DEPARTMENT OF THE INTERIOR AND ECONOMIC MOBILIZATION

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INDUSTRIAL COLLEGE OF THE ARMED FORCES

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Honorable Dale E. Doty, Assistant Secretary of the Interior, was born in Redlands, California, 9 February 1915. He received a B.A. degree from Pomona College in 1936, an M.A. from the University of Cincinnati in 1938, and an LL.B. from the George Washington University Law School in 1948. Mr. Doty entered the Federal Service in March 1939 as a field aide at the United Pueblo Indian agency, Department of the Interior, in Albuquerque, New Mexico. In 1939 he came to Washington to serve as a research assistant in the Land Classification Division of the General Land Office. From May 1941 to June 1943, he served as a land economist with the same bureau. In June 1943 he transferred to the Office of the Assistant Secretary of the Interior where he was administrative assistant and later executive assistant carrying out progressively more responsible assignments with emphasis on problems relating to land economics. In July 1946 he was made special assistant to the Under Secretary of the Interior where he served as assistant and adviser on important program and administrative policy matters. He was designated assistant to the Secretary of the Interior on 28 December 1949. Since 9 June 1950, he has served as Assistant Secretary for Public Land Management, having the following bureaus under his supervision: Bureau of Land Management, Bureau of Indian Affairs, National Park Service, Fish and Wildlife Service, and Office of Territories.

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GENERAL VANAMAN: Gentlemen, the United States is fortunate in being rich in natural resources. But the mere possession of oil, copper, coal, petroleum, and the like, is not enough. It is the intelligent use of these possessions that is the keynote to the situation. The Department of the Interior bears much of this overall responsibility, especially in the field of materials, in solid fuels, in power, and in petroleum. We are, therefore, very fortunate that this responsibility will be discussed by a man who speaks with real authority, the Assistant Secretary of the Interior.

It is a great honor to have you with us, Mr. Secretary, and it is a great pleasure to welcome you to this platform. Secretary Doty.

SECRETARY DOTY: Thank you, General Vanaman. It is a great pleasure to be here today. I regret that Secretary Chapman was unable to be here but unfortunately he had to be in Denver for a very important meeting there. From the people from Interior who have attended these courses over the last few years, I have a very high regard for the high caliber of people selected by the armed forces to get this very selected training. I wish I had the mental aptitudes and the technical ability to be one of you.

The talk I am to give today is only part of a much longer talk that I prepared. I have cut it substantially, but will give only parts of the remainder.

I shall not go very much into economic mobilization in the Department of the Interior. You may wish to ask questions on that in the question period. There are a lot of fascinating parts to it to people who are critical of it. Our interest is in long-range mobilization because we have to deal with large groups outside, such as the petroleum industry and the power industry. This has caused great organizational problems. The great job of mobilization is how to get along with other people, how to get along with other organizations rather than to picture an organization chart which, from one aspect at least, is the most efficient way of doing it. I shall not go into too much detail on the routine work of the Department concerning mineral resources, what we can do with them, what the problems may be in the use of each resource involved, and the full mobilization of the country's resources.

This Nation today is engaged in an entirely new kind of defense program. The primary problem is of course to build up the military machine. We have had to realize that our survival as a nation may well depend on our ability to turn our tremendous national strength into military striking power on short notice. We are now engaged in a great economic mobilization effort; one of its objects is to make economic strength mean immediately available military strength. Yet that is only a part of the story.

While we do that, we are also obliged to increase the basic economic strength of this Nation. It is not sufficient for us to be strong enough to meet the possible international crises of the next two or three years. What we face, ultimately, is the necessity of making America progressively a more productive nation--not merely in the next two or five years, but over decades or generations. In other words we must prepare for the waste and loss of an all-out armed conflict while at the same time our fundamental aim is to make our country a permanently stronger and more prosperous land.

During the immediate future--and we have no way of telling how long that "immediate" future may be--military and related foreign aid requirements will take an unusually high proportion of our national output.

We must realize that in the end our victory or defeat in the silent international contest now going on may depend principally on whether or not we are able to come out of the contest stronger than we were when we went into it. This means that the task of planning our effort now is much different from and even more difficult than it was during World War II.

In order that you may more fully understand the current role of the Department in economic mobilization, I should like to outline briefly some of the basic foundations of our defense production responsibilities. Originally established 100 years ago, the Department was, as the name implies, a department of interior affairs, as contrasted to departments for foreign affairs, treasury, and defense. For many years it served as a "catchall" department, bringing together miscellaneous activities, previously lodged in various agencies.

Through the years, however, the Department has acquired a unifying purpose of conservation and development of resources. As the responsibilities of the Federal Government for conservation and development of the Nation's resources expanded, the Department was assigned successively duties involving geologic and topographic mapping and determining the Nation's reserves of water, minerals, and metals; transforming dry lands into permanently productive farms

through irrigation and in this connection developing water resources of the West for all useful purposes; conducting investigations in the mining, preparation, and use of minerals in order to conserve mineral resources; protecting and managing scenic and outstanding recreational areas; protecting and managing the unappropriated public domain for grazing and other uses. Although the national forests were transferred to the Forest Service in the Department of Agriculture in 1905, the Department of the Interior has continued to have extensive interests in public and Indian forest lands. In addition responsibility for protection and management of the Nation's fish and wildlife resources was transferred to the Department of the Interior from the Departments of Agriculture and Commerce in 1939. On the other hand, activities of the Department which were unrelated to natural resources have been transferred to other agencies.

Thus, in response to changing conditions, the Department of the Interior has gradually become the center of major programs for the conservation and development of our natural resources. The Department pursues those programs with the objectives of (1) discouraging wasteful exploitation, (2) encouraging efficient utilization, (3) assuring development adequate to meet the requirements of the national economy and national security, (4) maintaining productive capacity for future generations, and (5) promoting an equitable distribution of benefits from nationally owned resources.

To carry out these responsibilities, the Department is organized according to major resources programs—water and power development, public land management, and mineral resources. Thus an Assistant Secretary is in charge of the Department's agencies concerned with water and power development. These are the Bureau of Reclamation, and the Bonneville, Southwestern, and Southeastern Power Administrations. The river development activities of the Bureau of Reclamation in the 17 Western States involve irrigation of arid lands, power development, municipal and industrial water supply, development of recreation facilities, and enhancing flood control and river navigation.

The Department is responsible in addition for the distribution of power from all Federal dams, those built by the Corps of Engineers as well as those built by Reclamation. In the Pacific Northwest this function is carried out by the Bonneville Power Administration; in the Southwest area, comprising the States of Arkansas and Louisiana and portions of Texas, Oklahoma, Kansas, and Missouri, by the Southwestern Power Administration; in other areas of the West, by the Bureau of Reclamation; and in the Southeastern States, by the Southeastern Power Administration. There are no Federal power dams at present in the northeastern United States.

Another Assistant Secretary is in charge of the Department's agencies concerned with public land management--the Bureau of Land Management, National Park Service, Fish and Wildlife Service, and Bureau of Indian Affairs. The Bureau of Land Management administers some 500 million acres of public land in the States and Alaska. These include the vast grazing areas administered under the Taylor Grazing Act and the rich Oregon and California forest lands in Oregon. The National Park Service has jurisdiction over more than 175 parks and other outstanding scenic areas throughout the Nation. The conservation and management of fish and wildlife, the responsibility of the Fish and Wildlife Service, must be integrated with the land and water-use programs of the Department and of other Federal and State agencies. The status of fish and wildlife resources is ever-changing under the influence of natural or man-made conditions---climate, soil erosion, timber cutting, grazing, land drainage, stream pollution, water-use developments, for example. The Bureau of Indian Affairs assists in the management of approximately 56 million acres of Indian lands ranging from heavily forested areas in Great Lakes States to sparsely vegetated grazing lands in the arid Southwest. In addition, the Bureau of Indian Affairs provides many services to the 400,000 Indians in the continental United States and 35,000 natives in Alaska of the type normally provided to the non-Indian population of State and local governments---services such as schools, hospitals, welfare aid, and general public health assistance.

In addition the Assistant Secretary for Land Management supervises the Office of Territories, which handles the Department's responsibilities for the administration of Alaska and Hawaii; the unincorporated territories of Puerto Rico, the Virgin Islands, and Guam; and American Samoa and the Trust Territory of the Pacific, for which responsibility will be transferred from the Navy Department to Interior on the first of next July.

The third major resources area---that of mineral resources---is also under an Assistant Secretary. The Department's regular activities in the minerals field are carried out by the Geological Survey, Bureau of Mines, and Division of Oil and Gas. As one of the principal fact-finding agencies of the Federal Government, the Geological Survey is charged with geologic mapping, preparing the National Topographic Atlas, classifying public lands, and determining the Nation's reserves of water, minerals, and metals. The Bureau of Mines conducts investigations into the mining and the preparation and use of various minerals.

These many and varied activities of the Department were drastically affected by World War II. You will remember that the basic policy was all-out prosecution of the war effort. As a result those Interior

activities which were not directly and specifically concerned with this immediate goal were put in a virtual stand-by status. The basic natural resource conservation and development program of the Department was temporarily sidetracked. Thus the entire emphasis was on immediate development of electric power facilities, on rapid expansion of mineral productive capacity, and similar activities.

Today we in the Department face a different problem, on which I will amplify later. Two factors are important, however, as contrasted to our World War II responsibilities. First, from a natural resource point of view we went into the war with greater reserves than existed just prior to Korea in terms, for example, of mineral and electric power productive capacities. In addition new productive capacities were in final stages of development. For example, the tremendous power potentials of Grand Coulee and Shasta were available to speed the war effort at an early stage. With Korea we found ourselves with much greater realized productive capacity but with proportionately much smaller developed reserve capacities on which to call for an expanded effort. The second, and a most important factor to our Department, results from the fact that today we cannot afford to devote our entire effort to the immediate mobilization problem. We cannot completely sidetrack natural resource conservation and development for this period. To do so would jeopardize the long-range defense goals and weaken the basic civilian economy.

As I have said we could and did adjust our basic programs to the war effort during World War II. For example, the Bureau of Mines was almost solely concerned with problems of mineral production, working with the War Production Board and other war agencies. Then, as now, the President and the Congress recognized the skills and capabilities of Interior by assigning to the Department additional major defense production responsibilities. Not only were the efforts of the bureaus redirected to mobilization activities, but new agencies were established.

Specifically, the Secretary had responsibility for the Petroleum Administration for War, the Solid Fuels Administration for War, and the Office of Fisheries Coordinator. As I shall indicate later, comparable defense administrations have been established in these fields to meet the present emergency. In addition, to meet a responsibility which fortunately is not now a problem, the War Relocation Authority was established to provide for the relocation, maintenance, and supervision of 110,000 persons of Japanese ancestry, evacuated from the west coast by military order.

Thus in World War II, as now, Interior met its mobilization responsibilities by regearing its natural resource developmental programs, administered through bureaus, and by establishing new agencies to administer specific new activities assigned to the Secretary.

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That conflict was an immediate physical struggle for survival. Military victory in accord with our democratic ideals, was the only goal that mattered, and no price was too high to pay. We made a sharp distinction between the military economy and the civilian economy. The former was developed at the expense of the latter.

Today we cannot make that distinction.

We cannot develop one economy at the expense of the other because the two basically are one and the same.

We are not facing a short emergency contest. We are obliged to accept "emergency" as something like the normal way of life. We may be in our present high-tension situation for many years. We must meet today's military commitments and must also be ready to meet enormous additional commitments which may never actually materialize.

Yet while all of that is going on, we must not only keep our basic civilian economy strong enough to carry the military load, but we must also continue to develop it and to expand it so that in the end—be it five years from now or a whole generation or more from now—America will be a stronger, sounder nation than it is today.

Consequently, our tremendous effort right now is to a large extent a matter of expanding and preserving the great basic productive resource base of America. That is something we have to do, not after we meet the military goals, but <u>while</u> we meet them. The two must go together.

In order to handle this great problem smoothly and without duplication of effort, the President delegated to various existing governmental agencies various powers in regard to priorities and allocations, requisitioning of materials and expansion of productive capacity and supply, which were conferred on him by the Defense Production Act of 1950.

These delegations were made to agencies whose normal peacetime functions require them to have organizations and personnel which keep in close touch with particular segments of the economy. Thus authorities with respect to the production of foodstuffs were delegated to the Secretary of Agriculture. Responsibility for matters directly affecting industry were given to the Secretary of Commerce.

As I have indicated the Department of the Interior is the government agency normally concerned with the conservation and development of the country's great basic resources—the soil and the water and the riches and energies that are derived from them.

Consequently, when the President decided to delegate certain duties under the Defense Production Act to existing government agencies, many responsibilities were charged to the Interior Department. Specifically, these have to do with minerals, electric power, solid fuels, petroleum and natural gas, and fisheries. As a result, there have been set up under the Secretary of the Interior the following five defense agencies:

1. The Defense Minerals Administration.

2. The Defense Electric Power Administration.

3. The Defense Solid Fuels Administration.

4. The Petroleum Administration for Defense.

5. The Defense Fisheries Administration.

In most cases these agencies were built around a nucleus of personnel, experience, and peacetime duties in the Department of the Interior.

Under a policy order issued by the Defense Production Administrator the Secretary of the Interior is charged with applying the priorities and allocations tools in facilitating the transportation of minerals, petroleum, gas, solid fuels, electric power, and certain fisheries products. It is his duty to recommend actions with respect to financial aid for the exploration and development of important minerals, and to recommend appropriate action on applications for tax amortization certificates, loans, and purchase contracts designed to encourage private investment in needed expansion of production facilities in the industries affected by Interior's jurisdiction. It is also part of the Secretary's job to make claims on other agencies for materials and services needed to assure the output of the commodities and services under his jurisdiction.

In addition the Secretary of the Interior has set up a small Defense Production Staff in his office to advise him on policy matters common to all of the defense administrations in the Department. Members of this staff represent the Department and the several defense agencies on a number of the important central committees of the Defense Mobilization Administration and the Defense Production Administration.

One fact to bear in mind is that before the Korean crisis developed it had become apparent that this country would be obliged to develop its resource base in order to support a considerably enlarged economy.

The Full Employment Act of 1946 definitely committed us to expansion. We came to see that normal population growth plus an easily attainable rise in our standard of living would give us a constantly rising demand

for goods and services which would require a steady, year-by-year expansion in our basic productive capacity. It appeared at that time that this expansion should average around 2 to 3 percent a year in order to meet normal peacetime wants.

This meant that we began to look upon our great fundamental resources of land and water from a different viewpoint. The old idea of conservation as a program something like putting perishables in a deep freeze so that they can be kept indefinitely had to be changed. Conservation of these resources was just as important as ever, but increasingly it had to go hand in hand with wise development. We needed them, but not in the deep freeze. They had to be used and used in such a way that they would be more productive rather than less.

Right on the heels of this new attitude came the crisis in Korea. As the fighting progressed and we began to see deeper into the implications of this struggle, we realized that the economic strength of the free people of the world is far superior to that of their enemies. The resources are on our side. The need is to use them properly.

In his most recent Economic Report, President Truman pointed out that as we increase our armed strength and expand our capacity for producing military supplies, "we must maintain and expand our basic economic strength--important both to military production and to our civilian economy--so that we can continue to grow stronger rather than weaker if it should prove necessary to continue a defense effort of great size for a number of years."

As the President showed, this meant that we must increase our facilities for the production of steel, aluminum, electric power, and the other basic commodities and services, up to "a level where it can carry the present defense burden without the necessity for irksome controls extending over a long period." He said further:

> "The handling of our natural resources is a vital aspect of this problem. Many projects must be cancelled or deferred, but those necessary for defense and essential civilian needs must go forward. If we allow our agricultural and range lands and forests to deteriorate, and if we misuse critically needed minerals and supplies of water, we shall become weaker each year instead of stronger."

There is one additional complicating factor in this situation. That is the uncertainty in the challenge which we are facing. We may measure the extent to which productive capacity can be expanded, but the fact remains that if the present crisis should spread we would

face limitless demands upon our economy. Yet we know that our resources are not in fact limitless. Where does that leave us? It leaves us, I believe, more than ever under the necessity of basing our principal economic decisions on long-term considerations.

We may face wholly unprecedented demands on our resources as part of the present emergency, or we may get through this emergency without serious trouble and return to a more peaceful world. In either event, we must take a vastly expanded economy into the future.

I should like to spell out some of those things in terms of our basic resources. Take hydroelectric power, for example, one of our great renewable resources. When we expand our capacity to produce hydroelectric power we have given ourselves a permanent new asset.

Consequently, we need above everything else to overcome the timidity of those who fear that we are going to have a surplus of electric power capacity. There is no surplus now and there is no surplus in sight.

A number of our defense programs will take a good deal more electric power than was at first indicated. Our aluminum expansion program, for example, will call for fully two million kilowatts of power capacity. The expanding atomic energy program as well as the chemical and metallurgical industries will require substantial quantities of power for national defense and essential civilian production.

During World War II we did not stop work on Grand Coulee Dam; that decision paid off many times over, both during the war and subsequently. It might also be remembered that during that same World War II we decided not to build the St. Lawrence Seaway project. We would today be in much better shape to meet any emergency if that project had then been built and was now in full operation. I hope that we do not make the same mistake a second time.

Another great source of energy is petroleum which is not a renewable resource. The drafts which are being and will increasingly be made upon us for petroleum are almost without number. Our production must be increased, and yet we must somehow manage this increase without exhausting an irreplaceable resource and making ourselves weaker rather than stronger over the long pull.

We will do this in the traditional way--by pushing the search for new oil. The exploratory effort of our petroleum industry during the past decade has been prodigious. Annual production of crude petroleum has risen from one and one-third billion barrels ten years ago to slightly more than two billion barrels today.

There does not appear to be anything in the present discovery rate to indicate that the limit has been reached. Nevertheless, we are in an emergency which may last for many years; the ultimate problem is to broaden our resource base permanently. Hence we must be ready with alternative solutions. I believe we must move ahead in the production of synthetic liquid fuels such as can be made from oil shale and from coal.

This country has enormous reserves of oil shale and coal; together, they comprise over 95 percent of our known mineral fuel resources. A careful program of experiment and development carried on in recent years by the Bureau of Mines indicates that they can now be used profitably. Both from the economic and the technological angle, oil shale can now be considered a usable source for liquid fuel. Considering the vastness of our oil shale reserves, this means that a great additional source of liquid fuels is available to us.

The picture in regard to coal is even brighter. Our coal reserves represent an ample source of liquid fuels for centuries to come. Technological advances made in producing liquid products from coal parallel those for oil shale. It costs more to make gasoline from coal than it does to produce it from oil shale, but our largest coal deposits, suitable for producing liquid fuels, are situated relatively close to the large consuming areas and are favorably located in respect to water and power facilities. I believe that all of these facts clearly indicate that it is time to put our oil shale and coal resources to work.

In the general field of mineral resources, it is of course true that there is no such thing as complete self-sufficiency. Minerals represent the nonrenewable resource in its most acute form. When a mineral deposit is exhausted it stays exhausted and nothing can be done about it. This statement is particularly significant when we realize how utterly and completely our economy depends upon the production of metals, nonmetallic minerals, and associated products. We cannot evade it. Minerals are the foundation for practically everything that we make, have, or consume.

World Wars I and II in this century and the increasing needs of the American people in the last decade have put a terrific strain upon these nonrenewable mineral resources. We have "skimmed the cream" off our mineral resources in these last seven or eight decades. I do not want to be an alarmist. We are not a "have-not" Nation. Our mineral resources are greater than those of most countries.

However, it is well to keep this in mind. We have only 7 percent of the world's land surface and about the same percentage of the world's population. Yet, we use 50 percent of the world's mineral production.

It is obvious that 7 percent of the earth's land area cannot be expected to contain half of the world's resources of every one of the 75 or 80 different minerals. A prime characteristic of mineral deposits is their unevenness of geographical distribution.

During the last war, we did a tremendous production job, but we had to draw heavily upon our domestic resources, and we had to import large quantities of mineral raw materials. This meant the diversion of ships and men badly needed for combat duties.

Of the critical and strategic minerals, a few we have in abundance. Others, we have in varying lesser quantities. In the third category, there are some important minerals which we lack entirely or have only in token quantities. The lines of demarcation were drawn more clearly after World War II. I hope that I see a national attitude with respect to minerals, changing from the idea of unlimited resources to one stressing the conservation and wise use of our nonrenewable mineral resources.

For these reasons the increased demands, which are put on our mineral resources by this emergency and by the long-term consideration arising out of it, make it imperative for us to move forward with long-range government programs relating to minerals discovery, development, use, and conservation. We must, for example, have broad basic research in the technology of mining, smelting, and refining. This should emphasize efficiency in mining, transportation, and utilization of domestic minerals. Research also should emphasize the development of substitute materials which will do a better job than scarce and hard-to-get products.

The Department of the Interior, through the Bureau of Mines, has pioneered in this field for several decades. The Bureau emphasizes fundamental research and background research, rather than applied research and development, which ordinarily are functions of industry and privately endowed research institutions.

Dissemination of the latest information on technical processes and improvements, especially to the smaller producers to whom this kind of information is not readily available, is another "must" in this broad basic research program for long-time security. The Department of the Interior fills a part of this need by publishing and distributing the result of the work of its technical agencies, such as the Geological Survey and the Bureau of Mines.

We need to develop what might be called a catalog of mineral deposits which could be brought into production quickly as part of a minerals expansion program. A few years ago the Department made

a start in this direction when the combined staffs of the Bureau of Mines and the Geological Survey compiled a document entitled "Mineral Position of the United States." This was published in 1947 as an appendix to a Senate subcommittee hearing on minerals and other natural resources, and has been a most useful tool in planning research and development programs. However, we realize that the minerals picture has changed considerably since that time, and the need for a more detailed and current mineral inventory of the Nation is urgent.

Furthermore, we need extensive studies of the transportation and marketing of certain minerals. There should also be a careful review and analysis of the relation of taxes, tariffs, and import policies to our mineral supplies, reserves, and production. In addition there are certain specific problems of very great importance.

The Defense Minerals Administration is aiding the minerals industries by recommending, through the Defense Production Administration, procurement contracts to the General Services Administration, by recommending government guarantee of private loans, direct government loans by RFC, and accelerated tax amortization to encourage the expansion of mines and mineral plants needed for the defense effort. In addition the Defense Minerals Administration offers help in the matter of access roads and housing; manpower advice and guidance; and in the maintenance, repair, and operation of equipment and machinery. Direct aid to prospectors is also one of DMA's programs to widen our supply of vital minerals.

We need very substantial increases in our capacity to produce basic metals such as steel and aluminum. This of course means that we must, for a time, divert certain basic materials in order to build new plants. Expansion of the steel industry in turn will require an expansion of coke and coking coal production. It also means that we must provide an adequate supply of iron ore.

That broadens the field of action substantially. We have to face the fact of an imminent decline in the output of high-grade ore from the Lake Superior region. Yet for the next few years the Lake Superior mines must be relied on to fill our major ore requirements.

While we do that, we must put much more emphasis on researches into the technological problem of refining and using the low-grade ores, such as taconites, which are still so abundant in the Lake Superior area.

In addition we must look to foreign ore supplies. A vital element in this program will be the construction of the St. Lawrence Seaway. If the imported ore is to be available in quantity to the great steel

centers of Pittsburgh and Gary, that seaway must be built and built quickly. If it is not, there will eventually be a very substantial relocation of the Nation's iron and steel industry, with economic and military effects which will be far-reaching.

I believe it would definitely pay us, as part of our emergency defense program to go ahead rapidly with the construction of the seaway. It is one of those projects which would permanently increase our national strength.

As for aluminum, I do not need to tell you that the requirements for this metal for military aircraft are tremendous. Here we face two problems---an adequate supply of high-grade bauxite and an adequate supply of electric power.

Our domestic supplies of bauxite are limited and most of it must be imported. It takes nearly 10 kilowatt hours of electricity to produce a pound of aluminum; this limits the expansion of production facilities to areas where low-cost electricity can be made available in large quantities. Some day we may be able to produce aluminum from other low-grade materials, such as certain kinds of clay, but for the present I am afraid we shall have to depend on bauxite.

Once we produced more copper than we used and exported the difference. This stopped sometime between World Wars I and II. In 1949 we produced 753,000 tons of copper, but we used over a million tons. Today we import about two-thirds as much copper as we produced annually between 1935-1939.

Similar situations exist with respect to lead and zinc. We are now having to import supplies of these two important nonferrous metals where once we were self-sufficient. We obtain most of our nickel---a metal in which we are almost completely deficient---from Canada, although the Canadians are now forced to rely upon lower-grade ores than were formerly used.

These are some of the better-known metals. What about some of the lesser-known but important metals? Cobalt, for instance, which goes into permanent magnets used in radio and television sets, high-temperature alloys used in jet engines, and high-speed steels. Cobalt is a material measured in pounds.

In 1946 we produced about half a million pounds, yet we used more than 4 million pounds. In 1948 we used over 5 million pounds. You probably know that the scarcity of cobalt is causing design engineers in industry and in the armed forces to look around for suitable substitutes. The same is true with respect to a number of other strategic metals.

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Speaking of substitutes, the researchers are making considerable progress in developing new materials. I should like to mention two new light, strong, and corrosion-resistant metals--titanium and zirconium. Titanium already is being produced by private industry. Zirconium is being produced in modest quantities by the Bureau of Mines and samples are being provided to other research agencies and to private industry for tests of its properties. I believe we can say that titanium stands in about the position of aluminum in 1890. Titanium is an expensive metal, but so was aluminum then. As recently as 1917, aluminum was termed a minor metal.

Magnesium, a metal for which the raw material is inexhaustible, promises to replace such metals as steel and aluminum as better methods of working it are developed.

In speaking of substitutes I am not thinking of inferior makeshifts but of equal and even superior replacements. Grave shortages exist in basic scientific information on our mineral deposits. Closing these gaps is especially important at this time when every project allied with locating stores of natural resources has a defense aspect. Our geologists tell us that the discovery of new oil reserves and new mineral deposits has become increasingly difficult.

Hope for the future lies in the more intensive study of present producing districts so as to enlarge known reserves; in the re-examination of areas once productive and now thought exhausted; and in the extension of studies to and geologic mapping of regions where structural and other indications are favorable but no discoveries have been made as yet.

Minerals and hydroelectric power represent just two phases of our great resources of water and land. We need very broad programs to protect and develop all of the other aspects of those basic resources if we are to reach our goal of broadening the resource base so that this country can support an extended defense program and can come out of this emergency period stronger than it was before.

There will be ever-increasing demands for the things grown on our land. This will inevitably mean increasing pressures on our forest, range, and agricultural land resources as the urge for more and more production is felt. Under a long-term defense economy, the Nation cannot permit these resources to continue to operate at a low level of productivity. We must make certain that these basic water and land resources are not only maintained on an adequate basis but are brought into maximum productivity as fast as possible.

There are approximately 282 million acres of public lands. Twenty-one percent of this area is critically depleted and another 26 percent is severely depleted. We estimate that it would take

more than 200 million dollars for soil and moisture conservation activities to bring these lands up to the minimum accepted standards of productivity. Currently, less than 5 million dollars of Federal funds are available annually for these activities.

The point I want to make is that spending the full amount to restore these lands is properly just as much a part of our long-term defense program as any other Federal expenditure. This soil and moisture conservation work must not be curtailed as was the case during World War II. These protective investments are absolutely essential if we are to broaden our resource base.

To put it more simply: As we expand our productive system, we simply must have proper land, watershed and river-basin management to assure us not only of water for hydroelectric, industrial, and domestic purposes but also of water and soil for an expanded agricultural system. Devoting money, manpower, and critical resources to such purposes is sound economy. Indeed we cannot properly meet our responsibilities without doing it.

The long-term consideration is the one that is important. It would be ruinous for us to try to save resources and manpower for the short pull by making little economies at the expense of the broad expansion program. Providing for our future productive strength is not merely fully as important as meeting the immediate military requirements--it is actually part of the job of meeting those requirements, because in the long run what we are striving for is a nation strong enough and productive enough to fulfill the great hopes of mankind in the era that lies ahead of us.

This emergency will not last forever. We shall come out of it some day, and when we do we must be a stronger, greater nation than we were when we went into it. If we come out exhausted and ready to collapse, then we have lost, no matter what the immediate military score may be. If we come out better fitted to produce the abundance of goods and services which we want mankind to associate with our democratic, free-enterprise system of life, then we have won--and won for keeps.

COLONEL BARNES: Our time has run out, Mr. Secretary. The problems that you have discussed with us this morning and the plans to meet them are of particular interest to the class in the studies in which they are now engaged. I thank you on behalf of all of us for the time you have put on this paper and the frank discussion you have given us this morning. Thank you very much.

(29 Oct 1951--650)S.