligently and effectively—that enables us to complete in the world minerals market as well as we do.

Thus, the copper mined in this country comes from ore yielding about 0.75 percent Cu on the average, and the cutoff grade is down to about 0.4 percent. Most foreign production comes from deposits containing several percent copper, and cheap labor notwithstanding, no foreign producers can match our costs.

Just as we have extended our supplies of minerals in the past by expanding our scientific knowledge and improving our technologic capability, so I believe we can extend them in the future, provided, as I mentioned earlier, we press the necessary research and development.

Research is needed in every segment of the industry, from finding the supply to recovering it and fabricating the products made from it. I wish to consider, however, only those parts of the problem related to the discovery of new supplies, for these are the ones that are the responsibility of the Geological Survey.

There are two main components to this problem—prospecting for new deposits and developing knowledge of rocks and minerals that underlie this country—and I wish to tell you what we are doing and what we feel needs to be done to strengthen our capability in these fields.

The Geological Survey does not often engage in physical exploration that is trenching, tunneling, and drilling, in the search for new deposits. Except in times of emergency, we concentrate our efforts to those activities that will provide industry with tools to do the job itself.

Thus, we develop knowledge of the origin of mineral deposits and their relation to other rocks and minerals and to geologic structures that will enable the prospector to recognize favorable ground and explore for minerals efficiently.

Our geologic mapping and other field studies make available to the prospector information on distribution of rocks and their geologic structure—information he needs in order to know where to begin his search. And we develop new instruments and methods that aid in locating concealed mineral deposits.

I think perhaps you are familiar with many of our contributions in these areas and rather than attempting to describe them, I will use the available time to discuss the problems we see ahead. The principal needs for research in the prospecting field are closely tied to modern developments or to the present day situation, and the three problems that we feel are most pressing are ones that did not have the same urgency 20 years ago.

One is the need for new and more effective exploration tools. The seocnd is the need for more information about marginal and submarginal deposits. And the third is for more information about the elements and minerals that are just now coming into use.

Of course, we have always needed better exploration tools and methods, but the problem is becoming more pressing now because the readily identifiable deposits that crop out at the surface have largely been found. When we consider that large areas of favorable ground in the United States are wholly concealed by alluvium or lava flows and that a thin cover of soil obscures outcrops in many other areas, we can be assured that the shallow crust contains far more high-grade ore than has been discovered to date.

Geologic mapping, of course, provides clues to concealed deposits in some areas, but more direct methods are needed also. For example the airborne magnetometer has been effective in finding certain kinds of minerals, and the Geiger counter and airborne scintillation meter were major factors in the discovery of concealed deposits of radioactive minerals. A wider variety of such tools than is now available would tremendously increase our capability for finding new deposits.

Recently we developed a beryllium detector that appears to accomplish this need for that metal. Proof of its effectiveness came last summer in the discovery of a large area of beryllium-bearing rocks in the Lost River area of the Seward Peninsula, Alaska.

We are in the process now of miniaturizing the device for use in drill holes. Another new tool that we are working on now is an ultrasensitive instrument capable of quickly detecting traces of mercury in air.

It has recently been found that minute amounts of mercury seem to be widely associated with certain base metal deposits and that it moves out from such deposits as a vapor. We believe this mercury detector, therefore will prove to be a valuable tool in searching for a variety of metalliferous deposits.

Incidentally, Mr. Williston, who testified before this committee yesterday, has pioneered in the development and use of an instrument of this type. We are also investigating the possibility of identifying concealed oxidizing sulfide deposits by use of gas chromatography equipment and by infrared detection devices. We hope these will be as effective as the geochemical and botanical prospecting methods, many of which were developed in recent years by the Survey.

I cite these examples to show that work is in progress on promising new prospecting tools, but the main point I want to make is that much more needs to be done in this area. And although I do not wish to take time to elaborate on it, I want to stress also the continuing need to expand our knowledge of ore controls and guides.

A little black box with a needle or a bell will be helpful to be sure, but if we are to make efficient use of it we need to know which geologic environments and geographic areas are most promising.

The need for information on our marginal and submarginal deposits is also far more critical now than it once was, for as I have already indicated, the cream has been skimmed from our known high-grade deposits. Fortunately, most elements occur in greater abundance in lower grade than in higher grade deposits, so that technologic advances that permit us to use lower grade ores will also increase our potential reserves to an even larger degree.

But many of these marginal and submarginal deposits occur in different kinds of environments or host rocks than do the high-grade ores and as yet little is known about them. A good example is marine black shale—rock that contains no visible metallic minerals and yet often contains substantial quantities of zinc, nickel, uranium, vanadium, molybdenum, selenium, and other valuable metals.

We now have analytical data on a dozen or so of these black shales, but the problem as a whole has barely been scratched.

As for the third problem requiring increased emphasis, our knowledge of the distribution of recoverable concentrations of elements that have only recently come into use—tantalum, tellurium, selenium, rhenium, and so on—is extremely limited.

For many of these elements, the first problem is to develop analytical methods for determining their concentration in rocks and minerals, and I am glad to report that we are making good progress in this area.

But again the questions as to where and how these elements as aluminum and titanium, information useful in finding minable deposits is woefully inadequate.

Before leaving the topic of prospecting per se, I want to say a few words about the prospector himself. As you know the independent prospector probably is responsible for the discovery of the vast majority of the mines operating today and in the past.

No doubt it took astute professional judgment to separate the bonanzas from the duds among the showings he turned up, but it is generally recognized that it was he who discovered most of the showings. Admitting the importance of his contribution in former days, I suspect most of us, until a few years ago might have been inclined to say that his day had passed and that he had little to offer now that prospecting has come to require the application of so much scientific information and gadgetry.

Of course, the problem is more complex than it was, and many of the mining companies have much expanded their technical staffs in order to utilize all available knowledge in prospecting. But during the 1950's we saw that the enthusiastic, curious, and intelligent prospector armed with a Geiger counter and a manual or two was highly effective in turning up new leads—in fact, it is fair to say that he was responsible for a large proportion of the truly new uranium discoveries made in this country.

I believe that the interest and capability of the prospector should be stimulated and improved. One of our current objectives in the

Survey is to improve our ability to translate our technical findings into terms the layman can understand in hope of helping the prospector to utilize modern information and techniques in his search for new deposits.

Coming now to the problem of defining the geologic environment, our objective here is to acquire knowledge of the composition and structure of the rocks that make up our country to aid in prospecting, developing, and using our resources. It is of little use, for example, to know that certain kinds of rocks or geologic structures are favorable for the occurrence of ore deposits unless it is known where such rocks and structures are to be found.

The usual techniques for defining the geologic environment consist of geologic mapping and related studies of rocks and minerals in the field, and these methods are still the most important. In fact, the numerous requests we receive from the mineral industry for geologic maps are ample testimony to the fact that geologic maps are still the basic exploration tool.

But other techniques—airborne magnetic and radiometric surveying and seismic studies, for example—are coming to play an important part also in providing information on regional geology and in defining ground favorable for exploration. Now, how much remains to be done in this fundamental area of geologic mapping?

If we take present mile-to-the-inch geologic maps as an index of our progress in supplying prospectors with the information they need in the scientific search for new resources, I must report that only about 18 percent of the conterminous United States is mapped now.

Mapping in Alaska is still almost wholly in the reconnaissance stage and we are aiming there for first coverage at a scale of 4 miles to the inch. Even at that scale, we are far from our goal, for such maps are availble for only about 15 percent of the State.

Senator GRUENING. That was due for the fact that for 92 years we were a colony of the United States and subject to discrimination at almost every point. We have a lot to catch up with now that we have been admitted to equality.

Dr. NOLAN. I hope this will be possible, sir.

Senator GRUENING. Thank you very much.

Dr. NOLAN. As for aeromagnetic mapping, only about 8 percent of the country is covered by published aeromagnetic surveys.

At the present rates, mile-to-the-inch mapping would not be completed until the middle of the next century. We are hoping to step up the rate of our activity to yield complete coverage by the year 2000 and to increase also efforts in other components of regional geologic and geophysical studies in order to give us better understanding of our physical resources.

In this connection, we have developed a 10-year program indicating the investigations we believe should be undertaken to strengthen the Nation's resource position.

Mr. Chairman, this concludes my testimony. I hope I have made clear my belief that this Nation can meet its future demands for minerals by continuing to expand its knowledge and technologic capability and I hope also I have indicated at least some of the areas in which the need for new knowledge is pressing. I will be glad to supply further information on any of these problems.

(The tables referred to follow:)

Summary statistics, nonmetallic elements and industrial minerals

Commodity	Unit	U.S. consumption		Production				Ratios for 1960		Reserves	
		1950	1960	1950		1960		U.S. production to U.S. consumption	U.S. consumption to world production	United States	World
				United States	World	United States	World				
Nonmetal-elements:											
Arsenic (As_2O_3)	Thousand short tons	32.1	28.1	13.3	51.8	11	62.0	40	47	2,500	Large
Boron (borates)	do	505.2	640.6	647.7	650 0(?)	950(?)	1,000.0(?)	150(?)	65(?)	121,000	135,000(?)
Lithium (minerals)	do		51.0	9.3	(?)	(?)	(?)			[1]	[1]
Sodium and Na salts	do		28,000.0(?)			28,000		100±	(?)	[1]	[1]
Potassium (K_2O)	do	1,410.0	4,000.0	1,288	4,400.0	2,638	10,000.0	66	40	400,000	5,000,000
Cesium and rubidium	Short tons		(?)			2	10.0				75,000
Calcium and compounds	Thousand short tons		1,000.0(?)				.0	100(?)			
Strontium ($SeSO_4$)	do	8.6	3.3	.25	10.0	.0	12.0(?)	0			
Fluorine (fluorspar)	do	426.0	644.0	301.0	834.0	230	2,160.0	36	30	20,000	
Chlorine	do	500.0						100(?)		[2]	[2]
Bromine	Thousand pounds		165.0	98		175		100+		[2]	[2]
Iodine	do	1,392.0	1,944.0	6,673		(?)	(?)	10			
Sulfur	Thousand long tons	4,988.0	5,860.0	5,986	10,600.0	6,661	17,995.0	113	33	125,000	700,000
Selenium	Thousand pounds	775.0	650.0	559		620	1,777.0	95	35		
Tellurium	do		320.0	60		260	390.0	81	82		
Phosphate rock	Thousand long tons	8,581.0	13,673.0	11,114	21,250.0	17,516	40,100 0	128	33	13,500,000	46,800,000
Industrial minerals:											
Asbestos	Thousands of short tons.	729.0	709.0	42	1,200.0	45	2,400.0	6	30	Small	60,000(?)
Barite	do	786.0	1,190.0	695	1,200.0	771	3,100.0	69	36	100,000+	[1]
Diamond (total)	Million carats			0	15.3	0	27.3	0		None	Large
Gem	do			0	2.5	0	6.6	0			
Industrial	do	10.8	12.0	0	12.8	0	20.7	0	58		
Graphite	Thousands of short tons.	20.9	37.3	5.1	148.0	5(?)	465.0	13	8	Small	
Gypsum	do	11,382.0	17,000.0	8,200	20,700.0	10,900	41,930.0	64	41	50,000,000	
Magnesite	do	367.0	511.0	429	2,150.0	499	7,100.0	98	7	[1]	
Mica (total)	do		125.0	70	116.0	120	205.0				
Sheet	do	13.9	4.6	.28		.28		6		Small	Large
Ground	do	72.2	120.4	70		120.3		100	59	Large	
Talc and pyrophyllite	do	621.0	722.0	621	1,470.0	734	2,450.0	100+	30	50,000	[1]
Chromite (refractory)	do	354.0	391.0				600(?)	0	65(?)	[3]	10,000
Quartz crystals	Thousands of pounds		230.0				500.0	0	(?)	None	Moderate(?)
Battery-grade Mn ore	Thousands of short tons.	41.3	27.2	11.5	56.0	9.1	(?)	37	(?)	Small	Moderate

[1] Very large. [2] Unlimited. [3] Very small.

Summary statistics, metallic elements, 1950–60

Commodity	Unit	U.S. consumption		Production				Ratios for 1960		Reserves	
		1950	1960	1950		1960		U.S. production to U.S. consumption	U.S. consumption to world production	United States	World
				United States	World	United States	World				
Iron ore	Thousand long tons	106,610.0	108,050.0	98,045	241,000.0	88,777	507,089.0	82	21	5,500,000	80,000,000
Copper (excluding secondary)	Thousand short tons	1,447.0	1,193.0	909	2,770.0	1,140	4,503.0	96	26	32,500	210,000
Lead (excluding secondary)	do	885.0	582.0	431	1,840.0	244	2,374.0	42	25	10,000	49,000
Zinc	do	1,101.0	950.0	623	2,359.0	432	3,428.0	45	28	25,000	84,500
Tin (excluding secondary)	Thousand long tons	71.0	52.0		166.0		180.0	0	29	5	5,000
Mercury	Thousand flasks (76 lbs.)	49.0	49.0	4.5	143.0	32	230.0	65	21	75	6,000
Antimony (excluding secondary)	Thousand short tons	15.0	13.0	2.5	48.0	.6	61.0	5	21	50	2,000
Bismuth	do	1.0	.8	.35	1.5	.25	2.6	31	29	1	25
Manganese ore (+35 percent Mn)	do	1,650.0	1,950.0	134	6,200.0	80	13,600.0	4	14	(1)	1,000,000
Chromite	do	980.0	1,220.0	.4	2,600.0	107	4,920.0	9	25	(1)	3,000,000
Nickel	do	100.0	108.0	.9	160.0	13	354.0	12	31	200	45,000
Cobalt	do	4.1	4.8	.4	8.0	1	18.0	20	27	15	2,200
Vanadium	do	1.3	2.0	2.3	3.1	5	7.0	226	32	45	1,000
Molybdenum	do	13.0	17.5	14.2	15.9	34.1	37.5	195	47	1,500	2,450
Tungsten	do	3.3	5.8	2.0	15.8	3.3	33.1	57	18	30	1,275
Columbium	Short tons	490.0	789.0	1	480.0	0	2,100 (?)	0	38 (?)	(1)	6,000,000
Tantalum	do	30.0 (?)	289.0	1	50.0	0	400.0 (?)	0	72 (?)		100,000
Rhenium	Thousand pounds		(?)			2		100	(?)	1,000 (?)	1,500
Aluminum (bauxite)	Thousand long tons	3,600.0	8,100.0	1,335	8,041.0	2,096	23,710.0	26	29	50,000	5,000,000
Magnesium	Thousand short tons	18.0	37.0	16	45.0	40	104.0	108	36	(2)	(2)
Titantium ores	do	691.0	1,113.0	475	740.0	795	2,340.0	71	48	64,000	2,000,000
Beryllium (beryl)	do	3.0	9.3	.5	6.7	.5	11.1	5	81	10	200 (?)
Zirconium (zircon+baddelyite).	do	30.0 (?)	50.0 (?)	25	75.0	25 (?)	100.0 (?)	50 (?)	50 (?)	12,000	35,000
Hafnium											
Cadmium	do	4.8	5.1	4.6	6.6	5.1	10.9	100	47	100	400
Germanium	Short tons		40.0			27	50.0	68	80		
Idium	Thousand ounces (troy).	1.0		126							
Gold	do	2,795.0	2,500.0	2,394	32,700.0	1,658	44,000.0	66	6	50,000	1,000,000
Silver	Million ounces (troy)	110.0	100.0	42.5	199.0	31.2	24.3	31	44	750	5,000
Platinum	Thousand ounces (troy).	309.0	325.0	18		10					
Other Pt group metals	do	187.0	451.0	13	600.0	10	1,101.0	3	70	(1)	25,000
Yttrium and rare earths	Thousand short tons	1.4	1.8	.46	2.0	.8	(?)	45	(?)	5,000	(3)

[1] Small. [2] Unlimited. [3] Large.

Senator GRUENING. Thank you very much, Dr. Nolan, for a very excellent presentation. I want to ask you one or two questions. Usually in the wake of new inventions there is concomitant legislation. Is there any new legislation needed in view of the new methods of exploration? Are those available without any further legislation? You speak of the airborne magnetometer, there is no requirement legislatively to make these available?

Dr. NOLAN. Not so far as any that are developed by the Geological Survey, no, sir. Those are in the public domain and may be used and are being used quite widely in the industry now.

Senator GRUENING. I notice you refer to the recent beryllium deposits in Alaska. I was there when this good news came to Nome. What is the invention which made this discovery possible?

Dr. NOLAN. It is a device which we have called a berylometer. I think the significant advance so far as that recent discovery is concerned was a development made in our Denver laboratory which made it possible for this instrument, which had been known before, to be wholly portable and usable in the field by field parties.

As I mentioned in my statement, we are now working on a further development of it which we hope will make it possible to use it in drill holes which will permit establishing a third dimension to the aerial coverage in two dimensions that can be made on the surface. In very brief terms, the device is an instrument which has as its key factor a radioactive isotope.

The isotope is antimony 124. Emitted gamma rays react selectively with the elment beryllium, and it in turn releases some of its neutrons which come back to the instrument and are recorded quantitatively in proportion to the amount of beryllium that is present in the ore. In other words, it not only qualitatively identifies the presence of beryllium minerals but also gives a rather good approximation of the amount of those minerals that are present.

Senator GRUENING. We have had a very interesting and close association with the Geological Survey in Alaska since the turn of the century in the days of Dr. Brooks, and I think wisely we have named many of our outstanding peaks after some of the pioneer geologists who opened up Alaska in the field of geology and mining.

I wonder whether you have any view on the work the Geological Survey performs in Alaska being headquartered in California rather than Alaska. We have a great desire to have the activities in Alaska to be located in Alaska.

Dr. NOLAN. As you know we have had some correspondence in the past. We have at the present time a significant number of our men stationed there permanently including some of the Geologic Division men at the university. The problem that we face in having some of the men who are working in Alaska headquartered in California is the physical problem of providing adequate library and laboratory facilities at a relatively few centers in the United States.

When we first began to develop plans to provide adequate laboratory space and library facilities back in 1950 we planned to create a relatively small number of centers at which could be concentrated such very expensive facilities. Even at that time we estimated the cost for an adequately equipped center to be several million dollars.

98-989—63——9

We have been able to put into being actually only two of those centers so far, one at Menlo Park, Calif., and one at Denver, Colo. We have been endeavoring to get one for the east coast for some years. The original plan in 1950 called for a total of five. In addition to the three I mentioned, one in the Mississippi Valley and a fifth one in Alaska. We have not been able to achieve this.

Senator GRUENING. Is this a matter of appropriations?

Dr. NOLAN. Appropriations and authorizations both, yes, sir.

Senator GRUENING. We can do our best to try to help you achieve it. We think it is very desirable. The University of Alaska is programing a vast policy of subarctic and arctic research and has made a considerable advance in that direction. I know they would most welcome the activities of the Geological Survey in connection with the university. They have lots of land and maybe we could help you for some of the accommodations.

Dr. NOLAN. Our space problems over the whole country I think are perhaps one of our most critical ones. I think they are going to become increasingly difficult in the future because, as I tried to indicate in my statement, the utilization of modern developments in chemistry and physics require far more elaborate laboratory and library facilities for the kind of research into ore deposits than was true at the times of Mr. Brooks and Mr. Mendenhall when a compass was most of the equipment that was needed.

Senator GRUENING. We are expanding on every front but often not as fast as we should. You mentioned that there are a number of fields in which far more information is needed. I realize there is always a problem in government. Each agency presents its demands and they are reviewed by the higher authority in the department and they are usually chopped down by the Bureau of the Budget and they are apt to be chopped down further in the House and we hope restored in the Senate.

I wonder if you are getting the funds for your work that you think are necessary. You are privileged to answer that in response to a question from a Senator without embarrassment.

Dr. NOLAN. I think, sir, that if we are to carry out the activities which I mentioned here, and which I regard as essential to our continued adequacy of supply of the raw materials on which the country is really dependent, that we are not advancing our research in mineral deposits as rapidly as we should. We have attempted in the 10-year plan that I mentioned to relate the need which I think can be expressed in the current rate of growth of the country's economy to the amount of research that we carry on in this field. We have attempted, in other words, to develop a program for the future that would call for expanded support for research in mineral deposits and geological matter.

Senator GRUENING. I am going to ask the staff of the committee to get us a list of some of the projects that could successfully and profitably utilize additional funds. This can be done without any particular reference to the funds themselves, and we will try to include them in the record and see if we cannot work to get you more funds.

I think one of the most important developments in recent times is the appreciation of the importance of research which only a decade ago was considered not important but now is considered essential for future progress.

(Subsequently, Dr. Nolan transmitted the following information in response to the foregoing request:)

Mineral Resource Studies That Must be Intensified or Begun

Because both population and per capita consumption of raw materials are expanding rapidly, national requirements for minerals and fuels are increasing by leaps and bounds. For example, the total amount of oil consumed during the next decade probably will be about 43 billion barrels, equal to 60 percent of the 72 billion barrels consumed in all of our history prior to 1963; and during the following decade we will probably consume at least another 55 billion barrels, making an aggregate 20-year consumption equal to about one-third more than the total consumed prior to 1963. Similar but somewhat smaller ratios are expected to hold for iron, copper, lead, and zinc. For natural gas, aluminum, nickel, and tungsten the expected rate of increase in consumption is much greater.

Proved reserves of oil amount to about 38 billion barrels, not even a 10-year supply at this growing rate of consumption, and the proved reserves of most other minerals have a similarly short life. Imports from the lesser developed countries may support expanding demands for a time, as they are doing in part now, but these countries are developing rapidly and their own growing demands are expected to consume such exportable surpluses.

To help the Nation meet its rapidly expanding demands for minerals and fuels, the Geological Survey has drawn up a 10-year program for its "geologic and minerals resource surveys and mapping" activity that will supply at an increasing rate both data and principles needed for successful mineral exploration. In essence, this program envisions that manpower devoted to this activity will approximately double over the 10-year period. The first year budgets for the subactivities related to mineral resources and exploration would be as follows, with fiscal 1963 given for comparison (funds for research on engineering geology and other land utilization problems, which are a part of the "geologic and minerals resource surveys and mapping" activity, are excluded from this tabulation).

	Fiscal year 1963	1st year of 10-year plan
Economic geology	$3,379,000	$4,152,000
Regional geology	7,100,000	10,056,000
Experimental geology	4,319,000	5,270,000
Total	14,799,000	19,478,000

The increases called for in these programs would strengthen a wide range of research investigations in the mineral field, including studies of the distribution and extent of mineral deposits of all kinds, geologic mapping and related studies necessary to establish the structure and composition of the rocks underlying the surface, and research on geologic processes and fundamental physical relationships, controlling the distribution of minerals and aiding in the search for them. The following are examples of important studies that would be intensified or begun:

EXPLORATION METHODS AND DEVICES

Although much of the land surface has been examined by prospectors, by far the larger part of the nearsurface portion of the crust and its resources are hidden from view by soil, alluvium, and other surficial deposits. Instruments such as the Geiger counter, magnetometer, and recently developed beryllium detector, and methods such as some of the geochemical and botanical prospecting techniques testify to the effectiveness of scientific tools and methods in discovering concealed deposits, and more and better ones are needed if the search for concealed deposits is to be pursued effectively. Examples of methods and devices on which work has recently been started and would be intensified include the development of gas chromatographic equipment for identifying elements such as sulfur and selenium that may migrate from ore deposits in a gas phase; perfection of an instrument capable of detecting minute amounts of mercury that escape to the air from certain metalliferous deposits; and an infrared detector capable of identifying the slight temperature anomalies associated with oxidizing sulfide deposits.

Further research on geochemical, botanical, and geophysical methods may be expected to yield methods and tools valuable in exploration. For example, only a minor fraction of the electromagnetic spectrum has been utilized in "seeing" geologic phenomena not visible to the eye, yet many other parts may prove useful in differentiating geologic phenomena that cannot be recognized or resolved by other techniques.

DEFINITION OF AREAS FAVORABLE FOR THE OCCURRENCE OF CONCEALED ORE DEPOSITS

Guides to prospecting for individual deposits can be and have been developed through detailed studies of mining districts. In a like manner, new mining districts (i.e., groups of deposits) may be found under cover of unmineralized rocks by analysis of the geology of even larger regions. District studies have been a major activity of the Survey since its inception, but regional studies and the synthesis of data that help define metallogenic provinces need to be intensified. The studies contributing to these regional analyses are diverse but one group in particular—the preparation of metallogenic maps showing for each element the geologic, physiographic, tectonic, or other genetic features to which its distribution is related—needs to be begun as soon as possible.

RESEARCH ON MARGINAL AND SUBMARGINAL DEPOSITS

Low-grade concentrations of elements in deposits not now considered minable will provide increasing proportions of our future requirements. Many of these deposits occur in different kinds of host rocks, in different geologic environments, or in different mineral forms than do the higher grade forms and as yet little is known about them. Research is needed to establish the distribution and magnitude of such deposits and to show which of them may lend themselves to exploitation in the near future. For example, it is known that not only may the concentration of a given element in marginal deposits be relatively high, but also that several elements may be present in amounts such that a multiproduct operation may be possible and profitable.

Similarly, the mineral form of ore metals varies considerably, such that the valuable constitutents may be recovered from some rocks much more easily than from others. Two of the rock types containing potentially important concentrations of valuable constitutents on which it would be desirable to undertake intensive studies are the organic-rich black shales and alkalic igneous rocks. A somewhat different problem, but one in the same general category of a marginal but potentially valuable resource, is that of geothermal energy. The recently discovered steam reservoir near the Salton Sea, which, incidentally contains astonishing amounts of several metals, is an example of the potential in this area, and highlights the need to begin a searching study of the origin, distribution, and geologic characteristics of geothermal sources of energy.

RESEARCH ON NEW ELEMENTS AND MINERALS

Rapid technological developments in space, nuclear energy, thermoelectricity, electronics, and other areas have created demands for previously little-used elements—such as tellurium, tantalum, selenium, and rhenium—whose presently known sources are totally inadequate. The record of results achieved recently in this country is ample evidence that mineral research, including development of rapid but sensitive analytical methods, will lead to the discovery and development of new supplies of these important elements.

APPRAISAL OF POTENTIAL RESOURCES

Both Government and industry need reliable data on the distribution and magnitude of mineral resources of all types. Information on the location of known deposits is a well known and frequently utilized aid in exploration; it also helps industry in selecting manufacturing sites and planning many of the phases of its operations, and is invaluable to Government in classifying the public domain and planning regional development and conservation projects. Similarly, data on the magnitude of known and potential national and world resources of various minerals are essential to both industry and Government in both short-range and long-range planning. Although much has already been done in providing resource data, three kinds of projects need to be much intensified: (1) Compilation of data on the distribution of mineral deposits on a State or regional basis. Two such reports (one on Montana and one on Wyoming) were completed recently, and a few others have been begun, but up-to-date compilations are lacking for much of the country. (2) Compilation of resource data for the Nation and world. Again a few such summaries have been completed recently, a comprehensive one for energy sources is underway, and similar ones are needed for many other elements. It is particularly hoped that a comprehensive volume summarizing estimates of known and potential resources of metallic and nonmetallic minerals can be started soon. (3) Research on methods, particularly for estimating potential resources, including those as yet undiscovered. Methods for this purpose are most advanced for petroleum, but even there it is widely recognized that they are far from adequate and current estimates of ultimate reserves differ by a factor of three.

GEOLOGIC PROCESSES CONTROLLING ORE DEPOSITION AND LOCALIZATION

Substantial progress has been achieved in the study of the processes by which mineral deopsits are formed and localized, but the general problem is still one of the most urgent in the exploration field, for understanding of mineral genesis is the key to successful exploration for concealed deposits. Among the following investigations are examples of research in this area that needs to be begun or intensified: (1) Relation of ore deposits to batholithic intrusives. By far the bulk of metalliferous deposits except iron are associated with igneous activity and many of them are related to the emplacement of batholithic instrusions. In some places there appears to be a zonal distribution of ores, suggesting that their deposition is systematically related to variations in temperature, pressure, and composition of magmatic fluids. Much more field and laboratory research, however, is needed to establish principles and guides useful in searching for concealed deposits. (2) Physiochemical characteristics of ore shoots. The primary objective of this study is to determine the physiochemical environment of ore shoots in the veins of selected mining districts, using as a principal tool experimentally determined data on the complex interrelationships of sulfides, oxides, and carbonates. Work now in progress, stemming from research on hydrothermal manganese ores, indicates that there are systematic variations in the composition of vein minerals with depth, suggesting, for example, that certain types of manganese minerals are strong clues to the presence at depth of base-metal deposits. Research on this problem promises significant help in guiding exploration at depth in many mining districts previously thought to have been largely worked out. (3) The effects of weathering in ore deposition. A wide variety of valuable mineral deposits—including placer minerals, supergene deposits, and clays and laterites—are concentrated by weathering processes but not enough is known of these processes and their effects to guide the search for deposits of this type. Large areas in the United States—the southern Appalachians, for example—have been so deeply weathered that surface manisfestation of mineral deposits has been obliterated. Yet these same processes have almost surely concentrated valuable minerals in supergene deposits at depth. Both principles and methods are needed to prospect for these secondary deposits as well as the concealed primary ores from which they have been derived.

REGIONAL GEOLOGY AND GEOPHYSICS

The search for and appraisal of the undeveloped, untested, and unproven mineral resources of the Nation are geologic problems that are solved most efficiently and economically with the aid of geologic and geophysical investigations. Geologic mapping and geophysical surveys are the first basic steps that must be taken in the scientific and systematic search for new mineralized areas. In this search, it is necessary that mapping first be done of relatively large areas or belts of country. Only in this way can we obtain a full understanding of the geologic framework that will enable us to predict which areas are promising enough to warrant intensive study and exploration. It is appalling to realize that less than one-fifth of our country is now covered by geologic maps of a scale suitable to meet modern demands, including those in the mineral resource field. Likewise, for more than half of Alaska, an area nearly one-fifth that of the remainder of the Nation, there is essentially no detailed geologic information available. The need for more definitive geologic data in support of the large variety of mineral development activities is most pressing and far outstrips the supply of basic geologic information provided through the Survey's continuing program of geologic and geophysical investigations. Specifically, more work is especially needed in Alaska, the Southeastern States, the mountainous country of the Northwestern States, and large parts of the basin and range province of Nevada, Utah, California, and Arizona. The long-range plan proposes to complete aeromagnetic coverage of the United States in the next 10 years, largely by contract with private companies ($1.8 million is included for this purpose in the first-year budget shown for regional geology).

Senator CHURCH. I want to ask one or two questions along the lines of your inquiry so I have a little more precise understanding of just where we are in this field. First of all let me commend you, Dr. Nolan, on an excellent statement. I think it is an outstanding statement.

Referring to your statement, let me read the following: "At the present rates, mile-to-the-inch mapping would not be completed until the middle of the next century." First of all are you referring to the miles-to-the-inch mapping of the entire country?

Dr. NOLAN. Geologic mapping.

Senator CHURCH. This does not relate to the previous paragraph which deals with the situation in Alaska?

Dr. NOLAN. No; this is the entire country.

Senator CHURCH. You then go on to say that we are hoping to step up the rate of our activity to yield complete coverage by the year 2000 and to increase also efforts in other components of regional geologic and geophysical studies in order to give us a better understanding of our physical resources.

In this connection we have developed a 10-year program indicating the investigations we believe should be undertaken to strengthen the Nation's resource position. I take it you have reference here to your own projects for the next 10 years and your master plan for completing your mapping activity by the year 2000, which in your judgment is based upon the needs of the country in this field; is that correct?

Dr. NOLAN. Yes, sir.

Senator CHURCH. My question is, are you presently getting from the Congress sufficient money to implement this plan?

Dr. NOLAN. No, sir.

Senator CHURCH. You are not?

Dr. NOLAN. No, sir.

Senator CHURCH. How much are you falling short? Are you asking for sufficient money through the Department of the Interior in the budget messages to implement this plan?

Dr. NOLAN. The budget process, as you know, is a long and complex one. Our initial estimates of the needs have taken into account this 10-year program. They have suffered attrition during the several stages through which they progress before they reach the Congress. So by the time they reach here they are not adequate.

Senator CHURCH. How long has this condition existed? I am talking not merely about this year.

Dr. NOLAN. This particular 10-year program, sir, was started a year and a half ago at the request and at the instigation of the Bureau of the Budget which I think made the general request of agencies in an effort to properly appraise the annual appropriations in the light of the need.

Our estimates that we have been preparing since that time initially have been consistent with this 10-year plan that has been in the making in the last year and a half.

Senator CHURCH. Can you tell us how far short you are falling in terms of the amount finally requested and in terms of the amount finally approved by the Congress as these amounts relate to the initial request?

Dr. NOLAN. I would like to have the opportunity of correcting this for the record to be certain of my figures.

Senator CHURCH. Surely.

Dr. NOLAN. The estimates for the past 2 years for the subitem, geologic surveying—our appropriations come under several subactivity items—for the geologic work which was the subject of my statement today they have been running, as I recall, something on the order of $5 million a year short of the amount that we have been developing for the 10-year program.

Senator CHURCH. How much have you been requesting? Will you relate the $5 million figure to the total amount you are actually requesting and receiving from the Congress?

Dr. NOLAN. The allowance for the Geologic Division for 1963 was $15,394,000. It is my recollection that approximately a quarter more or a third more—about $5 million more—would be required to reach the level which we had planned.

Senator CHURCH. I think that gives us a little bit better perspective of the amounts that would be required in order to implement your own plan based upon your estimate of the need. We ought to be appropriating about a third more than we have been.

Dr. NOLAN. Yes, sir. I think that is fairly close but I would like to check it.

Senator CHURCH. Very well. In checking it, if you have any change to make I am sure the chairman would want you to supply the accurate figure. I just wanted to get this in mind.

Dr. NOLAN. I think this is the right order of magnitude.

(The requested figures for geologic surveys are as follows:)

	10-year plan	President's budget (1964) or current budget estimate (1965)
1964	$20,300,000	$16,410,000
1965	25,000,000	19,410,000

Senator GRUENING. I think this is very helpful. At the hearing back in 1950, Senator Anderson who was holding the hearing, after getting information as to the general status of mapping, not geologic mapping, made the statement that at the pace the U.S. Government was proceeding to map Alaska it would accomplish its task in 17,000 years.

We are not badly off at that. I think it should move rapidly along the lines of Senator Church's question. Are there any further questions? If not, thank you very much, Dr. Nolan.

Mr. Clark Wilson has other commitments so we are very happy to have him.

STATEMENT OF CLARK L. WILSON, CHAIRMAN, EMERGENCY LEAD-ZINC COMMITTEE

Mr. WILSON. Thank you, Mr. Chairman.

Mr. Chairman and members of the committee, I don't want to worry you with that pile of paper. The statement is very short. There are quite a few exhibits which I thought might be of interest to the committee and the staff.

I am Clark L. Wilson, chairman of the Emergency Lead-Zinc Committee. My personal experience includes over 25 years in the exploration and operating phases of lead and zinc and other metal mining in the United States. I appear here today on behalf of the domestic lead-zinc mining industry. Members of the committee for which I speak account for at least 90 percent of domestic mine production of lead and about 80 percent of domestic mine production of zinc.

I might say in your announcement yesterday you said we were talking about mining problems in general, but it always seems that lead and zinc come out as the bellwether, because we have gone through quite a bit of experience of problems in the mining industry in the last few years and I would like to present a few more items that have not been covered in previous testimony.

Mr. Chairman, representatives of the domestic lead-zinc mining industry have been making similar appearances and presenting similar statements over the past 12 years before committees of the Congress, the Tariff Commission, departments of Government, and public forums interested in our problems. We have consistently urged constructive action by the Government to limit excessive foreign imports of these two metals to reasonable levels that will provide only those supplies actually needed to supplement the materials obtained from our own domestic mine production. To date there has been no constructive action to maintain a necessary and healthy segment of our mining industry—this in spite of sympathetic acceptance of our story, a genuine realization and appreciation in some quarters of Government of our difficulties followed by sound recommendations for long-term permanent working plans. Unfortunately for us and for the country, constructive legislation proposed by the Congress and the recommendations of the Tariff Commission have not been acceptable to the executive department as their concern with respect to the lead-zinc mining industry lies to a much greater extent with maintaining the "friendly image" with foreign nations than in providing an incentive to American citizens and companies who would develop our own natural resources.

It is not possible to document here all the effort that has been expended in trying to impress our Government officials that all is not well with the lead-zinc miner. We have summarized the major events in our economic history since 1950 and submit a copy, exhibit A, as information for your committee.

(The exhibit referred to follows:)

EXHIBIT A

SUMMARY OF LEAD-ZINC LEGISLATIVE AND GOVERNMENTAL EXPERIENCE SINCE 1950

I. DETAILS OF EXPERIENCE OF LEAD-ZINC INDUSTRY UNDER VARIOUS PROVISIONS AND PROCEDURES OF U.S. TRADE LAWS AND LEGISLATIVE PROPOSALS.

1. On May 10, 1950, the lead mining industry petitioned the Tariff Commission for "escape clause" action. This petition was filed in accordance with article XI of the trade agreement with Mexico (1943) and with the provisions of Executive Order 9832 (1947) which first established the Commission's "escape clause" procedures. On July 18, 1950, the Commission informed the industry that no consideration would be given to this "escape clause" petition because the Mexican agreement was being canceled by the U.S. effective December 31, 1950. The industry's petition was formally dismissed by the Commission on January 25, 1951. With the cancellation of the Mexican agreement, the 1930 duty on lead was temporarily restored.

2. In spite of presentations in early 1951 by the lead-zinc industry before the Committee for Reciprocity Information in preparation for the trade agreements negotiations at Torquay, the duty on lead, which had been restored only 5 months before by abrogation of the Mexican agreement, was cut to its prior level on June 6, 1951. In addition, the duty on zinc was also cut at Torquay on the same date.

3. On February 14, 1951, the lead-mining industry made application to the Tariff Commission under the provisions of section 336 of the Tariff Act of 1930 for an investigation of the "differences in the cost of production" of lead in the United States and foreign countries. The Commission, on May 29, 1951, dismissed this petition and advised the industry that trade agreement rates could not be changed by action under the provisions of section 336.

4. On September 14, 1953, the lead-zinc industry petitioned the Tariff Commission for escape clause action under section 7 of the Trade Agreements Extension Act of 1951. Hearings were held during November 1953. On May 21, 1954, the Commission made a unanimous finding that serious injury was resulting from excessive imports and recommended maximum permissible increase in duties.

5. Concurrent with this 1953-54 "escape clause" action, by resolution of the House Ways and Means Committee (July 29, 1953) and the Senate Finance Committee (July 27, 1953), the Commission also conducted a "general investigation" in accordance with the provisions of section 332 of the Tariff Act of 1930. This was transmitted to the Committee on Ways and Means and to the Committee on Finance on April 19, 1954, and is a 356-page volume with a detailed analysis of the economic conditions and pertinent statistics concerning the lead-zinc industry of the United States.

6. On August 20, 1954, President Eisenhower advised the Committee on Ways and Means and the Committee on Finance that he would not implement the unanimous recommendations of the Tariff Commission in their May 21, 1954, report (T.C. No. 27). In lieu of accepting the Commission's recommendations the President instituted increased defense stockpile purchases of these two metals and subsequently initiated barter. The President further stated that he was directing the Secretary of State to seek recognition by foreign countries who were principle importers that they would not take any unfair advantage of his alternative programs. However, the record now shows that imports for consumption did not decline and, in fact, increased since the President's letter.

7. In a series of regulations issued May 28, 1957, the Department of Agriculture essentially stopped all bartering in lead and zinc, which was the major alternate program instituted by the President. In testimony before the Ways and Means Committee August 1, 1957, Mr. Gordon Gray, Director of the Office of Defense Mobilization, announced that the defense stockpile goals for lead and zinc had almost been met and that purchases would cease in the very near future. This statement was again repeated by Mr. Gray in his testimony before the House Appropriations Subcommittee during February 1958. OCDM announced that April 1958 was the last month it would purchase zinc, and lead buying was scheduled to be stopped at the end of June.

8. Testimony was also presented to the Committee on Ways and Means by Mr. Gray on August 1, 1957, and repeated on February 18, 1958, that the lead-zinc industry is not eligible to seek relief under the "national security amendment

escape clause" (section 7(b)) of the Trade Agreements Extension Act of 1955. He stated the reason for his decision was the existence of very large stocks of both metals in the hands of the Government which were acquired by the two alternative programs instituted by the President when he declined to follow the recommendations of the Tariff Commission. It is estimated that there are now in excess of 1,250,000 tons of each of these metals in the defense and the supplemental stockpiles.

9. In his letter to the two congressional committees of August 20, 1954, the President concluded by stating that if the action he was taking, instead of following the Commission's recommendations, did not accomplish the objectives he sought that he "will be prepared early next year to consider even more far-reaching measures, and to make appropriate recommendations to the Congress." On June 19, 1957, Secretary of the Interior Seaton forwarded to the Congress a bill providing for the suspension of present duties and substituting a series of import excise taxes which would be effective only if the price of lead was below 17 cents and the price of zinc below 14½ cents.

10. Hearings were held August 1 and 2, 1957, before the Committee on Ways and Means on H.R. 8257 (and similar bills for an import excise tax on lead and zinc). Hearings were also held on a companion bill, S. 2376, by the Committee on Finance on July 22–24, 1957. The U.S. lead-zinc mining industry concurred in the proposed "peril point" market prices of 17 cents lead and 14½ cents zinc. It also pointed out, however, that the proposed schedule was wholly inadequate to sustain the "peril point" prices. The proposed schedule for zinc was, on an average, about 40 percent less than the Tariff Commission's 1954 recommendations; for lead, on an average, about 20 percent less. In only one instance was the proposed schedule greater than the Commission's recommendations—that was for lead, and then was only 45/100 cents more than the Commission's report. In the President's letter of August 20, 1954, he cited as one of the reasons for not implementing the Commission's findings was that the maximum permissible increase in duty was insufficient to "reopen closed mines" and would have only a "minor effect" on U.S. prices.

11. Following the exchange of letters between the late Mr. Copper, chairman of the Ways and Means Committee (August 16, 1957), and President Eisenhower (August 24, 1957), the Emergency Lead-Zinc Committee again petitioned the Tariff Commission for "escape clause" action. The petition was filed September 27, 1957, and hearings were held November 19–26, 1957.

12. Commenting on the Commission's May 21, 1954 (T.C. No. 27) recommendation for maximum permissible increase in duties, the President stated in his letter of August 20, 1954, that the increase in duty would probably only have a "minor effect" on the U.S. price of lead and zinc. He also said it was "questionable whether the tariff action would have any important consequences in reopening closed mines." In the 1957-58 case (T.C. No. 65) the U.S. industry petitioned the Commission not only for increased duties, but also for quotas. A complete quota plan was submitted to the Commission.

13. On April 24, 1958, the Tariff Commission again unanimously found that the domestic lead-zinc industry was suffering serious injury. Three Commissioners recommended reimposition of the 1930 rate of duty and three Commissioners recommended the maximum increase in duty (50 percent above the 1945 rates) and also recommended the imposition of absolute quotas, based on 50 percent of imports during the period 1953–57.

14. At the conclusion of the 60-day period, as provided in the present Trade Agreements Act, the President advised the chairman of the Senate Finance Committee and the chairman of the Ways and Means Committee that he was "suspending consideration" of the Commission's recommendations. The President further stated that a final decision would be appropriate after the Congress had completed its consideration of the proposed minerals stabilization plan which was submitted by Secretary of the Interior Seaton.

1. The "Seaton plan" provided stabilization payments on domestic production up to 350,000 tons of lead and 550,000 tons of zinc when the market price was below 15½ cents per pound for lead and 13½ cents per pound for zinc. An additional limited tonnage payment was to be made when the market prices of lead and zinc were below 17 and 14½ cents per pound, respectively. This legislation passed the Senate, but was defeated by the House in August 1958.

16. Presidential Proclamation No. 3257 of September 22, 1958, established absolute quota restrictions on imports for consumption of unmanufactured lead and zinc, effective October 1, 1958. However, the quota amounts were set at 80 percent of the average annual commercial imports for the base period, much more generous to the importer than recommended by the Tariff Commission.

There was no change in basic tariff rates and no provision for quota control of manufactured items.

17. ELZ received an invitation to send one observer-delegate to the London Conference of the United Nations' Interim Coordinating Committee for International Commodity Arrangements, September 1958. The committee was unable to be represented. Mr. C. E. Schwab, committee chairman, attended the second meeting in Geneva, November 1958. Plans were formulated for a long-term lead-zinc study group.

18. Metal prices were not improving in early 1958 and in March the Western Senators introduced S. 1566, a lead-zinc quota bill. Allowable imports were still excessive, lead and zinc stocks were increasing, mine production showed no improvement, and employment had not increased.

19. The third session of the U.N. Lead and Zinc Committee, held during May 1959, in New York, found a world excess production of lead and zinc metal over consumption. Voluntary production curtailments were announced by the larger exporting nations. Plans were laid for establishing an International Lead-Zinc Study Group.

20. By mid-1959, the continued troubles of the mining industry prompted further congressional action with introduction of S. 2169 (Murray of Montana and others), the 4 cent import tax bill with peril points of 15½ cents for lead and 13½ cents for zinc. Wayne Aspinall of Colorado, introduced H.R. 7721, the flexible quota bill.

21. In May 1959, Wayne Aspinall introduced H. Res. 177 stating "that it is in the national interest to foster and encourage (*a*) the maintenance and development * * * ; (*b*) orderly discovery * * * ; and (*c*) * * * research to promote the wise and efficient use of domestic metal and mineral reserves." Hearings were held June 29 with ELZ representation. This was passed by the Congress, and while not having legislative force, it did call on the executive department to advise the Congress as to relief actions proposed.

22. During July 1959, the U.S. producers of coated and uncoated zinc sheets filed for a section 7 escape clause investigation. Hearings were scheduled for November 3, with ELZ presenting a statement. On January 14, 1960, the Tariff Commission issued a report (Commissioners Talbot and Overton dissenting) that injury from imports did not exist, and therefore, no recommendation for a change in tariff rates.

23. ELZ planned to file another escape clause at the end of 1 market year under quotas. Tariff Commission counsel ruled that an industry operating under an escape clause proclamation was precluded from filing again for section 7 relief. In August 1959, mining State Senators introduced S. Res. 162, directing the Tariff Commission to review again the condition of the lead-zinc industry with findings of additional import restrictions needed for a sound and stable industry. Hearings were scheduled January 12, 1960, with ELZ presenting several witnesses to cover all phases of the problem. Flourspar had a similar hearing under S. Res. 163 with the report issued February 29, 1960. Three of four Commissioners refused to make specific findings on the grounds that the Commission lacked authority to submit recommendations or findings. In the lead-zinc report, Commissioners Talbot, Overton, Jones, and Dowling maintained this position. Schriber and Sutton recommended increases in tariffs to 3 cents on lead and 2.5 cents on zinc metal, and 70 percent of this on ores and concentrates. In addition, compensatory duties were proposed on manufactured items.

24. Six companies (importing smelters) filed a representation with the Commerce Department (August 28, 1959), and on November 24, 1959, with the Tariff Commission requesting formal investigation under Executive Order 10401 to determine "to what extent the quotas imposed by Presidential proclamation of September 22, 1958, remain necessary." This was opposed by the ELZ Committee, and Senator Murray as sponsor of S. Res. 162. This petition was refused by the Tariff Commission on December 15, 1959, as untimely in view of the S. Res. 162 investigation.

25. The International Lead and Zinc Study Group was formally created and its first meeting held in Geneva, January 1960. Voluntary commitments made in New York in May to restrict zinc sales were withdrawn. Regarding lead—Australia, Canada, Mexico, and Peru stated they would withhold offerings to the market. The United Kingdom announced that its Government had available for orderly disposal 54,000 metric tons of slab zinc.

26. Hearings were held by House Interior Committee in March on small mine subsidy bill. This passed the House prior to the political convention recess. It passed the Senate in the postconvention session and was pocket-vetoed by

the President as being difficult to administer, would establish an uneconomic precedent, production would adversely affect the market, and the present quota plan is still in effect.

27. On April 6, 1960, Congressman Howard Baker (Tennessee) introduced H.R. 11584, sponsored by the importing smelters proposing import taxes at the rates recommended by the minority in the March Tariff Commission report. The tariff rates of this legislation would not help the domestic miner.

28. In June 1960, Senator Kerr introduced the importing smelters bill as S. 3698, essentially the Baker bill, but including a 1-cent removable tax in the 3 and 2.5 cents on lead and zinc, respectively. Senator Bennett introduced the ELZ removable 4-cent tax as S. 3696, identical to H.R. 11786, which was essentially the same as S. 2169 with small changes in compensatory taxes. In Finance Committee action, Senator Kerr was successful in attaching S. 3698 as an amendment to the Virgin Islands bill, H.R. 5547, already passed by the House, and thereby bypassing the normal origination of lead-zinc tariff legislation in the House Ways and Means Committee. Senator Kerr's main interest was the small mine subsidy bill, and the lead-zinc tariff bill never reached the Senate floor. No lead-zinc tariff legislation was passed in the 86th Congress.

29. The *Bicycle* case was active in 1960. Import taxes had been increased as a result of a section 7 hearing prior to 1958. The President imposed only a part of the recommended tax increases. The courts held he did not have this prerogative, casting doubt on the legality of lead-zinc quotas. However, the Executive department held that 1958 extension of Trade Agreements Act gave the President authority to accept Commission recommendations in whole or in part, and quotas were imposed subsequent to the 1958 extension. Later peril point hearings reaffirmed bicycle rates, and these were imposed by Presidential proclamation, February 1961.

30. The second session of the International Lead and Zinc Study Group was held in Geneva, September 1960. There was no action on restrictions of zinc offerings. Voluntary restrictions on commercial offerings of lead remained as per the February 1960 meeting. Concern was expressed that the United Kingdom would have sold 35,000 metric tons of slab zinc by September 30 from Government stockpiles.

31. On September 30, the Tariff Commission issued a lead-zinc report reviewing the industry experience after 2 years of quotas under Executive Order 10401. It informed the President that serious injury continued in the domestic industry due to imports, and quota controls should continue. The President accepted this policy.

32. Metal prices dropped in December as metal stocks built up, reaffirming need for legislative import controls. Mr. Wayne Aspinall, chairman of the House Interior Committee, introduced H.R. 3416, providing a base permanent tariff on lead and zinc metal of 2 cents per pound (70 percent on ores and concentrates) and a removable tax of 2 cents (applied below 13½ cents market and removed about 14½ cents market). It included compensatory tariffs on manufactured items and a small subsidy to domestic miners financed from tariff collections. This would provide three advantages of (1) getting the miner to work; (2) stabilizing a reasonable price and supply for the consumer; and (3) still provide a portion of our market to the importer at a good price with reasonable tariff rates. This was assigned to the House Ways and Means Committee for hearing. The same bill was introduced in the Senate by Senator Anderson as S. 1747, and was assigned to the Interior and Insular Affairs Committee.

33. The small mines subsidy bill was reintroduced as H.R. 84 by Mr. Edmondson of Oklahoma, and hearings were held by the House Interior Committee in March, June, and July 1961. The administration opposed the bill as too expensive and stated that added mine production would be detrimental to the current market price. They recognized Government responsibility for encouraging the small mines during war times and proposed a phaseout subsidy based on a combined price of 27½ cents per pound paid on 750 tons each of lead and zinc the first year, 500 tons the second year, and 250 tons the third and last year. The Interior Committee reported out a compromise version based on 29 cents per pound combined price paid on 1,500 tons each of lead and zinc in 1962, 1,200 tons in 1963, 900 tons in 1964, and 600 tons in 1965, with total cost limited to $16.5 million. Payments are further limited to domestic producers by past production records. In this form, the bill passed the House on August 24, 1961, by a 196-to-172 vote. It passed the Senate by a voice vote on September 21, 1961, and was signed by the President on October 4, 1961. Operating funds will have to be provided by a supplemental appropriation in 1962.

34. Importing smelters tax bill was again introduced in March 1961 by Congressman Baker as H.R. 5193, and by Senator Kerr as S. 1361. The tariff rates are the same as the Kerr-Baker bill of the 86th Congress, with a permanent tariff of 2 cents on lead metal, 1.5 cents on zinc metal, 70 percent of these rates on concentrates, and an additional 1 cent removable tax on each metal controlled by peril points of 13½ and 14½ cents on lead and 12½ and 13½ cents on zinc. A change in this bill divides the compensatory rates on manufactured good to a 1 cent base tariff on lead products, 0.8 cent base tariff on zinc products, and 1 cent removable on each controlled by above peril points. The Baker bill was reported out of the House Ways and Means Committee late in the 1st session of the 87th Congress with no action by the House or Senate.

35. The third session of the International Lead and Zinc Study Group was held in Mexico City, March 20, 1961. Nations, other than the United States felt that their zinc stocks were normal and called for no controls. The United States delegate discussed our problems of steoks and reduced production, but no action was taken. Lead stock was acknowledged to be a world problem. The solution presented and accepted was a U.S. offer to barter surplus world stocks in return for reduced mine and metal production. LME metal prices at the time of this meeting were lead, 8⅜ cents; zinc, 10½ cents. Seven months later, prices were lead, 7⅞ cents; zinc, 9 cents.

36. The Senate Interior Commitee held a hearing in May 1961 to study the general condition of the domestic lead-zinc industry, and a second hearing in July to consider the Anderson bill. Testimony by ELZ noted that domestic stocks of metal and ores and concentrates were at record highs with domestic mines and plants posting substantial voluntary production restrictions as follows:

(*a*) The Anaconda Co. discontinued all lead-zinc mining at Butte, and curtailed refinery facilities.

(*b*) American Zinc, Lead & Smelting Co. cut metallic zinc production 10 percent and closed three Tennessee mines.

(*c*) St. Joseph Lead Co. curtailed zinc smelter production 15 percent, zinc or production 15 percent, lead ore production 10 percent, and postponed plans to increase lead smelter capacity. In June, they announced that the Bonne Terre mine would close because of low metal prices, after 94 years of operation.

(*d*) The New Jersey Zinc Co. curtailed production of slab zinc and alloy metal by 15 percent, followed by a second 15 percent cutback at Palmerton, Pa., and Depue, Ill., smelters. Also closed Flat Gap mine at Treadway, Tenn.

(*e*) Matthiessen & Hegeler Zinc Co. reduced its slab zinc production by 20 percent.

(*f*) American Smelting & Refining Co. curtailed zinc metal production at Corpus Christi, Tex., by 11 percent.

(*g*) Several months previous, The Eagle-Picher Co. substantially cut back zinc metal production at Henryetta, Okla.

The Interior Committee reported out the Anderson bill (S. 1747) substituting provisions of H.R. 84 for the susbidy terms of S. 1747. The Senate Finance Committee requested jurisdiction of the bill because of its tariff provisions. A hearing was held to hear administration witnesses who opposed both the tariff and subsidy provisions stating, "we believe that the program would projudice the broader interests of the United States * * * in its political relations with other countries." The bill was amended in executive session of the Finance Committee eliminating all tariff provisions and reported out as a subsidy bill. At this point, Senator Anderson moved for Senate consideration of H.R. 84, with approval as reported in item 33 above.

37. The administration was under pressure all year for formulation of a lead-zinc minerals policy, and on June 23 proposed the following:

(*a*) A "barter" purchase of $65 million of domestic lead-zinc stocks.

(*b*) A proposal for the Treasury Department to discontinue commercial sales of silver, permitting the market price to rise.

(*c*) Appointment of a mining task force to study local conditions in mining districts.

Adverse reaction from industry and Congress was immediate as the program had no long-term stability and would again subsidize foreign production. The proposal was shelved.

38. Following the State Department foreign lead barter announcement in Mexico City, negotiations proceeded with Consolidated Mining & Smelting Co. of Canada, Ltd. and Broken Hill Associated Smelters Proprietory, Ltd. of Au-

stralia. On August 24, 1961, the Department of Agriculture announced completion of arrangements for contracts totaling $18 million to acquire for the U.S. Supplemental Stockpile 55,000 tons of Canadian lead and 45,000 tons of Australian lead. The U.S. lead-zinc industry was in accord and on record as opposing these barter deals.

39. On September 23, 1961, the Senate adopted Senate Resolution 206 requesting the Tariff Commission to bring up to date the investigation of the lead-zinc industry published in March 1960, under provisions of section 332 of the Tariff Act. A public hearing was held on January 16 and 17, 1962. Witnesses appeared for the domestic lead-zinc miners, to again prove that imports continue to injure our industry even under the quota system, that as presently constituted, provides insufficient controls on unneeded imports. Importing smelters urged a "reasonable" tariff in place of quotas. Canadians, Mexicans, and Peruvians urged cancellation of quotas and lowering of tariffs. A report is due May 15, 1962, and will be without specific recommendations for import controls.

40. On October 2, 1961, the Tariff Commission issued a lead-zinc report reviewing the industry experience after 3 years of quotas under Executive Order 10401. It informed the President that serious injury continued in the domestic industry due to imports, and quota controls should continue. The President accepted the Tariff Commission findings on February 9, 1962.

41. The fourth session of the International Lead-Zinc Study Group was held in Geneva during October 1961. A comparison of world metal (lead-zinc) production and consumption indicated a surplus still continued with stocks accumulating; however, there was optimism amongst the importing countries that the situation for the first half of 1962 might improve. The United States was purchasing lead under barter from Canada and Australia (105,000 tons total) with agreements from these countries to curtail their production. There was agreement that production should be reduced, but no effective action was taken to control contemplated metal surpluses. The United States continued to receive criticism for its import controls, even from the countries benefiting from the barter contracts.

42. Tariff legislation to protect the lead-zinc mining industry was again introduced in the 2d session of the 87th Congress by Congressman Wayne N. Aspinall, as H.R. 9965, and by Senator Clinton P. Anderson, as S. 2747. Eighteen other Congressmen introduced identical legislation, and 20 Senators cosponsored the Senate bill. This proposed the same tariff rates (2 cents permanent and 2 cents removable at peril points of 13½ cents and 14½ cents per pound) as included in similar bills of the first session, but eliminates provisions for a mine subsidy. This legislation would provide a metal price and supply favorable to the miner, consumer, and importer.

43. The fifth session of the International Lead-Zinc Study Group was held at Geneva in March 1962. The balance sheet for world metal production and consumption again showed a surplus for final 1961 figures and in the estimates for 1962. There was general agreement that reductions in production were needed, with offers by some countries to do so. The U.S. delegate offered reductions, subject to agreements to be negotiated between individual producers and Government representatives. Some substantial producing countries were uncooperative, and the session adjourned until May 28 for further consideration of the problems.

44. The proposed Government-industry discussions were ruled by the Justice Department to be contrary to anti-trust regulations. The U.S. delegate informed the Study Group Secretariat that U.S. reductions proposed during March could not be negotiated.

45. The fifth session of the Study Group was resumed in Geneva on May 28, 1962. New balance sheets of production and consumption were prepared for 1962. Following a restatement of voluntary reductions by several producing countries, there appeared to be an estimated world lead deficit for 1962 (consumption over supply) of 18,000 metric tons, and a zinc surplus of 87,000 metric tons. World metal stocks were still excessive, and United States and world prices had decreased since the first of the year.

46. The International Lead-Zinc Study Group has improved the collection of world statistical information, but it has not helped control excessive imports into the United States that continue to depress our domestic mining industry.

47. The presidential announcement of the stockpile investigation reacted unfavorably on world metal markets. The price of lead in the United States and on the London Metal Exchange was depressed to new lows since price controls were removed following World War II. ELZ testified before the stockpile committee emphasizing that (a) the announced maximum objectives for

lead and zinc in the stockpile appeared to be ridiculously low, (b) no disposals should be considered until objectives were reevaluated considering reconstruction needs in the United States and abroad, and (c) industry representatives should be consulted in estimating metal supply and demand during an emergency. In June 1962, the ELZ Committee offered services of industry experts to assist the OEP in determining stockpile goals (based on supply and demand statistics) for lead and zinc. This offer to the Director of the OEP was diverted to the Department of the Interior, that furnishes supply data. ELZ was assured that the industry offer of consultation regarding stockpile objectives would be used, but the services of mining industry representatives were never requested.

48. The Tariff Commission published Document 58 in May 1962, pursuant to Senate Resolution 206, directing a study of the lead-zinc industry. This is a factual report of industry conditions, complete with statistics. The figures again highlight the excessive imports that suppress domestic prices and mine production. This investigation, conducted under section 332 of the Tariff Act of 1930, could not consider import injury to the industry or recommend corrective import controls.

49. The ELZ Committee testified before both the House Ways and Means Committee and the Senate Finance Committee to discuss further complications to the security of our domestic lead-zinc mining industry that would develop from provisions of H.R. 11970, the Trade Expansion Act of 1962. Under the definition of an "industry," and according to new rules for determining injury, lead-zinc mining could not qualify for escape clause relief. Ours is presently the outstanding example of an industry injured by imports and has so been determined by the Tariff Commission. Adjustment assistance proposed in the legislation would not be effective help in our case. We proposed an effective escape clause and elimination of adjustment assistance.

50. The Trade Expansion Act was approved by Congress and enacted as Public Law 87–794 on October 11, 1962. An escape clause "of sorts" was included, requiring a Tariff Commission finding that "increased imports have been the major factor in causing or threatening to cause" serious injury to a domestic industry. In making such a finding, the Tariff Commission must "take into account all economic factors which it considers relevant, including idling of productive facilities, inability to operate at a level of reasonable profit, and unemployment or underemployment." Under a finding of injury, a firm could obtain a recommendation for import restriction. The President may accept this or recommend adjustment assistance (technical assistance, loans, tax carryback). Unemployed workers may obtain adjustment assistance as unemployment payments, retraining, and relocation allowances. The terms of the "escape clause" are so stringent that for all practical purposes, it will be inoperative for obtaining import relief, even for an industry such as lead-zinc mining with two previous findings of import injury and recommendations for import controls.

51. The sixth session of the International Lead-Zinc Study Group was convened October 24, 1962 in Geneva, Switzerland. This will be remembered as the United States stockpile meeting, as great concern was raised by many of the 23 participating countries who correctly fear the drastic effects of disposals on world markets. Foreign producers were quite insistent that the study group be consulted by the U.S. Government before any disposal of lead and zinc is arranged. From the U.S. lead-zinc industry standpoint, this was the only positive accomplishment of the meeting. World production of lead and zinc still showed a surplus to consumption. Canada and Australia estimated for 1963 the largest lead and zinc production in their history. This estimate followed the completion of a lead barter arrangement whereby the United States stockpiled during 1961 and 1962, 50,474 tons from Australia and 55,547 tons from Canada. (This agreement, sponsored by the State Department, was opposed by the United States domestic industry and further aggravated the question of so-called surpluses in the supplemental stockpile.) The United States was still abused during the study group session for trying to maintan a "marginal lead-zinc mining industry" through tariffs, quotas, and subsidies. Voluntary production curtailments are no longer considered by the group. A special working party was assigned to study controls through international agreements. This, plus statistics, will no doubt continue extending negotiations within this group.

52. On October 1, 1962, the Tariff Commission issued a lead-zinc report under provisions of Executive Order 10401, reviewing the industry experience after 4 years of quotas. It informed the President that serious injury continued in the domestic industry due to imports, and quota controls should continue. The President accepted the Tariff Commission findings on January 9, 1963.

53. The small mines subsidy bill referred to in item 33 was financed for the calendar year 1962 through a supplemental appropriation of $4,690,000, authorized July 25, 1962. Sixty producers were certified for 1962 participation. Fifty-five received payments amounting to aproximately $1,200,000 paid on approximately 20,000 tons of lead and zinc (8,000 tons was lead). The majority of the subsidy was paid to producers in the tristate mining district. No estimate is available on new production stimulated by the plan, but appears to be only a small percent of the total program.

54. In 1962 market prices for lead and zinc remained at continuing low levels. High lead stocks resulted in a price drop to 9.5 cents per pound—the lowest since price controls were relaxed following World War II. Lead mine production was the lowest since 1900, resulting from low prices and the shutdown of mines in Missouri by a prolonged strike. The zinc price at approximately 11.5 cents per pound also reflected excessive zinc stocks. Excessive imports continued under the quota plan again exceeding domestic production. Since inception of the quota plan on October 1, 1958 through 1962, imports of lead have been 140 percent and zinc 110 percent of domestic production.

55. Yugoslavia has a lead metal import quota of 31,520 tons per year. Under provisions of the Trade Expansion Act, a trade concession should be suspended, as soon as practicable to any country dominated by communism, which is the situation in Yugoslavia. This means that the lead import duty should be doubled on Yugoslav imports and would be a small additional protection to the U.S. domestic industry. The State Department recalls a treaty of commerce agreed with Serbia in 1881 that calls for a 1-year notice on intention to revoke a concession. No such notice has been given by the President.

56. The Hanover, N. Mex., zinc mine and mill was closed for economic reasons on December 1, 1962. An application was filed with the Tariff Commission by the union representing the unemployed workers requesting adjustment assistance provided under terms of the new Trade Expansion Act. As indicated in item 50, the new escape clause provisions required in this case, that unemployment resulting from imports must be due in major part to a trade concession granted under trade agreements. The Commission found (Mar. 11, 1963) that competition from imports was a factor in the decision to close the property, but not the major factor. The petition was denied. It is doubtful that a natural resource industry can obtain a finding of injury under the escape clause of the new Trade Act and any assistance to curb excessive imports will have to come from congressional action.

57. The International Lead-Zinc Study Group has noted the increase of new lead-zinc smelting capacity around the world that is in excess of actual need. A part of this expansion is a new lead smelter at the Tsumeb Mine in the Union of South Africa, to "go on stream" in 1963. South Africa presently has an annual import quota for lead ores and concentrates of 29,760 tons. There is no allowable import quota for lead metal. The operators of the South African mines would like their quota classification changed from concentrates to metal to accommodate this change in their product. The concentrates are presently treated at El Paso, Tex., and American Smelting & Refining Co., who treat these concentrates on a "toll" basis, applied to the U.S. Tariff Commission on March 8, 1963, to have the African concentrate quota reallocated to other countries producing lead concentrates to aid this one smelting installation. The emergency lead-zinc committee opposed any change in the quotas as presently constituted until an overall import control plan becomes effective to assist the entire lead-zinc mining and smelting industry; and we so advised the President, the Tariff Commission, and our friends in the Congress of our position on this matter. The smelter application for a change in the quota was denied by the Tariff Commission on March 27, 1963. The section of the law applicable to their petition provides for reductions or terminations of a trade concession, if it appears to the Commission that the duty or other import restriction proclaimed by the President may no longer be necessary to prevent serious injury to the industry. The Commission stated that an investigation was not warranted at this time. The interpretation is a recognition of continuing injury to the domestic lead-zinc mining industry as a result of excessive imports. There have been nine investigations of our industry by the Tariff Commission in the past 10 years, always showing an excess beyond domestic requirements of foreign imports of both metals.

58. A summary of the domestic lead-zinc mining industry efforts to survive, and the need for constructive import legislation to maintain a segment of the industry was reviewed once again during May 1963 by the Emergency Lead-Zinc committee before the Senate Subcommittee on Minerals, Materials, and Fuels.

Summary of lead-zinc statistics since 1950

LEAD

[In short tons of lead content]

Period	Production			Stocks end period		Dutiable imports	Industrial consumption	Employees at lead and zinc mines and mills	Total employees at primary smelting and refining	Average price per pound
	Mine output	Secondary lead	Total lead metal	Producers'	Consumers'					*Cents*
1950	430, 827	482, 275	990, 589	137, 669	139, 884	514, 954	1, 237, 981	----------	----------	13. 296
1951	388, 164	518, 110	935, 803	124, 080	102, 760	191, 649	1, 184, 793	----------	----------	17. 500
1952	390, 161	471, 294	944, 146	149, 778	122, 530	[1] 644, 217	1, 130, 795	24, 282	17, 889	16. 467
1953	342, 644	486, 737	954, 628	196, 430	113, 763	409, 004	1, 201, 604	----------	----------	13. 489
1954	325, 419	480, 925	967, 637	201, 850	124, 641	460, 197	1, 094, 871	17, 016	----------	14. 054
1955	338, 025	502, 051	981, 208	150, 822	117, 458	424, 413	1, 212, 644	----------	----------	15. 138
1956	352, 826	506, 755	1, 049, 063	159, 259	123, 995	420, 005	1, 209, 717	16, 845	17, 156	16. 014
1957	338, 216	489, 229	1, 022, 762	207, 912	129, 310	512, 289	1, 138, 115	----------	----------	14. 658
1958	267, 377	401, 787	871, 943	303, 316	122, 900	[2] 561, 263	986, 387	10, 500	13, 641	12. 102
1959	255, 586	451, 387	792, 318	230, 328	126, 496	347, 117	1, 091, 149	9, 893	13, 308	12. 211
1960	246, 669	469, 903	852, 339	305, 841	97, 268	354, 211	1, 021, 172	9, 430	13, 303	11. 948
1961	261, 921	452, 792	902, 357	312, 402	99, 140	354, 714	1, 027, 216	9, 312	13, 335	10. 871
1962 [3]	237, 386	440, 000	820, 200	236, 547	90, 695	340, 191	1, 080, 700	(4)	(4)	9. 63

See footnotes at end of table, p. 142.

Summary of lead-zinc statistics since 1950—Continued

ZINC

[In short tons of zinc content]

Period	Production			Stocks end period		Dutiable imports	Zinc consumption			Average price per pound
	Mine output	Secondary zinc	Total zinc metal	Producers'	Consumers'		Slab zinc	Ores consumed and secondary	Total	
										Cents
1950	623, 375	66, 970	910, 437	8, 884	64, 206	394, 153	967, 134	383, 367	1, 350, 501	13. 866
1951	681, 189	48, 657	930, 290	21, 901	50, 071	285, 618	933, 971	392, 111	1, 326, 082	18. 000
1952	666, 001	55, 111	959, 590	87, 160	92, 579	[1] 599, 435	852, 783	358, 865	1, 211, 648	16. 215
1953	547, 430	52, 875	968, 980	180, 843	84, 863	653, 832	985, 927	356, 462	1, 342, 389	10. 855
1954	473, 471	68, 013	870, 438	124, 277	100, 981	630, 488	884, 299	296, 393	1, 180, 692	10. 681
1955	514, 671	66, 042	1, 029, 546	40, 979	123, 544	569, 639	1, 119, 812	349, 268	1, 469, 080	12. 299
1956	542, 340	72, 127	1, 055, 737	68, 622	104, 094	627, 071	1, 008, 790	314, 232	1, 323, 022	13. 494
1957	531, 735	72, 481	1, 058, 277	166, 660	88, 342	881, 953	935, 620	295, 973	1, 231, 593	11. 399
1958	412, 005	46, 605	827, 851	190, 237	93, 609	[2] 687, 189	868, 327	273, 838	1, 142, 165	10. 309
1959	425, 303	57, 818	856, 484	154, 419	102, 428	514, 112	956, 197	322, 179	1, 278, 518	11. 448
1960	435, 427	68, 731	868, 247	190, 810	68, 871	501, 899	877, 884	281, 054	1, 158, 938	12. 946
1961	466, 576	55, 237	902, 032	172, 586	93, 782	479, 624	931, 213	276, 256	1, 207, 469	11. 542
1962 [3]	505, 648	54, 905	940, 623	181, 513	75, 914	510, 121	1, 013, 949	332, 360	1, 346, 309	11. 5

[1] Import duties suspended Feb. 12, 1952 to June 24, 1952. The dutiable import figure includes 454,617 tons of lead and 599,435 tons of zinc on the free list.

[2] Quotas effective Oct. 1, 1958 permit maximum annual imports for consumption of 354,720 tons of lead and 520,950 tons of zinc.

[3] 1962 figures preliminary.

[4] Not available.

COMMENTS ON LEAD-ZINC STATISTICS

1. From 1951 through 1957, U.S. industrial consumption of lead and zinc was fairly constant at about 1,100,000 tons and 1,300,000 tons per year respectively. During this period, prior to the imposition of quotas in October 1958, the ratio of dutiable lead imports (eliminating duty-free imports for stockpile) to U.S. mine production increased from 49 percent in 1951 to 210 percent in 1958; in the case of zinc, imports increased from 42 to 166 percent.

2. During this same period, imports of lead increased from 192,000 tons a year to 560,000 tons a year (1958); zinc imports from 286,000 tons a year to 687,000 tons a year (882,000 tons in 1957). U.S. mine production has stayed fairly constant during periods of reasonable prices but has been severely curtailed since the excessive imports of 1957.

3. Varying U.S. market prices since 1950 have had very minor, if any, effect on U.S. industrial consumption of lead and zinc.

4. Unneeded imports caused U.S. supply of lead and zinc to greatly exceed industrial requirements. Before barter stopped, in 1957, large amounts of these excessive imports were absorbed by governmental acquisitions.

5. Unneeded imports continued after barter stopped and forced the price of lead to decline from 16 cents in early 1957 to 11 ecnts in July 1958—a drop of 30 percent. Zinc dropped from 13½ cents in April 1957 to 10 cents in August 1957—a decline of 26 percent.

6. A sharp decline in U.S. mine production occurred in the second half of 1957 and early 1958. The annual rate was lower than the depression years of the mid-1930's and has continued at levels below the early 1950's.

7. Employment, in the lead-zinc mining industry by 1961 was 38 percent of the 1952 figure. The total loss of employment by 1961 within this industry since January 1952 was well over 15,000 jobs.

8. U.S. prices improved in 1955 and 1956 under the alternative programs initiated by the President (in lieu of accepting the Commission's recommendations), but employment did not return to the early 1952 level.

9. During Korea, U.S. prices of lead and zinc were frozen by the Government. Import duties were suspended subject to reinstatement if the U.S. price would fall below 18 cents for each metal, which happened early in 1952.

10. Import quotas were established under Executive Order 10401 on October 1, 1958, permitting imports at 80 percent of the base period 1953–57 (Tariff Commission recommendation was 50 percent and increased tariffs.) These have proven to be too liberal compared to U.S. needs.

11. Lead mine production has decreased annually since 1956, and in 1962 was 237,386 tons, the lowest output reported since 1900; 1962 zinc mine production of 505,648 tons was slightly higher than 1958 through 1961, but these 4 years were lower than prior years back to the early 1930's.

12. Stocks of lead and zinc were excessively high at the close of 1962. Zinc stocks were continuing to build in 1962. Lead stocks were reduced as primary lead production was affected by low prices and a lead mine strike.

13. Import levels were controlled by quotas, but lead imports in 1962 were 340,191 tons, or 144 percent of U.S. mine production; zinc imports were 510,121 tons, or 101 percent of mine production.

14. The result of continued excessive imports since 1958 with an accumulation of excessive stocks was low mine production and poor metal prices. When quotas became effective, these prices were 11.5 cents for lead and 10 cents for zinc. Prices during 1962 averaged 9.6 cents for lead and 11.5 cents for zinc—too low to maintain a domestic mining industry. Lead dropped to 9.5 cents in February 1962, the lowest level since price controls of World War II.

15. Zinc production curtailments in 1962 by domestic producers helped reverse the trend of building excessive stocks; however, levels of stocks again increased during the year. At meetings of the International Lead-Zinc Study Group the importing nations adopted a policy that zinc is surplus only in the United States, and it is our problem to solve alone. They agreed that the lead surplus was an international problem but looked to the United States for a world solution through barter of approximately 106,000 tons of these foreign stocks; 33,050 tons were acquired for the stockpile during 1961, and 77,971 tons during 1962. While this was being acquired by State Department direction, in opposition to industry opinion, the congressional Stockpile Investigating Committee was declaring it "surplus."

16. A healthy stable domestic industry should produce an annual minimum of 350,000 tons of lead and 550,000 tons of zinc at a price fair to the producer and consumer.

Mr. WILSON. A statistical summary, included with this exhibit, will quickly demonstrate the attrition to the domestic lead-zinc industry since 1950, as our mine production decreased, because foreign imports flowed in at excessively high levels. This has continued under present quota provisions as the importer has been guaranteed the largest share of new metal requirements, regardless of consumption, and the domestic producer allowed to provide the balance at prices established by the foreign competition. The results have been subnormal domestic market prices, excessive metal stocks, closed mines, reduced employment, and lost profits.

In spite of this, another congressional committee was recently told by a representative from the Department of the Interior that with regard to lead and zinc—

On the whole, 1962 was a very good year statistically, except for price.

Our industry would define a "good year" as one in which the miner can work, one in which our mines provide a fair share of our domestic lead-zinc requirements, and one in which the mining industry can prosper from a profitable operation based on a reasonable market price. A "good year" is not measured just on production and consumption statistics that may appear to some observers to be encouraging. The latter has resulted in "profitless prosperity" for the miner and if continued will eventually cause complete destruction of the domestic mining industry.

We find little appreciation from some of these department staff representatives or little concern by them for development of new ore reserves or possibilities of the need for self-sufficiency in natural resource production. They apparently do not understand or at least are not concerned about the effort that must be expended in exploration, the time and investment involved in finding and developing an ore body, the expense of ore production operations, the problems of pumping water and maintaining workings, and the necessity for the continuation of this cycle if we are to replace the minerals that are produced in this process. There is no feeling for the miners and their families, and for the many service people and businesses that are supported and depend upon a lead-zinc mining operation. To them, we are just a statistic—so many tons of lead and zinc—to be juggled against imports in the game of international relations. This is not business in the American tradition.

Lead and zinc are mined in 20 of our States. Exhibit B.

(Exhibit B follows:)

EXHIBIT B

DESCRIPTION AND STATISTICS OF THE DOMESTIC LEAD-ZINC MINING INDUSTRY SUMMARY BY STATES

We are all aware that lead-zinc mining has long been an important industry in the United States, but the general information on mining in the various States and the yearly production and value is not so well known.

Information of this type is particularly important to these States and to their representation in Congress from the "hometown standpoint" as some economists in governmental departments, charged with formulating mineral policy, lump domestic production into one large total without regard for origin, forgetting that the mining industry helped found many of our States, and these mines and their production aren't just figures to consider on a national basis but represent business vital to the economy of States, communities, and families, together with stockholders scattered throughout every State of the Union.

New wealth comes only from development of natural resources, generating employment and associated economic benefits. A survey in one of our mining States found the average miner's family to be 3.5 persons and for every man engaged in mining and allied industries, 2⅓ jobs were created in service industries. Each miner supported 12 local persons including merchants, mechanics, doctors, lawyers, and other professional, trades, and service people. The economics of these figures are evident in our mining towns throughout the United States, and it's important that we have a constructive national minerals policy to recognize and provide for an orderly development and growth of all mining throughout our country.

To help understand the importance of lead-zinc mining in the United States, the Emergency Lead-Zinc Committee has compiled the attached information providing a short résumé of industry activities in 20 of our States, together with some recent statistics from the U.S. Bureau of Mines on production of lead-zinc ores and metal and its dollar value at average market prices.

The summary sheet includes practically all production for the years shown. There is some small production from other States not included. Unfortunately, the trend in number of mines, tons of ore treated, tons and value of metal produced, and market prices all show a marked decrease to 1960, as excessive, unneeded foreign imports have depressed our domestic markets. This same trend is noted in practically all the individual State statistics.

We hope you will find this to be constructive information that will result in a better understanding of the economics and broad distribution of our domestic mining industry throughout the United States. We request your continued efforts for legislation that will provide effective control of imports, producing a sound and stable price and metal supply and resulting in a prosperous and expanding domestic lead-zinc mining industry.

1961 summary of U.S. production of lead and zinc

State	Number of mines estimated by USBM	Tons of material treated	Tons of lead produced	Tons of zinc produced	Value of lead produced	Value of zinc produced	Average price of lead	Average price of zinc
							Cents	*Cents*
Arizona	24	434,265	5,937	29,585	$1,223,022	$6,804,550	10.3	11.5
California	14	1,789	77	17	15,862	3,910	10.3	11.5
Colorado	37	895,973	17,755	42,647	3,657,530	9,808,810	10.3	11.5
Idaho	39	1,446,741	70,651	58,184	14,554,106	13,382,320	10.3	11.5
Illinois	20	965,541	3,430	26,795	706,580	6,162,850	10.3	11.5
Kansas	9	100,099	1,449	2,446	298,494	562,580	10.3	11.5
Kentucky	1	89,994	656	1,147	135,136	263,810	10.3	11.5
Missouri	7	5,242,779	98,785	5,847	20,349,710	1,344,810	10.3	11.5
Montana	45	216,716	2,643	10,262	544,458	2,360,260	10.3	11.5
Nevada	11	4,437	478	182	98,468	41,860	10.3	11.5
New Jersey	1	1,745	----------	112	----------	25,854	10.3	11.5
New Mexico	18	364,284	2,332	22,900	480,392	5,267,000	10.3	11.5
New York	2	592,438	879	54,763	181,074	12,595,260	10.3	11.5
Oklahoma	22	80,232	980	3,148	201,880	724,040	10.3	11.5
Pennsylvania	1	434,917	----------	23,428	----------	5,408,120	10.3	11.5
Tennessee	7	3,663,844	----------	81,734	----------	18,798,820	10.3	11.5
Utah	28	556,616	40,894	37,239	8,424,164	8,564,970	10.3	11.5
Virginia	3	858,600	3,733	29,163	768,998	6,726,462	10.3	11.5
Washington	8	985,654	8,053	20,217	1,658,918	4,649,910	10.3	11.5
Wisconsin	9	465,506	680	13,865	140,080	3,188,950	10.3	11.5
Total	306	17,402,170	259,412	463,681	53,438,872	106,685,146	----------	----------

NOTE.—This summary was compiled from U.S. Bureau of Mines statistics and includes practically all production for the years shown. There is some small production from other States not included. Bureau of Mines total figures for 1961 recoverable mine production are lead, 261,921 short tons, and zinc, 464,390 short tons—1956 was the most recent year representing normal mine production and price levels for the overall lead-zinc mining industry in the United States. In comparison to this year, 1961 lead mine production decreased 25 percent, zinc mine production 15 percent, and total combined dollar value was down 40 percent, resulting from low market prices, caused by excessive U.S. metal stocks, accumulated from excessive unneeded foreign imports.

Summary of United States production of lead and zinc

Year	Number of mines estimated by USBM	Tons of material treated	Tons of lead produced	Tons of zinc produced	Value of lead produced	Value of zinc produced	Average price of lead	Average price of zinc
							Cents per pound	*Cents per pound*
1948	1,346	22,876,249	388,355	629,503	$139,031,031	$167,853,361	17.9	13.3
1949	1,238	22,120,182	408,340	592,713	129,035,321	148,649,123	15.8	12.4
1950	1,069	24,545,539	429,646	623,138	119,604,055	178,601,706	13.5	14.2
1951	1,080	32,236,847	387,481	680,780	134,068,692	242,154,619	17.3	18.2
1952	987	27,647,482	389,780	665,468	125,425,934	222,805,038	16.1	16.6
1953	693	22,436,409	341,430	545,866	89,460,693	124,961,074	13.1	11.5
1954	548	21,192,167	324,272	473,052	88,858,721	102,089,454	13.7	10.8
1955	529	23,485,084	336,717	513,966	90,341,640	126,538,144	14.9	12.3
1956	625	23,556,465	349,869	542,114	109,858,768	148,440,964	15.7	13.7
1957	517	21,831,333	337,161	531,494	96,426,952	123,202,346	14.3	11.6
1958	337	17,115,313	266,867	411,936	62,363,860	83,621,413	11.7	10.2
1959	254	17,032,825	254,938	425,143	58,635,938	97,750,121	11.5	11.5
1960	292	17,684,627	245,757	434,968	57,580,860	112,246,477	11.7	12.9

THE LEAD-ZINC INDUSTRY IN ARIZONA

Arizona still has an important and valuable lead-zinc industry, but it is sickly compared to what it was in the period following World War II and before the flood of imports into the United States, which depressed prices and closed most of her lead-zinc mines.

Arizona in 1960 ranked fifth among the United States in value of lead production and third in zinc. A summarized tabulation of Arizona's production of lead and zinc to the end of 1960, is as follows:

	Tons	Value
Lead	609,000	$118,526,000
Zinc	851,000	205,998,000
Total, lead and zinc	1,460,000	324,524,000

The $325 million total value is 4 percent of the estimated $8 billion total of Arizona's mineral production to date. Copper has been the predominent mineral in Arizona, but lead and zinc comprise 25 percent of the total value of mineral produced other than copper.

The average lead-zinc industry employment of 1,200 to 1,400 men in 1945–52 dropped to as low as 320, of which 220 worked in one mine, the Iron King—the only lead-zinc mine able to operate continuously from 1952 to 1960, and that ability was due to its gold, silver, and copper byproducts. In 1949, 181 mines produced lead, zinc, or both. Six are now producing, three of them copper-zinc mines which resumed operations with the copper price recovery in 1959.

There are no lead or zinc smelters in Arizona, and the metals leave the State in ores or concentrates. A minor amount of the metals comes back for use in Arizona manufacturing so that the balance of trade is very favorable to this State.

Based upon national statistics, it has been estimated that an average of 13.5 persons (including the miner and his family) are directly or indirectly dependent upon each miner's wages. It also has been estimated that over 50 percent of Arizona's gross mine production value is spent within the State for wages, supplies, power, taxes, and outside services. Therefore, even the reduced 1960 lead-zinc industry of Arizona contributed much to the State, with its nearly 500 employees and its gross output valued at $11.4 million.

Nevertheless, it is difficult to accept the sacrifice of over half of one's lead-zinc industry to the production of low-cost foreign metals, especially when much of the foreign output was stimulated and financed by this country and when remaining domestic industry is in a deplorably weakened condition.

Production of lead and zinc in Arizona

Year	Number of mines estimated by USBM	Tons of material treated	Tons of lead produced	Tons of zinc produced	Value of lead produced	Value of zinc produced	Average price of lead	Average price of zinc
							Cents per pound	*Cents per pound*
1948	189	797, 292	29, 899	54, 478	$10, 703, 842	$14, 491, 148	17. 9	13. 3
1949	174	968, 301	33, 568	70, 658	10, 607, 488	17, 523, 184	15. 8	12. 4
1950	139	888, 099	26, 383	60, 480	7, 123, 410	17, 176. 320	13. 5	14. 2
1951	136	954. 985	17, 394	52, 999	6, 018, 324	19, 291, 636	17. 3	18. 2
1952	112	819, 752	16, 520	47, 143	5, 319, 440	15, 651, 476	16. 1	16. 6
1953	68	452, 660	9, 428	27, 530	2, 470, 136	6, 331, 900	13. 1	11. 5
1954	45	346, 313	8, 385	21, 461	2, 297, 490	4, 635, 576	13. 7	10. 8
1955	46	408, 486	9, 817	22, 684	2, 925, 466	5, 580, 264	14. 9	12. 3
1956	46	452, 191	11, 999	25, 580	3, 767, 686	7, 008, 920	15. 7	13. 7
1957	45	481, 327	12, 441	33, 905	3, 558, 126	7, 865, 960	14. 3	11. 6
1958	31	388, 987	11, 890	28, 532	2, 782, 260	5, 820, 528	11. 7	10. 2
1959	22	449, 166	9, 999	37, 325	2, 299, 770	8, 584, 750	11. 5	11. 5
1960	22	515, 075	8, 495	35, 811	1, 987, 830	9, 239, 238	11. 7	12. 9

THE LEAD-ZINC INDUSTRY IN CALIFORNIA

California is noted for its history of gold production. However, the production of lead and zinc began to play a prominent roll when California gold miners started spreading out, looking for new frontiers to fill the growing need of the prospectors' quest for fortune. Many lead-zinc mines were discovered and worked, especially in the desert areas, for most of them were rich in silver and gold. In later years, California's lead-zinc mines played an important part in supplying the Nation's needs for metal during World Wars I and II and the Korean emergency.

Few people realize that the lead-silver mining community of Darwin, Calif., was once the second largest city in California, second only to Yerba Buena (San Francisco), and that the development and operation of the rich and famous mines of Inyo County, during the early years of California's growth were responsible for Los Angeles becoming a city of importance. A book called "City Makers," by Remi A. Nadeau, tells how his grandfather operated extensive freight lines from the Owens Valley to the seaports of the Los Angeles area in order to get lead-silver bullion from the Inyo County smelters to market and to bring back supplies for the people who operated the mines and the smelters. Although the old Cerro Gordo mine and smelters were closed years ago, the mine was reopened as a high grade oxide zinc operation and flourished shortly after World War I. Lead-zinc leaser-type operations have flourished periodically throughout the desert area until 1957, depending largely on metal prices and war needs.

During World War II and the Korean emergency, a fairly substantial number of mines were brought into operation, such as Darwin Mines, Santa Rosa, Zinc Hill, Minnietta, Modoc, Lippincott interests, Shoshone Mines, Defense Mines, and many other smaller operations. These mines, together with other small operations outside Inyo County, contributed a great deal of wealth and employment for segments of the California economy.

When lead prices began to drop below 16 cents during 1957, the mines began to close until today active lead-zinc mining operations are practically nonexistent. American Smelting & Refining Co. has a lead-zinc smelter on the sea coast near San Francisco. However, it now feeds primarily on foreign concentrates. A few small lead smelters in Los Angeles and other coastal cities process some lead ores mixed with scrap lead for making batteries.

From 1948 through 1956 California produced approximately 1.4 percent of U.S. domestic zinc production, and approximately 2.6 percent of U.S. domestic lead production. Today production is practically nil. From 1951 through 1956 the value of California zinc production averaged approximately $2 million per year and the value of lead production averaged approximately $2,800,000. Today the total value of both metals is less than $150,000 per year. Loss in gold and silver production amounts to approximately $3 million per year, since California ores are rich in these metals.

Closing of the lead-zinc mines has cost California millions of dollars in wages, tax revenue, freight revenue and community support. This is a trageic loss of new wealth that cannot be made up through other means.

Production of lead and zinc in California

Year	Number of mines estimated by USBM	Tons of material treated	Tons of lead produced	Tons of zinc produced	Value of lead produced	Value of zinc produced	Average price of lead	Average price of zinc
							Cents per pound	*Cents per pound*
1948	42	102,347	8,290	5,274	$2,967,529	$1,402,710	17.9	13.3
1949	47	115,729	10,300	7,209	3,254,619	1,787,832	15.8	12.4
1950	31	159,841	15,739	7,551	4,249,151	2,144,484	13.5	14.2
1951	31	191,095	13,450	9,287	4,653,776	3,383,633	17.3	18.2
1952	33	188,718	10,939	9,094	3,439,116	3,019,222	16.1	16.6
1953	20	133,936	8,532	5,180	2,235,207	1,191,303	13.1	11.5
1954	18	26,302	2,579	1,352	706,605	292,008	13.7	10.8
1955	12	136,901	8,150	6,784	2,428,734	1,668,875	14.9	12.3
1956	24	174,930	9,279	8,027	2,913,398	2,199,250	15.7	13.7
1957	18	69,762	3,438	2,862	983,251	687,223	14.3	11.6
1958	9	1,643	104	39	24,429	7,935	11.7	10.2
1959	7	2,040	222	75	51,150	17,306	11.5	11.5
1960	12	5,381	423	153	99,099	39,551	11.7	12.9

THE LEAD-ZINC INDUSTRY IN COLORADO

For many years, Colorado has been a substantial producer of lead and zinc in the United States. Production of both metals expanded during the 1940's and reached an annual valuation of $30 million in 1951 prior to the subsequent decrease in production during the late 1950's as metal prices dropped resulting from excessive, unneeded foreign imports. The attached statistical information indicates Colorado's lead production decreased from 30,336 tons, valued at $10,496,256 in 1951, to 18,080 tons, valued at $4,230,720 in 1960. Comparable figures for zinc are 55,714 tons, valued at $20,279,896 produced in 1951, and reduced to 31,278 tons, valued at $8,069,724 in 1960.

The larger mines in the State include the Eagle Mine of New Jersey Zinc Co. at Gilman in Eagle County; the Treasury Tunnel-Black Bear-Smuggler Union group of mines in San Miguel County, owned by Idarado Mining Co. and controlled by Newmont Mining Corp.; the Emperius Mine operated by the Emperius Mining Co. at Creede, Mineral County; and the Rico Argentine Mining Co. at Rico, Dolores County. The Standard Metals Corp. has recently developed a large lead-zinc ore reserve at Silverton in San Juan County but is postponing production until market prices justify a mining operation. The Bureau of Mines Minerals Yearbook lists other smaller mines throughout the State that have continued to produce even at current low market prices.

Some production in Colorado in 1958, 1959, and 1960 was made at a financial loss to the operators; but in view of the greater losses that would have been incurred through complete shutdowns, the operations were continued in order to provide employment for the primary mining communties and to prevent irreparable destruction to the heavy investments in mining properties.

Colorado's last lead smelter is being dismantled at Leadville due to lack of ore feed material, further indicating the deterioration of the mining industry that formerly had more than forty smelters in the State. Arrangements have been made to provide markets for Colorado lead-zinc mines by shipping ores and concentrates to the El Paso, Tex., smelter of the American Smelting and Refining Co. The added freight is an additional cost to metal production.

Colorado's vast mineralized area extends in a southwesterly direction across the State from the Boulder area to LaPlata County. In this area are known deposits of major proportion of the base and precious metals. These areas were formerly served by extensive milling and smelting operations; but with the exception of the major operations mentioned above, mining has for the most part been discontinued largely because of the high costs of operations and the low prices of metals.

In some instance where gold and/or silver are found in conjunction with the other metals, it has been possible to continue production by selective mining and careful management.

In other instances, gutting of the vein structure, or extracting the richer ore near the center of the vein, in other words, "high-grading," has been resorted to in an effort to meet the ever-increasing costs of mining experienced by the domestic industry.

Large investments made in uncovering extensive ore bodies in Colorado have proven the extent of mineralization, but under present market conditions, it would be impossible to recover primary investments.

Mining in Colorado is being discontinued in many sections of the State, and unless adequate legislation is passed to revive the industry, these destructive processes will continue.

Production of lead and zinc in Colorado

Year	Number of mines estimated by USBM	Tons of material treated	Tons of lead produced	Tons of zinc produced	Value of lead produced	Value of zinc produced	Average price of lead	Average price of zinc
							Cents per pound	*Cents per pound*
1948	159	692, 991	25, 143	45, 164	$9, 001, 194	$12, 013, 624	17. 9	13. 3
1949	151	584, 193	26, 853	47, 703	8, 485, 548	11, 830, 344	15. 8	12. 4
1950	124	796, 269	27, 007	45, 776	7, 291, 890	13, 000, 384	13. 5	14. 2
1951	116	1, 167, 507	30, 336	55, 714	10, 496, 256	20, 279, 896	17. 3	18. 2
1952	109	1, 132, 014	30, 066	53, 203	9, 681, 252	17, 663, 396	16. 1	16. 6
1953	57	906, 321	21, 754	37, 809	5, 699, 548	8, 696, 070	13. 1	11. 5
1954	67	721, 860	17, 823	35, 150	4, 883, 502	7, 592, 400	13. 7	10. 8
1955	72	708, 907	15, 805	35, 350	4, 709, 890	8, 696, 100	14. 9	12. 3
1956	72	995, 487	19, 856	40, 246	6, 234, 784	11, 027, 404	15. 7	13. 7
1957	55	948, 128	21, 003	47, 000	6, 006, 858	10, 904, 000	14. 3	11. 6
1958	37	750, 930	14, 112	37, 132	3, 302, 208	7, 574, 928	11. 7	10. 2
1959	27	671, 699	12, 907	35, 388	2, 968, 610	8, 139, 240	11. 5	11. 5
1960	50	745, 271	18, 080	31, 278	4, 230, 720	8, 069, 724	11. 7	12. 9

THE LEAD-ZINC INDUSTRY IN IDAHO

Historically the lead and zinc mining industry has been one of the major bulwarks of Idaho's economic structure. In the near-century of Idaho's identity as a territory and State, its mines have produced more than 7 million tons of lead with a value of $963 million, for a combined value of $1.43 billion.

For many years Idaho has consistently ranked second in the Nation in production of lead and among the top three States in zinc output. It regularly supplies about one-fifth of the country's annual mine production of lead and 10 to 15 percent of the zinc.

According to U.S. Bureau of Mines' preliminary estimates, Idaho last year (1961) produced 70,010 tons of lead with a value of $14,982,000 and 56,640 tons of zinc worth $13,027,000, for a combined total of mare than $28 million. This represents about 40 percent of the State's total mineral production for the year. Byproduct gold and silver production from lead and zinc mines would boost this total by an estimated $4 to $5 million, to nearly 50 percent of the State's mineral total.

Throughout the years, Idaho's vast lead and zinc resources have contributed importantly to the State's and the Nation's economic welfare, particularly in supplying the mobilization demands of World War I and World War II.

In recent years, however, the contribution of the lead and zinc industry to the State's economy has been a declining one due to adverse market conditions which have resulted from a national foreign policy which stimulated worldwide overproduction of both metals and permitted the surplus output relatively free access to domestic markets. Under this policy, the combined price of lead and zinc has dropped from a high of 35.5 cents in 1951 to an average of less than 23 cents during the past 4 years.

The impact of this depressed market on Idaho's lead and zinc mining industry can be demonstrated by numerous statistical comparisons, but a few illustrations should suffice:

> 1961 lead production was only about 70 percent of the recent production peak of more than 100,000 tons in 1950. Zinc output last year was less than 65 percent of the 1950 figure.
>
> Tonnage of ore mined last year was only 54 percent of the 1950 total. Since this represents a greater decline than is reflected in metal production, it is apparent that producers are being forced to "high-grade" their ore reserves in order to sustain their operations.

In terms of value of lead and zinc produced, in 1961 combined total of $28 million was only silghtly more than 50 percent of the $55 million total of 1951.

Last year there were less than 40 lead and zinc mines in productive operation in Idaho as compared with 129 in 1948 and an average of 112 in the 5-year period from 1948 through 1952. The Coeur d'Alene District of Shoshone County, which produced 98.7 percent of the State's lead output and 99.7 percent of the zinc in 1961, had only 13 mines producing last year. This was nine less than the previous year and only 25 percent of the average number of producers during the first 5 years of the 1950's.

It is estimated that employment in the industry has declined more than 30 percent in the past 10 years. Payrolls have decreased less than 8 percent, however, due to the steady upward trend of the wage scale for production workers. Daily wages of mine workers, including fringe benefits, have risen about 50 percent since 1952.

Shoshone County, center of Idaho's lead and zinc mining industry, suffered an 8.5 percent drop in population between 1950 and 1960, while the State as a whole was registering a 13.3 percent population increase.

From these comparisons, it is obvious that Idaho's lead and zinc mining industry is currently operating at least 25 to 35 percent below its production potential. Much of its milling and concentrating capacity is standing idle or in the process of dismantling and liquidation.

The State has one lead smelter and refinery which turns out high-purity refined ingot lead, corroding pig lead, antimonial lead, and leaded zinc oxide, as well as important byproducts including cadmium and silver. It also has an electrolytic zinc plant which produced special high-grade quality zinc of 0.9999 plus purity, several types of diecasting alloys and zinc anodes, along with byproduct cadmium and sulfuric acid.

Between 60 and 70 percent of Idaho's mine production of lead and zinc is processed in these plants. The balance, which represents a substantial tonnage of concentrates, is shipped out of the State for recovery of the contained metals. The Idaho plants also receive ore concentrates from outside the State and the country, and in recent years these sources have been supplying about 50 percent of the "feed" for the operations. The zinc plant has an annual capacity of 80,000 to 85,000 tons of refined metal, but for the past several years, production has been curtailed to 80 percent of capacity or less. Production at the lead smelter has been ranging upwards to 90 percent of its 108,000-ton annual capacity.

Practically all of Idaho's lead and zinc production is marketed outside the State for final use and fabrication, since there are no industries in the State which use either metal in any significant amounts. As export products, however, these two metals sustain an important segment of the State's economy, and under more favorable market conditions could make a substantially greater contribution to Idaho's future.

Production of lead and zinc in Idaho

Year	Number of mines estimated by USBM	Tons of material treated	Tons of lead produced	Tons of zinc produced	Value of lead produced	Value of zinc produced	Average price of lead	Average price of zinc
							Cents per pound	*Cents per pound*
1948	129	2, 944, 510	88, 544	86, 267	$31, 698, 752	$22, 947, 022	17. 9	13. 3
1949	107	2, 418, 605	79, 299	76, 555	25, 058, 484	18, 905, 640	15. 8	12. 4
1950	104	2, 657, 470	100, 025	87, 890	27, 006, 750	24, 960, 760	13. 5	14. 2
1951	110	2, 542, 078	76, 713	78, 121	26, 542, 698	28, 436, 044	17. 3	18. 2
1952	102	2, 578, 975	73, 719	74, 317	23, 737, 518	24, 673, 244	16. 1	16. 6
1953	74	1, 655, 301	74, 610	72, 153	19, 547, 820	16, 595, 190	13. 1	11. 5
1954	68	1, 405, 746	69, 302	61, 528	18, 988, 748	13, 290, 048	13. 7	10. 8
1955	69	1, 773, 113	64, 163	53, 314	19, 120, 574	13, 115, 244	14. 9	12. 3
1956	64	1, 788, 423	64, 321	49, 561	20, 196, 794	13, 579, 714	15. 7	13. 7
1957	48	1, 823, 110	71, 637	57, 831	20, 488, 182	13, 416, 792	14. 3	11. 6
1958	41	1, 334, 420	53, 603	49, 725	12, 459, 538	9, 655, 014	11. 7	10. 2
1959	32	1, 453, 367	62, 395	55, 699	14, 350, 850	12, 810, 770	11. 5	11. 5
1960	47	1, 097, 735	42, 592	36, 801	10, 040, 238	9, 494, 658	11. 7	12. 9

THE ZINC INDUSTRY IN ILLINOIS

All phases of the zinc industry are located in Illinois including mining, milling, smelting, conversion of zinc to chemicals, conversion to metallic products, utilization of byproducts, and recovery from scrap materials.

The areas of active mining are located in the northwest part of the State in Jo Daviess County adjacent to Galena and the southernmost part of the State in the Rosiclare district of Hardin County. Current output of 30,000 tons per year of high grade zinc concentrates account for approximately 4 percent of the entire U.S. zinc production. There are three primary zinc smelters, with a combined capacity of approximately 130,000 tons of slab zinc per year. There are two plants that convert primary zinc sinter to zinc oxide and one plant converting zinc scrap to zinc oxide. These facilities have an annual capacity of 45,000 tons of lead free zinc oxide. There are also 18 smaller plants that produce slab zinc and other zinc products from byproduct materials, obtained from the galvanizing (zinc coating) of steel and from other retained scrap zinc articles. These facilities (listed in table I attached) represent an original investment in excess of $400 million, based on current construction costs.

The value of mine concentrates and the products of manufacturing plants at capacity is equivalent to about $85 million per year at 1960 average prices. In 1959, the last year for which data is available, Illinois produced for sale about 125,000 tons of zinc metal, 15 percent of the U.S. total, and about 30,000 tons of zinc oxide, 17 percent of the U.S. total. Other zinc products are listed in table II attached.

It is estimated that the Illinois zinc industry employs about 3,000 persons who receive wages and salaries totaling approximately $15 million per year.

The primary smelters of the State consume on a 1959 basis, about 250,000 tons of zinc concentrates per year which is 14 percent of the total U.S. consumption and 28 percent of the U.S. mine production. Illinois consumed on a 1959 basis, 173,000 tons of zinc metal. This represents 18.1 percent of the zinc metal used in the United States. Comparable information on other zinc production is not available but can be assumed to be in the same order. Many of these products as listed in table II are typically utilized in making other products of a nature closer to the end consumer such as paint and die casting.

It is readily noted from this analysis that Illinois can be considered a major factor in the zinc industry. It is one of the few States that has maintained production levels at the low price levels of the past few years; however, it should be remembered that few if any mines are producing at a profit. Control of excessive imports to obtain better domestic prices is imperative for continuation and growth of this industry in Illinois.

TABLE I.—*Zinc mines and manufacturing plants in Illinois*

Mines:	
The Eagle-Pitcher Co.	Galena.
The American Zinc Co. of Illinois	Do.
Tri-State Mining Co.	Do.
The Minerva Co.	Rosiclare.
Ozark Mahoning Mining Co.	Do.
The Aluminum Co. of America	Do.
Primary smelters:	
American Zinc Co. of Illinois	Monsanta.
Matthiessen & Hegler Zinc Co.	La Salle.
The New Jersey Zinc Co.	Depue.
Primary zinc oxide:	
The American Zinc Co. of Illinois	Hillsboro.
The Eagle-Pitcher Co.	Do.
Secondary zinc oxide: Sippi Metals	Chicago.
Secondary smelters:	
Federated Metals	Beckemeyer.
Sandoval Zinc Co.	Sandoval.
Illinois Zinc Co.	Peru.
Illinois Smelting	Chicago.
Allied Metal Co.	Do.
General Iron & Metal Co.	Do.
Imperial Smelting	Do.
Inland Metals Refining Co.	Do.

TABLE I.—*Zinc mines and manufacturing plants in Illinois*—Continued

Secondary smelters—Continued	
Lincoln Smelting & Refining Co	Chicago.
Miller & Yoelin Co	Do.
North Branch Metal Products	Do.
Peoples Iron & Metal Co	Do.
Ideal Metal Co	Do.
Grossman Metal	East St. Louis, Ill.
Shanfeld Metal Co	Do.
Becker Iron & Metal Co	Do.
Standard Metals	Chicago.
Apex Smelting Co	Do.
Zinc compounds:	
Atlantic Chemical Co	Do.
Chemical & Pigment, Inc	Collinsville.
Chemicals, Inc	Chicago.
The Midland Co	Do.
Rolled Zinc (ribbon strip sheet) producers:	
Burgess Battery Co	Freeport.
Illinois Zinc Division Hydro-Metals, Inc	Chicago.
Do	Peru.
Matthiessen and Hegler Zinc Co	La Salle.

TABLE II

Zinc products of Illinois:

Slab zinc: All grades including chemically pure.

Zinc alloys: All types including brasses and high zinc alloys for die casting and galvanizing.

Rolled zinc: For dry batteries, lithograph plates, painting hardware, and other uses.

Zinc pigments zinc oxide: For use in rubber, paint, floor coverings, and for production of other zinc compounds.

Zinc dust: For use in paint and as a reagent in the chemical industry.

Zinc powder and brass powder: For use in making hardware and for bronzing paints.

Byproducts of zinc smelters:

Sulfuric acid: Used chiefly in the chemical industry.

Spiegeleisen and iron manganese alloys: Used in steel mills and foundries.

Cadmium metal: Used chiefly to plate hardware for corrosion resistance.

Production of lead and zinc in Illinois

Year	Number of mines estimated by USBM	Tons of material treated	Tons of lead produced	Tons of zinc produced	Value of lead produced	Value of zinc produced	Average price of lead	Average price of zinc
							Cents per pound	*Cents per pound*
1948	23	388, 517	3, 695	12, 980	$1, 322, 810	$3, 452, 680	17. 9	13. 3
1949	28	630, 090	3, 824	18, 157	1, 208, 384	4, 502, 936	15. 8	12. 4
1950	17	756, 010	2, 729	26, 982	736, 830	7, 662, 888	13. 5	14. 2
1951	19	857, 212	3, 160	21, 776	1, 093, 360	7, 926, 464	17. 3	18. 2
1952	21	930, 526	4, 262	18, 816	1, 372, 364	6, 246, 912	16. 1	16. 6
1953	21	700, 844	3, 391	14, 556	888, 442	3, 347, 880	13. 1	11. 5
1954	21	603, 675	3, 232	14, 427	885, 568	3, 116, 232	13. 7	10. 8
1955	13	839, 555	4, 544	21, 700	1, 354, 112	5, 338, 200	14. 9	12. 3
1956	23	851, 285	3, 832	24, 039	1, 203, 248	6, 586, 686	15. 7	13. 7
1957	23	853, 661	2, 970	22, 185	849, 420	5, 146, 920	14. 3	11. 6
1958	19	1, 003, 020	1, 610	24, 940	376, 740	5, 087, 760	11. 7	10. 2
1959	22	930, 265	2, 570	26, 815	591, 100	6, 167, 450	11. 5	11. 5
1960	22	1, 015, 581	3, 000	29, 550	702, 000	7, 623, 900	11. 7	12. 9

THE LEAD-ZINC INDUSTRY IN KANSAS

The lead and zinc mining industry of Kansas produced an average annual value of $8,800,000 during the 5-year period 1950–54 inclusive. The figure for 1959 was $345,000, or a drop in values of lead and zinc produced of approximately $8,500,000.

The mine production of lead concentrates averaged 8,335 tons during the 5-year period 1950–54, but was only 702 tons in 1959. Zinc concentrates produced by the Kansas mines averaged 43,700 tons in the 5-year period, but dropped down to only 1,971 tons in 1959.

Mine labor in 1954 was an estimated 621 employed directly in mining. In 1959 there were only approximately 11 people employed, mostly to keep the mines dewatered and to maintain them in a standby condition.

Cherryvale, Coffeyville, and Galena, Kans., have relatively small zinc oxide and/or lead oxide plants. These plants have had relatively steady employment for the past 6 years, estimated at approximately 350 personnel.

The value of these plants output of lead-zinc production is hard to obtain, but it is estimated to be approximately $5 million annually.

Production of lead and zinc in Kansas

Year	Number of mines estimated by USBM	Tons of material treated	Tons of lead produced	Tons of zinc produced	Value of lead produced	Value of zinc produced	Average price of lead	Average price of zinc
							Cents per pound	*Cents per pound*
1948	79	1,788,298	8,386	35,577	$3,002,188	$9,463,482	17.9	13.3
1949	70	1,602,976	9,772	29,433	3,087,952	7,299,384	15.8	12.4
1950	66	1,531,435	9,487	27,176	2,561,490	7,717,984	13.5	14.2
1951	78	6,733,827	8,947	28,904	3,095,662	10,521,056	17.3	18.2
1952	84	1,444,882	5,916	25,482	1,904,952	8,460,024	16.1	16.6
1953	58	881,254	3,347	15,515	876,914	3,568,450	13.1	11.5
1954	56	1,118,197	4,003	19,110	1,105,042	4,127,760	13.7	10.8
1955	58	1,543,530	5,498	27,611	1,638,404	6,792,306	14.9	12.3
1956	51	1,674,116	7,635	28,665	2,397,390	7,854,210	15.7	13.7
1957	43	933,569	4,257	15,859	1,218,000	3,679,000	14.3	11.6
1958	25	227,360	1,299	4,421	304,000	902,000	11.7	10.2
1959	11	16,385	481	1,017	111,000	234,000	11.5	11.5
1960	5	32,272	781	2,117	182,754	546,186	11.7	12.9

NOTE.—Materials treated pertain to crude ore (mine dirt) only; recoverable metal includes lead and zinc recovered from tailings retreatment.

Source: U.S. Bureau of Mines.

THE LEAD-ZINC INDUSTRY IN KENTUCKY

Lead and zinc are produced in Kentucky as a byproduct recovered from fluorspar milling principally in Lexington County in the western part of the State. Zinc values predominate compared to lead, and production since 1900 totals approximately 34,000 tons, valued at $7 million.

Production of lead and zinc in Kentucky

Year	Number of mines estimated by USBM	Tons of material treated	Tons of lead produced	Tons of zinc produced	Value of lead produced	Value of zinc produced	Average price of lead	Average price of zinc
							Cents per pound	*Cents per pound*
1948	3	(1)	216	639	$77,328	$169,974	17.9	13.3
1949	3	(1)	187	935	59,092	230,010	15.8	12.4
1950	3	(1)	66	731	17,820	207,604	13.5	14.2
1951	3	(1)	107	3,457	37,022	1,258,348	17.3	18.2
1952	3	(1)	60	3,280	19,320	1,088,960	16.1	16.6
1953	2	63,622	58	489	15,196	112,470	13.1	11.5
1954	2	21,160	----------	458	----------	98,928	13.7	10.8
1955	----------	----------	----------	----------	----------	----------	14.9	12.3
1956	1	17,056	228	417	71,592	114,258	15.7	13.7
1957	1	38,080	411	837	117,546	194,184	14.3	11.6
1958	1	46,264	516	1,258	120,744	256,632	11.7	10.2
1959	1	50,436	409	673	94,070	154,790	11.5	11.5
1960	1	68,922	558	869	130,572	224,202	11.7	12.9

[1] Not available.

THE LEAD INDUSTRY IN MISSOURI

Mines in the State of Missouri produce more lead than those of any other State in the Union. Missouri's annual production is approximately 125,000 tons of lead which represents about 40 percent of the output of mines in the United States in each of the past 10 years. The major part of this production comes from the mining areas in southeast Missouri, which contain a large number of mines and a lead smelter which has a capacity of about 115,000 tons of lead metal per year. The value of this output is approximately $25 million. In addition, the mines in southeast Missouri produce about 5,600 tons of zinc concentrates annually as a byproduct.

The lead mining industry in Missouri employs about 2,700 persons who receive wages and salaries totaling about $13 million. These employees are distributed among nearly a dozen communities, which therefore have a direct interest in the degree of activity of the lead mining industry.

The mines, concentrating plants, and the smelter in Missouri represent investments that, at today's level of construction costs, would require more than $100 million to reproduce.

Exploration activities in the last few years have developed a considerable lead mining potential in southeast Missouri. This includes the Viburnum project of St. Joseph Lead Co. that started production in July 1960, and the discoveries made by Kennecott Copper Corp., American Smelting & Refining Co., American Metal Climax, and National Lead Co. It will probably take higher lead prices than at present to bring these into production. Low lead prices forced the closure of the Bonne Terre mine during 1961 after nearly 94 years of operation. Ore reserves remain but are not economical at present market values.

The Joplin district of southeast Missouri (tri-State district) contains substantial lead ore reserves, but production in that area is generally unprofitable at present price levels.

Production of lead and zinc in Missouri

Year	Number of mines estimated by USBM	Tons of material treated	Tons of lead produced	Tons of zinc produced	Value of lead produced	Value of zinc produced	Average price, lead	Average price, zinc
							Cents per pound	*Cents per pound*
1948	90	4,520,103	102,288	6,463	$36,619,104	$1,719,158	17.9	13.3
1949	60	5,981,312	127,522	5,911	40,296,952	1,465,928	15.8	12.4
1950	68	6,384,138	134,626	8,189	36,349,020	2,325,676	13.5	14.2
1951	54	6,499,122	123,702	11,476	42,800,892	4,177,264	17.3	18.2
1952	67	7,128,550	129,245	13,986	41,616,890	4,643,352	16.1	16.6
1953	28	6,674,300	125,895	9,981	32,984,490	2,295,630	13.1	11.5
1954	16	6,598,647	125,250	5,210	34,318,500	1,125,360	13.7	10.8
1955	18	6,734,346	125,412	4,476	27,372,776	1,101,096	14.9	12.3
1956	19	6,996,696	123,783	4,380	38,867,862	1,200,120	15.7	13.7
1957	16	6,874,008	126,345	2,951	36,135,000	684,000	14.3	11.6
1958	9	5,945,836	113,123	362	26,471,000	74,000	11.7	10.2
1959	4	5,573,517	105,165	92	24,188,000	21,000	11.5	11.5
1960	5	5,897,813	111,948	2,821	26,195,832	727,818	11.7	12.9

NOTE.—Materials treated pertain to crude ore (mine dirt) only; recoverable metal includes lead and zinc recovered from tailings retreatment.

Source: U.S. Bureau of Mines.

THE LEAD-ZINC INDUSTRY IN MONTANA

Montana has long been one of the foremost producers and processors of both lead and zinc in the United States. However, current market conditions and other economic factors have sharply reduced the mining and treating of both metals below normal levels.

During the decade 1948–57, Montana's share of the total U.S. zinc production was never lower than 9 percent and ranged as high as 14.7 percent in 1953. Its average annual production during the years 1951–55 was 75,509 tons with an average annual value of more than $21 million. But in 1960, Montana produced only 12,551 tons of zinc with a value of $3,238,158. This was only 2.9 percent of U.S. zinc production.

The same decline has been experienced in lead production. During 1948–57, Montana's share of total U.S. production ranged from 4 percent to a high of 5.8 percent and its average annual mine production during 1951–55 was 18,876 tons worth $5,717,000. In 1960, Montana mined only 4,879 tons of lead worth $1,141,686. This was only 2 percent of domestic production.

Zinc and lead deposits are widely scattered throughout the State and a number of small mining operations produce limited amounts of both metals, usually in conjunction with silver or other types of mining. The marginal nature of these operations makes them highly dependent upon market conditions. In 1957, for instance, zinc was produced in 12 of Montana's 56 counties and lead was produced in 18 counties. However, the major producer of both lead and zinc is the Anaconda Co.'s properties in the Butte area. In 1957 these mines produced 85 percent of the State's zinc and 72 percent of its lead. At present, neither lead nor zinc is being mined in the Butte area, which largely accounts for Montana's decline in the production of both metals.

Two large zinc processing plants are maintained by the Anaconda Co. at Anaconda and Great Falls. The Anaconda plant, which has a capacity of some 15 million pounds of zinc a month, has been closed since January 1, 1961, and no resumption of operations is anticipated in the foreseeable future. The electrolytic zinc plant at Great Falls has a monthly capacity of 27 million pounds and is believed to be the largest U.S. plant of its type. It processes concentrates into zinc slabs for both the Anaconda Co. and various toll customers. At present, only six of the plant's eight units are in operation and this will be reduced to four units in July 1961. A return to six-unit operation is anticipated this October if market conditions are favorable.

Production schedules at the Great Falls plant call for the processing of 94,500,000 pounds of finished zinc during the 6-month period from June through November 1961. Of this amount, 35,344,000 pounds will be processed for Anaconda Co. accounts and the balance will be processed from concentrates, both domestic and foreign, supplied by toll customers. As of June 1, 1961, there was on hand at Great Falls 43,054,476 pounds of finished zinc for the Anaconda Co. and 44,770,330 pounds for toll customers.

At East Helena, the American Smelting & Refining Co. operates a lead smelter with a capacity of 8,000 tons of lead bullion a month. At present, the plant's output is about 5,000 tons monthly. Due to curtailed lead mining operations in Montana, the plant's intake presently is 60 percent from Idaho, 35 percent from Canada, and only about 5 percent from Montana sources. Ore and concentrates received from Montana points include small monthly tonnages from mine operations at Philipsbrug, Superior, Dillon, Lennep, Radersburg, and the Helena Valley, with occasional shipments from other isolated operations. The A.S. & R. plant also processes residues from the Anaconda Co.'s zinc plant at Great Falls. Production schedules call for the processing of 4,035,000 pounds of lead from these zinc plant residues during the 6-month period from June through November 1961.

The Anaconda Co. also operates a slag-treating plant at East Helena which recovers zinc oxide fume from th ehot and cold slag received from the A.S. & R. smelter. This zinc oxide is then returned to Great Falls for conversion into electrolytic zinc.

Reliable figures are not available to measure the loss of employment caused by the decline of lead-zinc mining and processing in Montana during recent years. However, where the Anaconda Co. employed 1,387 persons in its lead and zinc operations at Butte alone during 1956, the last year of normal production, its lead-zinc employment there is now limited to 59 maintenance workers. Presumably, a comparable job loss resulted in other areas from the closing of marginal mines and the curtailment of processing plants. Obviously, any improvement in market conditions which would allow resumption of normal lead-zinc mining operations and restore processing plants to full capacity would bring real and far-ranging benefits to Montana's economy.

Production of lead and zinc in Montana

Year	Number of mines estimated by USBM	Tons of material treated	Tons of lead produced	Tons of zinc produced	Value of lead produced	Value of zinc produced	Average price of lead	Average price of zinc
							Cents per pound	*Cents per pound*
1948	167	2,820,236	18,411	59,095	$6,591,138	$15,719,270	17.9	13.3
1949	146	1,240,184	17,996	54,195	5,686,736	13,440,360	15.8	12.4
1950	141	2,351,490	19,617	67,678	5,296,590	19,220,552	13.5	14.2
1951	135	2,740,084	21,302	85,551	7,370,492	31,140,564	17.3	18.2
1952	121	2,127,369	21,279	82,185	6,851,838	27,285,420	16.1	16.6
1953	87	1,914,158	19,949	80,271	5,226,638	18,462,330	13.1	11.5
1954	69	1,313,354	14,820	60,952	4,060,680	13,165,632	13.7	10.8
1955	63	1,500,165	17,028	68,588	5,074,344	16,872,648	14.9	12.3
1956	95	1,587,170	18,642	70,520	5,853,588	19,322,480	15.7	13.7
1957	78	1,118,942	13,300	50,520	3,803,800	11,720,640	14.3	11.6
1958	48	727,319	8,434	33,238	1,973,556	6,780,552	11.7	10.2
1959	43	670,489	7,672	27,848	1,764,560	6,405,040	11.5	11.5
1960	58	300,218	4,879	12,551	1,141,686	3,238,158	11.7	12.9

THE LEAD-ZINC INDUSTRY IN NEVADA

The Pioche, Nev., area has for many years accounted for 75 to 90 percent or more of Nevada's lead-zinc output. The Caselton operation of Combined Metals Reduction Co. has included custom milling of all sulfide ores produced in the district. Experience of this property and district are discussed as fairly representing Nevada.

After a long period of shipping Pioche ores to Utah mills and smelters, the Caselton mill was built and commenced operation in the fall of 1941. The importance of Pioche operations to the community and to the State of Nevada is illustrated by the following tabulation:

Year	Tons produced	Dollar value concentrates f.o.b. mill	Estimated district mine and mill employees
1942	126,000	$1,100,000	210
1947	200,000	2,700,000	330
1952	227,000	3,700,000	380
1957 [1]	65,000	424,000	130
1961	None	None	6

[1] The Caselton mine operated only 7 months in 1957 when metal price deterioration forced closure.

In addition to the above production, Bristol Silver Mines Co. was shipping ore direct to Salt Lake smelters. In 1957, production was 10,300 tons with net mine value of $414,000, and the mine employed around 35 men. Today their operation has also shrunk virtually to a standby basis.

For a community that has historically been dependent on the mines for its primary support, closing of the mines has created extreme hardship. People who spent their lifetime building homes have had to move. Merchants have had to go out of business. The county has been sorely pressed to find sufficient tax revenue and an important county in an important State has been hurt worse than some of the borderline "backward" countries whose good will our planners have tried to purchase.

A State that produced lead and zinc valued at $8 to $9 million in the early 1950's now has an annual token production of $200,000 to $300,000. The potential is still there if the miner is given the price incentive. The Nevada State Mine Inspector lists over 100 properties, potential lead-zinc producers, scattered throughout 12 counties in the State. All may not be large mines, but the operators typify the spirit of the miner and this State that helped build the strength of the West and will do so again if given a fair chance.

Production of lead and zinc in Nevada

Year	Number of mines estimated by USBM	Tons of material treated	Tons of lead produced	Tons of zinc produced	Value of lead produced	Value of zinc produced	Average price of lead	Average price of zinc
							Cents per pound	*Cents per pound*
1948	129	265,008	9,020	19,947	$3,229,392	$5,306,102	17.9	13.3
1949	145	282,354	9,276	19,962	2,931,358	4,950,725	15.8	12.4
1950	108	283,421	8,736	21,404	2,358,734	6,078,849	13.5	14.2
1951	99	321,951	7,083	17,437	2,450,908	6,347,123	17.3	18.2
1952	70	303,732	6,732	15,179	2,167,720	5,039,544	16.1	16.6
1953	36	102,012	3,307	4,426	872,644	1,017,981	13.1	11.5
1954	29	31,682	2,109	679	577,880	146,708	13.7	10.8
1955	37	37,831	2,104	2,434	626,932	598,912	14.9	12.3
1956	45	102,845	3,460	7,284	1,086,550	1,996,008	15.7	13.7
1957	36	84,529	4,911	5,161	1,418,995	1,197,375	14.3	11.6
1958	21	25,032	3,679	88	861,015	18,054	11.7	10.2
1959	20	5,735	752	109	172,878	25,000	11.5	11.5
1960	26	11,914	854	323	199,731	83,399	11.7	12.9

THE ZINC INDUSTRY IN NEW JERSEY

For many years, New Jersey was one of the foremost zinc-mining States, and the Franklin mine in Sussex County was the largest producer of recoverable zinc in the country.

In 1954, that mine was closed due to depletion of ore reserves after more than a century of operation; and its owner, the New Jersey Zinc Co., modernized and expanded operations at its nearby Ogdensburg mine. However, as a result of low market prices for zinc, that mine was closed in 1958 and has not since reopened.

At full capacity, the Ogdensburg mine would provide employment for about 400 men, and an annual payroll in excess of $1,300,000.

Production of zinc in New Jersey

Year	Number of mines estimated by USBM	Tons of material treated	Tons of zinc produced	Value of zinc produced	Average price of lead	Average price of zinc
					Cents per pound	*Cents per pound*
1948	2	488,701	76,332	$20,709,849	17.9	13.3
1949	2	341,058	50,984	14,443,000	15.8	12.4
1950	2	376,600	55,029	17,258,637	13.5	14.2
1951	2	404,424	62,917	24,279,745	17.3	18.2
1952	2	397,921	59,190	21,520,612	16.1	16.6
1953	2	312,884	45,700	9,922,990	13.1	11.5
1954	1	252,403	37,416	7,992,058	13.7	10.8
1955	1	89,704	11,643	2,863,945	14.9	12.3
1956	1	34,321	4,667	1,259,530	15.7	13.7
1957	1	Cleanup	12,530	2,856,840	14.3	11.6
1958	1	Cleanup	607	125,151	11.7	10.2
1959	----------	None	----------	----------	11.5	11.5
1960	----------	None	----------	----------	11.7	12.9

THE LEAD-ZINC INDUSTRY IN NEW MEXICO

The lead-zinc industry in New Mexico consists of mine production and concentrating mills. There is no smelting or fabricating done in the State.

This industry, although still of considerable importance to the areas in which it is mined, has greatly declined in the relative position it held in the forties and early fifties. Although New Mexico still has good reserves of both metals, the industry has been caught between the squeeze of increased costs for both labor and material and the extremely low price which has prevailed for the last 10 years.

During 1951, lead-zinc mines employed slightly over 1,250 men and produced 7,331 tons of lead and 44,755 tons of zinc which had a combined value of over $15 million. The severe drop in price in 1952 and again in 1953 resulted in a sharp curtailment of mining and eventually in 1959, production was down to 829 tons of lead and 4,636 tons of zinc, and employment was only 102 men.

With an average wage of $18 per day for miners, the impact of the wage loss alone, to the mining communities was of major significance. In addition, each job in a basic industry supports from 3 to 4 jobs supplying material and services to the industry and its employees. Thus the loss of over 1,000 jobs in the mining areas has had serious effect on the economy of the communities and counties concerned.

In addition to the loss of wages, both direct and indirect, the taxes paid by this industry to the schools, counties, and the State have been reduced sharply, causing additional problems.

It is estimated that investment in mines and mills in the Central Mining District, the major lead-zinc area in New Mexico is over $15 million.

Production of lead and zinc in New Mexico

Year	Number of mines estimated by USBM	Tons of material treated	Tons of lead produced	Tons of zinc produced	Value of lead produced	Value of zinc produced	Average price of lead	Average price of zinc
							Cents per pound	*Cents per pound*
1948	67	591, 572	7, 653	41, 502	$2, 739, 774	$11, 039, 532	17. 9	13. 3
1949	53	428, 800	4, 652	29, 346	1, 470, 032	7, 277, 808	15. 8	12. 4
1950	47	382, 404	4, 150	29, 263	1, 120, 500	8, 310, 692	13. 5	14. 2
1951	69	633, 716	5, 846	45, 419	2, 022, 716	16, 532, 516	17. 3	18. 2
1952	51	720, 976	7, 021	50, 975	2, 260, 762	16, 923, 700	16. 1	16. 6
1953	26	200, 973	2, 943	13, 373	771, 066	3, 075, 790	13. 1	11. 5
1954	8	45, 200	887	6	243, 038	1, 296	13. 7	10. 8
1955	20	159, 307	3, 296	15, 277	982, 208	3, 758, 142	14. 9	12. 3
1956	28	390, 969	6, 042	35, 010	1, 897, 188	9, 592, 740	15. 7	13. 7
1957	24	445, 972	5, 350	32, 679	1, 514, 084	7, 581, 760	14. 3	11. 6
1958	7	129, 861	1, 117	9, 020	261, 378	1, 842, 936	11. 7	10. 2
1959	6	78, 052	829	4, 636	190, 670	1, 066, 280	11. 5	11. 5
1960	8	223, 797	1, 996	13, 770	467, 064	3, 552, 660	11. 7	12. 9

THE ZINC MINING INDUSTRY IN NEW YORK

For each of the past 8 years, zinc mines in the State of New York have produced approximately 10 percent of all of the zinc mined in the United States. The production of these mines has averaged over 50,000 tons of zinc content in the ore produced per year. Production comes from the Balmat and Edwards mines of the St. Joseph Lead Co., located in St. Lawrence County. The value of the zinc produced is approximately $12 million per year.

The zinc mining industry of New York employs about 400 persons who receive wages and salaries totaling $2 million. The zinc concentrates, and a minor quantity of lead concentrates from the mines of New York, are shipped to smelters outside the State. The mines and the associated milling plants in northern New York, now producing zinc concentrates, represent an investment that in terms of today's costs would require about $16 million to reproduce.

Production of lead and zinc in New York

Year	Number of mines estimated by USBM	Tons of material treated	Tons of lead produced	Tons of zinc produced	Value of lead produced	Value of zinc produced	Average price of lead	Average price of zinc
							Cents per pound	*Cents per pound*
1948	3	464, 049	1, 231	34, 566	$440, 698	$9, 194, 556	17. 9	13. 3
1949	3	504, 105	1, 317	37, 973	416, 000	9, 417, 000	15. 8	12. 4
1950	3	494, 871	1, 484	38, 321	400, 680	10, 883, 164	13. 5	14. 2
1951	2	500, 490	1, 500	40, 051	519, 000	14, 578, 564	17. 3	18. 2
1952	2	437, 099	1, 120	32, 636	360, 640	10, 835, 152	16. 1	16. 6
1953	2	646, 041	1, 435	51, 529	375, 970	11, 851, 670	13. 1	11. 5
1954	2	662, 665	1, 187	53, 199	325, 238	11, 490, 984	13. 7	10. 8
1955	2	650, 877	1, 037	53, 016	309, 026	13, 041, 936	14. 9	12. 3
1956	2	657, 445	1, 608	59, 111	504, 912	16, 196, 414	15. 7	13. 7
1957	2	660, 638	1, 667	64, 659	476, 762	15, 000, 888	14. 3	11. 6
1958	2	563, 644	579	53, 014	135, 486	10, 814, 856	11. 7	10. 2
1959	2	438, 769	481	43, 464	110, 630	9, 996, 720	11. 5	11. 5
1960	2	701, 197	775	66, 364	181, 350	17, 121, 912	11. 7	12. 9

THE LEAD–ZINC INDUSTRY IN OKLAHOMA

The lead and zinc mining industry of Oklahoma produced metallic values of over $18 million annually for the 5-year period 1950–54, inclusive. For the year 1959, the lead-zinc mines produced only $379,000 of metallic values. An estimate for 1960 would indicate values of approximately $500,000, a loss of approximately 97 percent in the values of products mined in Oklahoma in the last 6 years.

Mine production of lead concentrates dropped from 20,300 tons in 1950–54 average to only 900 tons in 1959. Zinc concentrate production from Oklahoma mines dropped from 86,900 tons in 1950–54 to only 2,100 tons in 1959.

Direct mining employment in 1954 in Oklahoma was 985, and the 1959 figure is approximately 115, basically employed to keep mines dewatered and in standby condition.

Zinc smelting in Oklahoma, consisting of three large smelters, has fared much better than has the mining aspects of the lead-zinc industry. Perhaps one of the reasons for the better production from the smelters is the fact that two of the three smelters depend to a large extent on receipt of foreign ores as a source of supply for their production of slab zinc. Regardless of the ability of these smelters to receive foreign ore, the value of shipments of slab zinc from Oklahoma smelters has dropped materially. The value of slab zinc shipped for the average of the 5-year period, 1950–54, inclusive, was $43 million. The value of slab zinc shipments from the three smelters in 1959 was only $34,900,000 or a drop of approximately 20 percent. The present annual capacity of the three Oklahoma smelters is approximately 200,000 tons of slab zinc, and with the 1959 shipments amounting to only 152,000 tons, only approximately 76 percent of smelter capacity was used.

Smelter employment for the year 1954 was about 2,200, and in 1960, the figure is reduced to approximately 1,900 employees at the three smelters combined.

Production of lead and zinc in Oklahoma

Year	Number of mines estimated by USBM	Tons of material treated	Tons of lead produced	Tons of zinc produced	Value of lead produced	Value of zinc produced	Average price of lead	Average price of zinc
							Cents per pound	*Cents per pound*
1948	116	2,228,294	16,918	43,821	$6,056,644	$11,656,386	17.9	13.3
1949	115	2,543,835	19,858	44,033	6,275,128	10,920,184	15.8	12.4
1950	117	2,850,880	20,724	46,739	5,595,480	13,273,876	13.5	14.2
1951	119	3,542,213	16,575	53,450	5,734,950	19,455,800	17.3	18.2
1952	118	3,715,329	15,137	54,916	4,874,114	18,232,112	16.1	16.6
1953	124	2,090,760	9,304	33,413	2,437,648	7,684,990	13.1	11.5
1954	82	2,754,373	14,204	43,171	3,891,896	9,324,936	13.7	10.8
1955	63	3,007,235	14,126	41,543	4,209,548	10,219,578	14.9	12.3
1956	81	1,755,607	12,350	27,515	3,877,900	7,539,110	15.7	13.7
1957	56	899,973	7,183	14,951	2,054,000	3,469,000	14.3	11.6
1958	31	384,196	3,692	5,267	864,000	1,074,000	11.7	10.2
1959	9	15,365	601	1,049	138,000	241,000	11.5	11.5
1960	3	19,700	936	2,332	219,024	601,656	11.7	12.9

NOTE.—Materials treated pertain to crude ore (mine dirt) only; recoverable metal includes lead and zinc recovered from tailings retreatment.

Source: U.S. Bureau of Mines.

THE ZINC INDUSTRY IN PENNSYLVANIA

Pennsylvania is a major factor in the zinc industry of the United States. Near Bethlehem is one of the largest zinc mines in the country. Current output of 40,000 tons per year of high-grade zinc concentrates is scheduled to increase to 60,000 tons, around 7 percent of the entire U.S. zinc mine production. There are two primary zinc smelters, the combined capacity of which amounts to about 240,000 tons of slab zinc and about 115,000 tons of lead-free zinc oxide. There are also five smaller plants which produce slab zinc and other zinc products from byproduct materials which are generated in the galvanizing (zinc coating) of steel, and from other reclaimed scrap zinc articles. One plant produces zinc oxide as a byproduct from the manufacture of a chemical used in the textile industry. These enterprises (listed in table I attached) represent an original investment which, in terms of today's construction costs, would probably be in excess of $360 million.

The value of the mine concentrates and the products of the manufacturing plants (at capacity) is equivalent to about $120 million per year at 1960 average prices. In 1959 (the last year for which data is available) Pennsylvania produced for sale about 186,000 tons of zinc metal, 23 percent of the U.S. total, and about 100,000 tons of pigment zinc oxide, 58 percent of the U.S. total. Other zinc products are listed in table II attached.

It is estimated that the Pennsylvania zinc industry employs about 3,800 persons who receive wages and salaries totaling about $20 million per year.

The primary smelters of the State consume (1959 basis) about 535,000 tons of zinc concentrates per year, which is about 30 percent of the total U.S. consumption, and about 60 percent of the U.S. mine production. Pennsylvania consumes about 12 percent of the zinc metal used in the United States. Similar information as to other zinc products is not available but is probably of the same order. These products, as listed in table II, are typically utilized in making other products of a nature closer to the ultimate consumer, such as diecasting and paint.

Pennsylvania's production of zinc products far exceeds its consumption, with a resulting significantly favorable balance of trade in this regard.

TABLE I.—*Zinc mines and manufacturing plants in Pennsylvania*

Mine: The New Jersey Zinc Co	Friedensville, Lehigh County.
Primary smelters:	
The New Jersey Zinc Co	Palmerton, Carbon County.
The St. Joseph Lead Co	Josephtown, Beaver County.
Secondary smelters:	
Superior Zinc Co	Bristol, Bucks County.
General Smelting Co	Philadelphia.
George Sall Metals	Do.
Colonial Smelting	Columbia, Lancaster County.
Keystone Metals	Pittsburgh.
Chemical plant producing secondary zinc oxide:	Bristol, Bucks County.
Rohm and Haas	
Rolled zinc (ribbon, strip, sheens) producers:	
The New Jersey Zinc Co	Palmerton, Carbon County.
Imperial Type Metal Co	Philadelphia.

TABLE II

Zinc products of Pennsylvania:

- Slab zinc: All grades including chemically pure.
- Zinc alloys: All types, including brasses and high-zinc alloys for diecasting and galvanizing.
- Rolled zinc: For dry batteries, lithograph plates, building hardware, and other uses.
- Zinc pigments:
  - Zinc oxide: For use in rubber, paint, floor coverings, and for production of other zinc compounds.
  - Zinc dust: For use in making hardware and for bronzing paints.

Byproducts of zinc smelters:

- Sulfuric acid: Some 400,000 tons per year, used chiefly in the chemical industry.
- Spiegeleisen: An iron-manganese alloy used in steel mills and foundries.
- Cadmium metal: Used chiefly to plate hardware for corrosion resistance.

Production of zinc in Pennsylvania

Year	Number of mines estimated by USBM	Tons of material treated	Tons of zinc produced	Value of zinc produced	Average price of lead	Average price of zinc
					Cents per pound	*Cents per pound*
1958 [1]	1	191,839	10,812	$2,229,218	11.7	10.2
1959	1	327,145	16,718	3,827,753	11.5	11.5
1960	1	261,724	13,746	3,559,114	11.7	12.9

[1] Nothing prior to 1958.

THE ZINC INDUSTRY IN TENNESSEE

Tennessee is the largest zinc-mining State in the country, and also the fastest growing. This position is a result of developments since 1955, when Tennessee produced 40,216 tons of recoverable zinc. In that year it ranked sixth in size, behind Montana, Idaho, New York, New Mexico, and Oklahoma.

In 1959, Tennessee produced 87,079 tons of recoverable zinc (21 percent of the U.S. total), with a value of $20 million. The tonnage produced in 1959 was 117 percent larger than in 1955, and was substantially more the output of the second largest State, Idaho, which produced 53,530 tons.

This increase in zinc ore output in Tennessee has been due principally to extension exploration, the discovery of new ore bodies, and their development into efficient mines. Two concerns most prominent in these activities have been the New Jersey Zinc Co. and the American Zinc, Lead & Smelting Co.

The New Jersey Zinc Co. opened its first Tennessee mine in 1956 in Jefferson County, and this was followed in 1959 by one in Hancock County. In 1956, that concern also installed a 1,000 ton per day ore-dressing mill in Jefferson County and doubled its capacity 2 years later.

In the First Congressional District, the New Jersey Zinc Co. has had property under investigation for zinc deposits in almost every county, and has extensive holdings in Hawkins, Hancock, Grainger, Claiborne, and Jefferson Counties, and is actively prospecting for zinc deposits.

In the Second Congressional District that company has conducted many investigations for zinc deposits in London and Knox Counties, and currently has holdings in Union County which are being prospected for zinc ore.

In the Third Congressional District, the New Jersey Zinc Co. has numerous zinc, lead, and barite prospects. It has investigated some of them and plans to investigate others in the future.

American Zinc, Lead & Smelting Co. operates four mines in the First Congressional District, and one mine and an ore-dressing mill in the Second Congressional District. Two of the mines were opened since 1955.

United States Steel Corp. operates a mine in the First Congressional District.

Tennessee Corp operates an integrated mine, mill, and smelted in the Third Congressional District. This operation produces zinc concentrates, copper, and sulfuric acid.

These operations provide employment for more than 1,500 men, and an annual payroll in excess of $5 million.

In spite of all the favorable activities, the mining industry has serious problems resulting from depressed metal prices. This is reflected in four mine closures this year—three of these were announced by the American Zinc, Lead & Smelting Co. early in the year (Cov. Grasselli, and North Friends Mine in Jefferson County, Tenn.) and the Flat Gap Mine of New Jersey Zinc at Treadway, Tenn., closed in April of this year.

Zinc mines and mills in Tennessee

	Mines	Ore-dressing mills
1st Congressional District:		
Hancock County: The New Jersey Zinc Co.	1	1
Jefferson County:		
American Zinc, Lead & Smelting Co.	4	
The New Jersey Zinc Co.	1	1
United States Steel Corp.	1	1
2d Congressional District:		
Knox County: American Zinc, Lead & Smelting Co.	1	1
3d Congressional District:		
Polk County: Tennessee Corp.	1	1

Production of lead and zinc in Tennessee

Year	Number of mines estimated by USBM	Tons of material treated	Tons of lead produced	Tons of zinc produced	Value of lead produced	Value of zinc produced	Average price of lead	Average price of zinc
							Cents per pound	*Cents per pound*
1948	6	2,165,166	----------	29.524	-------------	$7,853,384	17.9	13.3
1949	8	2,179,108	257	29,788	$81,212	7,327,848	15.8	12.4
1950	7	2,255,977	----------	35,326	-------------	10,032,584	13.5	14.2
1951	7	2,514,074	14	38,629	4,844	7,030,478	17.3	18.2
1952	9	2,553,215	18	38,020	5,796	12,622,640	16.1	16.6
1953	7	2,517,694	9	38,465	2,358	8,846,950	13.1	11.5
1954	7	2,155,126	----------	30,326	-------------	6,550,416	13.7	10.8
1955	7	2,465,575	----------	40,216	-------------	9,893,136	14.9	12.3
1956	9	2,803,681	5	46,023	1,570	12,610,302	15.7	13.7
1957	8	3,108,602	----------	58,063	-------------	13,470,616	14.3	11.6
1958	7	2,921,488	----------	59,130	-------------	12,062,520	11.7	10.2
1959	8	3,892,035	----------	89,932	-------------	20,684,360	11.5	11.5
1960	9	4,006,687	----------	91,394	-------------	23,579,652	11.7	12.9

THE LEAD-ZINC INDUSTRY IN THE TRI-STATE DISTRICT

The tri-State district consists of Cherokee County, Kans., Jasper County, Mo., and Ottawa County, Okla. For many years this district was the principal zinc-lead mining area of the United States; however, production has dropped considerably from the district's peak to an all-time low of practically no production in 1959 or 1960.

The 1950–54 average annual production of recoverable lead amounted to 23,401 tons and recoverable zinc amounted to 76,535 tons for a total recoverable metallic value of $29,598,000. The figures for 1959, as tabulated by the Bureau of Mines, indicated the recoverable metal content of lead produced was only 1,982 tons and recoverable zinc metal was only 2,066 tons, with a total metallic value of $724,000. The above figures indicate quite clearly what has happened during the past few years to this district.

Employment figures of those directly employed in the mining operations in the district dropped from 1,630 in 1954 to approximately 126 in 1959, with a large percentage of the 1959 employment being used to just keep the mines in standby condition—mainly for pumping and maintenance work.

The following table indicates the major drop in production from this field occurred in 1957, with further drops in 1958 and practically no values in 1959.

Mine production, tristate district, recoverable metal, content, and value

Year	Tons of lead produced	Tons of zinc produced	Metallic value
1950–54 (average)	23,401	76,535	$29,598,000
1955	19,679	69,696	23,009,000
1956	20,373	57,215	22,064,000
1957	11,462	30,895	10,446,000
1958	4,991	9,688	3,144,000
1959	1,082	2,066	724,000

THE LEAD-ZINC INDUSTRY IN UTAH

Although Utah's lead-zinc industry has dwindled to about one-third of what it was in the roaring twenties, it is still an important factor in the State's economy.

In 1960, Utah produced, as metal content of zinc concentrates, zinc oxides and lead bullion, 37,400 tons of lead, valued at $8,677,000, and 34,100 tons of zinc, with a value of $8,798,000. The State's lead output was 15.3 percent of the national total, and zinc 7.9 percent. Utah ranked third among the lead-producing States of the United States and was fourth in production of zinc.

There were eight active mines in the State during 1960—three large (50,000 or more tone of ore), one medium (10,000–50,000 tons), and five very small producers, all under 1,000 tons.

Utah lead and zinc ores are complex in their nature. They are always found in association with other metals. During 1960, the byproducts of lead-zinc mining in Utah were: gold, 23,922 ounces; silver, 2,156,544 ounces; and copper, 6,163,620 pounds—the total byproduct value amounting to $4,764,000. Thus, lead-zinc and byproduct metals from Utah mines were valued at about $22 million.

Before 1950 the Salt Lake-Tooele County area was considered the greatest nonferrous smelting center in the United States. Since 1950 the American Smelting & Refining Co.'s smelter at Murray and the United States Smelting Refining & Mining Co.'s smelter at Midvale—both in Salt Lake County—have closed down. Only one smelter remains—the International Smelting & Refining Co.'s plant at Tooele.

The only lead-zinc mill in the State is the United States Smeltings' plant at Midvale, Salt Lake County. Lead concentrates from this concentrator move to I.S. & R.'s Tooele, Utah, smelter for further processing. Zinc concentrates are shipped out of the State.,

The products of Utah's lead-zinc mining and processing industry are: (1) sulphide zinc concentrates, shipped to Great Falls, Mont., for smelting; (2) zinc oxides, which move to Great Falls, Bartlesville, Okla., and Fort Smith, Ark., for further reduction; (3) lead bullion in anodes, which goes to east Chicago for refining, and (4) lead bullion in 4-ton pigs, which is refined at Omaha, Nebr.

Average employment in Utah's lead-zinc mining and milling industry during 1960 was 981, and the total payroll for the year was $5,449,442.

In addition to Utah-mined lead and zinc, the mill at Midvale and the smelter at Tooele produced, during 1960, about 12,700 tons of lead and 13,000 tons of zinc from ores produced in surrounding States and shipped to Utah for reduction. This is a drop from about 50,000 tons total for the two metals produced from out-of-State ores and concentrates in 1949.

TABLE I.—*Lead-zinc mines, mills, and smelters in Utah, 1960*

	District	County
Mining companies:		
Cardiff Industrial, Inc.	Big and Little Cottonwood	Salt Lake.
Deer Trail Mines	Mount Baldy	Piute.
Empire Mines Co.	Tintic	Juab.
Mecca Mining Co.	Dry Canyon	Tooele.
New Park Mining Co.	Blue Ledge	Wasatch.
Tintic Standard Mining Co.	Tintic	Utah.
United Park City Mines Co.	Uintah, Blue Ledge, Snake Creek	Wasatch, Summit.
United States Smelting, Refining & Mining Co.	West Mountain, Ophir	Salt Lake, Tooele.
Mill: United States Smelting Refining & Mining Co.	Midvale	Salt Lake.
Smelter: International Smelting & Refining Co.	Tooele	Tooele.

TABLE II.—*Lead-zinc products of Utah*

Sulphile zinc concentrates	Lead bullion in anodes
Zinc oxides	Lead bullion in 4-ton pigs

Production of lead and zinc in Utah

Year	Number of mines estimated by USBM	Tons of material treated	Tons of lead produced	Tons of zinc produced	Value of lead produced	Value of zinc produced	Average price of lead	Average price of zinc
							Cents per pound	*Cents per pound*
1948	81	1,033,331	55,950	41,490	$20,030,100	$11,036,340	17.9	13.3
1949	59	759,471	53,072	40,670	16,770,752	10,086,160	15.8	12.4
1950	61	605,613	44,753	31,678	12,083,310	8,996,552	13.5	14.2
1951	61	710,923	50,451	34,317	17,546,046	12,491,388	17.3	18.2
1952	38	679,942	50,210	32,947	16,167,620	10,938,404	16.1	16.6
1953	28	532,039	41,522	29,184	10,878,764	6,712,320	13.1	11.5
1954	30	553,477	44,972	34,031	12,322,328	7,350,696	13.7	10.8
1955	28	618,483	50,452	43,556	15,034,696	10,714,776	14.9	12.3
1956	41	596,880	49,555	42,374	15,560,270	11,610,476	15.7	13.7
1957	34	578,277	44,471	40,846	12,718,706	9,476,272	14.3	11.6
1958	36	511,050	40,355	44,942	9,443,070	9,176,328	11.7	10.2
1959	21	470,985	36,630	35,223	8,424,900	8,101,290	11.5	11.5
1960	15	486,482	39,398	35,476	9,219,132	9,152,808	11.7	12.9

THE ZINC INDUSTRY IN VIRGINIA

Virginia is a major zinc-mining State, ranking ninth in size in the country, and in 1959 produced 19,734 tons of recoverable zinc, approximately 5 percent of the U.S. total that year, valued at $4,500,000.

Annual production in recent years has ranged between 13,409 tons (1952) and 23,080 tons (1957). This variation, resulting in periods of unemployment for workers, has been due to economic conditions. This was particularly evident in 1958 when the price of zinc metal dropped to 10.31 cents per pound from 13.49 cents in 1956, due in large measure to an influx of imports. As a result, output of recoverable zinc declined to 18,472 tons in 1958 and has remained near that level since that time.

The New Jersey Zinc Co. is the principal producer of zinc ore and concentrates in Virginia, having started operations there over half a century ago. Its activities are centered in Wythe County where it operates a mine and ore-dressing mill at Austinville and a mine at Ivanhoe. In 1957, the Austinville mine was the fifth largest producer of recoverable zinc in the country.

In 1957, two new mines were opened. One was the above Ivanhoe mine by the New Jersey Zinc Co. The other was developed at Timberville in Rockingham County by the Tri-State Zinc Co. Both mines were closed during most of 1958 due to adverse economic conditions, but have since reopened at least on a moderate scale of operations.

Current operations provide employment for 400 men, and an annual payroll approaching $1,300,000.

Production of lead and zinc in Virginia

Year	Number of mines estimated by USBM	Tons of material treated	Tons of lead produced	Tons of zinc produced	Value of lead produced	Value of zinc produced	Average price of lead	Average price of zinc
							Cents per pound	*Cents per pound*
1948	1	519,899	4,703	15,882	$1,683,674	$4,224,612	17.9	13.3
1949	1	431,843	3,313	13,166	1,047,000	3,265,000	15.8	12.4
1950	2	426,432	3,254	12,396	878,580	3,520,464	13.5	14.2
1951	1	239,088	1,508	7,332	521,768	2,668,848	17.3	18.2
1952	1	509,055	3,792	13,409	1,221,024	4,451,788	16.1	16.6
1953	1	526,816	2,788	16,676	730,456	3,835,480	13.1	11.5
1954	1	617,480	4,320	16,738	1,183,680	3,615,408	13.7	10.8
1955	1	647,210	2,997	18,329	893,106	4,508,934	14.9	12.3
1956	1	737,892	3,035	19,196	952,990	5,180,616	15.7	13.7
1957	3	848,138	3,143	23,080	898,898	5,277,476	14.3	11.6
1958	3	653,971	2,934	18,472	686,556	3,807,853	11.7	10.2
1959	3	666,277	2,770	20,334	637,100	4,661,792	11.5	11.5
1960	3	648,951	2,152	19,885	503,568	5,142,275	11.7	12.9

THE LEAD-ZINC INDUSTRY IN WASHINGTON

Virtually all of the small lead and zinc mining operations in Washington have been eliminated from the production picture by the depressed price situation that has prevailed for the past several years.

Production in 1961 of 7,968 tons of lead at $1.7 million and 22,597 tons of zinc worth $5.2 million came almost entirely from three mines in Pend Oreille County. A small amount of lead was contributed to the lead total by a mine in Stevens County.

In terms of both tonnage and value, Washington's lead and zinc mining industry last year operated at about two-thirds of production potential, as measured by recent highs of 12,734 tons of lead in 1957, 32,786 tons of zinc in 1953, and a combined value of $10.7 million for both metals in 1956.

Lead and zinc production last year represented only about 10 percent of the State's 1961 mineral production value, as compared with 15 percent as recently as 1955.

Washington has substantial milling and concentrating capacity for lead-zinc ores that is not currently in use. There are no primary smelting or refining facilities for these metals in the State, however, and all production must be shipped to other States for processing into refined metal.

The Bunker Hill Co., which has its principal mining, smelting, and refining operations in Idaho, operates a secondary lead smelter in Washington as well as lead fabrication, battery breaking, and lead oxide plants. Products marketed include various forms of fabricated lead, such as solder, wool, pipe, sheet, type metal, and various alloys, as well as red lead, litharge, battery oxides, and zinc and antimony oxides.

Production of lead and zinc in Washington

Year	Number of mines estimated by USBM	Tons of material treated	Tons of lead produced	Tons of zinc produced	Value of lead produced	Value of zinc produced	Average price of lead	Average price of zinc
							Cents per pound	*Cents per pound*
1948	21	903, 462	7, 147	12, 638	$2, 558, 626	$3, 361, 708	17. 9	13. 3
1949	21	942, 256	6, 417	10, 740	2, 027, 772	2, 663, 520	15. 8	12. 4
1950	18	1, 158, 506	10, 334	14, 807	2, 790, 180	4, 205, 188	13. 5	14. 2
1951	16	1, 184, 087	8, 002	18, 189	2, 768, 692	6, 620, 796	17. 3	18. 2
1952	20	1, 309, 114	11, 744	20, 102	3, 781, 568	6, 673, 864	16. 1	16. 6
1953	23	1, 589, 912	11, 064	32, 786	2, 898, 768	7, 540, 780	13. 1	11. 5
1954	19	1, 440, 752	9, 938	22, 304	2, 723, 012	4, 817, 664	13. 7	10. 8
1955	9	1, 580, 128	10, 340	29, 536	3, 081, 320	7, 265, 856	14. 9	12. 3
1956	8	1, 110, 892	11, 657	25, 609	3, 660, 298	7, 016, 866	15. 7	13. 7
1957	10	1, 353, 841	12, 734	24, 000	3, 641, 924	5, 568, 000	14. 3	11. 6
1958	6	839, 631	9, 020	18, 797	2, 110, 680	3, 834, 588	11. 7	10. 2
1959	9	856, 708	10, 310	17, 111	2, 371, 300	3, 935, 530	11. 5	11. 5
1960	3	959, 822	7, 725	21, 317	1, 807, 650	5, 499, 786	11. 7	12. 9

THE ZINC INDUSTRY IN WISCONSIN

Wisconsin is one of the 12 most important zinc-mining States in the country. During the past 10 years, its annual output of recoverable zinc has varied between 11,400 and 23,890 tons, depending upon economic conditions in the industry:

Year	Recoverable zinc (tons)	Year	Recoverable zinc (tons)
1951	15, 754	1956	23, 890
1952	20, 588	1957	21, 575
1953	16, 830	1958	12, 140
1954	15, 534	1959	11, 400
1955	18, 326	1960	19, 200

The 19,200 tons of recoverable zinc produced in 1960 had a value of $4,700,000. The marked decline in output from 23,890 tons in 1956 to 12,140 tons in 1958 reflected the reduction in price of prime western zinc from 13.49 cents to 10.31 cents. The increase in production in 1960 was stimulated by a price of 12.95 cents.

Zinc mining and ore dressing in Wisconsin is largely concentrated in Grant, Iowa, and Lafayette Counties in the Third Congressional District. A number of operators of various sizes are represented.

Despite the present unsatisfactory economic situation, prospecting continues. The New Jersey Zinc Co., for example, with holdings in excess of 11,000 acres in the Third Congressional District, has prospected over the past several years and located a number of orebodies of sufficient size to warrant development and perhaps mining, provided metal prices improve. One in the vicinity of Elmo (7 miles south of Platteville) is now under development, and a 600-ton per day ore dressing mill will be constructed in 1962.

Current zinc-mining operations in Wisconsin provide employment for more than 200 men, and an annual payroll in excess of $500,000.

Production in lead and zinc in Wisconsin

Year	Number of mines estimated by USBM	Tons of material treated	Tons of lead produced	Tons of zinc produced	Value of lead produced	Value of zinc produced	Average price of lead	Average price of zinc
							Cents per pound	*Cents per pound*
1948	39	162,473	861	7,864	$308,238	$2,091,824	17.9	13.3
1949	45	165,962	857	5,295	270,812	1,313,160	15.8	12.4
1950	11	186,083	532	5,722	143,640	1,625,048	13.5	14.2
1951	22	499,971	1,391	15,754	481,286	5,734,456	17.3	18.2
1952	24	670,322	2,000	20,588	644,000	6,835,216	16.1	16.6
1953	29	534,882	2,094	16,830	548,628	3,870,900	13.1	11.5
1954	7	523,755	1,261	15,534	345,514	3,355,344	13.7	10.8
1955	10	583,731	1,948	18,326	580,504	4,508,196	14.9	12.3
1956	14	828,579	2,582	23,890	810,748	6,545,860	15.7	13.7
1957	16	710,776	1,900	21,575	543,400	5,005,400	14.3	11.6
1958	2	468,822	800	12,140	187,200	2,476,560	11.7	10.2
1959	6	464,390	745	11,635	171,350	2,676,050	11.5	11.5
1960	8	686,085	1,165	18,410	272,610	4,749,780	11.7	12.9

Mr. Wilson. In 1951, the combined value of lead and zinc produced from our mines in the United States was $376 million—a very substantial quantity. The average annual production of both metals for the period 1957 through 1960 had slumped to $170 million. This represents the direct loss of $200 million per year to the economy of 20 States. The indirect loss in business that would be generated by maintaining higher production levels is many times that amount. Employment in lead-zinc mines during this same period dropped from 24,000 to 9,500, and the number of mines decreased from over 1,000 to 300. The maintenance of a healthy domestic lead-zinc mining industry is imperative to the economy of many towns, States, employees, and mining company stockholders scattered throughout the country. In a few words, it is good business for the United States. Unfortunately, there are feelings in some departments of our Government that it is more essential to import raw materials to keep neighbors friendly, than it is to be concerned about domestic production; but in so doing, we export jobs of American labor, close mines, cripple communities, and lose the desire and the capital to explore, find, and develop the mineral resources at home that not only build our economy but are the basis of our national defense.

Lead and zinc are metals whose use dates back into ancient civilization. They have always been important industrial minerals and their use is continuing to grow through changes in the standard of living throughout the world, but also through new developments in the use of lead and zinc resulting from research sponsored and financed by our domestic industry.

The U.S. industry has greatly improved mining recovery and processing techniques in recent years in a determined effort to meet the competition of foreign countries who have taken over a large part of our markets, but these foreign producers have economic advantages not available to our domestic miners. This is demonstrated in another summary, exhibit C, submitted with this statement and particular emphasis is placed on the differential between the United States mining wage and that of foreign producers.

(Exhibit C follows:)

EXHIBIT C

A SUMMARY OF SELECTED ECONOMIC DATA RELATING TO DIRECT AND INDIRECT ADVANTAGES AVAILABLE TO FOREIGN LEAD AND ZINC PRODUCERS

Recently much publicity has been given to the Common Market and the effect that its external tariff barrier will have on international trade. To some lesser extent, the public has been made aware of tariffs and other protective devices adopted by the Government of Japan. Conversely, relatively little information has been made available on the multitude of advantages enjoyed by companies operating in many other foreign countries whose laws are designed to encourage their natural resource industries. The following will spotlight some of these factors as they apply to foreign producers of lead and zinc. It is felt that examination of these facts will portray strongly the comparative disadvantages under which U.S. producers are forced to compete in the domestic metal markets and in the foreign ore markets.

Average earnings or wage rates in mining industries of foreign countries compared to the United States

[Based on information from Department of Labor]

Country	Date	Wage rates based on a 40-hour week	Social benefits (percent of earnings)
Australia	September 1961	$48.00	([1])
Belgium	October 1959	32.00	30
Canada	September 1961	88.00	23
France	April 1961	21.00	45
Germany, Federal Republic of	May 1961	32.00	25
Italy	June 1960	19.00	75
Yugoslavia	1959	5.00	([1])
United Kingdom	April 1961	37.00	10
Japan	1960	20.00	([1])
Mexico	1959	15.00	([1])
Peru	1960	7.00	60
United States	1960	92.29	25

[1] Not available.

Lead and zinc ad valorem import duties (April 1961)

[United States compared with foreign countries having U.S. import quotas]

Country	Lead		Zinc	
	Ores	Metal	Ores	Metal
	Percent	*Percent*	*Percent*	*Percent*
Australia	([1,2])	([1,2])	7.5	11.8
Belgian Congo	12.0	10.0	([1])	[2] 5.0
Belgium	([1])	[3] ±1.8	([1])	[3] ±1.5
Bolivia	[2] 10.0	10.0	10.0	10.0
Canada	([1,2])	[2,3] ±10.0	([1,2])	[2,3] ±8.0
Italy	2.8	[3] ±30.0	2.8	[2] 17.4
Mexico	2.0	[2,3] ±15.2	[2] 2.0	[2,3] ±21.7
Peru	[2] 19.8	[2] 23.5	[2] 22.4	[2] 22.4
South Africa	([2,4])	([1])	([4])	([1])
Yugoslavia	([5])	([2,5])	([5])	([5])
United States	[3] ±7.0	[3] ±10.0	[3] ±5.0	[3] ±6.0

[1] Exempt.
[2] Item is assigned U.S. import quota.
[3] ± Indicates approximate percentage based on conversion of specific duty rate to ad valorem at "local" values.
[4] Article not included in the tariff.
[5] Not available.

NOTE.—The countries that "exempt" lead or zinc from import duties or have relatively low duty schedules are either (a) major exporters of the ore and metal and therefore immune from import competition (e.g., Australia, Canada, and South Africa), or (b) in need of imported ore for their smelters which have a high level of protection against imported metal (e.g., Italy and Mexico).

OTHER ECONOMIC ADVANTAGES AVAILABLE TO LEAD AND ZINC PRODUCERS OPERATING IN FOREIGN COUNTRIES

Argentina

The Government effectively prohibits the importation of lead and zinc items which are produced within Argentina in quantities adequate to satisfy local consumption requirements.

Australia

1. *Labor costs.*—State agencies prescribe employment policies and pay scales for employees of lead and zinc producers. The pay rates are based on formula involving costs of production, transportation sales price, and custom duty imposed by foreign consuming countries.

2. *Loan funds.*—State funds are held available for improvements such as roads, harbors, and railroads in support of mines and mineral resources.

3. *Income tax.*—Australian resident companies pay a 35-percent income tax on income up to £5,000 and 40 percent on the balance above that level.

4. *Sales tax.*—Metal mining industries are exempt from sales tax payment on machinery, implements, and apparatus used in carrying out mining or treatment operations.

5. *Imported equipment.*—If the mining equipment and machinery is made in the United Kingdom but is not made in Australia, it may be imported duty free. If made neither in United Kingdom nor Australia, it may be imported duty free from the United States.

6. *Import taxes.*—In addition to duties previously cited, there are substantial ad valorem import duties levied on manufactured products.

7. *Export incentives.*—In the new drive for exports, a rebate system has been devised on the payroll tax for companies increasing their exports. An increase of 8 percent in value, above the base period, gives complete payroll tax rebate.

Bolivia

The Central Government supports the Bolivian mining industry, including lead and zinc, by subsidy with funds supplied directly or indirectly by the United States.

Canada

1. *Initial production 3-year tax exemption.*—Profits from operation during the first 36 months of operating a new mine are exempt from Dominion income tax.

2. *Exploration and development costs.*—Income tax exemption is granted to individuals, partnerships, etc., and corporations for mine exploration and development expenditures, with no limitation as contrasted with the $400,000 limit in the United States.

3. *Depreciation allowances.*—Canada permits a deduction of 30 percent per annum on mining machinery and equipment compared to the U.S. composite depreciation rate of around 5 percent.

4. *Comparision of corporate income tax rates:*

[In percent]

	Canadian including 3-percent old-age security	United States without old-age benefits
1st $25,000 of taxable income	21	30
Next $10,000 of taxable income	21	52
Over $35,000 of taxable income	50	52

5. *Sales tax exemptions.*—The 10-percent Federal sales tax is waived on many items of mining machinery and supplies.

6. *Customs tariff exemptions.*—Many specified machinery and supply items (flotation chemicals and drilling bort for example) are allowed duty-free entry.

7. *Prospecting and mining claim system.*—Throughout Canada, legal policies make it possible for any person (individual or corporate, citizen or foreign) to hold, develop, or negotiate mineral prospects at a very modest cost. Free use of the surface, timber, water is provided. Provincial or Federal funds are availa-

ble for trails, roads, and in some cases railroad construction; for example, the $85 million railroad expenditure to the new Pine Point area, as well as willingness to develop harbors, as was offered to Brunswick Mining and Smelting at Bathurst, which was estimated at around $4 million. Provinces of Newfoundland and New Brunswick have offered to guarantee as to principal and interest, issues of bonds for major mining and smelting operations.

8. *Prospectors tax benefits.*—Bona fide prospectors and the persons who employ them or provide the financial backing for their prospecting activities are exempt from tax on amounts received from the sale of all or any part of an interest in a mining property acquired as a result of the prospector's efforts.

Mexico

The Mexican law of February 6, 1961, "regulating article 27 of the Constitution," initiated a policy of "Mexicanization" of the mining industry whereby future mining activities are to be controlled by Mexican capital and operated primarily for the advancement of Mexican economic development. No new mining concessions will be given any company with less than 51 percent Mexican ownership; foreign-controlled companies are given 25 years in which to dispose of their controlling interest, but without interim benefits granted their Mexican competitors. Chief benefit is an automatic 50-percent reduction in the production and export tax liabilities of companies wholly or predominately owned by Mexicans. Predating and unchanged by the new law, the Comision de Fomento Minero regularly provides technological, financial, and ore processing services to the Mexican mining industry as a whole. The new law proposes to extend these services through Fomento Minero and various other Government agencies, and to add geological and exploration services.

Peru

The present mining code of Peru, effective since July 1, 1950, was designed to discourage monopolies and to encourage the investment of domestic as well as foreign capital in mining. The field of small and medium mining is assisted financially, technologically, and by Government-owned benficiation plants through the Banco Minero del Peru. Profit taxes are applied on a sliding scale ranging from 7 to 20 percent and, only after 25 years of operation, an additional progressive scale of taxes from 10 to 20 percent on excess profits above 10 percent of the resources of the company. In the case of marginal operations, the Government authorizes the amortization of capital at rates sufficiently high to preclude the showing of profits during the first few years; once all the capital has been amortized, a special low rate of profit tax is applied.

In 1957, the lead-zinc industry specifically was granted additional support by waiver of the 4-percent export tax on those metals and their concentrates.

Yugoslavia

Yugoslavia subsidizes mineral production by control of the internal price structure, as well as the rate of exchange paid individual enterprises for foreign currencies received from exports.

FOREIGN MINERAL DEVELOPMENT FINANCING BY AGENCIES OF THE U.S GOVERNMENT

There have been several programs for acquisition and development of lead and zinc from foreign sources under financing agreements with agencies of the U.S. Government, such as the International Cooperation Administration, the Economic Cooperation Administration, the Development Loan Fund, and the mutual security program.

Financing is also available for foreign mineral development through loans with the Export-Import Bank (that obtains its funds through the U.S. Treasury). From the date of the Bank's organization in 1934 through December 31, 1960, loans totaling $556.2 million have been authorized for mining development in foreign countries.

The World Bank receives substantial financial backing from the United States. From 1944 through December 1960, this institution loaned $159 million for various mining projects.

The following exhibit is a partial list of contracts indicating those administered by the General Services Administration for the acquisition and development of lead and zinc from foreign sources.

Statement of ICA and DPA contracts administered by General Services Administration for the acquisition and development of lead and zinc from foreign sources in U.S. dollar equivalents

Country	Commodity	Date of contract	Disbursement	Repayments including interest			
				In kind			Cash
				Commodity	Short tons	Value in U.S. dollars	
France	Lead	Apr. 15, 1953	$680,000	Lead	2,286.3	$628,826	$100,059
Do	Lead and zinc	May 31, 1952	8,571,429	do	37,934.7	9,540,662	0
Do	do	July 28, 1950	4,000,000	Lead Zinc	13,994.0 4,390.0	4,628,363	0
Germany	Lead	Nov. 1, 1951	118,571		0	0	5,785
Do	Lead and zinc	May 14, 1953	119,048		0	0	23,588
Greece	do	Dec. 4, 1950	1,227,007		0	0	184,000
Italy	do	Nov. 5, 1951	784,000	Zinc	2,921.0	686,828	0
Do	Lead, zinc, and cadmium	July 11, 1950	1,494,180	Zinc Cadmium	5,512.9 69.0	1,594,040	0
Portugal	Lead	June 22, 1953	89,792		0	0	0
United Kingdom	Copper and lead	Jan. 30, 1952	560,000	Lead	542.4	771,414	1,429,322
Do	do	do	1,640,000				
Portugal	Lead	June 22, 1953	15,103		0	0	0
Greece	Lead and zinc	Dec. 4, 1950	102,147		0	0	0
France	do	Dec. 7, 1949	4,175,000	Lead Zinc	12,007.0 5,748.0	4,604,233	0
Do	Lead, zinc, and copper	Sept. 19, 1951	274,800		0	0	41,522
Do	do	Jan. 24, 1951	276,000		0	0	49,577
Greece	Lead and zinc	May 24, 1951	38,259		0	0	0
France	do	May 31, 1950	1,500,000	Lead Zinc	413.3 3,664.0	1,497,799	2,201
Germany	do	Dec. 19, 1950	571,429	Lead	1,503.1	412,623	158,806
Total ICA contracts			26,236,765				
Guatemala	Lead	Feb. 5, 1952	4,232,000	do	10,512.3		0
Mexico	Zinc		5,679,000	Zinc	16,773.0		0
Peru	do		5,145,000	do	13,680.0		0
Total DPA contracts			15,056,000				
Total ICA and DPA contracts			41,292,765				

Mr. WILSON. Aside from Canada, whose rate we also exceed, most countries pay less than one-half the U.S. wage scale, and they all have the advantages of modern mining machinery and techniques developed in the United States. You will note that some other countries who criticize our tariffs have higher rates than ours, in order to protect particular segments of their lead-zinc industry—this while they preach free trade.

Other governments, in contrast to the treatment accorded our industry, try to encourage their natural resource development through more favorable tax treatment, and other miscellaneous benefits cited in this exhibit.

All this adds up to subsidized foreign competition that must be equalized through permanent, long-term effective import control if the United States expects to maintain a mining industry and provide the incentive to find the new ore bodies needed for the future.

The United States consumes over 1 million tons of each metal each year. It is consumed in various forms but principally in the form of metal or oxides. At reasonable price levels that have a realistic relationship to costs of operation, the mines of the United States are capable of mining, on an efficient basis, ores that when smelted will be equivalent to approximately 35 to 40 percent of the amount of lead metal consumed in the United States and approximately 55 to 60 percent of the amount of zinc metal consumed in the United States. Reprocessed or secondary metal provides an additional lead metal supply of 40 percent of annual consumption requirements. Secondary zinc metal production is negligible (5 percent). The balance of the supply for both metals, approximately 20 percent in the case of lead and approximately 40 percent in the case of zinc, required for the U.S. consumption must come from abroad either in the form of metal or ores to be smelted here. Since 1950 actual imports of lead have been 38 percent and zinc 60 percent of U.S. metal consumption. This imported surplus, nearly double our needs, accounts for the buildup of excessive stocks, low prices, decreased domestic production, and closed domestic mines. There is adequate smelting and refining capacity in the United States to process from ores and concentrates the metal that we need.

Approximately 35 percent of our lead consumption is used in manufacturing batteries, 16 percent in gasoline antiknock additives, the remainder in many uses such as ammunition, cable covering, paints and building materials. Approximately 40 percent of the U.S. slab zinc consumption is used in galvanizing steel, another 40 percent in producing all types of diecastings, and the remainder in miscellaneous brass products, and pigments.

The use of lead and zinc will continue to develop worldwide. The present surplus of supply over consumption, both domestic (because of excessive foreign imports) and worldwide (because of excessive foreign production) will eventually change to a position of accelerated search for new deposits then needed to supply demand. Some advisers within our Government would like to use this method of letting nature solve our present industry problems rather than face up to the facts that imports have been and still are excessive. While we believe in the future, we have had to exist too many years under this policy of waiting for natural forces to solve our difficulties and while waiting for this good day of balanced supply and demand, our industry has continued to suffer each year with new fatalities among our domestic lead-zinc mines. We insist that appropriate action must be taken now by our Government to maintain a healthy vigorous domestic lead-zinc mining industry if we are to be in business and have the necessary ore reserves when and if that day of supply and demand equalization should ever arrive.

Mr. Chairman, as our legislative and statistical history will show, there is no question regarding our troubles and the cause. Our markets have been made too easily available to the surplus production of the world. Prior to June 1962, we did have recourse to investigation by the Tariff Commission with provisions that did provide our industry with constructive recommendations for relief on a finding of injury due to excessive imports. The Trade Expansion Act technically provides similar procedures, but new definitions of injury have effectively eliminated the possibility of relief under the new law. This has been proven already in 1963 with the rejection by the Tariff Commission for relief from imports under the escape clause, of applications from (1) the softwood lumber industry, (2) the hatters' fur industry, (3) household china, tableware, and kitchenware industry, (4) the whisky industry, (5) an adjustment assistance request from unemployed zinc miners affected by a mine and mill closure due to excessive foreign imports, and (6) an adjustment assistance request by a company producing household china dinnerware. This avenue of help, meager though it was, due to rejection of findings by the executive department, is now closed. I am sure Congress did not intend it to be this way, but such is the interpretation.

Our Government has been holding out hope that we will benefit from participation in United Nations sponsored meetings of the International Lead-Zinc Study Group. These have been going on since 1958, and we are not as well off as when they were started.

True, there have been some promises of voluntary production controls, but these were of short duration, and only partially observed. Our State Department added 106,000 tons of lead through barter to the supplemental stockpile, in 1961 and 1962—at a time during which another Senate committee was labeling much of the lead already stockpiled as surplus. Incidentally, our industry does not agree with this arbitrary determination that the lead and zinc in these stockpiles is surplus to our defense needs. These lead purchases were made on the promise that countries supplying the lead would reduce their own production by an equal amount during the purchase period. The lead was purchased from Canada and Australia, who now announce, following the completion of this deal, that their 1963 production will exceed all previous records. This is the thanks and cooperation we receive for trying to help solve the problem of the world lead-zinc surplus created by mining operations of other nations. The State Department still participates in talks on international agreements although admitting the practical impossibility of writing such a document for lead and zinc. This does lengthen the negotiating time with our foreign friends and puts off the day of decision—when they must be told that the United States will maintain a necessary segment of its lead-zinc mines by permanently limiting imports to domestic needs. Meanwhile, our industry continues to deteriorate.

The international lead-zinc study group has noted the increase of new lead-zinc smelting capacity around the world that is in excess of actual need. A part of this expansion is a new lead smelter at the Tsumbe mine in the Union of South Africa, to "go on stream" in 1963. South Africa presently has an annual import quota for lead ores and concentrates of 29,760 tons. There is no allowable import quota for lead metal. The operators of the South African mines would like their quota classification changed from concentrates to metal to accommodate this change in their product. The concentrates are presently treated at El Paso, Tex., and American Smelting & Refining Co., who treat these concentrates on a "toll" basis, applied to the U.S. Tariff Comimssion on March 8, 1963, to have the African concentrate quota reallocated to other countries producing lead concentrates to aid this one smelting installation. The Emergency Lead-Zinc Committee opposed any change in the quotas as presently constituted until an overall import control plan becomes effective to assist the entire lead-zinc mining and smelting industry; and we so advised the President, the Tariff Commission, and our friends in the Congress of our position on this matter. The smelter application for a change in the quota was denied by the Tariff Commission on March 27, 1963. The section of the law applicable to their petition provides for reductions or terminations of a trade concession if it appears to the Commission that the duty or other import restriction proclaimed by the President may no longer be necessary to prevent serious injury to the industry. The Commission stated that an investigation was not warranted at this time. The interpretation is a recognition of continuing injury to the domestic lead-zinc mining industry as a result of excessive imports. There have been nine investigations of our industry by the Tariff Commission in the past 10 years, always showing an excess beyond domestic requirements of foreign imports of both metals.

Having heard a brief description of the mining industry experience and critical position, I would like to include as exhibit D a more detailed explanation that defines the domestic lead-zinc industry, how we differ from operation of foreign mines, just how our business differs from that of the custom smelters, the type of relief justified for our industry, and general suggestions on how this can be obtained by legislation that will control imports to levels needed by the U.S. consumer. We hope this summary will be of assistance in the deliberations of this committee.

(Exhibit D follows:)

EXHIBIT D

RECOMMENDATIONS FOR LEGISLATION TO MAINTAIN THE DOMESTIC LEAD-ZINC MINING INDUSTRY

WHAT IS THE DOMESTIC LEAD-ZINC INDUSTRY?

The lead-zinc industry in the United States divides itself into two distinct parts: (*a*) One is the mining of domestic lead and zinc ores. (*b*) The other is the production of metal by smelting and refining lead and zinc ores of either domestic or foreign origin.

There is consumed in the United States annually approximately 1 million tons of lead and 1 million tons of zinc. It is consumed in various forms but principally in the form of metal or oxides—but it takes approximately 1 million tons of each metal to produce the various products in which it is sold to the consumer.

98-989—63——12

At reasonable price levels that have a realistic relationship to costs of operation, the mines of the United States are capable of mining on an efficient basis, ores that when smelted, will be equivalent to approximately 35 to 40 percent of the amount of lead metal consumed in the United States and approximately 55 to 60 percent of the amount of zinc metal consumed in the United States. Reprocessed or secondary metal provides an additional lead metal supply to 40 percent of annual consumption requirements. Secondary zinc metal production is negligible (5 percent). The balance of the supply for both metals, approximately 20 percent in the case of lead and approximately 40 percent in the case of zinc, required for U.S. consumption must come from abroad either in the form of metal or ores to be smelted here. Since 1950 actual imports of lead have been 38 percent and zinc 60 percent of U.S. metal consumption. This imported surplus, nearly double our needs, accounts for the buildup of excessive stocks, low prices, decreased domestic production, and closed domestic mines. There is adequate smelting and refining capacity in the United States to meet all our needs.[1]

Several of the mines in the United States are owned by companies that also have smelters. Other mines are independently operated. Companies operating approximately 50 percent of the domestic smelting capacity own mines of their own which supply the major portion of their needs.

Some smelters in the United States have no mines of their own and must rely upon others for their ores and concentrates. They are known as "custom smelters" and they buy their ores or concentrates from domestic mines but principally from foreign sources.

It follows from what has been said that (*a*) custom smelters who rely principally on foreign ores and concentrates have little interest, if any, in maintaining a healthy domestic mining industry, while (*b*) the paramount interest of those who own domestic mines is to protect them from crippling imports from abroad.

HOW CUSTOM SMELTERS DO BUSINESS

It is important to know how the custom smelters buy their ore in order to understand their lack of interest in domestic mine production and their relative unconcern about the price at which their products sell in the market.

Custom smelters operate essentially on a "toll basis." They buy ores and concentrates based upon the current market price of the metal. There is built into each contract their costs in smelting and refining plus a margin of profit. So that whatever the price of the metal may be—whether high or low—the custom smelter realizes a margin of profit. If the price is high, the amount of profit is somewhat greater—but in all events, they make a profit.

To put it another way, the cost of the raw material they smelt is directly related to and fluctuates with the selling price of metal. If as sometimes happens the custom smelters find that their intake of ore is at a greater rate than their sales of metal and their inventories are building up, they naturally would like to be relieved of buying more ore under their contracts. In that event, all they need to do is to cut the price on their products so that the one supplying the ores cannot afford to produce them; and thus the flow is retarded or stopped. And this has been done over and over again in the marketplace.

Thus the custom smelters are always able to make a profit and to protect themselves against taking ores if the market is not absorbing the products they make. The only one that gets really hurt under these contracts is the miner.

A very different situation prevails with respect to mines in the United States owned by a company that also does smelting and refining when selling prices of metal are forced to a low level by the impact of excessive imports at low prices or the cutting of prices by custom smelters. The cost of mining in the United States remains constant regardless of the selling price of metal, and unlike the case of the custom smelters the cost of raw materials smelted by companies who draw their raw material from their own U.S. mines is not related to nor does it fluctuate with the selling price of metal. Having regard for their obligation to their employees, the miners, such companies are very slow indeed to close down their mines. Thus they continue to operate their mines, often at a loss, rather than throw hundreds of men out of work and incur the standby expense of a closed mine.

---

[1] The facts relative to lead and zinc are so comparable and the distress in which each finds itself is so parallel that hereafter we will not differentiate between the two unless specifically mentioned.

Prime western zinc is selling today (April 1963) at 11½ cents a pound. At this price many mines in the United States have had to close because 11½ leaves no margin above operating costs. All other domestic mines that are operating are doing so either at a loss or they are simply trading dollars. Lead is selling today at 10½ cents a pound, and the same conditions prevail in the domestic lead mines that we find in the domestic zinc mines.

Mines abroad are producing more than they have ever produced before and can continue to produce even if the price of metal in this country were much lower than 11½ cents a pound for zinc and 10½ cents a pound for lead.

DIFFERENCES IN DOMESTIC AND FOREIGN MINES

The question arises as to how it is possible for foreign mines to continue operating profitably when domestic mines cannot. The answer is found largely in the character of the ores found in domestic and foreign mines. In domestic mines, lead and zinc are practically the entire profitable element found in the ores being mined. There are sometimes small amounts of other metal values that are recovered, but basically the U.S. mines are operated for their lead or zinc content. In the mines abroad, however, lead and zinc are found commingled with substantial amounts of copper, silver, and sometimes gold. The results is that the profitable operation of the mines does not depend upon the cost of producing lead and zinc alone. As a matter of fact, with the present price of copper, some foreign mine operators can consider that their lead and zinc cost them practically nothing and thus sell those two metals in a very low market. It is largely a bookkeeping problem for many of them. In addition, the foreign mines, except those of Canada, have much lower labor costs with equally efficient mining equipment and technique. But the principal difference lies in the character of the ores themselves.

THE DOMESTIC MINING INDUSTRY AS DISTINCT FROM THE CUSTOM SMELTERS

The domestic mining industry is quite obviously interested primarily in protecting the mining industry of the United States. The custom smelter has no such interest. It has only one interest and that is in getting ores, and it makes no difference that they come from abroad.

The Emergency Lead-Zinc Committee represents approximately 90 percent of the mines in the United States and 50 percent of the smelting capacity. The smelter group, on the other hand, represents less than 10 percent of the domestic mines and 50 percent of the smelting capacity.

If the custom smelters were completely candid, they would tell you that they prefer no restrictions on the importation of lead and zinc ores. Since the end products of the U.S. lead-zinc mines are lead and zinc ores, this means that the custom smelters prefer no restrictions that would protect the U.S. mines. They would, however, like some restriction on the importation of metal, the end product of their operations. In fact, this is basically the position they took before the Tariff Commission in 1957. They have, however, withdrawn from that extreme position because they think that politically it is impossible to maintain and are now prepared to consider some protection for the mines as well as themselves in order to be relieved of existing quotas.

There is only one point on which the domestic mining industry and the custom smelters are in agreement: Large quantities of manufactured materials containing substantial amounts of lead and zinc are being imported into the United States. Such products, among others, are litharge and zinc oxide. To the extent that these products are imported, it means that the smelting capacity as well as mine production of the United States has been displaced. Therefore we would all like to see this part of the invasion of our market brought under control.

But the custom smelter has little concern, if any, about the domestic mining industry.

WHAT RELIEF IS JUSTIFIED

The Emergency Lead-Zinc Committee proceeds on the basis that a sound, reasonable, and workable plan to protect the domestic mining industry should be adopted. A plan can be adopted which does not unreasonably injure any branch of the industry in the United States. And a plan should be approved or disapproved on its merits. It is on this basis that we submit the suggestions which follow in the belief that they (*a*) are entirely reasonable; (*b*) will give the domestic mining industry an opportunity to operate on a reasonably profitable basis; (c) will not really hurt the U.S. custom smelter, but on the other hand will afford it protection; and finally (d) will protect both branches of the industry against unreasonable imports of fabricated products.

Before discussing the types of relief which we think are justified, we should make it clear that the domestic mining industry opposes any form of relief which is of a transitory nature and which falls short of providing the protection which the industry must have to operate on a reasonably profitable basis. Our mining industry has struggled too long under present unfavorable conditions to accept relief which fails to meet in a reasonable way its basic problems. If the industry is to struggle for existence under a revised program, it may as well struggle for existence under the present program. In either case, the domestic mining industry may well be faced with extinction. It is for this reason that something worthwhile must be done to protect it against unreasonable imports if we are to have a mining industry in this country.

TYPES OF RELIEF

There have been two approaches designed to provide relief for the domestic mining industry: (a) through flexible import excise taxes on ores, concentrates and metal; and (b) through adjustable quotas on ores, concentrates and metal. Either approach is workable provided it contains the criteria necessary to give reasonable protection.

RELIEF THROUGH FLEXIBLE IMPORT EXCISE TAXES

Senator Anderson introduced S. 2747 on January 25, 1962, designed to protect the domestic mining industry through the imposition of flexible excise taxes on imports. Congressman Aspinall of Colorado introduced a similar bill on January 30, 1962, as H.R. 9965. The domestic mining industry still agrees that provisions of this legislation would:

1. Provide a domestic price sufficient to produce a minimum of 50 percent of our needs from our own mines.
2. Maintain the metal price and metal stocks at levels favorable to the needs of the consumer.
3. Provide a price to exporters to this country that would maintain a favorable cash flow for foreign producers and a continued opportunity to participate in our market on a reasonable basis.

RELIEF THROUGH FLEXIBLE IMPORT QUOTAS

The same results can be accomplished with proper import quota controls. The lead-zinc mining industry outlined a quota plan during the 1957 escape clause hearing before the U.S. Tariff Commission. This was the basis of a bill, H.R. 7721, introduced by Mr. Aspinall in 1959.

Following this hearing, the Tariff Commission made a unanimous finding of injury based on representations of the lead-zinc mining industry and three Commissioners recommended maximum allowable tariffs and an absolute quota restricting imports to 50 percent of those during the base period 1953–57. Absolute quotas were imposed by Executive order on October 1, 1958, but at 80 percent of the base period level, favoring the importer, and there was no increase in tariff rates. The industry has continued to deteriorate as this quota was not sufficiently restrictive and did not adjust to changes in domestic consumption.

From this quota experience, it is recognized within the domestic lead-zinc industry that a quota must be flexible similar to that proposed in the 1959 legislation (in contrast to the present absolute quota) to equal the difference between domestic production and domestic consumption for both metals. This will provide our actual needs and the metals will sell at a price fair and profitable to the producer and attractive to the consumer.

Mr. WILSON. Mr. Chairman, it is time that Congress enacts import legislation to develop, maintain, and expand the natural resources of our country. We must rely on Congress to insist that the executive department accept the need for a domestic industry by approving such legislation. There is no other alternative for assistance to the lead-zinc mines but through congressional action. I trust you will recommend this action to the appropriate congressional committees and assist them and us in the preparation of the appropriate terms for such legislation.

Senator GRUENING. Thank you very much, Mr. Wilson. We appreciate your excellent statement. The lead-zinc industry is apparently one of a number which has been sacrificed to the foreign aid policy. I find myself in complete sympathy with the view that we should protect our home industries first and foremost.

As you know, efforts have been made repeatedly to secure some relief but they have encountered the opposition of the administration, both this one and the preceding one. It is apparently not a policy which originates from any one party but it does seem to originate in the executive department.

Other legislation is under contemplation now on the subject of quotas. I note you make the statement that the Emergency Lead and Zinc Committee now opposes any change in the quota as it is presently constituted. Do you mean by that that the quota system in diminishing the imports would not be helpful?

Mr. WILSON. Our position is, Senator, that any change that is made in the present quota would be originating, for instance, as in the case of the Tsumbe problem to try to help one particular smelter or one particular phase of the industry. We feel this is sort of aspirin treatment to just help this or help that.

We say that the present quota should remain as presently constituted until we have some overall effective long-term plan, preferably through legislation, that will take into consideration all phases of the industry and correct all of our problems in one piece of legislation.

Senator GRUENING. You have this legislation in mind. So far as I am concerned I am prepared to recommend it. I don't know what the other members of the committee would do. This goes to another committee of Congress, the Finance Committee, which usually, acting upon the wishes of the administration, fails to report it favorably.

Or has failed so far, but that doesn't mean we should not try again. Could you tell me whether the lead-zinc industry has benefited by the enactment of the Stabilization Act of 1961, Public Law 87-347?

Mr. WILSON. You mean the small mines bill?

Senator GRUENING. Yes.

Mr. WILSON. Unfortunately I would say that again is sort of the aspirin treatment.

Senator GRUENING. What kind of treatment?

Mr. WILSON. Aspirin treatment. There is a headache here and there.

Senator GRUENING. You mean symptoms rather than a disease?

Mr. WILSON. That is right, sir. It takes care of a few small fellows. But as Mr. Edmondson so well explained his own program yesterday, it is a phaseout program to try to compensate a few small producers who were active during the Korean period in trying to produce. This would give them some compensation. They are supposed to get out of business. While this program is going on, the thought is that there should be some new overall program that we talked about here this morning that would solve the problems of the industry.

Senator GRUENING. Are you familiar with these bills in the House by Representatives Aspinall and Udall, H.R. 3120 and H.R. 3845?

Mr. WILSON. Yes, sir. I am.

Senator GRUENING. Are those desirable from the standpoint of the industry?

Mr. WILSON. I think they are, sir.

Senator GRUENING. In other words, you would like to see them enacted by the Congress.

Mr. WILSON. I think they should be enacted.

Senator GRUENING. Thank you very much, Mr. Wilson. Senator Church.

Senator CHURCH. Mr. Wilson, you are familiar with the bill that Senator Anderson proposes to introduce soon in the Senate, are you not?

Mr. WILSON. Yes, sir.

Senator CHURCH. That bill has the full endorsement and support of the emergency lead-zinc committee, does it not?

Mr. WILSON. It does; yes.

Senator CHURCH. Do you regard this proposed legislation as designed to adequately cope with and solve the chronic problem that has faced the domestic lead-zinc industry?

Mr. WILSON. Senator Church, we do, for several reasons. In the first place the bill is based on the premise that we should certainly have a segment of our domestic industry that can be healthy enough to be profitable and continue to explore and extend its activities in years to come.

Along with that, we recognize that at present we can't provide all supplies of raw materials both for lead and zinc that we need. This bill is designed to supplement what we cannot produce. In this way it is fair to the domestic producer it keeps a supply for the consumer at a reasonable price, and it gives what we would say a reasonable portion of our market to the foreigner at a price which is very profitable to him.

So it takes in effect all three people who are concerned, the producer, consumer, and the importer.

Senator CHURCH. Mr. Wilson, would you explain just how this bill would differ in its concept, since it is based upon the quota principle, from the present quota that applies to the importation of lead and zinc and that has been in existence for the past several years?

Mr. WILSON. The present quota was based on import experience for 1953 to 1957. During proceedings of the Tariff Commission they recommended that period be the base period. They recommended the quota be established at 50 percent of that base period.

President Eisenhower issued his order and raised that to 80 percent which favored the importer as against the domestic producer. It is an absolute quota; 80 percent of that particular base period. It does not take into effect the fact that we have changes in consumption.

If our consumption goes down it is the domestic producer who is doing the gambling. The foreigner is guaranteed his section. We take leavings. The bill we propose is twofold. It is based on a price. Below that price there would still be an absolute quota in order to get rid of the surpluses that we are still living with.

Any time our markets go above a certain price metal for either metal we then use Bureau of Mines figures of what we can produce in the way of mine production and secondary metal, or any stockpile materials that might ever get into the market which we hope doesn't happen, but we think we should look to.

That is our supply. We know what we consume. The difference would be what we need from imports. That would automatically become the quota for the period under consideration.

Senator CHURCH. Would it be correct to characterize the bill as contrasted to the present situation in this way? That under the present arrangement of the fixed quota, it is as though we had placed the door open at a fixed position, allowing so much import each year, regardless of the condition of the domestic market, regardless of the domestic price, or of any other factor, whereas under the bill the door would be hinged in such a way that it could either be opened up to a given level or closed entirely depending on the conditions of the domestic market, the domestic price, and other factors that relate to the health of the domestic industry.

Mr. WILSON. That is a very good way to describe it, with one exception. The bill would never close the door completely.

Senator CHURCH. I realize as I said it that I was wrong. But otherwise the door would open or shut to a given minimum.

Mr. WILSON. And it would meet our needs.

Senator CHURCH. And thus meet our needs.

Mr. WILSON. That is right.

Senator CHURCH. Mainly for purposes of getting this on the record where it will be helpful to us, can you explain to the committee why you regard this flexible quota approach, keyed to domestic conditions, as preferrable to the flexible tariff approach that was the basic concept in the legislation that Senator Anderson sponsored, which I cosponsored last year and previous years, which at that time had the full endorsement and support of the lead and zinc emergency committee. Why do you think the new quota proposal is preferrable to the other proposal that previously had your endorsement?

Mr. WILSON. I suppose, Senator, we are getting down to some psychological reasoning. As was discussed here yesterady, that word tariff seems to be a pretty nasty word. It does have a connotation of a tax on the foreigner who is importing into our market.

Of course, we are living under a quota program but we heard yesterday from the State Department this is only temporary and we should look to international markets with apparently no discrimination, if you want to call it that, in our favor.

But we just feel since we are under a quota that has been partially effective—at least it has been a deterrent to total destruction of our market—and some of our importing nations have become more or less used to the quota experience, that possibly this would have a better chance of acceptance not only in the Congress but we would hope by the Executive and by those who do import into our markets.

Senator CHURCH. Isn't it also true that this approach might have a more temperate effect on the domestic price than the tariff approach, in that the domestic price would not be lifted to the same level that a protective tariff would lift it.

In other words, doesn't the consumer under this approach—the domestic consumer—get a somewhat better break than he would under the tariff approach?

Mr. WILSON. Yes, I would say so. The consumer can look to a fairly level price under this plan. Also we get into problems with tariffs, if differentials between our domestic production cost and foreign cost vary too widely, you get into such a high tariff that you are talking about money that you know practically you can't legislate.

This other way, as you say, you are leveling a price that is fair to the producer and consumer and you are still supplementing your supply to keep that price at about that level.

Senator CHURCH. I shall cosponsor this bill, as I have the previous bills, and I am hopeful that we have more success with it than we have had in the past. You understand the problems.

Mr. WILSON. I certainly do.

Senator CHURCH. I think, Mr. Chairman, that one factor that we should take into consideration is that as long as this bill is based exclusively upon a quota principle and does not involve the matter of taxation, it seems to me that a very legitimate question arises as to proper jurisdiction of committees.

We ought to make a thorough inquiry and call upon our legal counsel and other staff members to look at precedents to determine whether or not this bill can't be retained in the Interior Committee and recommend it directly to the floor of the Senate without reference to the Finance Committee.

I know that we would want to conform to the precedents and to the rules of the Senate, but I raise this question and I think it is worthy of thorough investigation.

Senator GRUENING. I think that is a very constructive suggestion. I would like to suggest that in view of this discussion between Senator Church and Mr. Wilson, that the bill which failed of passage in the last session and the pending draft of Senator Anderson's bill, which I expect to be a cosponsor, be placed in the record at this point, so that the discussion can be clear.

(The bills referred to follow:)

[S. 2747, 87th Cong., 2d sess.]

A BILL To stabilize the mining of lead and zinc in the United States, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, **That this Act may be cited as the "Lead and Zinc Act of 1962".**

TITLE I—GENERAL PROVISIONS

DECLARATION OF POLICY

SEC. 101. It is declared to be the policy of Congress—

(a) to promote a reasonable balance between foreign and domestic supplies of lead and zinc ores, concentrates, and metal; and

(b) to restore to a sound and stable condition the domestic lead and zinc mining industry.

EFFECTIVE DATE

SEC. 102. Subject to the provisions of section 4622(b) of the Internal Revenue Code of 1954, as amended by title II of this Act, this Act shall take effect ninety days after date of enactment of this Act, and the quotas provided for by Proclamation Numbered 3257 of September 22, 1958, shall be discontinued on the effective date of this Act.

SEVERABILITY

SEC. 103. If any provision of this Act or the application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or the application of this Act which can be effected without the invalid provision or application, and to this end the provisions of this Act are severable.

TITLE II—AMENDMENTS TO THE INTERNAL REVENUE CODE OF 1954

AMENDMENTS TO CHAPTER 38 OF THE INTERNAL REVENUE CODE OF 1954

SEC. 201. Chapter 38 of the Internal Revenue Code of 1954 is amended as follows:

(a) By redesignating subchapter G as H.

(b) By renumbering sections 4601, 4602, and 4603 as sections 4631, 4632, and 4633, respectively.

(c) By inserting after subchapter F the following new subchapter:

"SUBCHAPTER G—LEAD AND ZINC

"Sec. 4601. Imposition of taxes on imported lead.
"Sec. 4611. Imposition of taxes on imported zinc.
"Sec. 4621. Price determinations.
"Sec. 4622. General provisions.

"SEC. 4601. IMPOSITION OF TAXES ON IMPORTED LEAD.

"(a) There are hereby imposed upon the following articles, imported into the United States, taxes at the rates specified:

"Article	Rate of Tax
Articles provided for in paragraph 391 of the Tariff Act of 1930, as amended: Lead-bearing ores, flue dust, and mattes of all kinds.	1.4 cents per pound on lead content, provided that such taxes shall not be applied to the lead contained in copper, gold, silver, or tin ores, or copper mattes, unless actually recovered.
Articles provided for in paragraph 392 of the Tariff Act of 1930, as amended: Lead bullion or base bullion, lead in bars and pigs, lead dross, reclaimed lead, scrap lead, antimonial lead, antimonial scrap lead, and all alloys or combinations of lead not specially provided for.	2.0 cents per pound on lead content.

"(b) If the average market price of lead determined in accordance with section 4621 is less than $13\frac{1}{2}$ cents per pound, there shall be imposed on the following articles additional taxes at the rates specified beginning on the first day of the calendar quarter next following such determination: *Provided*, That when the said average price of lead so determined is $14\frac{1}{2}$ cents per pound or more, the said additional taxes shall cease to be imposed beginning on the first day of the calendar quarter next following such determination:

"Article	Additional Tax
Articles provided for in paragraph 391 of the Tariff Act of 1930, as amended: Lead-bearing ores, flue dust, and mattes of all kinds.	1.4 cents per pound on lead content, provided that such taxes shall not be applied to the lead contained in copper, gold, silver, or tin ores, of copper mattes, unless actually recovered.
Articles provided for in paragraph 392 of the Tariff Act of 1930, as amended: Lead-bullion or base bullion, lead in bars and pigs, lead dross, reclaimed lead, scrap lead, antimonial lead, antimonial scrap lead, and all alloys or combinations of lead not specifically provided for.	2.0 cents per pound on lead content.

"(c) In addition to any other tax or duty imposed by law, there are hereby imposed upon the articles provided for in paragraphs 46, 72, 320, and 397 and lead in sheets, pipe, shot, glazier's lead, lead wire, babbitt metal, solder, and type metal under paragraph 392 of the Tariff Act of 1930, as amended, imported into the United States, taxes at the rate of 2.0 cents per pound on the lead contained therein.

"SEC. 4611. IMPOSITION OF TAXES ON IMPORTED ZINC.

"(a) There are hereby imposed upon the following articles, imported into the United States, taxes at the rates specified:

"Article	Rate of Tax
Articles provided for in paragraph 214 of the Tariff Act of 1930, as amended: Zinc fume.	1.4 cents per pound on zinc content.
Articles provided for in paragraph 393 of the Tariff Act of 1930, as amended: Zinc-bearing ores of all kinds, except pyrites containing not more than 3 per centum of zinc.	1.4 cents per pound on zinc content, provided that such taxes shall not be applied to the zinc contained in lead, tin, or copper ores unless actually recovered.
Articles provided for in paragraphs 394 of the Tariff Act of 1930, as amended:	
Zinc in blocks, pigs, or slabs.	2.0 cents per pound.
Zinc, old and worn-out, fit only to be remanufactured, zinc dross, and zinc skimmings.	1.4 cents per pound.

"(b) If the average market price of zinc determined in accordance with section 4621 is less than 13½ cents per pound, there shall be imposed upon the following articles additional taxes at the rates specified beginning on the first day of the calendar quarter next following such determination: *Provided*, That when the said average price of zinc so determined is 14½ cents per pound or more, the said additional taxes shall cease to be imposed beginning on the first day of the calendar quarter next following such determination.

"Article	Additional Tax
Articles provided for in paragraph 214 of the Tariff Act of 1930, as amended: Zinc fume.	1.4 cents per pound on zinc content.
Articles provided for in paragraph 393 of the Tariff Act of 1930, as amended: Zinc-bearing ores of all kinds, except pyrites containing not more than 3 per centum of zinc.	1.4 cents per pound on zinc content, provided that such taxes shall not be applied to the zinc contained in lead, tin, or copper ores unless actually recovered.
Articles provided for in paragraph 394 of the Tariff Act of 1930, as amended:	
Zinc in blocks, pigs, or slabs.	2.0 cents per pound.
Zinc, old and worn-out, fit only to be remanufactured, zinc dross, and zinc skimmings.	1.4 cents per pound.

(c) In addition to any other tax or duty imposed by law, there are hereby imposed upon the articles provided for in paragraphs 5, 77, 93, 214 other than zinc fume, 341, 380, 381, 1634, alloys of zinc, zinc strip, and other zinc mill products under paragraph 397, brass wire under paragraph 316(a), leaded zinc oxides containing over 25 per centum of lead under paragraph 72, zinc dust under paragraph 394, and parts whether partly or wholly manufactured from zinc, provided for in paragraphs 372, 369, 353, and 368 of the Tariff Act of 1930, as amended, imported into the United States, taxes at the rate of 2.0 cents per pound on the zinc contained therein and in addition to any other tax or duty imposed by law there is hereby imposed upon zinc wire under paragraph 316(a) of the Tariff Act of 1930, as amended, imported into the United States a tax at the rate of 4.0 cents per pound on the zinc content contained therein and in addition to any other tax or duty imposed by law there is hereby imposed upon zinc sheets under paragraph 394 of the Tariff Act of 1930, as amended, imported into the United States a tax at the rate of 7.0 cents per pound on the zinc content contained therein.

"SEC. 4621 PRICE DETERMINATIONS.

"(a) For purposes of this subchapter, the terms 'average market for lead' and 'average market price for zinc' mean, respectively, the average market price for common lead (in standard shapes and sizes delivered at New York City), and the average market price for slab zinc (prime western, free on board, East Saint Louis, Illinois), each determined for a period of three consecutive calendar months as hereinafter provided.

"(b) As soon as practicable after the last day of the second month of each calendar quarter following the effective date of this Act, the Secretary of the Interior shall determine the average market price for lead and the average market price for zinc during the three consecutive calendar months immediately ending on the second month of each calendar quarter, shall notify the Secretary of the Treasury of each such determination and shall cause each such determination to be published in the Federal Register. The first such determination shall be made and published in the Federal Register as soon as practicable following the effective date of this Act and each such subsequent determination shall be made and published in the Federal Register not later than the last day of each such calendar quarter. The average market prices so determined and published shall be the average market prices governing the imposition and removal of the additional taxes set forth in section 4601(b) and in section 4611(b) of this subchapter as to articles provided for therein entered, or withdrawn from warehouse, for consumption during the calendar quarter following the calendar quarter in which such determination is made.

"SEC. 4622. GENERAL PROVISIONS.

"(a) The taxes specified in subsection (a) and (c) of section 4601 and in subsections (a) and (c) of section 4611 shall be applied on and after the date of the effective date of this Act; the taxes specified in subsection (b) of section 4601 and in subsection (b) of section 4611 shall be applied on the effective date of this Act as if the average market price for lead and the average market price for zinc had been determined, in accordance with section 4621, to be less than 13½ cents per pound, and thereafter shall be applied in accordance with the provisions of subsection (b) of section 4601 and of subsection (b) of section 4611.

"(b) Notwithstanding the provisions contained in subsection (b) of section 4621 and in subsection (a) hereof, the provisions of subsections (a), (b), and (c) of section 4601 and of subsections (a), (b), and (c) of section 4611 shall not apply insofar as the imposition of taxes are concerned until the effective date of this Act: *Provided, however*, That any such taxes on any of the articles specified in sections 4601(a), 4601(b), 4611(a), or 4611(b), other than those included within paragraphs 392 and 394 of the Tariff Act of 1930, as amended, shall not be applicable to any such articles which were entered in bonded warehouse prior to the date of enactment of this subchapter, such products upon being withdrawn from bonded warehouse during the statutory period of the bond to be subject to the rates of duty which were applicable thereto prior to the enactment of this subchapter.

"(c) On and after the date of enactment of this Act, the articles provided for or referred to in subsection (a) of section 4601 and subsection (a) of section 4611 may be duly entered for warehouse by the importer under bond. Any such article may be withdrawn from warehouse and entered for consumption during a period when the tax imposed by section 4601(b) or section 4611(b), as the case may be, is applicable upon payment of such tax, and upon payment of the applicable duty; any such article may be withdrawn from warehouse and entered for consumption during a period when the tax imposed by section 4601(b) or section 4611(b), as the case may be, is not applicable only upon certification that the article has been sold for use. The term 'sold for use' applied to any article means that the article has been sold or otherwise transferred, or is subject to a binding agreement for sale or transfer, to a purchaser or transferee who intends to process, manufacture, fabricate, or combine it to produce a different article.

"(d) For purposes of this subchapter, the term 'United States' includes Puerto Rico."

(d) By amending the table of subchapters for such chapter to read:

"SUBCHAPTER G. Lead and zinc.
"SUBCHAPTER H. Special provisions applicable to import taxes."

TITLE III—EFFECT OF AMENDMENTS ON TARIFF ACT OF 1930

SEC. 301. (a) The treatment provided for imports of articles described in sections 4601 and 4611 of the Internal Revenue Code of 1954, as amended by title II of this Act, shall, for purposes of section 350 of the Tariff Act of 1930, as amended, be considered as having been in effect continuously since the original enactment of said section 350.

(b) The duties imposed under paragraphs 214, 391, 392, 393, and 394 of the Tariff Act of 1930, as amended, shall cease to apply to the articles provided for in subsections (a) and (b) of section 4601 and in subsections (a) and (b) of section 4611 of the Internal Revenue Code of 1954, as amended by title II of this Act, as of the date the import taxes imposed by said subsections become applicable.

[S. 1534, 88th Cong., 1st sess.]

A BILL To protect the domestic economy, to promote the general welfare, and to assist in the national defense by stabilizing the domestic lead and zinc industry, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States or America in Congress assembled, That this Act may be cited as the "Lead and Zinc Stabilization Act of 1963."

TITLE I—LEAD

SEC. 101. As used in this title—

(a) The term "lead" means lead metal, as defined in subsection (b), and the lead content of lead ore, as defined in subsection (c).

(b) The term "lead metal" means lead bullion or base bullion, lead in pigs and bars, lead dross, reclaimed lead, scrap lead, antimonial lead, antimonial scrap lead, and type metal, which, if imported into the United States, is subject to duty under paragraph 392 of the Tariff Act of 1930, as amended, and all alloys or combinations of lead not specifically provided for in such paragraph, which, if imported into the United States, are subject to duty under the Act.

(c) The term "lead ore" means lead-bearing ores, flue dust, and mattes of all kinds, which, if imported into the United States, are subject to duty under paragraph 391 of the Tariff Act of 1930, as amended.

(d) The term "imported into the United States" means entered, or withdrawn from warehouse, for consumption within the meaning of the Tariff Act of 1930, as amended.

(e) The term "ton" means two thousand pounds.

(f) The term "quarter" means calendar quarter.

SEC. 102. No lead shall be imported into the United States in any quarter, beginning with the first quarter which begins after the date of enactment of this Act, after the amount of lead imported into the United States during such quarter equals the import quota for lead for such quarter established under section 103.

SEC. 103. (a) For purposes of section 102 the import quota for lead for any quarter shall be whichever of the following amounts is the lesser:

(1) (A) Forty-five thousand tons, in the case of the first four calendar quarters which begin after the date of enactment of this Act, or

(B) Sixty thousand tons, in the case of a calendar quarter thereafter, or

(2) the amount by which the domestic consumption of lead in the second quarter preceding such quarter exceeded the domestic production of lead in such preceding quarter.

Provided, That subsection (a)(1) shall not apply for a quarter if for any one of the first three of the four calendar months preceding the quarter the average price of common pig lead, free on board New York, as reported in the Engineering and Mining Journal "Metal and Mineral Markets" exceeds 13½ cents per pound.

(b) For purposes of subsection (a)(2), the domestic production of lead for any quarter shall be the sum of (1) the amount of recoverable lead reported by the United States Department of the Interior, Bureau of Mines, in the monthly report of mine production of lead in the United States produced by mines in the United States during such quarter, (2) the amount of antimonial lead produced at primary refineries (lead content) and the amount of lead (both reported and estimated) recovered by secondary smelters in the United States during such quarter as reported in the United States Department of the Interior, Bureau of Mines, monthly lead report titled, "United States Lead Industry," and (3) the amount of lead released from United States Government stockpiles or inventories for consumption in the United States, during such quarter. The domestic consumption of lead for any quarter shall be the amount of pig lead (both reported and estimated) consumed in the United States as reported in the United States Department of the Interior, Bureau of Mines, monthly lead report titled, "United States Lead Industry", during such quarter.

(c) The amount of lead metal which may be imported into the United States during any quarter shall not exceed 10 per centum of the total quarterly lead import quota established under provisions of this section.

TITLE II—ZINC

SEC. 201. As used in this title—

(a) The term "zinc" means zinc metal, as defined in subsection (b), and the zinc content of zinc ore, as defined in subsection (c).

(b) The term "zinc metal" means zinc in blocks, pigs, or slabs, old and worn-out zinc, fit only to be remanufactured, zinc in dross, and zinc skimmings, which, if imported into the United States, are subject to duty under paragraph 394 of the Tariff Act of 1930, as amended.

(c) The term "zinc ore" means zinc-bearing ores of all kinds, except pyrites containing not more than 3 per centum zinc, which, if imported into the United States, are subject to duty under paragraph 393 of the Tariff Act of 1930, as amended; zinc sinter, zinc fume, deleaded zinc fume, Waelz zinc oxide and sintered Waelz oxide and other materials, not specifically provided for, composed wholly or in chief value of zinc and used primarily for manufacture of zinc metal and zinc pigments.

(d) The term "imported into the United States" means entered, or withdrawn from warehouse, for consumption within the meaning of the Tariff Act of 1930, as amended.

(e) The term "ton" means two thousand pounds.

(f) The term "quarter" means calendar quarter.

SEC. 202. No zinc shall be imported into the United States in any quarter, beginning with the first quarter which begins after the date of enactment of this Act, after the amount of zinc, imported into the United States during such quarter, equals the import quota for zinc for such quarter established under section 203.

SEC. 203. (a) For purposes of section 202 the import quota for zinc for all foreign countries for any quarter shall be whichever of the following amounts is the lesser:

(1) (A) Eighty thousand tons, in the case of the first four calendar quarters which begin after the date of enactment of this Act, or

(B) One hundred thousand tons, in the case of a calendar quarter thereafter, or

(2) the amount by which the domestic consumption of zinc in the second quarter preceding such quarter exceeded the domestic production of zinc in such preceding quarter.

Provided, That subsection (a) (1) shall not apply for a quarter if for any one of the first three of the four calendar months preceding the quarter the average price of Prime Western slab zinc, free on board East Saint Louis, as reported in the engineering and mining journal "Metal and Mineral Markets," exceeds 13½ cents per pound.

(b) For purposes of subsection (a) (2), the domestic production of zinc for any quarter shall be the sum of (1) the amount of recoverable zinc, reported by the United States Department of the Interior, Bureau of Mines, in the monthly report of mine production of zinc in the United States, produced by mines in the United States during such quarter, (2) the production of secondary slab zinc as reported by the United States Department of the Interior, Bureau of Mines, in the zinc monthly report of the United States zinc industry, and (3) the amount of zinc released from United States Government stockpiles or inventories for consumption in the United States, during such quarter, less (4) the zinc content of zinc ores and concentrates consumed during such quarter used in the production of zinc oxide reported as such by the United States Department of the Interior, Bureau of Mines, in the zinc oxide monthly report, during such quarter. The domestic consumption of zinc for any quarter shall be the amount of slab zinc consumed (both reported and estimated) in the United States as reported by the United States Department of the Interior, Bureau of Mines, in the zinc monthly report of the United States zinc industry, during such quarter.

(c) The amount of zinc metal which may be imported into the United States during any quarter shall not exceed 10 per centum of the total quarterly zinc import quota established under provisions of this section.

TITLE III—MANUFACTURED LEAD AND MANUFACTURED ZINC

SEC. 301. As used in this title—

(a) The term "manufactured lead article" means: lead pigments, litharge, orange mineral, red lead, white lead, all pigments containing lead, dry or in pulp, or ground in or mixed with water, not specifically provided for, which if imported into the United States are subject to duty under paragraph 72 of the Tariff Act of 1930, as amended; babbitt metal, solder, lead in sheets, pipe, shot, glazier's lead, and lead wire, which if imported into the United States are subject to duty under paragraph 392 of the Tariff Act of 1930, as amended; articles or wares not specifically provided for, if composed wholly or in chief value of lead, whether partly or wholly manufactured, which if imported into the United States are subject to duty under paragraph 397 of the Tariff Act of 1930, as amended; electric storage battery and parts thereof, storage battery plates, and storage battery plate material, partly or wholly manufactured, all the foregoing of the lead-acid type and not specifically provided for, which if imported into the United States are subject to duty under paragraph 320 of the Tariff Act of 1930, as amended; lead acetate white, lead acetate brown, gray, or yellow, lead nitrate, lead arsenate, lead resinate, and all other lead compounds not specifically provided for, which if imported into the United States are subject to duty under paragraph 46 of the Tariff Act of 1930, as amended.

(b) The term "manufactured zinc article" means: zinc oxide and leaded zinc oxides containing not more than 25 per centum of lead, in any form of dry powder, ground in or mixed with oil or water, lithopone and other combinations or mixtures of zinc sulphide and barium sulphate containing by weight less than 30 per centum of zinc sulphide, which if imported into the United States are subject to duty under paragraph (77) of the Tariff Act of 1930, as amended; zinc dust, zinc in sheets, zinc in sheets coated or plated with nickel or other metal (except gold, silver, or platinum), which if imported into the United States are subject to duty under paragraph 394 of the Tariff Act of 1930, as amended; zinc wire, which if imported into the United States is subject to duty under paragraph 316 of the Tariff Act of 1930, as amended; articles or wares not specifically provided for, if composed wholly or in chief value of zinc, whether partly or wholly manufactured, which if imported into the United States are subject to duty under paragraph 397 of the Tariff Act of 1930, as amended; zinc chloride, zinc sulphate and zinc sulphide, which if imported into the United States are subject to duty under paragraph 93 of the Tariff Act of 1930, as amended.

(c) The term "imported into the United States" means entered, or withdrawn from warehouse, for consumption within the meaning of the Tariff Act of 1930, as amended.

(d) The term "quarter" means a calendar quarter.

SEC. 302. (a) No manufactured lead article shall be imported into the United States in any quarter, beginning with the first quarter which begins after the date of enactment of this Act, after the amount of such manufactured lead article imported into the United States during such quarter equals the quarterly import quota for such manufactured lead article established under section 303.

(b) No manufactured zinc article shall be imported into the United States in any quarter, beginning with the first quarter which begins after the date of enactment of this Act, after the amount of such manufactured zinc article imported into the United States during such quarter equals the quarterly import quota for such manufactured zinc article established under section 303.

SEC. 303. The quarterly import quota for each manufactured lead article and each manufactured zinc article shall be one-quarter of the average yearly amount of such article imported into the United States during the calendar years 1953 through 1957.

SEC. 304. Upon the expiration of the fourth quarter during which the restrictions imposed by section 302 are in effect, and annually thereafter, the Secretary of Interior shall make an investigation to determine whether the imports of manufactured lead articles and manufactured zinc articles bear approximately the same relationship to the consumption of such articles in the United States as the average imports during the calendar years 1953 through 1957 bore to the average consumption of such articles in such years, and shall make such adjustments in quotas as he finds necessary to maintain approximately the same relationship.

TITLE IV—GENERAL PROVISIONS

SEC. 401. The import quotas provided for in titles I, II, and III of this Act shall be determined by the Secretary of Interior. An initial determination of such quotas shall be made as promptly as possible after the date of enactment of this Act. The determination of quarterly import quotas provided for in section 103(a) and 203(a) of this Act for subsequent quarters shall be made as promptly as possible after the close of the second quarter preceding the quarter for which such quotas are determined.

SEC. 402. Notwithstanding any other provision of this Act, the Secretary of Interior may, in his decision, establish classifications of manufactured lead articles and manufactured zinc articles, which classifications may but need not be the same as classifications established under the Tariff Act of 1930, as amended, and, in lieu of establishing a separate quota for each manufactured lead article or each manufactured zinc article within a classification, establish a single quota for all articles within such classification.

SEC. 403. The quotas provided in this Act as determined by the Secretary of Interior shall be administered by the Secretary of the Treasury.

SEC. 404. The Secretary of Interior and the Secretary of the Treasury are authorized to make such rules and regulations as may be necessary to carry out the provisions of this Act.

SEC. 405. Any person who knowingly violates any provision of this Act or any rule or regulation of the Secretary of Interior or the Secretary of the Treasury issued under this Act shall be fined not more than $, or imprisoned for not more than , or both.

SEC. 406. The quotas provided for by Proclamation Numbered 3257 of September 22, 1958, shall be discontinued on the date that quotas established by this Act become effective.

Senator GRUENING. Senator Jordan.

Senator JORDAN. Mr. Wilson, I am glad to hear your explanation of the Anderson bill that has been prepared for introduction. I too expect to cosponsor that because it seems to me that we have in years past met this determined resistance and now we must approach it from a new angle.

This new approach is to your satisfaction, I take it.

Mr. WILSON. Yes, sir; it is. Actually I might say that an adjustable quota bill was introduced in the House several years ago. This is a similar version but we think with some refinements that make it much more workable. It really came about from a presentation that we made during the 1958 Tariff Commission hearing in which we were actually advocating an increased tariff but we also presented the quota approach. It was as the result of that Tariff Commission hearing that they did report out, with a split decision—there was unanimity of injury to the industry, three Commissioners recommended the maximum tariff and also the 50 percent quota that I was discussing with Senator Church.

They didn't propose an adjustable quota. We think that is a very important part of any quota bill to be workable.

Senator JORDAN. When you say in your statement here it is time that Congress enacts import legislation to develop, maintain, and expand the natural resources of our country.

By import legislation you are referring to this particular bill as being the import legislation you think will make the correction that you seek?

Mr. WILSON. Yes, sir, I am.

Senator JORDAN. I am glad to have that information. I intend to cosponsor this bill.

Mr. WILSON. We appreciate the interest that has been shown here today.

Senator GRUENING. Thank you very much, Mr. Wilson. I would say to you that if there is any comfort in companionship in misery, I would say that the gold industry is worse off than the lead-zinc industry. The lead-zinc industry's plight is through nonfeasance by the Government and the gold industry's plight is due to the misfeasance of the Government.

We hope we can do something for both of them.

Mr. WILSON. Certainly misery loves company, and I hope we are all successful. Thank you very much.

Senator GRUENING. Next we will hear from Mr. Ankeny, Director of the Bureau of Mines.

STATEMENT OF MARLING J. ANKENY, DIRECTOR, BUREAU OF MINES

Mr. ANKENY. Thank you, Mr. Chairman.

Mr. Chairman and gentlemen, we in the Bureau of Mines are pleased to have this opportunity to come before you and tell you something of the Bureau's program in minerals.

The lasting strength of a forward-looking United States is dependent upon the full and creative development of our Nation's mineral wealth. In both peace and war, this mineral heritage has served the country's needs and has provided the fundamental raw materials for the most highly developed industrial society in the history of mankind.

As Secretary Udall has pointed out, however, mineral resources are not inexhaustible. Many predictions have been made from time to time that reserves of certain essential minerals will soon become depleted as the Nation continues to develop its industrial strength to meet the combined pressures of a steadily growing population, a more complex economy and the unsettled and highly competitive international situation.

The future cannot be forecast with scientific precision and no one knows for certain whether some of the grim predictions of decline and weakness through resource depletion will come to pass. But the very fact that technologic developments resulting from human resourcefulness, ingenuity, and invention have prevented ultimate exhaustion of mineral resources up to this time is a lasting tribute to the creative determination of our people and holds much promise that the United States will continue to have adequate supplies of minerals and fuels to meets its expanding needs.

The mineral research program of the Bureau of Mines embraces the mining and metallurgical problems of some 80 economically significant metals and nonmetals, excluding the mineral fuels. It requires the energies and talents of about 1,400 persons almost half of whom are professionally trained in physical sciences or engineering.

Of approximately $15 million appropriated to the Bureau for mineral programs for fiscal year 1963, 80 percent has been allotted to technologic research and 20 percent to resource examinations and appraisals. In addition, almost $2 million will be made available to the Bureau for mineral research from other Government sources and from private organizations that wish to utilize Bureau experience and capabilities in cooperative studies.

Research programing is organized essentially on a commodity basis and each commodity program is designed to fit into a coordinated approach to the national mineral-supply problem and to extend utilization of minerals and metals through knowledge of mineral characteristics.

The research itself is carried out on a functional basis by a staff of engineers, scientists, and technologists under the local supervision of research directors, working in research centers and laboratories.

The Bureau's program in minerals is based on the fundamental assumption that its mission is to help assure an adequate, dependable, and continuing supply of minerals to meet the needs of an expanding population, a rising standard of living, and the national security, produced under conditions minimizing hazards to health and safety of workers in the mineral industries.

A basic prerequisite to the Bureau's program is its fact-gathering activities which are required to develop realistic projections of mineral-supply requirements. Information is gathered through timely and extensive surveys of resources, reserves, productive and processing capacities, production, imports, and other related factors.

On the demand side, a parallel record is compiled of consumption and exports. The impact on the supply-demand-price balance of factors like new technologies and production and consumption, tariffs, subsidies, quotas, noncommercial stockpile programs aand international commodity agreements are also appraised.

Although this mass of data is collected, arranged, and interpreted primarily for use in formulating and guiding the technical research program, it also provides as a byproduct a major factfinding service of inestimable value to Government and industry.

I am sure you gentlemen are fully aware of the Bureau's "Mineral Yearbook" through which many of these data are published, as well as some 400 mineral market surveys and a number of definitive materials surveys that present detailed information on individual mineral commodities.

Technologic research projects are placed in one of two main groupings: (1) Metallurgical research, conducted at metallurgy research centers or laboratories, and (2) mining research, performed at mining research centers, laboratories, or offices.

The Bureau's metallurgical research is conducted at seven centers and five associated laboratories. The centers are at Albany, Oreg.; Reno, Nev. (with associated laboratories at Boulder City, Nev., and Berkeley, Calif.); Salt Lake City, Utah (with a laboratory at Tucson, Ariz.); Rolla, Mo.; Minneapolis, Minn. (with a laboratory at Bruceton, Pa.); College Park, Md. (with a laboratory at Norris, Tenn.); and Tuscaloosa, Ala.

The variety of metallurgical investigations conducted by the Bureau requires high competency in virtually all phases of metallurgy, physical and inorganic chemistry, chemical and ceramic engineering, and mineralogy. We are intensely proud of the record of achievements of our researchers who have won recognition for the Bureau and for themselves.

Three of the four have gone to metallurgists, and specialists in this field have received citations from Government agencies and technical societies as well.

The many scientific disciplines represented in the Bureau's metallurgy research program are applied in both extractive and materials research and an accelerated research program is well underway to seek high-purity metals with special properties that will withstand exteme conditions encountered by high-speed aircraft, missiles, and space vehicles.

98-989—63——13

It is believed that this program will supply new concepts which the designer may confidently employ for both defense and peaceful purposes. Moreover, this work may well lead to establishment of entirely new industries in the same way that Bureau research opened the avenue for commercial production of titanium and zirconium.

The Bureau of Mines over the years sinceits creation has developed numerous new methods and new materials now in everyday application by industry. Many of the metals and nonmetals so essential to the Nation's progress and security are scarce and difficult to recover from the ores.

With full recognition to this ever-increasing problem, the Bureau is engaged in a continuing quest for methods to assure adequacy of mineral supplies in the face of dwindling reserves and leaner ores.

As an example of the progress made in ore beneficiation, metallurgists now recover copper from ores containing less than 0.5 percent whereas at the turn of the century 3 percent copper was considered marginal and anything less than that was worthless.

Many of the scientific improvements which have transformed marginal and submarginal properties to valuable deposits have been sparked by the Bureau of Mines.

Now let me for a moment tell you something of the Bureau's mining research program. It is divided into two major areas: (1) Basic research involving fundamental investigations of phenomena, knowledge of which could result in far-reaching improvements in the mining processes, and (2) applied research to solve existing mining problems and improve present practices.

This research is conducted at five locations: College Park, Md., Denver, Colo., Spokane, Wash., Reno, Nev., and Minneapolis, Minn. Each of these is engaged in a specialized field of investigation which in the aggregate covers the entire mining process from mine preparation to transportation of broken ore and to the processing plant.

The present research staff includes mining engineers who have become proficient in certain phases of physics and mathematics, physicists and geophysicists who have become experts in such fields as stress analysis and seismology as applied to mining, and geologists with talents in physics and engineering. All of their efforts are directed to the objective of reducing the cost and improving the efficiency of mining.

The projects currently active are far too numerous to mention here today, but let me cite a few in order to give you some idea of the variety and scope of our mining research efforts. The Denver Mining Research Center specializes in research in rock mechanics, a science of the behavior of rocks under various stresses and environments, producing information that is important to all exploration, development, and operational problems of mining.

Two ground control projects involve research to develop criteria for more efficient design of underground openings in mines employing block caving systems of mining. Another project is adapting statistical techniques to obtain greater precision and reliability in ore grade estimation in order to plan new operations with a greater assurance of economic success.

Our studies in this area have received much recognition throughout the country and our research teams are considered foremost among specialists in this new field.

At the Minneapolis Mining Research Center the primary emphasis is on research on rock penetration and fragmentation and supporting operational problems, principally mine water control. The Reno Office of Mining Research specializes in studies of open-pit slope design, recognizing that very small changes in the planned slope of open pit walls greatly influences the amount of material to be moved and hence the economics of the total operation.

At the Spokane Office of Mining Research the emphasis is on research on artificial ground stabilization and support. One study is concerned with devising techniques for predicting the direction and magnitude of rock pressures on deep mine openings in order to obtain design criteria for effective underground supports.

We are proud of our achievements in our research on improved methods for rock bolt anchorage. One result of this work has been the invention of a new type bolt which has created widespread interest among both mine operators and mine equipment suppliers. This bolt, which is anchored by an explosive, is designed to bind layers of rock into competent supporting structures and has extended the range of utility of rock bolting to mines where this economical, efficient type ground support method formerly could not be used.

Researchers at the Applied Physics Research Laboratory at College Park, Md., are pioneers in the field of rock mechanics. References to some of their many publications are found in almost any comprehensive treatment of the subject. Illustrative of their work is Bureau of Mines Bulletin 587, "Design of Underground Openings and Competent Rock," published in 1960, which represents the culmination of many years of extensive research in the rock mechanics of stable ground.

Blasting research is also conducted by the staff at this laboratory and the major effort is on the mechanisms by which rock is broken by explosives.

We believe that in each of these areas of study—mining, metallurgy, and mineral factfinding—we are accumulating a foundation of fundamental knowledge that is essential to assure continued advancement in all branches of mineral technology as well as to assure the successful solution to the Nation's mineral resources problems.

Through these important avenues of research we believe that we are helping to expand the mineral resources base that supports the Nation's continued industrial progress and insures its survival.

This concludes my statement.

Senator GRUENING. Thank you very much, Mr. Ankeny. I would like to ask you the same question that I asked Dr. Nolan. Are you getting enough money to do the work that you feel is necessary?

Mr. ANKENY. A recent study of the National Academy of Sciences advocates that for the next 10 years the growth of Bureau metallurgical programs in the science of metallurgy should be about 30 percent a year and the growth in mining research should be about 10 percent a year.

We are not growing that fast. I should add that even though funds were available, it is extremely doubtful that we could grow that fast.

Senator GRUENING. You mean you could not get the personnel?

Mr. ANKENY. Because of limitations in personnel and facilities.

Senator GRUENING. I want to ask you another question. You referred to the work of various stations at Albany, Oreg.; Reno, Nev.; Boulder City, Nev.; Berkeley, Calif.; Salt Lake City, Utah; Tucson, Ariz.; Rolla, Mo.; Minneapolis, Minn.; and Bruceton, Md.; and then work at College Park, Md.; Denver, Spokane, Reno, Minneapolis. What are you doing in Alaska?

Mr. ANKENY. We do not have a research laboratory in Alaska. We do what I believe is a fairly substantial job on mineral resources. We do not like to think of our research centers as having particular area significance but rather of significance in certain specialized fields.

So when our resource people who are working in Alaska, or any other part of the country, turn up a problem that requires metallurgical research, we are organized in such a way that we assign that research work to the laboratory that has the greatest capability in that particular field of activity rather than from any geographical considerations.

Senator GRUENING. We have supplied the Bureau of Mines with a very beautiful building and island entirely to itself and we hope that you can find some peculiar specialty that would be appropriate to this vast region even if you do not go on a regional basis.

Mr. ANKENY. I have visited that establishment, and it is the headquarters of our operations in Alaska. I think it is fairly well occupied. There is some analytical laboratory activity there. But no activity of pure research into a specific research problem in minerals.

Senator GRUENING. The University of Alaska is now moving ahead in developing a comprehensive program of arctic and subarctic research, and I would like to interest you in that program and see whether you cannot coordinate some of your activities in your laboratory at Douglas with that.

I think it might be mutually beneficial.

Mr. ANKENY. We certainly are in close touch with that situation. I personally know the gentleman who is in charge of the program up there. I have had numerous contacts with him. In this connection I think it is advisable to advise this committee here that the Bureau of Mines does not at the present time have authority to contract research.

There is a bill pending in the Senate now that would give this authority to the Bureau of Mines so whenever a problem comes up that is within the capability of a University that we could execute a contract to have that work done. Another advantage that would be gained from this legislation would be that it would help us solve our technical manpower problem.

At the present time there is a movement both in Congress and in the executive branch to hold manpower down to a minimum. There is no particular tag put on the kind of manpower that you are limited to. This in a way works a hardship because even though we have appropriations we find it difficult because of this movement to increase our scientific and technical manpower.

If we had authority to contract with universities it would help our program in this regard.

Senator GRUENING. We will watch the progress of this bill and see what we can do about it. Has a report been made by the Interior Department yet on this bill?

Mr. ANKENY. Sir, I am sorry I didn't hear.

Senator GRUENING. I say has there been a report by the Department of Interior on this bill to which you refer which would give the Bureau of Mines the power to contract?

Mr. ANKENY. I do not believe that a report has been forthcoming as yet.

Senator GRUENING. You might ask them to speed it up so that we can consider it. Thank you very much.

Mr. ANKENY. Thank you, sir.

Senator GRUENING. Last but not least, we have Mr. George Fumich, Jr., Director of the Office of Minerals Exploration. We are sorry to keep you waiting.

STATEMENT OF GEORGE FUMICH, JR., DIRECTOR OF OFFICE OF MINERALS EXPLORATION

Mr. FUMICH. That is entirely all right, sir.

Senator GRUENING. That does not mean we are not interested in what you say.

Mr. FUMICH. I have a brief formal statement which I would like to read and then I will informally expound on that.

The Department of the Interior through its Office of Minerals Exploration maintains a financial assistance program for the exploration of domestic minerals reserves.

The Office of Minerals Exploration and its predecessor agency, Defense Minerals Exploration Administration, have encouraged exploration for domestic minerals and metals since mid-1951, by sharing with private industry the risk and cost of searching for new ore deposits.

Under the present program, the Government pays 50 percent of the allowable cost for approved work up to a maximum of $250,000 in a single contract and is repaid by a 5 percent royalty on production.

If the exploration is unsuccessful or if there is no production, there is no obligation to pay royalty except on production incidental to the exploration work. Interest is charged at rates which have ranged from 5.75 to 6.50 percent, and it is also payable from the 5 percent royalty.

This participation has stimulated exploration by private industry in 36 of our 50 States in a search for 30 mineral commodities. It has put men to work in our mining communities and aided the economy of the Nation as well as added to its wealth. Valuable geological information has been obtained for the future, and important new ore deposits have been added to our known reserves.

As of March 31, 1963, the Government had executed 1,218 exploration contracts calling for total expenditures of $60,481,760, of which the Government's maximum participation was set at $36,656,371. The Government has expended $23,940,067 on these projects, and has been repaid a total of $4,473,028 from royalties on production.

Of these 1,218 projects, 402 have been successful in finding significant ore deposits. A total of 72 projects have repaid the Government's share of the costs in full. The recoverable minerals and metals in the ore reserves found by the successful projects are estimated to have a value in excess of $1 billion at current prices.

Although the addition of gold and silver last year to the list of mineral commodities eligible for exploration assistance materially aided some of the depressed mining areas, the general situation of the small operator is so bad that without some additional aid, he is on the way to extinction, thus further depressing the mining areas.

Unfortunately, even though the Office of Minerals Exploration program has become increasingly successful in accomplishing its purpose, it is not now designed fully to meet these problems of the mineral industry.

Informally, getting to some of the improvements we have tried to install in the program in the last few years, approximately 2 years ago secretary Udall added gold and silver to the program and as a result of the addition of these two minerals in our program we now have a total of 15 gold contracts that we executed in that 2-year period, accounting for approximately a million dollars worth of exploration assistance projects. In other words, even though we have been discussing the depressed conditions in the gold and other areas of the mining industry, there has not been a complete void or vacuum of Government action in this particular field as the OME, while it might be a very small agency, is making some great efforts in this particular field.

Frankly, I think we can do better. I think we are still ineffective in certain areas. But I still think we are accomplishing the mission for which we are presently designed. I believe that we have been especially helpful to the small gold and silver producers in the last 2 years.

For instance, approximately 2 years ago we had only 11 contracts executed for approximately $280,000. We received 44 applications at that time. To give you an idea how we have been increasing in recent years, last year we received 121 applications, asking for $12,800,000 worth of exploration assistance projects.

Out of that total of 121 applications we executed 21 contracts, totaling $726,325 worth of exploration funds. Out of the $726,000 that we expended last year in a total of 21 contracts, we executed 6 gold and 3 silver contracts.

In other words, of the total of 21, gold and silver accounted for almost 50 percent. Now what have we done this year? This year so far of the 14 exploration contracts executed, 8 were for gold exploration. We have also executed two silver contracts.

So far this year for the 10 months of the program we have executed 10 contracts for gold and silver. We have 27 applications that we are processing requesting $2,800,000 in exploration funds; 10 are for gold and 9 are for silver.

So you can see that gold and silver are playing an increasingly important part in our particular program. We do think we are making some effort in these particular fields. We also have some other mineral commodities that are involved in our program.

But getting back to gold and silver I think that these two minerals along with mercury and some others are particularly minerals that we can really help because of the size of their industries. To give you an idea in the field of mercury, in 1961 there were 69 mercury producers in the United States. They produced approximately 31,662 flasks. That was a total amounting to about $6,200,000. There is an industry that is not large. Mercury is peculiarly adaptable to small industry because of the size of deposits and the way they occur.

It does not interest the large producer. For this reason the small producers are going into this particular field more and more. But because of the price situation and other factors and exploration costs the small producers need some assistance from Government.

Another field that we have been talking about here is gold. Gold, I think, is also very adaptable to our particular program. In 1961 we had about 500 producers, producing gold in the United States. They employed about 4,400 people. They produced about $54.2 million worth of gold, mining approximately 1,548,000 ounces.

So you can see an industry like that is the type of industry I think we can help. Silver is another. It is not quite as large as the gold industry. There were about 300 producers in 1961 employing 3,600 men. They produced 34.8 million ounces of silver worth approximately $32.2 million. We have reserves of about 7 years.

That is another factor I would like to get into. Our program is designed to stimulate exploration for minerals that we know are in short supply now and which we believe will be in short supply within the next 40 years. What do we find so far as our reserves are concerned?

Based on 1960 rates of consumption, gold has a reserve status of about 13 years. Silver about 7 years. Bauxite about 6 years. Lead about 14 years. Zinc about 28 years. What do some of the scientists say about the growth of our country, and about the growth of the metal consumption in our country. We know that in the last 30 years the United States has consumed more minerals than all of the peoples of the world had previously used throughout all history.

Within the same 30 years we doubled our rates of production of these minerals twice. Also what do we find for the next 40 years based on population? The experts say we had 180 million in 1960 and we are going to have 245 million in the United States in 1980.

They also say we will have 330 million people in the year 2000. That means we are going to have an increase each year for the next 40, based on these predictions of about 1.5 percent. They also say that our metals increase each year is going to be about 3.1 percent for the next 40 years.

They also say our gross national product is going to increase. They say we had around 503 million in 1960. In 1980 we will have about 1,060 billion. In the year 2000, we will have 2,200 billion. So it means that the GNP each year is going to increase 3.8 percent for the next 40 years.

It means that we are going to have a tremendous increase in the next 40 as we have had in the past 30 or in the past 50. So we believe there is an acute need for the particular program that we are concerned with. I personally believe it is one of the most valuable small programs in Government.

I know we have all heard of Parkinson's law and we say something gets bigger all the time. In the last 5 years, the OME has decreased in size. About 5 years ago we had 194 people connected in one way or another with this particular program. Today we have 20. That gives you an idea of how we have "de-Parkinsonized."

To repeat, I am really sold on the program. I believe that it is doing a good job but I also believe it can do a much better job. Thank you.

Senator GRUENING. Mr. Fumich, I think this is very important work. You say you have about 12 contracts or arrangements in gold.

Mr. FUMICH. Sir, we have eight contracts that we executed in this fiscal year. We executed 6 last year, which makes 14. We also have one in the field for approval, which makes a total of 15 contracts that we have either executed or which will be executed shortly.

Senator GRUENING. Could you describe the nature of those? Just what do they provide?

Mr. FUMICH. Three of them are based on buried placer riverbeds. The other 12 are all lode mines. Last year we executed two in California, two in Alaska, one each in Nevada and Montana. This year we executed four in California and two in Montana and one each in Nevada and Colorado.

It gives you an idea where these contracts have been executed. The 10 that we have pending are generally in those same States and about on the same ratio.

Senator GRUENING. You remember in our previous conversations we discussed this as one approach that might be beneficial to the gold industry. I would appreciate if your would supply for the record a list of these contracts with a little detail about each so that it may be included in this record.

Then when we subsequently have further hearings on gold we perhaps will be able to explore them even more fully.

Mr. FUMICH. I will be only too glad to furnish you with that information, sir.

(Subsequently, the following information was submitted:)

OME Gold Contracts Executed

California

Gold Queen Mining Co., Sierra County; Government's share $19,725. Underground crosscutting and drifting along the Gold Queen vein.

California Alluvial Mining Corp., Plumas County; Government's share $24,555. Surface churn drilling and also underground drifting pertaining to a buried placer.

Stanley E. and Nettie M. Brainerd, Sierra County; Government's share $7,540. Angle Liberty Mine; work consists essentially of crosscutting to the vein and then drifting on the vein structure.

Armin Speckert, Plumas County; Government's share $30,675. Underground work of drifting and raising in connection with a buried placer.

Dickey Exploration Co., Sierra County; Government's share $25,160. Underground work of crosscutting, drifting, and raising along the Wyoming vein.

Gold Queen Mining Co., Inc., Sierra County; Government's share $50,610. Underground work of drifting and crosscutting on a series of veins; Gold King, Dreadnaught, Seneca, Belmont, and Docile.

Best Mines Co., Sierra County; Government's share $40,045. Underground work of deepening a shaft and drifting along the Peavine vein.

Montana

Northern Continental, Inc., Phillips County; Government's share $38,050. Underground work of drifting and longhole drilling along the Gold Bug vein system.

Larrigon Mining Co., Ravalli County; Government's share $15,805. Underground work under the project consists of drifting, crosscutting, and driving dog holes to explore a wide shear zone known to be goldbearing.

Grand Deposit Mining Co., Beaverhead County; Government's share $36,015. Underground work of drifting and crosscutting to explore a goldbearing contact.

Nevada

Old English Gold Corp., Nye County; Government's share $17,450. Work consists of sinking a shaft followed by drifting from the shaft bottom along a goldbearing vein.

Consolidated Eureka Mining Co., Eureka County; Government's share $59,300. Sinking a shaft and drifting to explore for ores of gold and silver.

Colorado

Bimetallist Mining Co., Ouray County; Government's share $13,425. Underground work of drifting and raising on the Bimetallist vein which was formerly productive.

Alaska

Little Squaw Mining Co., Chandalar District, Fairbanks Precinct (about 90 miles north of Fairbanks); Government's share $83,875. Essentially the project consists of bulldozing along the surface outcrops of two veins; to be followed by underground crosscutting and drifting along the vein structures.

Richard Rowe; Fourth Judicial District; a placer about 80 miles southeast of Fairbanks, on the Chena River at a location known as Van Curlers Bar, Government's share $6,150. Work contemplated consists of surface excavation by means of a bulldozer.

Senator GRUENING. Senator Mechem.

Senator MECHEM. I want to know the reason for the decline in the number of employees in your agency.

Mr. FUMICH. Under the original setup this was the Defense Minerals Exploration Administration which was originated under the Defense Production Act of 1950. Under that original jurisdiction the main mission was an emergency mission based on the Korean war situation.

In 1958, OME was formed and as a result of that the program format was changed somewhat and we are working on a more conservative basis. When I say conservative, we have certain restrictions that we didn't have before that we have to use as guidelines in our program.

Senator MECHEM. Do you notice any decline in the incentive for exploration?

Mr. FUMICH. One of the problems that we have is this. We have to point our efforts toward the smaller producer and yet we can only help him up to 50 percent. He wants to get into the program but in many cases he can't furnish his own 50 percent even though he can charge his own labor and material as part of the 50 percent.

Frankly, we are quite surprised with the response that we have been receiving from operators especially in the gold industry. We have been hearing about a very depressed industry and yet here is a mineral commodity that is heading our list.

Some of the other minerals are in much better shape. Yet we still have the fact staring us in the face that we have more gold applications and more gold activity in our program than any other mineral activity.

Senator MECHEM. Are these established operators or just people who have come into the business in the past few years?

Mr. FUMICH. It would be a mixed reaction. I guess there is nothing like a goldminer and no one more optimistic. Some of these projects are in the same area where the historic mines are located. A lot are in the Allegheny District in California in Sierra County.

There you have one of the districts where more gold should be discovered because of its geology. I don't think it has been fully explored. Even based on the present price of $35 an ounce, competitive producers could be established there.

In some of the other areas, too. Incidentally in New Mexico under DMEA and OME, we executed 35 contracts amounting to approximately $3,800,000 in various exploration projects.

Senator GRUENING. Mr. Fumich, your statement on lead and zinc will be included in the record in addition to your extemporaneous remarks.

Mr. FUMICH. Do you want me to go into lead and zinc? I would rather make it extemporaneous rather than read it.

Senator GRUENING. I think we will include it in the record at this point.

(The statement is as follows:)

STATEMENT ON LEAD AND ZINC, PRESENTED BY GEORGE FUMICH, JR.

Mr. Chairman and members of the subcommittee, I appreciate being invited to appear before your subcommittee today in connection with the matters now before you.

The Lead-Zinc Small Producers Stabilization Act of 1961 (Public Law 87-347, approved Oct. 3, 1961) authorized and directed the Secretary of the Interior to establish and maintain a program of stabilization payments to small domestic producers of lead and zinc ores and concentrates.

Aggregate payments may not exceed $4.5 million during each of calendar years 1962 and 1963, $4 million during 1964, and $3.5 million during 1965.

Administration of the program was delegated by the Secretary of the Interior to the Administrator of General Services Administration on April 19, 1962.

Although the Lead-Zinc Small Producers Stabilization Act of 1961 provides for payments on lead and zinc contained in ores and concentrates sold during the 4 calendar years 1962–65 inclusive, funds for inplementation of the act were not made available until July 25, 1962. The regulation for administering the act were filed on July 27, 1962, and published in the Federal Register of July 28, 1962.

Perhaps the best way to give you an idea of the program is by setting out two of the requirements: (1) The lead and zinc must have been sold after January 1, 1962, and must have been derived from mines which were operated during some part of the period from January 1, 1956, to August 1, 1961.

(2) The producer must have produced and sold ores or concentrates of one or both of these metals in normal commercial channels, from mines in the United States or its possessions, during some part of the period since January 1, 1956, and must not have produced more than 3,000 tons of recoverable lead and zinc combined during any 12-month period since that date.

The first application for participation in the program was received August 17, 1962, and by the end of the year 103 applications had been received. Eight more have been received since January 1, 1963, making a total of 111 applications.

Of the 111 applicants, 85 were issued certificates of participation, 15 were denied, 2 withdrew, and 9 are being checked for verification of data. Of the 15 applicants denied, 11 had not produced during the required period. The other four applicants had production in excess of the limitation and thus were unable to qualify as small producers.

Of the 85 applicants who have been certified to the program, only 60 were eligible for payments on 1962 production. Of these 60 applicants, 55 submitted requests for payments on 1962 production and have received approximately $1 million.

Senator GRUENING. We will keep this record open for a week to satisfy various requests that have been made including the one on gold.

Thank you very much. Is there anyone here who would like to testify that has not been called upon? If anyone would like to submit a statement it will be accepted within the next week.

(Whereupon, at 12:45 p.m. the subcommittee was adjourned.)

APPENDIX

(The following communications and statements were presented before, during, and after the hearings. They were ordered placed in the record.)

STATE OF ALASKA,
OFFICE OF THE GOVERNOR,
Juneau, April 5, 1963.

Hon. ERNEST GRUENING,
U.S. Senator,
New Senate Office Building,
Washington, D.C.

DEAR SENATOR GRUENING: I am informed that two of the purposes of your hearing are to gather information on the current condition of our domestic minerals industries, and to learn what remedial action could and should be taken. I wish to present information and recommendations on these two subjects.

Alaska, famous for early gold rushes and still popularly thought to be the scene of much golding mining, has experienced a decline in gold mining from a peak annual production of over 700,000 ounces to 114,000 ounces in 1961. This year, the remainder of our larger dredges are being permanently shut down, and Alaskan gold mining will be almost at the vanishing point. Huge amounts of copper and lesser tonnages of chrome, lead, zinc, tin, antimony, and tungsten have been produced in Alaska. Today, none of these metals is being mined here. Production of platinum and mercury is reduced. These facts are indication of the depressed state of Alaska's mining industry.

Basically, the forces working against mining in Alaska are similar to those in other mining States. It is in the national interest, both for economic and defense considerations, to have a healthy mining industry. The United States dares not risk becoming dependent on foreign sources for its necessary metals. A mineral deposit cannot be put into production by merely opening a valve in time of emergency. Large low-grade deposits of iron or copper, for example, take years to develop and put into production.

Another reason for keeping our mines in operation is the unemployment problem. I note with satisfaction President Kennedy's determination to keep unemployment at the lowest level possible. As I am sure you are aware, former mining districts are scenes of some of the greatest unemployment.

Let us consider now some of the measures that should be taken to at least partly assist and encourage the mining industry. My recommendations are presented under the following four hearings: "Taxes," "Roads," "Exploration," and "Direct Assistance."

1. *Taxes.*—One of the chief reasons that mining is doing so well in Canada, and why huge amounts of American mining venture capital are going there rather than into domestic mining developments, is the Canadian Federal tax advantage. First and most important is the 3-year exemption period from Federal income taxes for new operations from the starting date of production. This has a significant influence on efforts to get new mines into operation. If this advantage were given to the domestic industry, especially in the higher cost and underdeveloped States, production and employment would be certain to increase.

Another tax advantage working to Canada's benefit is the absence of a capital gains tax on the transaction of selling a mining prospect or property. This is an incentive to look for discoveries and sell them sooner at lower prices, thus helping to bring more ore deposits into production. This incentive could well be extended to American prospectors and exploration companies.

As in Canada, also, exploration costs should be totally tax deductible.

2. *Roads.*—I realize that access to remote areas for discoveries and development work is not the problem in other States that it is in Alaska. However, it is a very serious item retarding development in Alaska. Favorable areas that are inaccessible should be opened up with access roads. If a company knows it can rely on obtaining help in roadbuilding to its property, it will be much more willing to explore and work in remote areas. In view of the tremendous amounts of money being made available to States under the Federal highway aid program, funds could and certainly should be made available to States for use on a matching basis with mining companies for mineral development and for building roads into inaccessible areas to encourage exploration and development. Using Canada again as a good example, I wish to point out that that country has found that road pioneering and assistance is a significant spur to the mining industry.

3. *Exploration.*—We need much more scientific geological, geophysical, and physical exploration in favorable areas where private companies cannot afford to do it themselves. It has been authoritatively estimated that at least three times as many commercial ore deposits lie hidden as have been discovered. The U.S. Geological Survey and the U.S. Bureau of Mines should receive increased appropriations with which to accelerate their efforts to find indications of these hidden ore deposits and to evaluate them when found, along with many of the apparently marginal ones that are considered to have possibilities. Most States have agencies capable of similar exploratory work, and should receive matching funds to pursue exploratory programs, depending on the areas and the need.

4. *Direct assistance.*—No industry could operate successfully today on a 1934 price for its product and its market practically restricted to one purchaser. Yet this seems to be expected of the gold mining industry. No other industry has been so discriminated against by the U.S. Government. Most certainly, of all industries, the gold mines are justified in expecting a subsidy. The State of Alaska has requested incentive payments of at least $35 per ounce before, and we do it again now.

As pointed out at a hearing last year, incentive payments will not upset the monetary system. Please also let me place on record once again the facts that incentive payments for newly mined gold will: (1) help cure the damage being done by the outflow of our gold reserves, (2) increase employment, and (3) lragely remove the discrimination against the gold miner.

In summary, I emphasize that our domestic mining industry is in a depressed state, and that remedial action by the Federal Government is needed and justified. I urge assistance in the matters of taxes, roads, exploration, and subsidies.

Sincerely,

WILLIAM A. EGAN, *Governor.*

UTAH MINING ASSOCIATION,
Salt Lake City, Utah, May 15, 1963.

Hon. ERNEST GRUENING,
Chairman, Subcommittee on Minerals, Materials, and Fuels,
Senate Committee on Interior and Insular Affairs,
Senate Office Building, Washington, D.C.

DEAR SENATOR GRUENING: I regret having had to cancel my appearance before your committee on May 10, to present our views on "Problems of the Domestic Mining Industry," but would greatly appreciate having this letter, making brief comment on some of those problems, accepted for the record of the hearing.

The major portion of Utah's basic, new wealth-producing economy is based on the mining and processing of minerals and metals. The great variety of mineral resources which Utah produces has resulted in exposure of one segment or another of our mining industry to the various problems which have arisen.

In recent years, Utah has lost a cobalt refinery, a tungsten refinery, and tungsten mine production; its surviving lead-zinc mines have registered an overall loss on operations the past 4 years; its fluorspar production has been critically reduced; its iron and steel industry has lost substantial portions of its market; its copper industry faces ever-tightening competition, and its uranium industry has been materially limited.

A basic condition in mine and in mineral processing plant closures has been the cost of production versus static or decreased prices. Wages, supplies and taxes, the principal elements of cost, have increased for mining operations generally in parallel with the national trend. A "machine miner" in a Utah mine in 1952 received $14.36 for an 8-hour shift. In 1963 he is receiving a base wage of $19.08, and fringe benefit costs have increased proportionately. Basic wage costs have increased one-third while prices in the same period have decreased. Lead and zinc in 1952 averaged 16.467 and 16.215 cents, respectively, compared with present prices of 10.5 and 11.5 cents. The average lead price for 1962 of 9.631 cents was the lowest yearly average since 1956.

The cobalt refinery of Calera Mining Co. in Utah, for treatment of ores mined in Idaho, was closed when the Government refused to renew purchase contracts in favor of securing supplies from Cuba and the Belgian Congo.

The tungsten refinery of the Salt Lake Tungsten Co. was closed with the collapse of the domestic tungsten industry when the Congress in 1956 refused to appropriate funds to continue the purchase program. A small but continuous mine production of tungsten in Utah terminated at the same time. Of the 600 to 750 tungsten mines operating in 1955 and 1956, a few survived the resulting price cut. The principal ones were the Hamme Mine in North Carolina, the Pine Creek Mine in California, and byproduct tungsten production from the Climax Molybdenum operation in Colorado. The Hamme Mine closed in February 1963 as a direct result of the economic stress brought upon U.S. producers by price reductions occasioned largely by dumping of Russian and Chinese tungsten on the world market. The Russians have periodically followed the same practice with intermittent dumping of substantial tonnages of zinc on the world market.

Tungsten dumping by Russia and China directly confronts domestic miners with competition with the wage scales of those countries. There could be no surer method of rendering this country completely dependent on foreign and principally Soviet sources for this vital mineral, critically essential to both our civilian economy and to our defense program.

Dumping of steel products in our market has reached national attention. Originally a problem of coastal areas with respect principally to wire and nails, it now encompasses most of the domestic marketing areas and includes a much larger list of basic steel products. Marketing of Utah-produced steel has suffered from increasing steel imports, much of which is suspect as to legitimate pricing.

The above examples are cited simply to emphasize that the United States has been progressively and needlessly deteriorating in its mineral raw material productive capacity. Particularly, with respect to those minerals and metals which are involved in international trade. This deteriortaion has resulted largely from foreign policy based on favoring the raw material producers of foreign areas, through loans and grants to stimulate exploration and development, and through import controls being reduced to favor the foreign producer in our market. Lip service has been given in all areas of government responsible for mining and marketing of minerals and metals, but the basic process of building up foreign production and favoring the sale of that production in our domestic markets has dominated the actions taken.

Such programs as have been devised by the responsible Government agencies and presented as relief measures for domestic mining have been temporary, stopgap measures which have, in such cases as stockpiling, aggravated the basic problems rather than correcting them.

If a healthy domestic mining industry is to be maintained, one which is capable of meeting our critical needs through development of the reasonably available mineral resources of our country, then certain basic policies must be adopted and implemented. These include:

1. Strengthening of the law with respect to antidumping control, coupled with prompt corrective action dealing with violations.

2. Import controls in the form of flexible tariffs or quotas designed to retain a reasonable share of the domestic market for minerals and metals at prices consistent with the cost of production in our domestic economy.

3. Revision of the tax structure to provide incentive to search for and develop our mineral resources, including full expensing of exploration costs, removal of the 50 percent of net profits limitation with respect to depletion

credits, and a moratorium on income taxes such as Canadian mines enjoy for a reasonable period after a mine begins operations. Acceleration of tax payment dates and carrying forward of operating losses to determine net profits, as such profits affect depletion credits—measures proposed to the Congress as tax reforms—represent additional burdens to an industry which needs relief and encouragement if it is to carry on its vital role in our economy.

4. Encouragement, rather than the present harassment, to fully explore the public domain under the mining laws and the Mineral Leasing Act for mineral resources which can be developed by private initiative.

Our economy is based on minerals and metals. Without adequate supplies our machine-age economy with its complexity of civilian and defense equipment and tools would crumble overnight. To become needlessly dependent on unreliable sources for those mineral raw materials is not only a threat to our immediate civilian economy and defense, but it would be a hollow and threatening heritage to pass on to succeeding generations.

Wishing you and your committee success in your efforts to strengthen and to assure the continuity of domestic sources for essential mineral and metal raw materials, I am,

Very truly yours,

MILES P. ROMNEY,
Manager, Utah Mining Association.

STATEMENT OF HANS H. LANDSBERG, DIRECTOR, RESOURCE APPRAISAL PROGRAM, RESOURCES FOR THE FUTURE, INC.

I want to thank the committee for the invitation to appear at these hearings, which I regard above all as a tribute to my organization, Resources for the Future, Inc. Unfortunately, I shall be unavoidably absent from Washington and am, therefore, submitting this statement. The presentation which I shall make draws from a sizable number of opinions, all of which have contributed to a book that was released on April 1 of this year under the title of "Resources in America's Future." This book has, besides myself, two principal authors, Mr. Joseph L. Fisher, president of RFF, and Mr. Leonard L. Fischman, a consulting economist here in Washington. In addition, the research staff of RFF and a number of economists, statisticians, and other research workers called in as consultants have made substantial contributions. I mention this not to place upon any of them even part of the responsibility for what I am about to say, but rather to make it clear that most of what I have to say represents the judgment accumulated in a 5-year period of professional give-and-take in preparing this book.

I understand that your committee is at this moment engaged upon an effort it has characterized as exploratory and informational, in search of facts and ideas. I shall address myself mainly to the first half of this pair; facts, though facts not too narrowly conceived. Not only is it here that I can with least soul searching speak as an expert, but if a factual framework is set up at the very beginning, supported by the best data that can be marshaled but carefully qualified and interpreted, then, it seems to me, ideas can be gaged and appraised not merely in terms of their, shall we say, philosophical attractiveness, but in terms of their relevance, and their likely impact upon the real world.

I shall limit my remarks to the metallic minerals, and indeed to the major ones. Fuels have recently been the subject of a thorough study by the Senate Interior Committee, and the major nonmetallic, nonfuel minerals, such as potash, phosphates, lime, salt, etc., are in such ample supply in this country and in neighboring Canada that one need not fear for their adequacy in the foreseeable future.

A quick review of the past and present degree of reliance on imports for five major metals shows that it has been growing. Iron ore imports that in 1940 constituted less than 5 percent of domestic consumption rose to nearly 10 percent by 1953, hit a high of 38 percent in 1959, and have since subsided only slightly. In bauxite imports have always bulked large. They accounted for 50 to 60 percent of consumption before the war, rose to 75 and 80 percent in the fifties, and in 1960 constituted 98 percent. For lead the import share has climbed from less than 10 percent in the thirties to a level now fluctuating around 40 percent. Zinc imports have risen from next to nothing 30 years ago to a steady 60 percent of consumption in the past 10 years. In copper we have shifted from net exports in prewar years to net imports at a level around 20 percent of domestic consumption.

For other metals like tin, manganese, nickel, various ferroalloys, imports have always supplied the bulk if not all of this country's supply, simply because nature has not endowed us with commercially useful concentrations of these materials. Thus, consumers have drawn their supply from foreign sources in most instances not as a matter of choice but of necessity.

While the United States has come to rely increasingly on foreign sources, at the same time, foreign producers have come to depend less and less upon the United States as a customer. Comparing 1948 and 1960, the share of the United States in world consumption has declined as follows: copper from 49 to 27; lead from 47 to 23; zinc from 43 to 26; aluminum, 50 to 39; and steel (as proxy for iron ore), 52 to 26.

While postwar prostration helps to explain the low level of non-U.S. consumption in 1948, its subsequent rise has never halted and must be accounted for by more fundamental tendencies in the world economy and this country's place in it. I shall come back to the significance of this trend later. Keeping in mind the historical record and looking ahead I think one would want to find clues to these questions:

(1) Is dependence upon foreign sources likely to increase further?

(2) Are there alternatives to reliance upon foreign supply?

(3) What do we know, and if we don't, what should we know about the cost implications of turning to alternative domestic sources or new technology?

(4) Are there cost problems ahead in drawing on foreign sources?

You will note that this list does not contain any query regarding security or depressed areas. These omissions do not stem from any belief that these problems are not germane to the choice between domestic and foreign sources, where such a choice does exist. Rather we have in RFF focused on the long perspective and assumed that solutions can be found to both these issues but that neither of them go to the heart of what, in this instance, we were interested in; namely, the outlook for the longrun adequacy of domestic resources. I shall briefly return to these issues at the end of my statement.

Consulting the projections into the future that we have made we find that the metals have, almost without exception, one common and not surprising feature: on the basis of presently available data, the known reserves within the United States, defined as the material in the ground profitably minable with current technology and at current prices, seem insufficient for meeting the demand that reasonable calculations lead us to expect over the next four decades.

The demand projections we have made at Resources for the Future are compatible with a population growth to the year 2000 of about 1.6 percent per year and an annual rise in the gross national product of a little better than 3.7 percent, which is implicit in our labor force and productivity assumptions. Both these magnitudes make their home well in the center of a large tribe of projections that have of late come into being. They seem to us realistic and a solid base for erecting projections of demand for consumer and producer goods.

You will find these demand projections, cumulated over the 40 years from 1960 to 2000, compared with estimated reserves and potential ore in a simple tabulation (table I).

The confrontation strikingly illustrates the fact that with the exception of vanadium, and molybdenum, when generously interpreted, domestic reserves as now estimated cannot see us through the rest of the century, even if the total content were to be mined during the next 40 years.

The data on U.S.[1] estimated reserves are essentially those that have been developed by the Department of the Interior on the basis of information made available by the mining industry, supplemented by the Department's own independent knowledge. Only in rare instances have they been further modified by RFF on the basis of other later information.

[1] Excluding Alaska and Hawaii.

TABLE 1.—*Cumulative demand for selected metals, 1960–2000, compared with estimated U.S. reserves and identified potential ore*

Item	Unit	Demand 1960–2000	Estimated U.S. reserves	Identified potential ore
Iron ore	Billions of long tons of iron content	4.2	3.0	20
Manganese	Millions of short tons of metal content	73.0	1.0	77
Chromium	Millions of short tons of Cr_2O_3	43.0	4.0	
Nickel	Millions of short tons of metal content	12.0	.5	(?)
Tungsten	Thousands of short tons of metal content	460.0	71.0	(?)
Molybdenum	Millions of short tons of metal content	2.6	2.0+	(?)
Vanadium	Thousands of short tons of metal content	185.0	600.0	(?)
Cobalt	do	430.0	43.0	(?)
Aluminum	Millions of short tone of metal equivalent of bauxite.	255.0	13.0	98
Copper	Millions of short tons of metal content	112.0	50.0	50
Lead	do	38.0	4.5	(?)
Zinc	do	69.0	25.0	(?)
Tin	do	3.0	0	0

Source: Based upon ch. 21 of "Resources in America's Future," by Hans H. Landsberg, Leonard L. Fischman, and Joseph L. Fisher, Johns Hopkins Press, Baltimore, 1963. (Excluding Alaska and Hawaii.)

It is generally agreed that such estimates, for a variety of reasons, tend to portray too conservative a picture of reserves. Revision is infrequent, and the criteria for narrowing or widening the circle within which an ore occurrence is classified as part of reserves are not always specified or consistent in time and place.

Nonetheless, the reserves data cannot possibly be so poor that their improvement would upset the above conclusion. So far, therefore, there can be no doubt as to the conclusion.

This changes somewhat when we relax the stringent reserve specifications and look at the column in the same tabulation that is labeled "identified potential ore"; this is ore that is not now profitably minable but may be expected to become so with advancing technology over the next decades. At once the outlook for iron ore changes to one of abundance. That for manganese, copper, and aluminum improves greatly, though it still falls short of adequacy. As for the other materials, we have no data for analysis, but one may guess that for most the outlook would be little changed.

The question we must then ask is this: Can the transition to these poorer materials, where physically identified, be made without significant cost increases? There are some answers available.

For iron ore and aluminum there is ample evidence that transition to low-grade domestic material (the more difficult types of taconite, and alumina-bearing clays) may raise the cost of the steel or aluminum ingot by not more than 10 percent in the short run and perhaps not all in the long run. Both industry and Government, the latter through the Bureau of Mines, have made great strides in widening the raw material base of these two metals without conjuring up higher costs.

Copper is an interesting case since the tenor of copper ore mined in this country has continuously decreased over the past 80 years, yet the real price of copper in the United States, presumably reflecting its cost, has shown no sustained tendency to rise. Foreign sources have, of course, been drawn on more in the latter decades of this long period. Whether this relationship can continue below current grade levels is a question to which we do not as yet have the answer. It is a question well worth posing though.

For manganese one must be very skeptical. The same is true for some of the other materials, where the history of incentive prices offered by Government in the fifties suggests that the lower grade ores behave more like manganese then like iron ore or aluminum, i.e., they seem to be exploitable only at greatly increased prices, and by "greatly" I mean double, triple, or more.

I have been specific only in order to illustrate an important conclusion we can now draw: there is no broad judgment one can make that would apply to all minerals or all metals. From the viewpoint of cost repercussions, one could look with a good deal of equanimity toward raw material self-sufficiency in iron ore or aluminum, if a persuasive case for its need could be made, but concern would be in order if this were to extend to say, manganese, chromium, or tungsten, on account of the high costs and prices that would be involved in adjusting to such a situation, certainly temporarily, perhaps permanently.

Let us now extend our analysis in two dimensions: one, to the resources beyond those with which the United States is endowed, and beyond the type and grade of material that can qualify at least as potential ore. When we look at the resources of the world as a whole or, at the non-Communist countries only, where that is statistically meaningful, we must also take into account demands arising outside the United States which may well rise more rapidly over the remainder of this century than in the United States. Again, ignoring in this context the problems, now greatly magnified, of data availability and quality, we can come up with some order of magnitude of cumulative demand that may be compared with both reserves and potential ore in the group of countries in question.

Among the findings yielded by such a confrontation are the following: for iron ore the reserves of the non-Communist world are greatly in excess of foreseeable demand so that no recourse, in the next 40 years, and substantially beyond, need to be had to potential ore. The same is true for aluminum, where very large foreign bauxite deposits have been mapped out in recent years. For manganese, the reserves may equal or exceed demand when account is taken of the many mining operations scattered throughout the world. Judgment for nickel adequacy rides on the feasibility of exploiting vast poorer grade deposits, of the type found in semitropical areas, such as the Philippines, Indonesia, and elsewhere. Without their utilization, it is difficult to see adequacy, barring, of course, large new discoveries of high-grade reserves such as were made during the past decade in Canada. Similarly for chromium: the real size and the quality of the South African deposits and again the cost structure of the so-called lateritic ores are crucial. So is adaptation of consumers to poorer grade chromium. Too little is know regarding the cost implications of exploiting potential ore deposits to draw meaningful conclusions. For copper, a judgment of adequacy in the non-Communist world seems to depend upon the possibility of gradually lowering the grade mined abroad to 1 percent, without encountering a rise in costs. U.S. experience suggests that this is feasible, but it is not a certainty.

One need not expand this list to make the point that seems to me to emerge quite clearly: the world as a whole is faced with the same task as the United States, and that is to find ways and means of successfully mining poorer materials; and by successfully I mean without significant increase in costs. The United States differs from the rest of the world only in the timing: we have arrived sooner at that point. Put differently, if the U.S. experience is a good guide, the lowering in grade can proceed abroad for some time to come without the question of increased costs arising. For example, there are many copper mines outside the United States where 4 and 5 percent ore is worked, as against the 0.7 and 0.8 percent average in this country. Especially in view of the close affiliations or identity of management in this industry throughout the world one should not expect great difficulties in a gradual lowering of grade of ore in most foreign operations.

Because mining companies are in business to mine ore and not to prove reserves, it is of course possible, indeed likely, that foreign even more than domestic reserve estimates have a substantial conservative bias. But again, the error would have to be of very large proportions to upset our judgment that within the next 40 years a transition to poorer ores in a good many minerals will be called for. There should, therefore, be little reason to doubt the wisdom of encouraging all types of research; in exploration to find new reserves (this has happened in the United States in the past 15 years in copper, zinc, and lead), in recovery to extract the maximum amount of metal at the least cost, in beneficiation to permit utilization of less desirable ores, in fabrication to widen the range of acceptable raw materials, in use of scrap, and in developing substitutes from materials in more plentiful supply. The usefulness of what is accomplished at home is bound sooner or later to come in handy elsewhere in the world. This, of course, includes also wholly new technology and sources, such as the ocean floor nodules which have stood in the wings for some time, and only last month were termed by an investigator producible at perhaps 75 percent of the cost of conventional ore, and which undoubtedly will become an object of increasing attention for both engineers and economists, even if this particular outlook should turn out to be on the optimistic side. It includes equally the leaching in place or the mining of large quantities of ore with the help of nuclear explosions. Such methods could thoroughly shuffle the current magnitudes of reserves and potential ore. It is important that we keep our minds open to these possibilities.

98-989—63——14

I cannot close without commenting briefly on a most important effect of modern technology: the ever-widening range of substitution. In its demand projections the RFF study has attempted to allow for this effect, but it is really not possible to do so satisfactorily. In the metals this affects above all the ferroalloys, the adequacy of none of which should be considered in isolation. But it is also true, and will be increasingly so, for aluminum vs. copper and vs. steel, and it is true for various metals vs. various nonmetals, especially the synthetic materials. Some of the latter can now boast of characteristics in terms of tensile strength, heat resistance, etc., that put them in a class with some of the metals. Since in addition they have characteristics not possessed by metals they have turned into increasingly important rivals.

In terms of the focus of these hearings this is important. From what I have outlined, it is clear that recourse to low-grade domestic ore would in many instances cause substantial price increases. Recourse to foreign material will face this problem only in the more distant future. Instead it carries the built-in risk of interruption in supply, and this may lead to cost penalties at a given time. The latter risk can be eliminated or minimized through stockpiling, and while we have seen that a solution satisfactory to all is not easily found its attainment should be feasible. If the specter of insecurity of supply could thus be banished, the twin problem of areas depressed because of decreased domestic mining activities could then be approached and dealt with as a question of social policy. The alternative cost to society of maintaining a higher cost domestic industry including the effect upon the domestic price level, export and balance-of-payments ramifications, etc., may or may not be higher than that of stockpiling and aid to declining industries, but there is little doubt in my mind that the advances of technology will set increasingly narrow limits within which the price of a mineral can be supported without causing the market of the material in question to be preempted by a competing material or materials.

For that reason, the effort to lower the cost of production of poorer material by advancing the frontiers of knowledge would in the long run be a more rewarding expenditure of funds. Markets can easily be lost to lower priced materials and once lost they may stay lost. With the proliferation of new materials, the designer's choice is widening at a rapid pace, and the number of items he can do without is growing. In addition, as I have shown earlier, the United States has become a smaller factor in international raw material markets, a trend that is most likely to continue. Any threat of a future price squeeze that might result from rising aggregate world demand pressing upon aggregate world reserves would certainly best be countered, if not eliminated, by applying abroad as well as at home the fruits of technology. At the same time, increasing substitution possibilities should work in the direction of making this country less dependent upon any one mineral, thus enabling it to minimize the cost of any supply difficulties that arise and cautioning the foreign, as well as the domestic supplier, against seeking even temporarily to profit from a tight supply situation.

STANFORD RESEARCH INSTITUTE,
Menlo Park, Calif., May 3, 1963.

Mr. STEWART FRENCH,
Chief Counsel, U.S. Senate Subcommittee on Minerals, Materials, and Fuels, New Senate Office Building, Washington, D.C.

DEAR MR. FRENCH: Following are some notes in summary of my visit with you and Mrs. Friedman on April 26.

First, we must point out that Stanford Research Institute has conducted fewer than 40 projects in fields related to geology and process metallurgy. In actual volume this has amounted to about $1.5 million since the beginning of the institute in 1946, or a little less than 1 percent of our total effort.

We have, however, several staff members who maintain competence in these fields and who have developed some opinions which may be useful to the committee. The so-called gold recovery paper presented by Dr. Davenport to the Western Mining Conference in February is one of these. It is hoped, however, that our limited exposure to the earth sciences will enable us to cite to the committee some more general experience which we have had as research managers and which we believe may be applicable to the mining industry.

By way of background, it might be explained that Stanford Research Institute is an unendowed, nonprofit organization which is owned by the trustees of Stanford University. In general its staff, facilities, and activities are separate from the university, although there are numerous examples of collaboration. Established in 1946 to solve problems and develop new techniques for industry and government, it has grown into what some regard as the world's largest, most versatile technical problem-solving organization. During 1962 work proceeded on 892 projects, 560 of which were for commercial clients, the remainder for Government agencies. The largest single contract amounted to about 6 percent of the $35 million volume.

This organization has now worked for several of the so-called underresearched industries, at least to the point of believing that some useful generalizations can be drawn for anyone seeking to give technical stimulation to faltering industries. For the record, we have made modest advances in behalf of banking, railroads, air pollution, commercial laundries, printing, meat rendering, and the processing of wheat and cotton, among others. The total investment in these efforts has amounted to more than $10 million over the past 10 years, all of the funds coming from commercial interests.

The principal lessons for research planners which we would commend to your attention are as follows:

(1) The first lesson concerns the necessity of getting one or more good technical ideas of where to start before embarking on any large efforts. A really good idea will usually have the following properties:

(*a*) It will change existing practices by at least a factor of two;

(*b*) It will attract competent and creative scientists to work on it;

(*c*) It will be opposed by most of the experts and organizations already in the field;

(*d*) It will seldom come from people or organizations who have been working in the field for more than 5 years.

(2) The second lesson recognizes the versatility required to shake the idea down to specific techniques. In modern research, the most innocent question quickly evolves to problems requiring mass spectrometers, digital computers, and air travel cards for the staff. It is important to observe that not one of our examples of research for underresearched industry could justify the expense of facilities nor attract the range of competences by itself. In each case the staff and facilities, while owned by the Institute, were in existence and had the needed skills largely because of other projects with a multitude of other objectives.

(3) Another way of stating this is to say that the problems of these industries do not afford the technical depth or the continuity to justify a versatile facility or to hold a creative staff. In many instances, for example, trade association laboratories were active in the field but preoccupation with existing techniques or limitations of charter prevented their making any revolutionary contributions.

(4) A fourth lesson in the management of innovative research is that the effort is always organized on a project basis and that there is no continuing need for the staff or facility when the project is over. As the project evolves from concept through feasibility to development and transition to industry, there is a complete shift of facilities and staff. Since the research part of the cycle is completed in the first 2 or 3 years, good research personnel tend to avoid these projects if they are organized in a separate organization.

(5) The fifth lesson concerns costs and schedules. It shows that the right timing, the right subject, and the right people are more important to the success of a project than are the amounts of money or the number of people. Our experience indicates that good innovative ideas will crop up, if at all, with $10,000 to $50,000 worth of staff time over a period of 6 months to a year. A year and $50,000 to $150,000 will usually demonstrate feasibility to a research staff. One-third to half a million dollars and 3 or 4 years will get the idea to where the techniques can be picked up and are usually sought by 10 or more companies. Once the idea is acquired in industry, it appears that they need another 2 to 5 years and something from $1 to $5 million to get it on the market. The elapsed time from the concept to commercial application is rarely less than 5 years, and appears to be more like 6 to 8 years.

(6) A sixth, last lesson is an observation on the importance of proprietary information or patents. In general, we have been overrun with companies looking for processes or products. But it appears that when we have something developed at Government expense, where no patents are available, where the know-how is, or could easily become common knowledge, there is great reluctance to invest the kind of money required to carry the applications forward. There are some interesting exceptions, of course, depending upon such things as the sizes of companies in the industry and the amounts of capital and risk involved.

Turning these generalities more directly to the problems of the committee, there are several points worth noting:

(1) On gold, there are several quite theoretical reasons for believing that gold production might be increased at costs considerably below those existing today. If this should happen, we can be sure it will involve techniques which are totally different from those in use today, and that it will take 10 years to get any significant production.

(2) The reason for being so certain that the techniques must differ radically may be of interest. The present methods have been used for a long time and have been improved slowly over the years by a lot of very intelligent and industrial people. In short, experience and practice has worked every last bit of slack out of the system and further improvements are unlikely. For this reason, the gamble must be on innovation which is much more likely to come from some totally unrelated and unexpected sources rather than from some people or organizations whose equipment or experience limits them to improvements.

(3) At the outset, any program which is undertaken should not be restricted to a particular metal. The reason is that the kind of techniques which teach us how to be better geologists, or how to handle materials, or how to work in the ground will be useful to all, or at least groups of metals. Research applicable to gold, for example, would almost certainly apply as well to silver and platinum.

(4) Some metals of strategic value also may be worthy of specific attention. Three that appear to be desirable research targets are manganese, chromium, and cobalt. These are largely imported, technically nonsubstitutive in steel alloys, the stockpiles are large enough to give research people breathing time, there are relatively few domestic interests who would be pushed around by radical innovations, and any new techniques would probably be applicable on other metals later.

(5) For the purpose of evaluating the risk or investment potential some additional guesses might be helpful. The total stake, or import cost for the six metals cited (gold, silver, platinum, manganese, cobalt, and chromium) amounts to about $325 million per year. As a mining enterprise this would be comparable in size to Phelps-Dodge ($312 million sales, $436 million assets, $38 million net, 13,900 employees). At the research end it would probably take a quarter of a million dollars of blue-sky gambling followed, if practical, by another half million dollars to build some prototypes to the point of convincing people that changes are possible. From there on there should be enough momentum to get commercial interests to complete the investment, leaving ample opportunity for them to develop patents or proprietary knowledge which protects their specialties.

Respectfully submitted.

WM. D. MCGUIGAN,
Assistant General Manager, Engineering.

STATEMENT OF J. BLECHEISEN, CHAIRMAN, INDEPENDENT DOMESTIC FLUORSPAR PRODUCERS ASSOCIATION

This memorandum on fluorspar is submitted by the Independent Domestic Fluorspar Producers Association—a nationwide association of independent domestic fluorspar producers; its adress is Box 365, Rosiclare, Ill. This memorandum is intended to show the bedraggled, beaten down, and beleaguered condition of the independent domestic fluorspar producers in America—all brought about by the rising avalanche of fluorspar imports.

Fluorspar (CaF_2) is a nonmetallic mineral containing the element fluorine. It is used in the production of aluminum, steel, hydrofluoric acid, high octane aviation fuels, refrigerants, propellants, fluorocarbon, plastics, glass and enamel products, cement, water fluoridation, atomic energy, and many other uses essential to the national security and economy. Fluorspar is a strategic and critical material and is stockpiled by the Government.

USES OF FLUORSPAR

Fluorspar is marketed in three commercial grades—metallurgical for steel and iron foundries; acid for aluminum, hydrofluoric acid and the fluorine chemicals; and ceramic for glass and porcelain enamel.

Of the 655,000-odd tons consumed in the United States in 1962, approximately 375,000 tons was of the acid grade for the production of hydrofluoric acid, aluminum, fluorine chemicals, etc.; and approximately 40,000 tons of the ceramic grade consumed in the glass and enamel industries; and approximately 240,000 tons of the metallurgical grade consumed in the steel and iron industries.

DESCRIPTION OF DOMESTIC INDUSTRY

The domestic fluorspar industry is made up of two segments of producers—independents, those who produce fluorspar and sell on the open market (the group submitting this memorandum); and the captives, those who produce for their own account and use, and do not sell into the open market. About 40 percent of the domestic production is captive.

The independent domestic producers produce and sell metallurgical, ceramic, and acid grade fluorspar; whereas the captives are primarily concerned with acid grade fluorspar. However, during the 1940's and 1950's, the captives did include metallurgical producers but they have not in recent times. The principal independent producers are: Minerva Oil Co. (fluorspar division) with offices in Eldorado, Ill.; Ozark-Mahoning Co. with offices in Rosiclare, Ill.; Rosiclare Lead & Fluorspar Mining Co., Rosiclare, Ill.; Tamora Mining Co. (Wiley Cochran), Elizabethtown, Ill.; Kentucky Fluorspar Co., in Marion, Ky.; J. Willis Crider Fluorspar Co., Marion, Ky.; Cummings & Roberts, Darby, Mont.; J. Irving Crowell, Jr., Beatty, Nev.; and Delta Fluorspar Associates, Delta, Utah. Fluorspar was produced in 1962 in Illinois, Kentucky, Montana, Nevada, and Utah (in order of amount of production).

Domestic fluorspar is identical, grade for grade, with foreign fluorspar; for example, finished marketable acid grade fluorspar is 97 percent plus of CaF_2, no matter how low in CaF_2 content the original crude ore might have been before processing and milling. Fluorspar is fluorspar.

DOMESTIC PRODUCTION

Domestic production (shipments) [1] of fluorspar, both captive and independent, since 1953 is as follows:

[In thousands of tons]

Year	Acid and ceramic	Metallurgical	Total
1953	198.5	119.5	318.0
1954	181.8	53.1	245.6
1955	187.5	104.6	279.5
1956	187.1	132.7	329.7
1957	209.6	109.2	328.8
1958	214.6	104.9	319.5
1959	143.7	51.3	185.0
1960	166.8	62.9	229.7
1961	162.5	42.5	205.0
1962	177.9	21.0	198.9

The downward trend of domestic production is apparent, especially of the metallurgical grade.

The high production (shipments) of domestic fluorspar during the years 1956, 1957, and 1958 are accounted for by reason of Government stockpiling contracts held by domestic producers. It is clear that domestic producers (captive and independent) currently have a capacity to produce at least 300,000 tons annually. In fact, that capacity, as found by the Office of Civil and Defense Mobilization in its report of September 25, 1959, is estimated to be 450,000 tons.

FOREIGN PRODUCTION

The principal foreign producers (who are exporters to the United States) are Mexico, Italy, and Spain, in the order of their rank as exporters to the United States. Mexico is the largest fluorspar-producing country in the world, having displaced the United States from that position in 1956. A comparison of U.S.

[1] Shipments usually approximate production over the years.

production with production in Mexico and the other foreign countries is as follows:

[In thousands of tons]

Year	United States	Mexico	Italy	Spain
1951–55 average	304.3	171.1	77.8	78.4
1956	329.7	344.5	137.6	81.2
1957	328.8	471.4	159.4	97.4
1958	319.5	562.0	162.9	99.7
1959	185.0	362.4	174.0	98.3
1960	229.7	399.8	167.4	119.0
1961	205.0	425.5	166.2	155.0
1962	198.9	553.5	127.5	146.0

Practically all of the Mexican production is regularly exported to the United States (Tariff Commission report, February 1960, p. 55) ; over the last 5 years approximately half of Italy's production reached the United States, and about 70 percent of Spain's production was exported to this country.

IMPORTS

The principal imports of fluorspar to the United States are from Mexico, Italy, and Spain. Far and away, Mexico is the largest exporter to the United States.

Imports (including those for Government use) from these countries and total imports from all countries are as follows:

[In thousands of tons]

Year	Mexico	Italy	Spain	Other countries	Total (all countries)
1956	315.6	56.3	47.8	55.8	485.5
1957	391.0	140.2	62.1	38.0	631.3
1958	244.9	59.1	56.5	31.6	392.1
1959	327.0	135.2	71.6	21.9	555.7
1960	287.5	96.1	108.6	41.8	534.0
1961	344.9	62.3	87.9	10.6	505.7
1962	447.5	47.8	82.8	17.7	595.8

The ratios of total imports to consumption, and supply, are:

Years	Consumption	Supply
	Percent	*Percent*
1956	78	59
1957	98	65
1958	80	55
1959	95	75
1960	83	70
1961	74	71
1962	91	75

Thus, it is apparent that imports dominate the domestic consuming market and likewise provide the largest proportion of total supply.

CONSUMPTION

Average annual consumption of fluorspar has been steadily rising during the last decade. In 1950, consumption was 426,000 tons and in 1962, consumption is estimated to be 656,000 tons, a rise of about 55 percent. Herewith are statistics on consumption of fluorspar, by grades, from 1956 forward:

[In thousands of tons]

Year	Acid and ceramic	Metallurgical	Total
1956	334.0	287.3	621.3
1957	376.2	268.4	644.6
1958	302.5	191.7	494.2
1959	371.2	218.7	589.9
1960	403.8	229.9	643.7
1961	453.7	228.1	681.8
1962	417.7	239.1	656.8

Thus, it is apparent that the domestic producers do not lack a market for their fluorspar production. The case is rather that foreign producers have kept prices depressed because of competition among themselves; and, too, such foreign price competition keeps independent domestic producers from much of the consuming market and continues to shrink the area they can serve economically.

It is estimated, based on existing plant capacity of the end users of fluorspar, that fluorspar consumption could be (if users' capacity were used 100 percent), as follows:

End use:	*Tons*
Steel industry	300,000
Hydrofluoric acid and users thereof (aluminum, chemicals, etc.)	600,000
Ceramic, glass, foundry, and miscellaneous	50,000
Tons of fluorspar annually	950,000

U.S. RESERVES OF FLUORSPAR

The U.S. Department of Interior, Geological Survey, found in 1956 (see release Nov. 23, 1956) fluorspar crude ore reserves in the United States of 22 million tons, 35 percent-plus grade.

The concentration ratio, that is, the amount of crude ore necessary to produce 1 ton of finished fluorspar, is approximately 2.5—as shown by the following table compiled from statistics of the Bureau of Mines:

Year	Crude mined	Milled	Concentrate produced	Concentration ratio 2 over 3
	Tons	*Tons*	*Tons*	
1950	822,450	520,000	283,500	1.8
1951	847,850	706,200	341,300	2.0
1952	885,300	739,300	345,400	2.1
1953	903,400	823,900	322,700	2.5
1954	616,900	656,348	305,860	2.1
1955	636,500	667,500	268,400	2.4
1956	922,100	775,700	306,500	2.5
1957	861,500	790,600	322,600	2.4
1958	818,100	814,800	310,600	2.6
1959	405,700	442,000	195,100	2.2
1960	575,700	558,600	225,900	2.4
1961	615,000	491,000	193,000	2.5

Hence, if the U.S. domestic industry were allowed to produce and could find a market for 300,000 tons of finished fluorspar annually, 750,000 tons of crude ore would be required annually—and thus, there is enough crude ore fluorspar in the United States, without new discoveries, to maintain a fluorspar industry for approximately 30 years.

The U.S. fluorspar industry in recent years has produced, in some years, over 300,000 tons a year and could do it again (see table "Domestic production," p. 3).

CONCLUSION

The domestic fluorspar industry has declined in size and output over recent years and is slowly headed for elimination, if foreign competition continues at the current pace; the U.S. Government has no current governmental policy affecting the fluorspar industry—the industry has been allowed to drift downward to possible extinction.

The remedy would be to increase the tariff on fluorspar; at the present time it is $1.87½ per ton on acid grade fluorspar, and $7.50 per ton on metallurgical grade. The least that should be done would be to equalize these tariffs.

Another possible remedy would be to hold a four-nation conference on fluorspar—the four principal producers of fluorspar are the United States, Mexico, Spain, and Italy, the latter three being the principal exporters to the United States. At such a conference, with Government participation, a program of country quotas could be worked out to enable the U.S. domestic industry to produce and ship into the consuming market not less than 300,000 tons per year.

The Independent Domestic Fluorspar Producers Association would be glad to submit any further information which the Minerals, Materials, and Fuels Subcommittee on Interior and Insular Affairs would desire.

Statement of Donald H. McLaughlin, Chairman of the Board, Homestake Mining Co.

My name is Donald H. McLaughlin. At this time, I am chairman of the board of the Homestake Mining Co. and prior to 1961 I served for some 16 years as president and chief executive officer of that company.

The Homestake Mine is the largest gold mining operation on the two American Continents. It is situated in the northern part of the Black Hills of South Dakota and, in the 87 years since its discovery, the mine has produced around 26,700,000 ounces of gold from 97 million tons of ore. Today, the Homestake is the only gold mine of any significance in the United States still able to operate under current conditions.

The monetary policies followed by our Government with regard to gold since the gold standard was abandoned in 1933, have denied the citizens of our country the right to own gold and thus enjoy the protection it affords against inflation. Under these policies, the gold miners, who must meet wages, cost of supplies, and other charges in our depreciating currency, have been forced to accept 35 paper dollars per ounce for their product. Obviously, this results in a squeeze on profits that has resulted in the closing of all but a very few of the country's gold mines and reducing the annual output of gold in 1962 to one-third the prewar output.

Indeed, the consumption of gold for industrial needs in the United States now considerably exceeds the production of the mines, and if it were not for the official restrictions on price and uses, a situation somewhat similar to that which prevails in silver would be troubling our officials in the Treasury.

This is not the place to discuss monetary policy concerning gold, but I cannot refrain from saying that I believe the inevitable outcome of our current practices—particularly our habit of persistent deficits that in the end will have to be met by monetization of debt, with continual deficits in our balance of international payments, and the pattern of higher and higher wages following domestic inflation—is a revaluation of the dollar in terms of gold. This, I would hope, could be brought about in an orderly way that would result in the restoration of the full gold standard with the major currencies of the world redefined in terms of gold and made freely convertible.

Quite apart from these considerations of monetary policy, which have no place here except in their relation to the gold mining industry, it must be pointed out that the domestic gold mining industry will be completely destroyed within a few years unless gold is revalued or unless some special assistance is given to keep profits from disappearing completely.

I have urged, and will continue to urge, that the problems of the gold miner should be met by recognition of the persistent value of gold as money and by adjusting the already depreciated paper currencies of the world (including the dollar) to it. This, with correction of bad fiscal habits, should go far toward promoting stability of money and expansion of trade through the free world.

However, as this wise move appears to have no support on the part of the administration and those in positions of power in our national monetary affairs, at least as far as one can judge by public statements, I am glad to join my associates in the gold mining industry in urging that a premium or special aid in some effective form be made available to the gold miner, in order to keep the existing mines active and to stimulate search for new deposits and to encourage the investment of funds in new mines.

To be effective in accomplishing their ends, such aid would have to be substantial. A price of $70 per ounce of gold is about the minimum that in my judgment would bring about the desired results. (Incidentally, this would just about compensate for the depreciation of the dollar since 1940.)

Such a price—whether attained through a revaluation of gold or through special payments of one sort or another to the few producers, would prolong the life of an enterprise such as the Homestake, for it would make it possible to mine lower grade ores at a profit and postpone the day which is now all too near when costs paid in depreciated dollars catch up with the fixed return per ounce.

The higher price, however, would revive the search for new deposits. Such exploration, using modern techniques, is costly and is not apt to be undertaken unless the chances for rewards on an adequate scale are good enough to appeal to hardheaded men. I doubt if there are many—if any—new districts likely to be found by the old-fashioned methods. But, with guidance obtained through better understanding of geologic features of gold ores, their mineral associations (including trace minerals and halos), the geophysical characteristics of gold deposits and other relationships, it is quite probable that discoveries will be made in areas where gravels, swamps, and lakes conceal the surface or where gold-bearing terrains are covered by later lavas and other deposits.

Such costly work is not undertaken in the economic climate that prevails in the gold industry today. Unless effective steps are taken to provide greater incentives than now exist, domestic gold production within a few years is likely to be no more than recovered as a byproduct from copper and other base metal operations.

Copies of recent papers of mine on the subject are submitted with this statement, and I shall not repeat charts and other statistics given in them.[1]

In closing, I must emphasize that unless gold is to be completely repudiated as the basic international monetary commodity—which I am convinced is quite beyond our power to do, even if some theorists in high places are inclined to favor it—gold should be revalued in terms of major currencies and that until this is done, the domestic gold mining industry should be aided to prevent its complete extinction.

Please accept my thanks for this opportunity to present my views.

Gold and Gold Mining

(Talk by Donald H. McLaughlin at luncheon meeting of the New York Society of Security Analysts, Apr. 16, 1963)

GOLDEN PARADOXES

Gold mining, as an industry, has many unique features. It prospers in times of depression and suffers in times of prosperity. Its profits are most seriously reduced when inflationary conditions prevail, even when the holding of gold seems desirable to many as a hedge against depreciation of currencies.

The metal is scarce in the accessible crust of the earth, yet the deposits from which it may be won are fairly widespread. It is easily recognized when in the sands and gravels of streams and beaches, where it can be recovered by simple means, but the quantities found in such deposits have rarely been enough to make more than short surges in the total output of any particular year or decade. The bulk of the world's gold comes from ore deposits in hard rock that are costly to find and to exploit, and that support operations not susceptible to abrupt changes in scale.

Gold is accepted as the basic monetary commodity throughout the world and currencies are defined directly or indirectly by their official gold content; yet its

---

[1] Papers by Mr. McLaughlin which appear in other Senate documents are not reprinted here.

circulation and the full service it can render have been rigidly restricted for the past 30 years. Its possession gives power to individuals and to free societies, yet the Government most devoted to preserving such rights denies its citizens the privilege of owning gold and using it as a protection against the arbitrary actions of their rulers elected or otherwise.

When a gold miner advocates a revaluation of gold—or a higher price for the product of his mine in terms of the currencies he must use to meet his costs—he is generally regarded with suspicion and his arguments are apt to be dismissed as self-serving. This is quite unfair, for a gold miner would stand to benefit equally well by deflation and by the depression that is all too likely to occur if current fiscal and monetary policies persist. Consequently, I trust you will not dismiss my arguments as special pleading for action beneficial to the gold miners alone. I am sure the world's economy as well as our own would be well served by a revaluation of gold—and this critical step is not urged merely for the relief it would bring to the hard-pressed gold mining industry, though I admit it would be as welcome as it is overdue.

THE DOLLAR VERSUS GOLD

A basic conflict exists, as I see it, between gold and the dollar. Gold is recognized through the world as the basic monetary comomdity—the standard against which currencies are measured. The dollar is defined in terms of gold, but, with convertibility denied domestically, it is hardly better than a fiat currency. At the same time, dollars held by foreign governments or agencies are convertible into gold upon demand. By these procedures, we can avoid the discipline of gold in our domestic affairs and yet maintain the dollar as a hard gold-backed currency in our foreign transactions. Such a policy is tenable only if we conduct our fiscal policies as though we were on the dollar standard. With continued inflation, with the power of labor to force excessive increases in wages, and with successive deficits in international payments, the tenuous tie between gold and the dollar at the present rate will be increasingly difficult to maintain and a point is bound to be reached at which it will break. This seems inevitable if unbalanced budgets met by monetization of debt continue as a persistent habit.

BALANCE OF INTERNATIONAL PAYMENTS

The seriousness of the problem created by the sequence of deficits in the balance of international payments has at last been recognized. The steps necessary to reduce it to reasonable terms are clear enough but unfortunately we find that the most effective of them would impose restraints on the domestic economy that would seem to many as most untimely. Easy credit, reduced taxes, generous spending, and deficit financing may be urged by economists in high places as conventional means of stimulating a sluggish economy, but we no longer have the freedom to indulge in such practices without risking imbalance in international payments that will result in further loss of gold or build up of short-term claims held in dollars that are redeemable in gold.

Since 1952, the Nation's gold stock then $23,252 million has declined to a low of $15,892 million (February 1963). The decline has been uninterrupted since 1957. Furthermore, short-term liabilities in dollars redeemable directly or indirectly in gold that are held abroad have increased from $16,159 million in 1958 to $24,928 million in January 1963. These claims will continue to mount as long as the deficit in our international balance of payments perists. The overall deficit in 1962 was $2.2 billion, which was only slightly below the $2.4 billion deficit in 1961 in spite of energetic efforts to improve the balance of trade and to relieve the demand for dollars by various devices.

Unless one is optimistic enough to think that rather drastic corrective measures can and will be taken, it seems to me to be inevitable that the balance-of-payment deficits will continue with decline in our actual gold stock and with increase in claims against it until a point is reached at which a run on the Nation's gold will start.

REVALUATION OF GOLD—THE RECOMMENDED REMEDY

When that happens, a revaluation of gold in terms of the dollar will be forced. Devaluation is admittedly a harsh and discreditable procedure. But, as I see it, the dollar by losing over half its purchasing power since 1950 has already been devalued to this extent. The tie to gold at the prewar price is an attempt to force the value of gold itself to accompany a depreciating currency in is decline.

If this can be accomplished, it would demonstrate that the era of managed currency had arrived and that gold was no longer of any significance as the basic monetary commodity. Probably many in high places expect this to happen, in line with the earlier doctrines of Maynard Keynes in which his contempt for gold was so clearly expressed.

In spite of the efforts of his followers still in high places, I am confident that the respect for gold in contrast to the distrust of fiat currencies, is so great and widespread that its power is certain to prevail and eventually to force adjustments of currencies even as strong as the dollar if their further depreciation is unchecked.

In attempting to maintain the gold content of the dollar at the ratio fixed in 1934 (i.e., at $35 per ounce of gold) the mistake Britain made in the midtwenties is being repeated. At that time, with more honesty than realism, Britain endeavored to restore convertibility of the pound sterling into gold at the 1914 rate, which was an attempt to repay the vast debts of the first war in money of the same gold value as that in which they were incurred. It wasn't possible without a drastic deflation, as we too found out.

Now, it seems to me, we are doing the same thing again, in holding the dollar at its prewar gold content with the implication that it is as sound as it was in 1940 and that the vast indebtedness of World War II and of the subsequent extravagances will be paid in dollars worth their old value in gold.

To revalue the dollar in gold is merely to recognize a fait d'accompli. A devaluation of over 50 percent is an unfortunate event that has already occurred. The blame for the devaluation is properly placed on the policies that led to war and its aftermath of expenditures that could only be met by confiscation of wealth through the more or less subtle devices of inflation. The revaluation of gold in terms of the dollar and other currencies will be simply an adjustment to realities.

The various devices of borrowings of foreign currencies, extension of credits from the International Monetary Fund, and gentlemen's agreements among central bankers may provide some measure of relief, but unless the basic imbalances are corrected—and I see little chance that they will be—a trigger point is certain to be approached at which a surge in the demand for gold might force an embargo and an eventual adjustment in gold content of the major currencies.

The present 25-percent reserve of gold now required against Federal Reserve Bank notes and deposit liabilities should be retained, even though it reduces the gold currently available for settlement of the $20 billion of international claims to only $4 billion. As long as this reserve is maintained, action to meet the situation will be forced when the declining gold stock approaches this figure. It serves as a warning signal of danger and should lead to action while orderly measures can still be taken. If it is ignored, and the Nation's gold stock falls toward zero as its limit, a devaluation might eventually have to be faced under conditions that would be extremely humiliating.

RESTORATION OF GOLD STANDARD WITH ADJUSTMENT TO EXISTING DEPRECIATION OF MAJOR CURRENCIES

A desired end, in my judgment, would be the restoration of the gold standard with the major currencies redefined in terms of gold and made full convertible, with removal of all restrictions on ownership and international movement of gold removed. With this accomplished, the discipline of gold would be restored on a basis that per se would be neither inflationary nor deflationary and which should promote stable money throughout the free world.

To accomplish this under existing rules and agreements would not be simple. But, if procedures were agreed upon at high levels and basic relations between major currencies and gold worked out, subsequent ratification by Congress could be expected, following a temporary period of embargo on gold payments while negotiations were in progress.

A revaluation of gold to restore it to its purchasing power of 1940 would call for a price per ounce of at least $70. This would, of course, be very beneficial to gold mining enterprises that have been struggling to keep alive under the conditions that have prevailed in the past three decades. The benefits should, however, be regarded as a restoration of the profits once enjoyed and not as an undeserved windfall.

OPERATION OF GOLD MINES UNDER CURRENT RESTORATION

As an example of the difficulties of gold mining under present conditions, the following figures from our Homestake records may be of interest.

	1941	1962
Production	1,499,988 tons at $13.02 per ton, $19,529,080.	1,868,741 tons at $10.85 per ton, $20,270,000.
Profit per share from gold operations.	$4.45	$1.41.
Wages	$4,500,000	$10,000,000.
Local taxes	$337,739	$806,000.
Welfare	$207,137	$629,638.
Supplies	$1,230,668	$4,023,000.

Fortunately, the company has other sources of income that lifted our income in 1962 to around $2.78 per share. The above figures, however, reveal all too clearly the effect of current monetary policies on gold mining, even after improvements in technical operations in which we are justified in taking great pride.

Appraisal of any individual gold mining enterprise, of course, must be based on such considerations as tonnage and grade of ore in measured reserves and prospects for additional ore, mining and metallurgical costs, recoveries, rate of operations and the various factors that go into a technical valuation of anticipated profits. The price of the product admittedly depends on national and international policies far beyond our control. Containing of current policies however, will put the few remaining domestic gold mines out of business before many years. On the other hand, a revaluation of gold will be very beneficial to them as to the entire Nation by prolonging the life of active mines, by leading to enlargement of operations, and by stimulating the search for additional ore.

The Homestake Mines is the largest gold producer in the two Americas. It once ranked fourth or fifth in the world but the great new mines of South Africa have pushed it relatively to much lower rank in annual production of the postwar decades.

Since its discovery in 1876, the mine has produced around 26,700,000 ounces of gold valued at $935 million at the current price. The total amount of ore mined and milled is close to 97 million tons. To visualize these quantities this tonnage of ore in a solid block would form a cube about 1000 feet on a side; the gold recovered from it could be put in an 11.25 foot cube.

This pattern of profits caught between using costs and the fixed price of gold has of course been repeated throughout the world. In all places except South Africa, it has had the expected result of reducing profits and depressing the gold mining industry.

In South Africa, two very beneficial factors lifted the total profits of the industry as well as the output of gold to new highs. They were (1) the new mines of the Far West Rand, the Orange Free State and the Kinross region to the east, where a number of major mines are now in full operation on ores of considerably above average grade and (2) profits from uranium that have kept several older marginal mines in operation that otherwise would have been closed under present conditions. Costs per ton in South Africa, however, rose, but cost per ounce, thanks to higher grade ore as well as to superb technology, declined with the result that profits from gold rose.

WORLD PRODUCTION

Thanks entirely to the increased contribution from South Africa, world production of gold reached a new high of 36.9 million ounces in 1962 ($1,291 million). Canadian and United States production declined to 4.1 and 1.6 million ounces respectively, in contrast to 5.3 and 4.9 million ounces in 1940. South African production accounted for 68 percent of the total output of the free world in 1962. Estimates of Russian production vary from 10 to 17 million ounces annually, but sources of information are obviously unofficial. Exports to the free world have been close to 7 million ounces per year for the last 5 years though considerably below this figure in 1962.

DISPOSITION OF ANNUAL INCREMENT TO THE GOLD SUPPLY

Only around 30 percent of the gold made available from the world's mines and from Russia in 1963 went into monetary uses. This was considerably less than the average since the war, but it is significant that during the past 7 years more than half of the available supply each year has gone into nonmonetary uses. In the United States, industrial uses of gold consumed 2.8 million ounces in 1961 and current figures are probably at an even higher level. Here, under the strict licensing system that prevails, probably none of the gold obtained from the Treasury went into hoarding. Abroad, the distinction is less clear between gold used in industry and that acquired as a protection against inflation. The stigma attached to the world hoarding seems hardly deserved, in view of the record of governments and the money managers in confiscating of wealth by inflationary practices.

INDUSTRIAL USES OF GOLD

There is growing recognition these days that gold, quite apart from its acceptance as money, possesses intrinsic value. The metal itself has unique qualities that create an increasing demand for it in the expanding and complicated technology of the times.

Its extraordinary resistance to corrosion, especially to oxidation, to sulfur and to inorganic acids, is well known. Less appreciated perhaps is the high reflectivity gold possesses, particularly for the red end of the spectrum. This property is already being used to advantage in space vehicles. The possibility of a glass with thin films of gold, adequate to reflect heat and still transparent, should appeal to architects if they still insist on continuing to build airtight glass boxes, requiring expensive air conditioning to be habitable.

A program of research on properties and uses of gold has recently been started under the direction of Clyde Williams & Co. and we are very hopeful that many more opportunities to employ the unique properties of gold will be revealed in the course of the studies.

SUMMARY

To conclude, may I attempt to summarize my views in the following sentences:

(1) Gold will undoubtedly continue to be the basic monetary commodity of the world, in spite of efforts on the part of politicians and the money managers to avoid its strict disciplines,

(2) A nation that ignores the existence of gold, even when not on the gold standard, is likely to find its currency depreciating and to be in danger of being forced into successive devaluations,

(3) The dollar's tie to gold, at the prewar ratio of $35 per ounce—made effective by recognition of convertibility into gold of dollars held by foreign governments and their agencies—imposes serious disciplines made apparent through the balance of international payments that restrict our freedom domestically to employ the conventional means of stimulating a sluggish economy by easy credit, unbalanced budgets or other inflationary devices,

(4) A soft dollar inconvertible into gold at home is in conflict with a hard dollar abroad, convertible into gold at the prewar rate of $35 per ounce which will eventually force a decision between gold and fiat currencies,

(5) The wise solution—before it is too late—is revaluation of gold in terms of the world's leading currencies and restoration of the gold standard at the new rates with full convertibility.

With this accomplished, the prospects for stable money on a worldwide basis would be vastly improved, with fiscal policies again subject to the disciplines of gold which would discourage irresponsible deficit financing.

Unless wise steps such as these are taken, the inverted pyramid of debt both domestic and international will continue to expand until corrective measures are forced that may be so drastic that our entire social order will be in danger.

As I read about the various moves of the money managers to offset the difficulties of the times by a round robin of borrowing, by postponement of claims against our gold, and by seeking prosperity through continued deficits, I am tempted to close with a quotation from Eliza in My Fair Lady—"Just you wait, Henry Higgins, just you wait."

REMARKS OF JOHN B. PULLEN, CHAIRMAN, WESTERN GOVERNORS' MINING ADVISORY COUNCIL, APPEARING BEFORE THE WESTERN GOVERNORS' CONFERENCE, MOUNTAIN SHADOWS RESORT, SCOTTSDALE, ARIZ., APRIL 23, 1963

It is a great opportunity to appear before your distinguished group of the Governors of the Western States and to present some of the history of the Western Governors' Mining Advisory Council. There may be some among you who have not participated in the activities of this group during the 10-year period that it has been working with the Western Governors' Conference. All of you, however, are fully acquainted with the importance of the mining industry to your State.

The production of metals and minerals is the foundation upon which the Western States have built their economic past and future. The average value of the 1961 mineral production of the 11 Western States and Alaska was $355 million per State. California was highest with $1,400 million; Alaska was lowest with $35 million. The total for all the Western States in 1961 was $4,300 million.

These Western States are also interested in public land problems for that is where we find our mines. They embrace 723 million acres, or a total 768 million acres, owned by the Federal Government. Alaska, with 361 million of these acres, has half of the Western States' total. Washington with 15 million is lowest. Alaska's federally owned lands cover 98.8 percent of her area, Nevada's cover 86.2 percent. Therefore these States have a community of interest that is vital to their future economy.

The inspiration that led up to the organization and program of the Western Governors' Mining Advisory Council in its association with the Western Governors' Conference was an exhaustive report by the President's Materials Policy Commission transmitted to the President on June 2, 1952. This was known as the "Paley Report," which was an intimate study of what had happened to the domestic mining industry because of World War I and World War II and what the future must be to insure national security based upon the metal and mineral resources of the country, much of which was centered in the Western States.

Briefly, this Paley report showed definitely and conclusively that national security demanded a healthy and going domestic mining industry. The report revealed, however, that the domestic mining industry was rapidly slowing up and moving abroad because of the competitive advantages which foreign countries had in low wages, cheap water transportation to eastern markets, absence of import controls, etc., and that something must be done about it.

Federal officials, in an effort to put into effect recommendations of the Paley report, called upon the Governor of California (Earl Warren) to start organizing the Western States and developing solutions to the problems. Governor Warren promptly wrote to all the western Governors inviting them and their State mine officials to attend a meeting at Los Angeles in February 1953. In discussing what could be done to alleviate the difficulties, the Western Governors' Mining Advisory Council was born and its first meeting was held in Salt Lake City in May 1953.

It was decided that a permanent organization was very necessary in order to present constructive recommendations to the Governors for their guidance. The name "Western Governors' Mining Advisory Council" was agreed upon. Articles of organization were drawn, in which a particular purpose was stated, as follows: "The Council shall serve to exchange information between the Western States on the mineral and public land problems common to these States and to recommend prudent solutions for these problems, and in so serving to provide information and recommendations for policy and for action, uniform throughout the States." The number of delegates from his State was to be optional with each Governor. A spokesman or chairman would be named for each State group and those appointed by the Governors would serve without compensation and attend the meetings, without expense to the State. It has been a dedicated group, voluntarily serving, and they have made their report to the Governors in each of the 10 years the organization has been functioning.

In order that each of the States would have the opportunity for all those interested in the problems of the domestic mining industry to make recommendations, meetings were scheduled in various parts of the West. The meetings have been as follows:

February 1953	Los Angeles.
May 1953	Salt Lake City.
September 1954	San Francisco.
March 1955	Sacramento.
October 1956	Los Angeles.
April 1957	Reno.
February 1958	Colorado Springs.
July 1959	Sun Valley.
March 1960	Seattle.
May 1961	Salt Lake City.
January 1962	Portland.
January 1963	San Francisco.

In addition to the above, meetings were held each year at the time and place of the American Mining Congress convention.

The meeting of January 1963 in San Francisco is where the recommendations were agreed upon to present to this gathering here today for such action as the Western Governors may care to take. There were 45 delegates present and every Western State was represented. Furthermore, considerable preliminary work has been done by mail as study committees were appointed on each of the subjects to be discussed.

While each Governor will be furnished with a complete copy of the problems and resolutions, lack of time prevents exhaustive discussion now. However, the resolutions being presented include the subjects of: "Federal Mine Taxation"; "Health and Safety, a State or Federal Problem?"; "Gold"; "The Silver Situation"; "Public Land Laws and Administration"; "What Constitutes Discovery?"; "Import Controls"; "Wilderness Legislation"; "Uniform State Laws on Mineral Location Procedure on Federal Lands"; and "Stockpile Disposal Problems."

Even though time does not permit complete presentation, we sincerely hope that each of the Governors of the western public land States will study that which is being presented and take action to assist in carrying out the recommendations.

These meetings during the past 10 years have evidenced helpful results and have been claimed, both by delegate members of the Western Governors' Mining Advisory Council and by Governors themselves, to have been constructive.

We commend the recommendations to your consideration.

Review of Specific Minerals and Metals

It is a fundamental premise of national policy that the maintenance of an adequate mobilization base for metals and minerals is essential to national defense.

The Western Governors' Mining Advisory Council submits, therefore, that the continued search for and production of a fair proportion of the Nation's needs for the following strategic minerals from within the Nation's borders is in the public interest.

Antimony

The domestic production of antimony provides only a small percentage (approximately 5 percent in recent years) of our requirements. Under present circumstances and with the bulk of antimony imports (in the form of ores and concentrates) coming in duty free, an expansion of domestic antimony production does not appear possible.

U.S. primary antimony statistics

[Short tons contained antimony]

	1961	1st 9 months, 1962
Domestic mine production	689	443
General imports	13,277	11,441
Consumption	12,697	10,870

Asbestos

California, with three recently completed, large asbestos plants and more in prospect, appears destined to become the largest domestic producer of short fiber chrysotile asbestos. The largest potential use of this asbestos is in highway construction, where it has proven to be advantageous under certain conditions. Western States use of Western States asbestos in such highway construction should be investigated.

The Indian lands of Arizona continue to yield the only domestic production of low iron, long fiber chrysotile asbestos. Cessation of Government purchases dropped the value of Arizona production 72 percent in 1959. New, modern mills have enabled a comeback to about 45 percent of 1958 value, but a limited market for the highest grade fibers remains a major obstacle. Small-scale Government purchases of these strategic fibers may be necessary to preserve this small but important defense industry.

Chrome

Domestic chrome mining died on October 3, 1961, with the closure of the American Chrome operation in Montana. Oregon-California-Alaska chrome mining passed away 2 years earlier. All this mining was in response to the Federal stockpiling program of the 1950's. The result of this program was the production of 400,000 long tons of chrome ore, a pilot plant operation showing the feasibility of converting the ore into acceptable ferrochrome and the discovery and cataloging of over 400 domestic deposits. Any likelihood of resurrecting chrome mining was effectively stopped by the Senate committee investigating stockpiling when it accused the industry of exerting political influence and receiving prices for above world markets.

Copper

The domestic supply and demand of copper are in a somewhat better balance at present than they were a year ago. This is due to a reduction in output by many of the producers during the year. However, the worldwide picture is not good. Foreign production is running ahead of demand and copper stocks continue to increase, thus posing a serious threat to a continued steady market.

Lead

During 1962 lead mining had one of its difficult years. The recent preliminary report by the U.S. Bureau of Mines notes that mine production further declined 9 percent below the level of 1961 and, in fact, was the lowest domestic mine output of lead since the year 1900. These U.S. statistics were distorted by the strike in midyear at all of the St. Joe mines in southeast Missouri. In fact, during the last few years there have been major strikes at a number of properties because producers were unable to meet the economic demands of union negotiators. Stocks of refined lead remained very high during the war. Pricewise, market conditions were very unfavorable and by February 1962 lead had dropped to the extremely low level of 9½ cents per pound where it remained during the year until the first of November when it moved to 10 cents per pound. Unquestionably, this late 1962 improvement in the price occurred only because of the continuation of the St. Joe strike.

Outside the United States, on the London Metal Exchange, the price of lead plummeted to new lows and stood for most of the year in the range of 6½ to 7½ cents. This price outside the United States exerted tremendous pressure on the U.S. price and even though imports were limited by the quota proclamation of October 1, 1958, this low-priced lead has a significant impact on the price level inside the United States. While the tempo of lead mining in the United States has in no way recovered to a healthy 350,000-ton-per-year figure, it is well to note that production outside the United States continues to increase as supported by the figures submitted by member nations at the International Lead-Zinc Sudy Group meeting held in March and October.

Zinc

Mine production of zinc in the United States improved a little over 1961 but, as in the case of lead, it is still shy of reaching the 550,000-ton figure considered healthy for the industry. The U.S. zinc price declined in March of 1962 from 12 to 11½ cents and it stayed at this level throughout the balance of the year. Outside the United States the zinc price did not suffer as badly as that of lead but the London Metal Exchange still averaged less than 8½ cents for the year as a whole. This low price outside the United States put pressure on the domestic price via imports. The U.S. Bureau of Mines now estimates that 1962 will report a consumption figure above 1961 and may well be the largest since 1956. It is ironical that under these circumstances mine production and domestic prices lag and the whole problem can be laid at the doorstep of unneeded imports being permitted to enter the United States under the quota plan. In contrast, mine production of zinc outside the United States continues to expand and in 1962 again reached a new record figure.

Lead-zinc

Indicative of the continued lack of recovery of mine production of the two metals and extremely low prices is the October 1 Tariff Commission report submitted to the President as its third periodic report on the escape clause action imposing quotas. The Commission advised that the conditions of the industry had not changed enough to warrant a formal inquiry into new consideration of relinquishing the present quota regulations on lead and zinc. That is, the Commission found again, and for the third time, that the "injury" sustained by the industry because excessive imports is continuing. During 1962 there was implementation of the program to provide stabilization payments to small producers of lead and zinc who could qualify. These payments are based on the difference between the current metal market prices for each metal and 14½ cents per pound. Preliminary information on the number of applicants and the mine production they might account for leads to the conclusion that this program will have no substantial impact on the U.S. mine production figures.

Manganese

From any realistic viewpoint, there is no domestic manganese industry left in the United States. Most of the operating mines closed with the termination of the last of the Government manganese purchase programs in August 1959. The last special contract with an individual producer ended in 1961 and the plant in Nevada has been dismantled. At the present time, only the mines at Philipsburg, Mont., remain open and their production is primarily for dry cell battery and chemical use. Anaconda has intermittently produced nodules from stockpiled ore, and Manganese Chemicals Corp. is producing synthetic manganese from manganiferous iron ores and tailings in Minnesota.

The following table shows the relation between domestic and foreign production of manganese and illustrates the decline in domestic production since 1958.

Manganese production in short tons

[From USBM Minerals Yearbook, 1961]

Year	Domestic	Foreign
1952–56 average	222, 207	2, 530, 447
1957	366, 334	3, 105, 172
1958	327, 309	2, 452, 578
1959	229, 199	2, 397, 804
1960	80, 021	2, 543, 841
1961	46, 088	2, 098, 438
1962 (estimated)	20, 000	2, 200, 000

In 1954, 367 manganese "establishments" were engaged in producing manganese ore in the United States. In 1958 there were 186; in 1961 about a half dozen; and in 1962, 4.

The number of employees in the manganese mining and milling industry averaged 2,604 in 1954 and 2,099 in 1958, and wages paid to production and related workers in each of these years amounted to more than $7 million. In 1961, there were 222 workers with total wages of about $1 million and in 1962 the figures could well have been reduced by 50 percent of 1961.

Yes, under the barter program authorized under the Agricultural Trade Development and Assistance Act, over 1,700,000 tons of duty-free manganese has been imported by the Government during the years 1959–62 while the domestic industry was collapsing.

However, credit must be given to the fact that dring the past decade a substantial stockpile has been built up against shortages of supply during periods of national emergencies. As of December 31, 1961, U.S. Government stocks in the National Stockpile, Defense Production Act inventory and Commodity Credit Corporation and supplemental stockpiles totaled over 12 million tons of manganese ore.

With Government preference toward encouragement and support of foreign production, a large and probably adequate Government stockpile, and a wide disparity between domestic and foreign production costs, revival of the domestic manganese industry seems remote indeed.

Mercury

The status of the mercury industry is very precarious. During the past year the domestic consumption was something in excess of 60,000 flasks. Of this

98-989—63——15

amount nearly 40,000 flasks were furnished by imports which leaves the domestic producers with a market of only about 25,000 flasks.

While the price for most of the year remained steady at $191 to $194 it dropped to $186 to $189 near the end of the year.

This price drop was caused by two factors: The first, and the strongest, was the continued pressure put on the market by imported metal and the ability of foreign producers to import into the United States at any time. The second was the distressed selling of metal by domestic mines which were under financial pressure that they had to sell current production at any price. The result has been near liquidation of the mercury mining industry in the United States.

Whereas about 2 years ago there were 8 mines producing over 1,000 flasks a year and 10 more producing over 100 flasks per year there are now half that number in each category in the United States. That is, there are only four mines as of the present time and it may well be that one of those has folded up during the past few weeks.

Thorium, monazite, and rare earths

Nothing has been domestically produced during 1962 in the heavy rare earth (thorium-monazite class) as the imports of foreign ores and/or finished or semifinished products are the controlling factor. Some production has been maintained in light rare earths (cerium) from the Mountain Pass, Calif., property. However, it is understood that no increase in production occurred there in 1962 as compared to 1961. Open market prices for thorium or monazite sand concentrates would be such, had there been any sales, that freight to market would absorb 50 percent of that price. In short, with but one exception, there has been no domestic western thorium, monazite, or rare earth production. Potential producers have been maintained in either developmental or standby condition.

Columbium and tantalum

The Western States have the only significant reserve of tantalum in the North American Continent, and the only significant producer of columbium in the United States. However, the production of those elements from these States is controlled by imports of both columbium-tantalum ores, and heavy rare earth metals source materials, with the result that all mines are at a standstill. If they were in production, they would assist in reducing the unemployment in these particular areas.

Tungsten

The peak year of tungsten production was 1955 when there were 40 large producers and over 700 other producers. Today there is one large producer and one byproduct producer. The outlook does not indicate any improvement.

Uranium

The four major uranium-producing States are, in order, New Mexico, Wyoming, Utah, and Colorado. An example of the importance of the mining and milling of this element is shown by the following data on Utah's 1961 production: 1,098,783 tons containing 6,160,406 pounds of U^{308}; value $25,734,000; employment 1,377; payroll $9,208,741; assessed valuation $29,538,000 (over 2 percent of the total assessed valuation of Utahs).

It is too early to appraise the effect of the AEC's extended procurement program on the uranium industry, for operators are still engaged in evaluating their position. It will, however, result in some further reduction of the annual production rate, for some operators will find the stretchout to December 31, 1970, to their advantage. Although the stretchout provides for deferral of some current production, such deferral is matched by additional salable production in the 1966–70 period.

Cobalt

The situation in regard to cobalt can be summarized in one brief sentence: The price for cobalt in 1940 was $1.50 per pound. The current price for cobalt is $1.50 per pound. No domestic cobalt mine can operate under these conditions.

The principal production of cobalt comes from Africa where is is produced in Katanga, Northern Rhodesia, Morocco, and Uganda. The security of these sources of supply needs no comment. Another potential source is Cuba.

In North America production is coming from the Sherritt Gordon operation at Lynn Lake, Manitoba. There is also some production as a byproduct from smelters.

In the United States proper the only source for cobalt seems to be the Blackbird District in Idaho which, for some time, produced the metal but which was forced to close operations due to the low price.

In the United States there is also a potential source in the cobalt-bearing lead ores near Fredericktown, Mo., and the cobalt-bearing iron ore deposits at Cornwall, Pa. While these are theoretically potential sources, no practical production from them has been demonstrated.

It appears that the current U.S. stockpile of cobalt is about 1 million pounds. In 1961, 10½ million pounds were imported and it appears that 13 million pounds will have been imported in 1962.

Cobalt carries a duty of 4½ cents per pound on cobalt oxide.

Fluorspar

The position of the fluorspar mining industry in the United States is very much the same as that of the strategic metal mining industry in the United States.

While domestic reserves exist, in general the mining of them cannot compete with the mining of foreign higher grade surface deposits. Some production is coming from U.S. mines but these properties are hampered by several problems; most of them are underground, have large amounts of water, and the ore as mined requires upgrading or beneficiation to be marketable.

The U.S. demand for the various grades of fluorspar has shown a rather steady increase. Fourteen years ago 475,000 short tons were consumed annually with about 50 percent of that coming from imports. Last year about 670,000 short tons were consumed with about 90 percent coming from imports.

Importing countries, in order of importance are Mexico, Spain, Italy, West Germany, and Canada. The present price is different for each grade of material, and each sale is negotiated. It appears, however, that the better grades are selling for $45 to $50 c.i.f. port of entry. Tariff rate in effect December 1958 on ore containing over 97 percent CaF_2 was $1.875 per short ton. On ore containing less than 97 percent CaF_2 tariff was $7.50 per short ton. There is no tariff on cryolite.

Fluorspar consumption is expected to increase considerably during the next 10 years. However, there is no reason to believe that U.S. fluorspar production will increase.

Recommendations for Specific Minerals and Metals

Antimony

Tariff protection for both domestic mines and smelters is needed to reactivate the domestic antimony mining industry.

Asbestos

As part of a program to investigate the use of Western States products Federal and State investigation of the use of asbestos in highway construction is urged. Small scale aid to the marketing of the long-fiber strategic chrysotile asbestos produced from the Indian lands of Arizona is urged in order to maintain this sole domestic source of low iron fiber.

Chrome

Small excise taxes (or tariffs) be imposed on foreign imports of chrome ore, the proceeds from which should be sufficient when distributed among U.S. producers to maintain a healthy nucleus of domestic production of this strategic mineral.

Copper

Adequate import taxes should be established to be effective only if and when the average monthly price falls below a reasonable legislated peril point, thus providing a market free of duty for any imports so long as the average monthly price is at or above the peril point.

Lead-zinc

Adequate import controls be established (either tariff or quotas or a combination, if necessary) to be adjustable with the U.S. requirements considering domestic supply and demand and to be more restrictive if and when unneeded imports depress the U.S. market prices below a reasonable legislated peril point level required for the maintenance of a healthy domestic industry.

Manganese

Possibly some domestic production of manganese could be revived by imposition of small excise taxes on foreign imports, the proceeds of which could be distributed among U.S. producers or potential producers as was recommended by the council in May 1962. Of more immediate pertinency and effect is support of the OME program for assistance in exploration and development of mineral deposits which may lead to discovery and development of domestic manganese deposits capable of competing with foreign imports.

Mercury, fluorspar, and cobalt

The situation has continued in rapid deterioration. We again urge additional tariff protection which would assure roughly one-half the domestic market for domestic producers.

Thorium, monazite, and rare earths

The Government abides by the terms of the Buy American Act in purchasing thorium and monazite, and Federal assistance be given by research programs or purchase so that a healthy domestic rare earths industry can be developed.

Tungsten

No reduction in tariff be permitted.

Uranium

The Atomic Energy Commission and the Joint Committee on Atomic Energy are to be commended for the November 17, 1962, announcement of the extension of the domestic procurements program through 1970, and for the provision to permit consolidation of producing mining property units, milling operations, or milling contracts. The industry urges that the implementation of the new program be conducted as rapidly as is feasible and as equitably among the producers and producing areas as is possible, in order that a healthy domestic uranium mining industry, capable of expanding to meet anticipated greater future needs, might be maintained.

Mine Taxation

Percentage depletion and related provisions of our tax laws dealing with the special problems inherent in the taxation of mineral production should be recognized as sound tax policies which serve the best interests of the entire Nation.

Any proposals to reduce the benefits of these provisions work to the detriment of the people, because they reduce the availability of risk capital for the finding and production of new mineral supplies.

Increasing the tax burden upon the extractive industries would be directly counter to the administration's announced objectives in recommending an overall tax cut—to spur the economy, increasing economic, growth, and reducing unemployment.

Expansion of our economic activity—and even maintenance of our present level of activity—will require larger and larger amounts of minerals each year We must remember that the minerals of the earth are the foundation upon which economic strength is based. If we change our tax policies to discourage investment of the funds necessary for production of these minerals, we will do injury to the economy of the Nation as a whole and the extractive communities in particular, without any compensating benefit to any group.

Being a nation composed of consumers of great quantities of minerals, it is imperative that we follow policies which will make the needed minerals available to the public at reasonable prices.

"RESOLUTION

"*Be it resolved*, That the following recommendations of the Western Governors' Mining Advisory Council with respect to the subject of 'Mine Taxation' be approved and adopted by this conference:

"We, therefore, urge the Congress not to impose any additional tax burdens upon the extractive industries."

HEALTH AND SAFETY IN METAL AND NONMETALLIC MINES

In 1952, Congress, as a result of several coal mine disasters, passed the Coal Mine Inspection Act, giving the Federal Government safety inspection and enforcement rights in coal mines employing 15 or more persons.

In 1956, extensive hearings were held by Congress on the desirability of legislation giving the Federal Government the same rights in metal and nonmetallic mines. As a result of these hearings, no legislation was passed.

In 1961, the issue arose in Congress again, and hearings were again held on the subject. As a result of a Department of the Interior proposal at those hearings, Public Law 87-300 was passed in September 1961 directing the Secretary of the Interior to conduct a 2-year study of the subject and to make a report to Congress. The act specifically directed that a study be made of—

(1) The causes of injuries and health hazards in metal and nonmetallic mines (excluding coal and lignite mines);

(2) The relative effectiveness of voluntary versus mandatory reporting of accident statistics;

(3) The relative contribution to safety of inspection programs embodying—

(*a*) Right of entry only, and

(*b*) Right of entry plus enforcement authority;

(4) The effectiveness of health and safety education and training;

(5) The magnitude of effort and costs of each of these possible phases of an effective safety program for metal and nonmetallic mines, and

(6) The scope and adequacy of State mines safety laws applicable to such mines and the enforcement of such laws.

The Secretary of the Interior or his representatives were given the right of entry into any and all mines and to require reports of operators for the purpose of conducting this study.

Unde the provisions of this act, the U.S. Bureau of Mines has been conducting inspections of each of about 400 mines in the country. After each inspection, the Bureau has issued a report and recommendations to the operator of each mine. These inspections and reports have shown great inflexibility and lack of adaptability of the Federal inspection system to the great range of conditions and circumstances which mines of different minerals present. Federal inspectors have in a number of instances made recommendations to mine operators which, if followed, would put the operators in violation of existing, applicable State laws and regulations. Great inconsistency in recommendations by different inspectors has been found.

The advocates of Federal inspection cite the wide disparity between the different State mine safety inspection and regulation acts as a major reason for removing this traditionally State matter to the Federal field. They cite that in some States the mine inspectors are elective officials, with no qualifications whereas in other States the positions are appointive, with great differences in the qualifications required. In some States, the appointments are pure political rewards. In others, politics play no part. Some States appropriate little or no funds for mine inspection while others appropriate substantial amounts for this field.

The human element in health and safety is the most critical, but the most difficult factor to control. It is well known among safety experts that the greatest success in reducing accidents results from developing an attitude of individual safety consciousness and personal responsibility. The program of increased inspections which have resulted from the Federal intervention in this field is already making individuals conclude that responsibility for safety rests with the inspection agency and that the attitude and responsibility of the individual mines is unimportant. This result is harmful to the cause of mine safety. It makes the matter of safety education even more difficult for the States and the industry.

If legislation is finally passed by Congress calling for Federal regulation, inspection, and enforcement of metal and nonmetallic mine safety, a great breakthrough into the field of States rights will have been accomplished and will be relied upon as a precedent to justify further invasions of this field.

Records of the U.S. Bureau of Mines show that improvement in frequency rates of both fatal and nonfatal accidents has been greater in metal and nonmetallic mines, which are under State jurisdiction, than in coal mines, which are under Federal jurisdiction.

Comparing experience of each type of mining for the period 1950–54 with the period 1955–59 shows a decrease of 17 percent in the frequency of fatal accidents in metal and nonmetallic mines, but an increase of 8 percent in coal mines. For nonfatal accidents the decrease in frequency rate for metal and nonmetallic mines was 18 percent compared with a 10 percent decrease for coal mines.

"RESOLUTION

"*Be it resolved*, That the following recommendations of the Western Governors' Mining Advisory Council with respect to the subject of 'Health and Safety in Mining' be approved and adopted by this conference:

"We, therefore, recommend that:

"(1) Jurisdiction of all matters relating to health and safety of employees in mining industry (other than coal) remain with the States;

"(2) The enactment of laws which require Federal inspection of metallic and nonmetallic mines and quarries is neither necessary nor desirable; and

"(3) The U.S. Bureau of Mines continues, as it has in the past, to render valuable service to the mining industry through its research activities, the dissemination of information on accident prevention, first-aid and mine-rescue training, and similar activities in the mine safety education field. All Federal agency participation in these fields should continue to be based on cooperation with the States."

GOLD

Stability of the monetary system of the United States is vital to this country and to the countries of the free world. An essential to such stability is an increase in the gold production of our Nation, now at an alltime low.

Gold production in the United States should also be increased for industrial or commercial reasons. These uses of this metal have increased to more than 3 million ounces annually and are still increasing, while production has remained in the range of 1½ million ounces, compared with as much as 6 million ounces in 1940. The current deficit being made up by sales from the Nation's monetary reserves.

It is self-evident that the gold miners of this Nation need higher prices to produce. An increase in the dollar price of gold could conceivably interfere with international monetary policy, but incentive payments for newly mined gold from domestic gold mines would not. Neither would such payments disturb the domestic monetary system. Such an incentive would reopen closed gold mines and restore lost jobs.

Gold is the basic international monetary commodity and any proposal to repeal or reduce the required gold backing of our currency is inimical to the best interests of the Nation.

"RESOLUTION

"*Be it resolved*, That the following recommendations of the Western Governors' Mining Advisory Council with respect to the subject of "Gold" be approved and adopted by this conference:

"We, therefore, recommend that:

"(1) The Western Governors urge incentive payments that will tend to increase substantially the U.S. output of gold and also assure domestic producers a fair economic return; and

"(2) The Western Governors oppose any decrease in the legal requirements of 25 percent gold backing of Federal Reserve paper bills plus Federal reserve net deposit liabilities."

THE SILVER SITUATION

Facts to be considered

(1) Historically, silver has been a monetary metal, and it continues to serve an important role in our monetary system today.

(2) For most of the past century silver was in oversupply. This situation has reversed in recent years, through the expanding uses by industry.

(3) This recent imbalance in production has been met through the liquidation of holdings throughout the world.

(4) With the near depletion of the "free" silver stocks in the U.S. Treasury and the discontinuation of the sales of such, the silver price has advanced from

91⅜ cents per ounce in November 1961 to over $1.25 per ounce. As yet no substantial new production has been stimulated by this price increase.

(5) In our opinion the price of silver will soon reach the monetary price of $1.29 per ounce at which the U.S. monetary reserve of some 1,600,000,000 ounces, backing silver certificates, will be available for redemption by any holder of such certificates. This important reserve will then be the added source of supply for the coinage and industrial demand of all of the world, including the sharply increasing demand for coinage in the United States. As a result, pressure will still be exerted on the price of silver until it will advance beyond this plateau toward the monetary value of U.S. subsidiary coinage of $1.38 per ounce.

National silver policy

A new policy of the United States must of necessity be forthcoming. President Kennedy has proposed as a solution the complete demonitization of silver, except for use in subsidiary coins. This would involve repeal of the silver purchase acts and the silver transactions tax and replacement of outstanding silver certificates with Federal Reserve notes.

Such a policy would appear to have the following shortcomings:

(*a*) It would dissipate the world's only remaining mobilized reserve of this highly strategic metal.

(*b*) It would place an additional strain on our already inadequate and steadily dwindling gold reserve.

(*c*) It would serve as a dangerous precedent for removal of all precious metal backing of our national currency.

We believe the new national silver policy would better serve the long-range national interest if based on the following premises:

(1) That the preservation of the "hard money" backing in our monetary system is not only desirable but necessary.

(2) That silver historically has done and can continue to supplement the work of gold in monetary systems.

(3) That present world monetary reserves, with annual accretions at the present rate, are not sufficient to service the present and anticipated volume of world trade.

(4) That, because silver is still the principal metal of money among more than half the peoples and nations of the world, especially in Asia, Africa, and the Western Hemisphere, it can serve as an effective weapon in the cold war, just as it has served in the past in hot wars.

(5) That silver supply and demand can be brought into reasonable balance, in the long run, only under conditions that will encourage exploration for new discoveries and make profitable the exploitation of lower grade ore deposits, while at the same time encouraging more efficient and selective usage.

"RESOLUTION

"*Be it resolved*, That the following recommendations of the Western Governors' Mining Advisory Council with respect to the subject of "Silver" be approved and adopted by this conference:

"We, therefore, recommend:

"(1) That the silver transactions tax be repealed, to permit a more orderly market in silver.

"(2) That the reserve of silver in the U.S. Treasury be maintained, as much as possible, for coinage and monetary backing, and that no sales be made at less than the monetary price.

"(3) That proposals to authorize the issuance of $1 Federal Reserve notes be rejected until such time as a thorough study has been made of the entire silver situation by Congress and the Treasury Department."

General Mining Laws of the United States

Bills for a general revision of the mining laws have been introduced in Congress.

The system established by the General Mining Laws for the location and patenting of mining claims has proven successful in encouraging the development of the mineral resources of our Nation through private initiative and enterprise. Any attempts to alter this system are contrary to the national welfare.

"RESOLUTION

"*Be it resolved,* That the following recommendations of the Western Governors' Mining Advisory Council with respect to the subject of 'General Mining Laws' be approved and adopted by this conference:

"We recommend that any general revision of the mining laws be opposed. We also recommend the study of possible supplemental legislation to afford reasonable prediscovery protection to anyone who in good faith is engaged in seeking a discovery. This should particularly apply to exploration by geological, geophysical, geochemical and other scientific methods capable of indicating deep-seated deposits of mineral."

DISCOVERY

In recent years the Department of Interior has distorted the longstanding concept of "discovery" by imposing upon the mining industry requirements that mineral deposits be commercial and that a market for the minerals presently exists.

Where a person of reasonable prudence is willing to do substantial work and expend substantial sums in exploration of a mineral deposit, or in development of the means or processes to put the deposit to use, any holding or ruling that the deposit is not a "valuable mineral deposit" or that it has no "economic value" is not in accord with the mining laws. Experience has adequately demonstrated that value lies in potential as well as in present use.

"RESOLUTION

"*Be it resolved,* That the following recommendations of the Western Governors' Mining Advisory Council with respect to the subject of 'discovery' be approved and adopted by this conference:

"We, therefore, recommend that the original concept of 'discovery' as developed by judicial decisions should be adhered to by all departments of our Government. We condemn decisions of the Department of Interior which distort and disregard longstanding precedents and we urge a return to the original concept.

"We further urge that the Department of Agriculture and the Department of Interior administer the lands under their jurisdiction through regulations that are fair and uniform and that their policies be formulated and carried out with a view to encouraging the development of our mineral resources."

IMPORT CONTROLS

If the United States is to reestablish its western strategic and critical mineral mining industry in a reasonably healthy condition, it is essential that relief from excessive imports of low-cost foreign minerals be provided. Two possible avenues of relief—import controls and subsidies—are open.

The imposition of adequate import duties and/or quotas is preferred. Duties may be imposed or increased automatically when the price falls below a prescribed peril point, and be removed or reduced when a prescribed price is reached or exceeded. It is essential that circumvention of the purpose of the proposed duties or quotas be prevented by the imposition of equivalent duties or quotas on related metal or mineral items, including semifabricated, fabricated, and derivative products produced by low-cost foreign smelters and manufacturers.

Certain minerals now are ineligible for escape clause proceedings because of the technicality that the duties on them have not been reduced since 1934.

The uncertainty of appropriations for the alternate method of relief from excessive imports, namely subsidization, precludes other than temporary relief therefrom.

"RESOLUTION

"*Be it resolved,* That the following recommendations of the Western Governors' Mining Advisory Council with respect to the subject of 'Import Controls' be approved and adopted by this conference:

"Congress is urged to require implementation of relief recommendations pursuant to escape clause proceedings for all minerals regardless of the technicality that duties on some have not been reduced since 1934.

"Congress is further urged to restore the escape clause to at least the level of effectiveness it offered before it was rendered virtually meaningless by the Trade Expansion Act of 1962.

"Furthermore, proceedings under the Anti-Dumping Act need to be clarified and s mplified in order to allow more effective prevention of sales of imports at less than fair value."

UNIFORM STATE LAWS RELATING TO MINERAL-LOCATION PROCEDURES ON FEDERAL LANDS

Mineral location procedures are prescribed for the most part by State laws. These State laws vary widely from one State to the next. Some of these laws are outmoded, some are inadequate, and some are objectionable.

Inasmuch as the Federal law is paramount and the laws of the States only augment, it does not appear that we should be enslaved by complete uniformity in this augmentation. On the other hand, it does appear to be desirable from the standpoint of those in the mineral exploration business who move from one State to another in their work, to have as much uniformity as is consistent with each State's needs.

The need for a degree of uniformity is widely recognized, and careful consideration of specific proposals is needed. The work of the Rocky Mountain Mineral Law Foundation in drafting a proposed uniform mineral location law is highly commendable. Their latest draft might well be used as a basis for further revision.

"RESOLUTION

"*Be it resolved*, That the following recommendations of the Western Governors' Mining Advisory Council with respect to the subject of 'Uniform State Mining Law' be approved and adopted by this conference:

"We, therefore, recommend that the western Governors appoint an ad hoc committee to work with any other groups interested in the problem and report back to the 1964 western Governors' conference regarding development of uniform State law relating to mineral-location procedures on Federal lands."

STOCKPILING

The Nation's stockpiles of strategic and critical minerals and metals are national assets of great value and are insurance both against future military requirements and for rebuilding our economy in any postwar period.

Senate hearings during 1962 have left the public impression that huge excesses of stockpile materials exist and that there is urgent need to accelerate and facilitate disposals of such surpluses by transferring control of stockpile disposition from the Congress to the executive branch of the Government.

The mining industry was called upon by the Government in the last two national emergencies to build these stockpiles and responded magnificently. The industry was not apprised of the goals for the stockpiles and did not know the totals of materials stockpiled since World War II until such information was declassified early in 1962.

As is generally known, concepts of national defense and civilian recovery requirements change substantially from time to time—an apparent surplus today may develop into a serious shortage tomorrow. It is our belief that the Nation's stockpiles represent reservoirs of labor, energy, transport and equipment in the form of essential raw materials. The Nation should not be rushed into disposal of its reserves of strategic and critical materials. Furthermore, it should be recognized that so-called surpluses of stockpiled materials cannot be disposed of without serious economic effects on the natural resource industries. No matter how they are channeled from the stockpiles of Government agencies or industry they will displace materials that otherwise would have been currently produced. This economic impact should not be overlooked.

"RESOLUTION

"*Be it resolved*, That the following recommendations of the Western Governors' Mining Advisory Council with respect to the subject of 'stockpiling' be approved and adopted by this conference:

"We recommend that:

"(1) Congress retain control over the disposal of minerals and metals in the national and supplemental stockpiles.

98-989 O—63——16

"(2) Minerals and metals in the Defense Production Act inventories, not now subject to congressional control, should not be released except pursuant to a plan formulated in consultation with representatives of the industry involved, and with approval of the appropriate committees of the U.S. House of Representatives and the Senate. Any such plan for release should provide for disposal through domestic producer-marketing channels and in a manner at such time that prices and established markets will not be adversely affected.

"(3) In making disposal plans, each metal and mineral must be treated separately with regard to the particular economic and market conditions prevailing at the time.

"(4) Any transfer of minerals or metals from the stockpiles for use by other Government agencies should be subject to the same terms and conditions as sales to private industry.

"(5) Representatives of the metal and mineral industries in the United States should be consulted and given an active part in any reappraisal of stockpile objectives and any program for stockpile disposal.

"(6) Congress redefine stockpile purposes and periodically reappraise stockpile objectives, taking into consideration military requirements, civilian needs in any future major emergency, postwar rehabilitation requirements and the similar needs of our allies."

ARIZONA SMALL MINE OPERATORS ASSOCIATION,
Phoenix, Ariz., May 24, 1963.

Hon. ERNEST GRUENING,
U.S. Senate, Senate Office Building,
Washington, D.C.

DEAR SENATOR GRUENING: I greatly appreciate your letter of April 11 advising us that the hearings on your bill S. 758 have had to be postponed until May 6. We have been mighty busy with the Western Governors' Mining Advisory Council and therefore have not had the opportunity of getting up a brief in time for presentation at your hearings early in May.

Incidentally, your Governor Egan has been in attendance at this conference, and I thought you might be interested in having a copy of the presentation of our group to the western Governors, who are at this time still in session at Mountain Shadows Resort, Scottsdale, Ariz. I am sending you a copy of the presentation herewith.

You will find in the recommendations quite a number that pertain to public land problems. Any part of this presentation by the Western Governors' Mining Advisory Council to the western Governors' conference might very well be presented as evidence of the public land problems and what we in the West believe to be the answers to some of the difficulties which we are having.

I want to tell you again how much we appreciate your active interest in the problems of the western mining industry. It would be greatly appreciated if you would see to it that we are on your list to get your press releases, as we are very anxious to keep the mining folks of the Western States informed as to your work in helping them find an answer to their difficulties.

Unfortunately, we are not financially able to send men to Washington to appear at these hearings, and we do have to limit our presentations to written statements. We are hoping that someday there will be a series of field hearings throughout the Western States that will cover the whole subject of western mining and the difficulties which the operators are having, legislatively, to keep alive. By having such hearings, the grassroots operators would be given the opportunity to tell their troubles to the Members of Congress, who are about the only ones who can do anything about them.

Thanking you, and with best wishes, I am,

Yours sincerely,

CHARLES F. WILLIS,
State Secretary.

THE STOCKPILE STORY

I. INTRODUCTION

The American Mining Congress urges the Congress of the United States to retain control over the national stockpiles of strategic and critical metals and other materials.

The American Mining Congress believes that it is absolutely essential in the national interest to maintain these stockpiles as insurance for production of weapons and machines in any possible future war, and for rebuilding of the nation's economy in any post-war period.

Shifting responsibility for stockpile disposals to the Executive Branch from the Congress, where it was placed by law, could create unstable conditions in domestic production, processing, pricing, sales and fabrication of metals and other industrial commodities.

The Executive Branch has requested this change in authority in the current session of the Congress.

Stockpiles have been in the news since January 31, 1962, when President Kennedy at a televised press conference expressed the view that stockpiles were unduly large and that "unconscionable" profits may have been made by those who sold to the government. Within a few days Senator Symington of Missouri was named to head an investigation by a subcommittee of the Senate Armed Services Committee.

Shortly after hearings began, detailed statements were published for the first time revealing the quantities and values of individual commodities held in the stockpiles, the stockpile objectives themselves, and the surpluses as calculated by the Administration.

The hearings during 1962 left a widespread impression that the nation's taxpayers are saddled with a costly and largely useless accumulation of materials. Hence the urge to accelerate and facilitate disposals.

The American Mining Congress believes that many aspects of the stockpile story have not been fully debated and are not widely under stood by the Congress or the public. Before legislation is enacted, we would like to pose some basic questions and present our answers. We believe the proponents of accelerated disposal should be expected to deal factually with these questions also.

Only after both sides have been heard and all views thoughtfully evaluated can an intelligent judgment be made.

These are the questions:

What are the stockpiles?

Why does the United States need stockpiles?

How have stockpile objectives been set?

When were stockpiles bought?

Have stockpiled materials been bought for purposes other than national security?

Were excessive prices paid for stockpiles?

What does it cost to maintain the stockpiles?

Should stockpiles be kept?

What would be the effects of stockpile disposals?

Should Congress retain control over stockpile disposals?

In an effort to keep this study within a reasonable length, a mass of supporting detail has necessarily been omitted. We have it available, however, for those who may wish to obtain further data.

II.

Question: What are the stockpiles?

Answer: The stockpiles are inventories owned by the government of 95 commodities deemed to be strategic and critical.

These commodities are so designated because they are basic industrial raw materials important in the production of military weapons or for essential civilian defense-supporting industries.

Further, they are materials of which the production within the United States has not been and is not now sufficient to supply this country's estimated requirements in defense emergencies.

As of December 31, 1961, the estimated value of the 95 items stockpiled by the United States was $7,723,229,700. The actual cost to the government of acquisition, excluding the cost of maintenance, as of that date was $8,711,579,200. Maximum objectives are presently established for 76 of the 95 items in the strategic and critical materials inventories.

Based on present stockpile objectives (discussed on page 10), $3,390,866,000 was classified as surplus to current government requirements on December 31, 1961.

The stockpile falls into three major classifications—the military (national) stockpile, the Defense Production Act inventory, and the supplemental stockpile.

The military stockpile was authorized by Congress in the Strategic and Critical Materials Stock Piling Act of 1946, Public Law 520, which provided for the taking over of inventories acquired immediately prior to and during World War II and for supplementing them so as to attain adequate protection against future military requirements. The legislation clearly provided that these stockpiles were to be held inviolate for national emergencies and were not to be used for other purposes.

The Defense Production Act inventory was authorized by Congress in Public Law 774 of 1950, as subsequently amended. The intent of this Act was to stimulate rapid expansion of the country's industrial capacity to meet the emergency posed by the Korean War. The Act authorized long-term contracts for the purchase of materials to be produced from new or expanded plant facilities.

The supplemental stockpile was authorized by Congress in Public Law 480 of 1954 and Public Law 540 of 1956. The major purpose of this legislation was to authorize the barter of deteriorating surpluses of perishable agricultural commodities acquired under the farm program in exchange for foreign strategic and critical materials that would not deteriorate and that would cost much less to store.

To the extent that stockpile objectives under the military stockpile program had not been fully met, some commodities acquired under the Defense Production Act and the supplemental stockpile legislation have been transferred to and now form part of the military stockpile.

As of December 31, 1961, of the $7,723,229,700 value of the total stockpile, 74% was in the military stockpile; 12% was in the DPA stockpile; and 14% was in the supplemental stockpile.

Of the 95 commodities in the stockpiles, 73 are mineral commodities and 22 are agricultural and pharmaceutical commodities.

The agricultural commodities comprise such items as rubber, cordage fibers, certain essential pharmaceutical items, and specialties such as goose feathers and down. They differ from mineral commodities in that they can be reproduced through cultivation, provided soil and climate conditions are favorable.

The mineral commodities include most of the major industrial minerals except iron and steel, the mineral fuels, and certain nonmetallics (consumption of the excepted items is so enormous that stockpiling is considered impracticable). Unlike agricultural commodities, minerals cannot be reproduced or replenished. Through conservation and through recycling of scrap, man has learned to husband his mineral resources, but he is powerless to create them anew.

In terms of present value contained in the total stockpiles, nine mineral commodities account for approximately two-thirds of the total held. These nine are: aluminum (including bauxite), copper, chrome ore, lead, manganese ore, nickel, tin, tungsten and zinc. The other minerals in the aggregate account for an additional 21%.

Only one agricultural commodity, rubber, is held in the stockpile in comparable amounts. It accounts for 9% of the total stockpile value.

These figures indicate, therefore, that many stockpile problems should be viewed largely—although not entirely—in the light of the unique economics of the mineral industry.

III.

Question: Why does the United States need stockpiles?

Answer: Because experience in World War I, World War II, and the Korean War has shown that without reserves of strategic and critical materials in readily usable form the country's defense efforts can be hampered, delayed, or even fail.

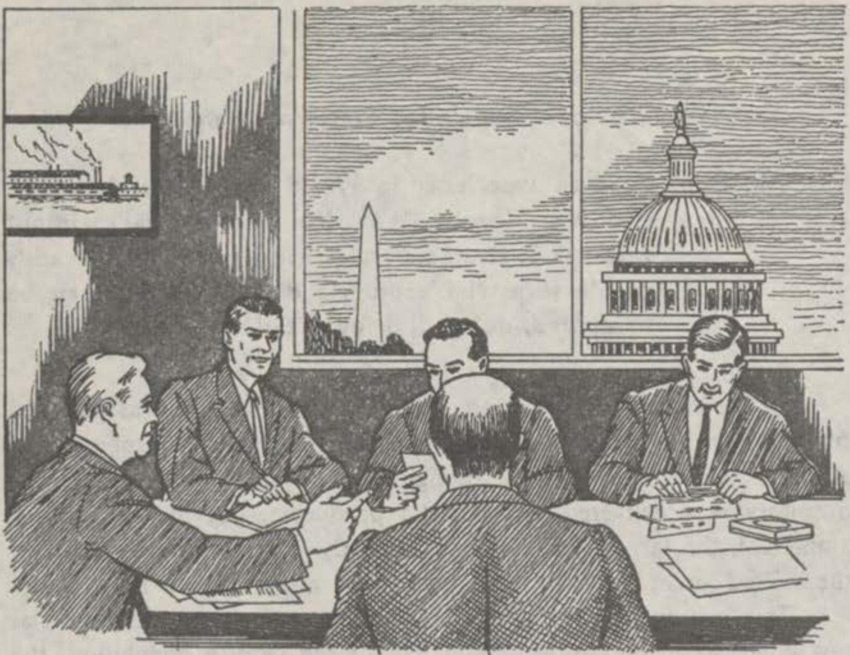
Of the materials now in the military stockpiles, 73% was obtained from foreign sources. Of the materials now in the supplemental stockpile, almost 100% is of foreign origin. The bulk of the DPA inventory was delivered by domestic producers, but in the case of aluminum, the largest DPA item, the metal, although produced within the United States, was derived largely from imported bauxite.

This country is the largest producer and consumer of industrial raw materials in the world. With 6% of the world's population, the United States in peacetime uses from one-third to one-half of the world's consumption of most major industrial raw materials. In times of national emergency the U. S. requirement for these materials increases very markedly.

The day is ended when this country can supply its needs from within its borders even of such commodities as lead and zinc. Aluminum metal production as noted above depends almost entirely on imported bauxite. Copper production is sometimes sufficient during peacetime but it must be imported during times of national emergency. Domestic production of nickel, manganese, chrome, tin and tungsten—even under the most favorable economic circumstances—has never been more than a fraction of U. S. requirements.

This situation was well understood during the Korean War when President Truman appointed the Paley Commission. After two years of study the Commission published an exhaustive analysis of the United States resource position that predicted widespread shortages over the 25-year period to 1975. **Of major mineral raw materials classified as strategic and critical, the United States was found self-sufficient in only two—magnesium and molybdenum.**

In times of war, when transport is often the key to victory, the country gambles with its chances of success if it must divert much of

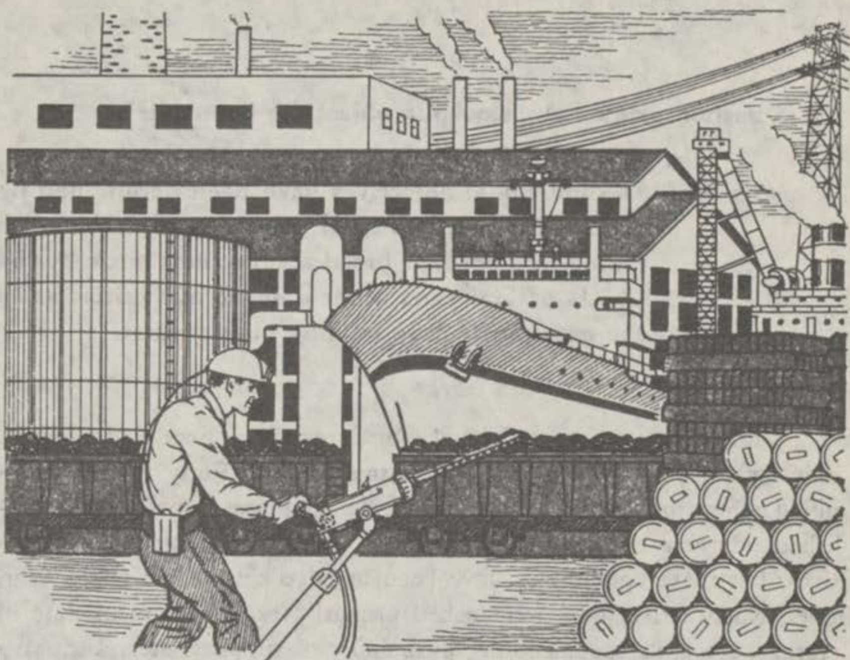


its energies and its available military and naval strength to the safe importation of huge quantities of raw materials.

During World War II, military transport planes were used to fly tin, tungsten, hog bristles and tung oil over the Hump from China to India and then on through the Middle East, Africa, and South America back to the United States. True, the planes were needed to carry men and munitions of war outbound, but the necessity for loading them with vital raw materials on the homebound journey meant delays in turnaround time, utilization of precious manpower, and a far heavier drain on scarce aviation fuel.

In 1942 approximately 25% of all inbound vessels carrying bauxite from British Guiana and Surinam were sunk by German submarines in the Caribbean Sea—on this country's very doorstep (see cover). This not only threatened the continued vital production of aluminum (without which airplanes could not be built), but it caused the loss or diversion of merchant tonnage and naval escort vessels that could have been used to transport and supply troops in the theaters of war.

When war broke out in Korea in 1950, the available supply of aluminum was judged inadequate. The Truman Administration moved promptly and vigorously under the Defense Production Act to expand U. S. productive capacity by 50%. These plants were built in 1951



and 1952, diverting scarce materials and skilled manpower which could have been more profitably employed on direct war-connected tasks had an adequate reserve of aluminum been in stockpile.

These three examples are only illustrative. They could be multiplied a hundredfold. The point is a simple one: when basic raw materials are needed in an emergency, any necessary price will be paid by the government to obtain them. But this price cannot be measured in money alone. The true costs also include manpower, energy supplies, transport facilities, critical equipment and machinery.

The stockpiles are not needed to save money. They are needed to save men, who can be better used on direct war-connected tasks than in expanding raw material supplies; to save power for the production of munitions; to save transport facilities needed in the logistics of the fighting fronts; to save critical equipment that can better be used, for example, in opening new roads or building defenses than in removing the overburden to prepare a new copper mine for ore production.

This is what the stockpiles are: reservoirs of labor, energy, transport and equipment in the form of essential raw materials.

IV.

Question: How have stockpile objectives been set?

Answer: The individual objectives have been determined by various interdepartmental government committees taking into account broad assumptions made by the Chiefs of Staff and other defense authorities as to the nature of future military emergencies.

Until 1962, when individual objectives were first made public, industry was uninformed as to their magnitude. Early in the stockpiling effort the Munitions Board of the Defense Department established advisory committees which included some industry representatives, but these committees have been inactive since the Korean War. Even when active, they were asked primarily to advise on matters of storage, stockpile specifications, availability of supplies, etc. **Industry views on appropriate stockpile goals have not been sought.**

The Congress likewise has not been involved in the determination of stockpile goals. Semiannual stockpiling reports, made by the Administration to the Congress, disclosed neither tonnage nor value figures for individual commodities. All that was published was the aggregate value of stockpiles on hand, the value of material under contract but not yet delivered, and the names of those commodities for which stockpile objectives had actually been attained. Since the objectives themselves were not known, industry could form no opinion as to the validity of the goals.

When detailed data were published in 1962, industry and the public for the first time learned that stockpile objectives have been changed with considerable frequency and by startling amounts. (See Fig. 1.) Stockpile objectives or goals represent the difference between the estimate of supplies of strategic and critical materials available and the estimated supplies of such materials required during the emergency period for military, atomic energy, industry, civilian and essential export purposes. The source of these materials includes domestic mine production, scrap recoveries and reliable imports. The individual objectives have been determined by various interdepartmental government committees taking into account broad assumptions

FLUCTUATIONS IN MAXIMUM STOCKPILE OBJECTIVES
COPPER—LEAD—ZINC
1944 THROUGH 1959

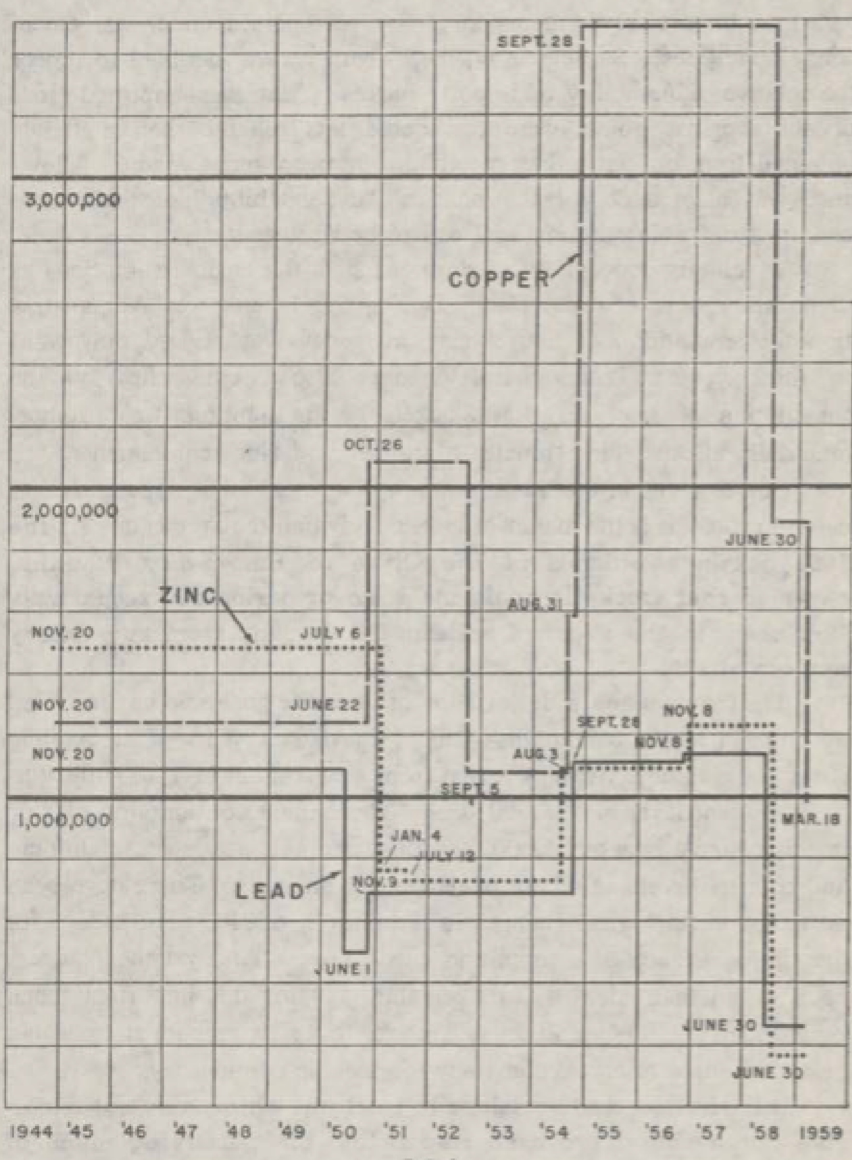


FIG. 1

made by the Chiefs of Staff and other defense authorities as to the nature of future military emergencies.

During the Truman Administration, the targets were at one time based on import requirements for a five-year period under war emergency conditions. Subsequently, these figures were modified to reflect the relative vulnerability of import sources. Materials imported from distant overseas points were considered less reliable than materials obtained from our immediate neighbors, Mexico and Canada. Allowance was also made for the political "dependability" of the source country from which the material was to be imported.

As military concepts of warfare changed, the basic assumptions as to duration were changed also. During the Eisenhower Administration the assumption of a five-year emergency was revised downward to three years. Technological changes also counted heavily—the substitution of steel for brass jackets in ammunition, for instance, materially affected the estimates of copper and zinc requirements.

One element in considering appropriate goals that apparently has caused problems is the matter of essential civilian requirements. **At the 1962 hearings, officials of the Office of Emergency Planning revealed that stockpile goals make no provision for reconstruction needs in the event of widespread damage from any enemy nuclear attack.**

The frequent and wide variation of stockpile goals can be illustrated by citing a single commodity—zinc. In sixteen years of stockpiling effort the zinc objective has varied from a maximum of 1,500,000 tons to its present level of 178,000 tons. The annual consumption of zinc in this country is about 1,000,000 tons; it ranks after steel, aluminum and copper in volume of use of new metal annually. There have been no major technological changes in the pattern of zinc use—except for the single instance of ammunition cited above. And yet the planners have varied their ideas as to a suitable goal for this important metal by as much as 800%, and today consider that a two-month stock would be an adequate reserve against any foreseeable contingency.

It is obvious that revisions in stockpile objectives, not excessive purchasing, have been responsible for classifying much of the material as surplus.

During the Eisenhower Administration a policy was temporarily adopted that the objective for each commodity should be not less than a supply equivalent to the nation's entire industrial consumption for one year.

This policy, **no longer in force**, has much to commend it. For, in the uncertain posture of the world today, the nature of the emergencies that may face this country and hence the raw material problems that may arise cannot be easily foreseen.

For example, in the case of both lead and zinc a large portion of the domestic mining capacity is concentrated in one small area. Each of these can be immobilized by a nuclear attack. Our ability to produce the required tonnages from domestic sources would be severely handicapped.

Nickel provides another excellent example. Prior to World War II a single mining district in Canada provided this country with substantially all its supplies. During World War II a nickel plant was built in Cuba with U. S. government funds, with a capacity to supply 15% of U. S. needs. During the Korean War the first sizable nickel producer in this country was equipped (under a DPA contract) and after Korea two additional new sources were developed—a second major district in Canada and a second U. S. government-assisted plant in Cuba.

By the yardsticks of geographical proximity and political dependability, prior to 1959 both Canada and Cuba were considered reliable sources. Today, however, Canada stands alone. The Cuban nickel production financed by U. S. government funds is currently being shipped to Russia, Poland and Czechoslovakia.

The nickel stockpile goal of 161,500 tons was set in 1958. It has not been revised since. The nickel actually in all stockpiles on December 31, 1961, was 219,350 tons and some sales have been made from the DPA inventory. But given the war-essentiality of nickel (attested to in both World Wars and in Korea) and the fact that the United States produces only 10% of its requirements, a good case can be made for holding on to the entire quantity now in reserve.

As the chairman of the world's largest nickel producer stated recently, if nickel stockpiles were liquidated "it would be either very difficult or impossible to replace them promptly if they were needed for future mobilization requirements."

In sum, there can be no certainty about what is the right stockpile goal for any single commodity. Concepts as to the proper size will change with the changing pattern of the world. These targets will always be a matter of individual opinion. No matter how expert such opinion may be, events may prove it to have been wrong.

V.

Question: When were stockpiles bought?

Answer: Purchases for the military and the DPA stockpiles were made for the most part between the years 1947 and 1955, with the bulk of the material obtained for the supplemental stockpile acquired since that date.

Figure 2 contrasts for the period since 1948 the total value under contract with the total value actually delivered to the national stockpile. These data, taken from the semiannual reports to the Congress, show a considerable lag between the time contracts were made and the time materials were delivered.

This is inevitable in procurement of materials from distant sources and doubly so in the procurement of mineral raw materials from new sources. The location, development, and preparation of a mineral deposit for production is a time-consuming process—a matter of several years in most instances.

Where a new project is involved the seller will obviously invest heavily in capital facilities only after he has assurance of a market. Between the time he has that assurance in a signed contract and the time he can make his first delivery, two or three years will normally elapse.

An understanding of this point is essential for those who have criticized deliveries made to the stockpile after the current objective for a particular commodity has been fulfilled. In most instances, the contract was made when the objective was larger than it is today and when the stocks of the commodity actually in the government's hands were far smaller than the objective. After the contract was signed and after the contractor had, in good faith, made his investment, the objective was changed. Under these circumstances neither the seller nor the government officials who negotiated the contract can fairly be criticized. Indeed, in many cases, as the hearings have brought out repeatedly, both the sellers and the government officials involved were subject to great pressure to complete negotiations rapidly.

The period of greatest activity in stockpile procurement, both for the military stockpile and for DPA, was during the Korean War. This

TOTAL CONTRACTS AND TOTAL EXPENDITURES
FOR THE NATIONAL STOCKPILE
FISCAL YEARS 1948 THROUGH 1962

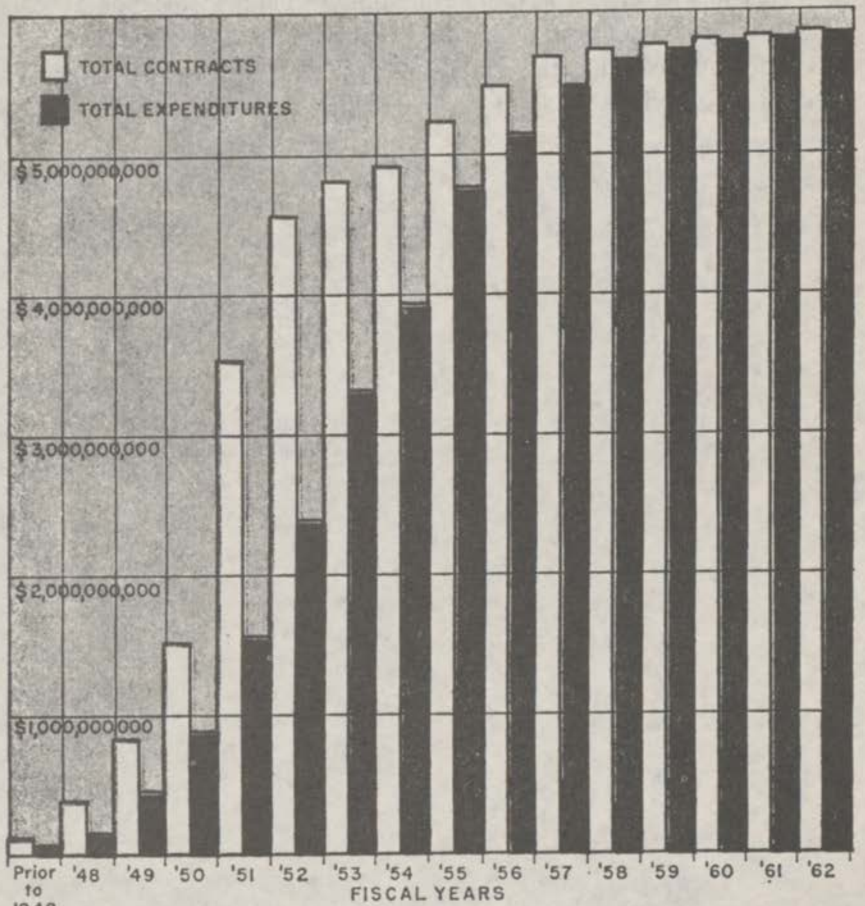


FIG. 2

period coincided with the preparation of the Paley report, when economists and long-range planners anticipated future shortages of many basic commodities. The pressure of the Korean War pushed commodity prices in this country up against OPS-administered ceilings, while outside this country prices went still higher, diverting normal imports to world markets.

It is known *now* that hostilities in Korea ceased in 1953. But no one knew that in 1950, 1951, or 1952. *Then* opinion was fearful that the war might spread into a worldwide holocaust. Raw materials were in many cases under allocation; industrial consumers were pressing their suppliers for extra deliveries and maintaining inventories as large as the regulations and their own finances would permit.

This was hardly an advantageous time to build a stockpile at low cost. But if it had not been built and if events had turned out differently, how different too would the climate of public opinion on the stockpile question be today!

VI.

Question: Have stockpiled materials been bought for purposes other than national security?

Answer: Certainly purposes other than defense, strictly defined, have influenced some purchases made in the years since 1954. But in a broader sense, national security has been the basic motivation.

A case in point is the program of the Eisenhower Administration for buying lead and zinc begun in 1954, about which there was extended discussion at the Senate Armed Services Subcommittee hearings. This program was frankly designed to support domestic prices of the two metals, following the President's decision not to accept a recommendation of the Tariff Commission for an increase in import duties on the metals. Purchases amounting to several hundred thousand tons were made over a period of three years, ending in 1957.

During the Senate Subcommittee discussion, it was alleged that "military secrecy" had been used to conceal a program undertaken for political and economic reasons. The alleged political reasons were to placate Western voters and Congressmen who favored the higher duties; the alleged economic reasons were to maintain employment and profits of the industries. The New York Times on June 26, 1962, published a critical editorial, "Industrial Price Supports," indicating the purchases were a "misuse of military secrecy."

In fact there had been no secrecy, military or otherwise. When President Eisenhower made his decision, he wrote a letter on August 23, 1954, to both Houses of Congress explaining his rejection of the Tariff Commission recommendation; this letter was published widely in the press, together with an accompanying press release that gave full details of the program. Curiously enough, the New York Times had applauded this decision at the time in an editorial published on August 24, 1954, entitled "A Wise Decision."

The plight of the lead and zinc industries in 1954 was the direct outcome of the great expansion in worldwide mining activity induced by the high prices prevailing during the Korean War. Some of this additional productive capacity was a direct result of earlier government buying. The

98-989 O - 63 - 17

Paley Commission, in its 1952 report, had flatly predicted shortages of and higher prices for lead as a probability.

When, instead, prices weakened as increased imports competed with domestic production, the domestic lead and zinc producers instituted "Escape Clause" proceedings before the Tariff Commission. The Commission found that the producers had been injured and, acting under provisions of the Reciprocal Trade Acts, recommended higher rates of duty.

President Eisenhower, in deciding instead to add to the stockpiles, had a reasonable basis for so doing. The original Stock Piling Act of 1946 stated that stockpiles were intended to protect against a "dangerous and costly dependence of the United States upon foreign nations for supplies of these materials in times of national emergency." The President and his advisors reasoned that if lead and zinc imports continued expanding and prices of these metals remained low, this would close down additional domestic lead and zinc mines—as these mines closed, our proportionate reliance on imports would increase—as our reliance on imports increased, our stockpiles should necessarily be higher. To buy the additional material for stockpiles, therefore, was looked on as a protection of the country's own "mobilization base" by maintaining domestic mine output.

There is sound logic in this reasoning. Thus, while it may be argued that the lead and zinc stockpile purchase program of 1954 was influenced by considerations other than those of strict defense, in a larger sense the national defense was nevertheless involved.

In any case the charge that military secrecy was used to conceal the program is incorrect. The extent of the program was well known, the tonnages to be purchased were stated in advance and the motives were spelled out in the President's letter. All of this had been public knowledge long before the Senate hearings.

The other major example of stockpile acquisitions which, in some instances, have not been directly related to national security is the so-called "barter" program, which is responsible for most of the material now in the supplemental stockpile. Under this program, nonperishable strategic and critical materials have been acquired from foreign countries in exchange for surplus wheat, cotton, and other agricultural products acquired by the U. S. Government under the farm support program.

Under the Kennedy Administration in 1961, the State and Interior Departments persuaded other government agencies to acquire an additional 105,000 tons of lead by barter—even though the stockpile objective had been reached. As a provision of this offer, foreign producers participating in the barter were to curtail production and thus help remedy the continual world oversupply of that metal, which represented a threat to the security of the nationa's mobilization base in lead mining.

Neither of these two stockpile programs was sponsored or supported by the mining industry. Because they recognized the dangers of continued additions to stockpiles, the miners would have vastly preferred higher import duties to the lead-zinc stockpile purchases and have repeatedly so stated. They were also reluctant to see the government trying to solve its farm surplus problem by exchanging excess farm products for additional lead or zinc. They recognized that as the government holdings of these metals became larger, the risk that a clamor would arise to liquidate them would become greater—as has since happened. Many of those outside the mining industry who strongly supported the barter program in 1955 and 1956, when it was begun, are now urging disposal of the minerals so acquired.

On the other hand, the stockpiling of bauxite through barter is a constructive program directly related to national security. The United States and Canada have 55% of the aluminum capacity of the world, but less than 1% of world bauxite reserves—the major source material of aluminum. Most of our domestic bauxite reserves are too low in grade for economical use. More than 13 million tons of bauxite per year are necessary to supply normal requirements. Fortunately, large new reserves have been developed in Jamaica, Haiti, the Dominican Republic and the Guianas. Aluminum industry plants located in the Gulf of Mexico are dependent on these vital offshore reserves, which could be cut off overnight in the event of war (see cover). Present bauxite stockpiles provide a 14 months' supply, far short of an objective based on a three-year emergency. Continuation of barter for bauxite until this objective is attained is one program that will greatly strengthen our national defense.

VII.

Question: Were excessive prices paid for stockpiles?

Answer: In general the prices paid for stockpile purchases were those prevailing at the time the goods were bought. Exceptions were certain DPA purchases at long-term stipulated prices negotiated to induce new enterprises to begin production.

Most purchases under the original Act of 1946 and under the barter program have been based on published prices recognized as authoritative. These prices do fluctuate from time to time. In fact such fluctuations cause serious problems for the so-called underdeveloped countries that are large exporters of raw materials.

Consequently, it should occasion no surprise that much of the stockpile was bought at prices higher than those that now prevail. Raw material prices currently are well below the levels prevailing immediately after World War II or during the Korean War—when the stockpiling drive was most urgent. The mining industry warned the stockpilers in 1948 and again during the Korean War that stockpile purchases could not be added to burgeoning civilian demand and current military requirements without pushing prices upward. Nevertheless, for reasons that then were deemed in the national interest, it was decided to push ahead and acquire the stockpiles.

As to whether these prices led to excessive profits, the question must be understood in relation to the economics of the mining industry. There is a wide variation in production costs among various mines, depending on such factors as grade of ore, size and shape of the orebody, mining methods that can be used, amenability of the ore to processing, etc. Prices that will yield good profits to low-cost mines may actually result in losses to others. This contrast in profitability exists every day in the marketplace, because all producers at any given time are realizing approximately equivalent prices.

Tungsten provides a clear example of how widely prices have varied. The price of tungsten ore rose to $60 a short-ton unit during the Korean War; it is currently about $16 a short-ton unit. Government purchases at $60 now appear to have been a poor investment. But could this have been foreseen then?

South Korea is an important producer of tungsten. Suppose it had been lost to the Free World? Hindsight is easy to come by; but in criticising decisions made under the stress of events, one should remember what those events were.

Tungsten at the time was essential in the antitank ammunition and aircraft programs. Tungsten continues as an essential warfare material and is gaining importance in the missile field.

At $60 a unit a few domestic tungsten mines could and did make profits. Others could barely struggle along. They promptly closed when the price dropped. In fact, domestic production has decreased to the point where the United States is again dependent upon imported tungsten for a substantial portion of its requirements.

Only in DPA contracts were large-scale stockpile purchases made at prices other than those currently published or prevailing. Under DPA the government was endeavoring to induce industry to bring new capacity into production. Ordinary commercial considerations in most instances did not justify equipping these particular projects for operation. The owners were understandably reluctant to add capacity without some assurance that their investments would be protected by an outlet for the product.

Where the project involved a marginal deposit or an untried process, the owners asked both for an outlet for the product and a guarantee of price. In several cases the owners, given their own preference, would have delayed initiation of the project. A typical example of this was the Hanna nickel project in Oregon, today the only sizable nickel producer in the United States.

Because the Hanna ores differ materially from those exploited in Canada and Cuba, a new metallurgical process was involved. Under ordinary commercial procedures, lengthy and careful pilot-plant testing was indicated. But in 1952, with nickel the most critical of the shortage materials, the government was in no mood to wait. So Hanna, a reluctant seller at best, was induced to accelerate inception of production by a contract under which the government took much of the risk.

VIII.

Question: What does it cost to maintain the stockpiles?

Answer: In the fiscal year ended June 30, 1962, the cost of storage and maintenance of the stockpiles of strategic and critical materials was $12,429,080, about one-fifth of one percent of the value of the stockpiles.

This negligible cost is possible because most metals and minerals can be stored outdoors or in simple unheated buildings. Storage locations are largely government military reservations.

There is no problem of deterioration or damage of significant proportions. Rotation, which is necessary for some of the agricultural products, such as rubber, is not needed for metals and minerals.

By contrast, the huge stocks of perishable agricultural products stored as a consequence of the farm support program cost large amounts to store and maintain. In the fiscal year 1962, for example, the storage cost for the agricultural surplus was $391,208,665.

Now that the government owns the stockpiles of strategic and critical materials, their retention involves no great out-of-pocket cost.

IX.

Question: Should stockpiles be kept?

Answer: The United States should keep its stockpiles so long as there is a possibility that it will be involved in wars or a possibility that its access to raw materials will be endangered by economic warfare activities of the Soviet bloc.

There can be no guarantee that this nation will never again be faced with a war. If there is a next time, offshore supplies may not be available.

Nuclear war has been mentioned as a reason for disposing of or greatly curtailing stockpiling, on the theory that the war will be a matter of hours or days—not months or years. But, even if the United States were to win such a war, large stockpiles of strategic and critical materials would be needed for reconstruction in the event of serious damage.

The economic warfare value of stockpiles has been little mentioned, but deserves major consideration. Some stockpile materials are produced in large quantities only in limited geographical areas. A change in political orientation can be of major significance.

Cobalt supplies a simple illustration. About two-thirds of the free world supply is produced in the former Belgian Congo. Within the last two years grave concern has been expressed regarding possible Communist domination of this vital area. In that event, how reliable would this country's supply of Congolese cobalt be?

The instance of Cuban nickel has already been mentioned, but it bears repetition. Two major projects, financed by the United States, are now supplying strategic nickel to the Communist bloc rather than to the United States.

Chinese incursions into Southeast Asia threaten the major U.S. sources of tin and natural rubber. Synthetic rubber can perhaps replace the natural product, but there is no substitute for tin in tinplate or certain solders. The country has a savings-bank account in tin now. Is it really so very wise to be drawing down that reserve today with the Red Chinese across the Indian border?

In the hearings before the Senate Subcommittee repeated reference was made to technological obsolescence of certain stockpile items. It is true that of the 95 materials in the stockpiles, some items have only one or two major military or industrial applications and in some instances the significance of these uses has diminished.

The situation with respect to quartz crystals is illustrative. This commodity, produced in significant quantities only in Brazil, was essential for communications equipment during World War II. In the light of this experience a substantial stockpile target was established. More recently scientific investigation has led to the production of synthetic crystals of equal usefulness and the quartz crystals reserve seems no longer necessary.

Admittedly there are such specialty items in the stockpiles and they need to be dealt with on a case-by-case basis. The same considerations do not apply to those materials that are the very sinews of modern society. The nine major metals to which reference has already been made are good examples. **It does not lie within the scope of probability that technological events will eliminate the widespread industrial and military uses of such materials as, for example, aluminum and copper and zinc.**

Reserves of minerals have been the basis on which every major industrial society has prospered. If the scientists of the U.S. Geological Survey were to state that exploration had developed within the United States economic deposits containing 348,000 tons of tin, 224,000 tons of nickel, 12,735,000 tons of managanese ore, 8,675,000 tons of chrome ore, and 102,000 tons of tungsten—the quantities in the stockpile—this news would be greeted as evidence of great new national wealth. This country has no tin deposits of economic significance and limited deposits of nickel, chrome ore and tungsten. It has large reserves of manganese ore, but for the most part these are of low grade and high cost.

In fact, a significant benefit resulting from the recent publication of stockpile details lies precisely in the fact that this country's potential adversaries now know its enormous strength in resources. This is a significant deterrent—just as knowledge of the U.S. missile strength proved a deterrent in the Cuban crisis. To quote from the late Senator Francis Case, an expert in stockpile matters:

"Once we have attained a position of sufficiency to meet a strategic requirement, the requirement for secrecy diminishes. I sometimes think that when we have a position of strength, it ought to be known

widely, because a knowledge of our position of strength is the best insurance against an accidental attack."

Consequently, far from looking on the stockpiles as a costly and largely useless encumbrance, the citizens of this country should properly consider them as a national asset of the greatest value, **an indestructible asset to be conserved for use only in an emergency when it is needed.**

This was the concept originally adopted by Congress. It is a concept that should not be abandoned without full and free national debate, of a sort which has not yet been held.

X.

Question: What would be the effects of stockpile disposals?

Answer: Any significant stockpile disposals would depress commodity markets. Production and employment in the affected industries at home and abroad would suffer, and relations with friendly countries would be hurt.

Tin provides a recent example of this. Under the terms of the 1946 Act, Congress passed in 1962 a bill authorizing the sale of 50,000 tons of tin and lesser quantities of other materials. This amount of tin is equivalent to almost a full year's consumption in the United States. The act was silent on the price or the rate of disposal.

Between the time of enactment and the time the first sale was made, the tin market was extremely nervous and volatile. The effect on this country's relations with Bolivia, Malaya, Indonesia, and other tin-producing countries was not good. Recognizing this, the Administration later announced details for the release of the first 3,000 tons on a temporary basis over a period of 15 weeks. Only a portion was sold, and thereafter smaller lots (1,000 tons and 1,600 tons) were offered at the rate of 200 tons per week. Although sales have accounted for less than 50% of the offerings, market uncertainty has continued to exist.

It is our opinion that quantities, prices and rates of disposal should all be considered before any disposal is authorized **and that these factors should be spelled out in the authorizing legislation.**

Furthermore, domestic industry (meaning producers, processors, consumers and labor) should be consulted in advance before legislation is submitted to the Congress. The Director of the Office of Emergency Planning, the government agency charged with responsibility for the stockpile, emphasized this point in a statement before the Senate Armed Services Subcommittee in December, 1962, when he said: "It has become more and more apparent that there is a need for greater coordination between agencies of government **and consultation with industry and foreign governments."**

But it must be clearly recognized by all concerned that there is no "painless" way to dispose of stockpiled materials. To the extent such materials are disposed of, regardless of whether they are sold in the marketplace or are utilized by government agencies in lieu of normal procurement, they will displace materials that otherwise would have been currently produced. Employment and earnings in the affected industries in the United States and the rest of the free world will inevitably suffer, and the search for and development of new mineral reserves will be retarded. **These are the harsh economic effects of disposal.**

Unemployment in the United States is already high, and is a particular hardship in mining areas, many of which are remote and offer no alternative means of employment. **The government should not add to the unemployment problem by selling materials from the stockpiles.**

XI.

Question: Should Congress retain control over stockpile disposals?

Answer: When it enacted the basic stockpiling legislation in 1946, Congress recognized the need to reassure the economy with regard to future disposals, and wisely provided that control of disposals would be kept in its own hands except in a national emergency. It is essential that this Congressional control be continued.

The 1946 Act specifies that sales from the national stockpile can be made only with specific Congressional approval. Similar provisions were enacted for the supplemental stockpile acquired by bartering agricultural commodities. Defense Production Act inventories are not subject to similar restrictions and may be sold without specific Congressional approval, provided the domestic market price is obtained.

During the hearings in 1962, however, Administration spokesmen asked for wider executive powers in order to accelerate disposals. They are expected to present legislation along these lines at the 1963 session.

It is such discretionary power of administrative personnel that gives industry greatest concern. Such authority could easily be used to exercise indirect price controls or for other purposes not connected with national security. The potential effects of stockpile disposals are so serious and so widespread that the opportunity for the full discussion and consideration which are inherent in the legislative process should be retained. This was, in effect, the pledge of Congress to industry when stockpiling was started; it is as vital today as it was then. Congressional control over this valuable national asset must be retained.

Moreover, we regard it as of paramount importance that Congress review the purposes of the stockpile program and provide for administrative officials its blueprint of what protection the stockpiles should embody. The Director of the Office of Emergency Planning, in his December, 1962, statement already referred to, pointed out that in setting current stockpile objectives:

(a) "no definitive scope has been established for general nuclear war, nor has the extent of the reconstruction period been clearly defined";

(b) "no material is now included in the stockpile for allocation to our allies other than normal wartime exports"; and

(c) there is no reserve of strategic and critical materials in the stockpile to cover projected long-range deficits of raw materials in the United States.

The views of the Executive Branch on these matters are to be defined in a study now under way.

When this study is completed the Congress should reassess the basic policies involved. Not since 1946 has the Congress defined its views as to the areas of national security that the stockpile is intended to protect.

In our opinion, given proper long-range policy criteria, much or all of what is now classified as surplus will be shown to be an essential part of the stockpile. What will be the answer if, after disposal with its consequent market disturbance, the persons responsible for national security then decide that a mistake has been made, that the maintenance of larger (not smaller) stockpiles would be prudent?

This country must not be rushed into dissipation of its reserves of strategic and critical materials.

XII. CONCLUSIONS

The American Mining Congress recommends that in establishing policy in regard to stockpiles, the following basic facts should be recognized and properly weighed:

1. Stockpiles consist largely of mineral resources that cannot be replenished or replaced.

2. Two-thirds of the investment is in nine major metals that will not become technologically obsolescent; and this country is an importer of all nine.

3. No one can be certain as to the proper size of the objective for the individual commodities. Objectives today are lower than they were a few years ago. When the purposes of the stockpiles are reconsidered, objectives may well be substantially increased.

4. When stockpiled commodities are needed in an emergency, the cost of acquiring them will not be measured solely in dollars. The cost will also have to take into account diversion of labor, power, transportation equipment, and scarce machinery—all badly needed for other emergency activities.

5. The cost of storing the stockpiles is negligible.

6. Stockpile sales will adversely affect employment, commodity prices, relations with other producing countries, and development of new resources. This is the reason that the present disposal provisions were incorporated in the 1946 Act. Congress should retain control of any such sales.

7. To avoid detrimental effects of even limited sales, industry must be given an opportunity to present its views under procedures clearly defined by the Congress.

8. Stockpiles not only provide protection in the event of war; the knowledge of their existence may also be an important deterrent to the outbreak of war.

9. Stockpiles represent insurance against adverse political trends abroad short of war, providing alternate sources of supply in the event the flow of materials is cut off from countries that have defected to the Soviet bloc or that have reduced production due to internal upheavals.

STOCKPILES OF STRATEGIC AND CRITICAL MATERIALS ARE AN INVALUABLE NATIONAL ASSET — LET'S KEEP THEM!