

And, again, the must be done by industry, it is industry that produces the minerals, it isn't the Federal Government. And we must recognize that solutions to our problem require more time, money, and effort as the grade of domestic ore diminishes, mineralogy changes, and different types of mineral deposits are exploited. Also, we must develop the required technology on a timely basis to provide for an orderly adjustment of the economy to our changing needs.

Senator FANNIN. Before this we talked about processing. Do we really have a large-scale proven process for converting oil shale to petroleum? In other words, have we really realized any amount of product with any process we are using today?

Dr. HIBBARD. It is my opinion that the experiments which are done today would justify a scaling up to the point where this would be commercially feasible.

Senator FANNIN. Of course this always reminds me of what we have done on the desalting of water. We have shown how we accomplish it by slide rule but we don't have any water. Does that also apply to oil shale?

Dr. HIBBARD. We have gone through a demonstration stage, and it would be practical now to proceed in an orderly manner to develop the processes to full-scale operation. But to answer your question, we do not have commercial-size oil shale retorting equipment.

Senator FANNIN. So today it is still theoretical to a certain extent?

Dr. HIBBARD. To a certain extent. But I believe the risk is low.

Senator FANNIN. Of course I know they are very competent in water desalination, also. But at the same time potable water is being produced at three to four times what they were predicting would take place, and I understand that recently they have changed the figures and that the cost has gone up.

Dr. HIBBARD. You are entirely correct, we don't have the key to scaling yet which will make or break the process.

Senator FANNIN. Thank you very much, Doctor.

II. INSURING ESSENTIAL OVERSEAS SUPPLIES

Dr. HIBBARD. In common with other nations we are not presently, nor likely to become, self-sufficient in regard to the supply of mineral raw materials that are essential to our needs. Also, in some instances the outlook for obtaining even a small part of our need from domestic sources is remote.

Clearly, in the future even larger quantities of certain items will have to come from foreign sources if demand is to be satisfied without marked increases in cost. Included are tin, chromium, manganese, tantalum, columbium, cobalt, platinum, and others in various degrees.

There is no known mineral deposits in the United States which have any immediate hope of satisfying much of our needs for these types of materials. So we will continue to get these from overseas. It is very essential that the overseas trade with those countries producing these materials be maintained open and free.

Conversely, in important instances we produce surpluses that compete successfully for markets abroad. We should seek to retain and expand such markets and maintain trade balances favorable to the United States.