INTRODUCTION TO NATURAL RESOURCES

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INDUSTRIAL COLLEGE OF THE ARMED FORCES

Washington, D.C.

INTRODUCTION TO NATURAL RESOURCES

27 September 1954

COLONEL CONNER: General Niblo, ladies and gentlemen: You will recall that Dr. Reichley in his talk on the curriculum named the Economic Potential Branch as one of the six branches of the Education Division. The Economic Potential Branch, besides conducting the Economic Potential Studies which will begin in March, is responsible for the Natural Resources Unit which we start today.

The Economic Potential Branch (or "Eco Pot" as we are often called--I am sure you have heard that term) is located in the north end on the second floor of Building T-5.

Inasmuch as all of our paths have not crossed since you have been here, I would like for you to meet the branch personnel.

One of our members was first introduced to you by Captain Boundy from this platform as our Athletic Officer. After Captain Boundy's talk, a couple of students approached Tom O'Neil with remarks to the effect, "Gee, a full Colonel as Athletic Officer! Boy, you certainly have it easy; what a soft job!" Well, this is to let you know that Tom O'Neil, in addition to his other duties, is a member of the Economic Potential Branch.

A steadying influence in the Branch is Commander Bob Thorson. Bob is the Branch expert on petroleum and water resources. The man who keeps the Economic Potential Branch ticking from year to year as we in the military come and go is Dr. Clem.

Two new members of the Branch, students from last year, who have already contributed so much to our course, are Jim Walsh and Dick Barrett.

We have borrowed from other branches two men who have extensive experience in the field of natural resources, both in civilian life and here at school, Alden Baum and Pop Henkel. I am sure Pop is no stranger to any of you baseball fans. Some day we are going to teach him where the strike zone is.

I daresay that in our careers all of us at one time or another have had occasion to work for two bosses at the same time. I would like next to introduce to you a little lady who works for eight bosses, Carolyn Baker.

And last but not least, just in case you lost your program, I am Cas Conner.

This unit, Unit III, is a study and review, and I would like to call your attention to its objective: "To provide an understanding of the present world natural resources situation and trends, as these bear upon economic mobilization." Just like "Manpower" this unit is purposely placed early in your course because it is one of the basic factors to be integrated into your subsequent Economic Mobilization studies.

Our subject this morning is "Natural Resources." Just what is meant by that term? The definition given in the monograph, R-157, our unit monograph, which you have already read, is perhaps as explanatory as any. It says, "Natural resources are all those materials of nature which are used by man for his own existence and benefit."

Materials are popularly divided into the three categories, animal, vegetable, and mineral, as in the TV and Radio quiz program "Twenty Questions." Those concerned with a serious study of the subject categorize natural resources a little differently, as shown on this chart.

(Chart)

Normally, we consider that Natural Resources are divided into two broad categories--mineral and agricultural. Now agricultural resources are both animal and vegetable, and are used as food or for industrial purposes. For example, beef cattle are used for food. They are also used for industrial purposes. In addition to being used for medicinal purposes, coming out of the bottle, some of us lose sight of the fact that corn is sometimes eaten. You see the other examples here of industrial resources.

The second general category of materials is minerals, which is further divided into two general classes--metallic and nonmetallic. Under metallic are the ferrous materials--all those which have to do with

iron and steel products. Also under ferrous materials are molybdenum, nickel, manganese, chrome. All other metals come under the category of non-ferrous--lead, tin, zinc, copper. Under light metals are magnesium, aluminum, titanium. We also have the precious metals--gold, silver, platinum.

Under non-metallic minerals we have fuels--petroleum, gas, coal; our building materials--sand, gravel, and various types of building stone. Over here, we have phosphates, potash, nitrate, corundum, sulphur, salt, as an example.

I don't want to spend any more time on this chart. I just want to give you a broad framework from which we can talk about natural resources. Possibly most our concentration in this unit will be on the minerals category, so for that reason we will have a handout in your mail boxes this afternoon giving a much more detailed breakdown for minerals.

So much for terms and classification.

The relationship of natural resources to the industrial power, and hence the military and political power of a nation, is adequately covered in the monograph which you have already read, and I do not intend to elaborate on that aspect this morning.

Likewise, the natural resource position of the United States, as well as that of other world areas, has been treated in sufficient detail by the monograph for introductory purposes. Briefly, you will recall, the monograph points out our declining self-sufficiency in many materials, our tremendously increasing requirements, and the problem we face vis-a-vis the USSR, a resource-rich nation whose resources have barely been tapped.

Of course, these points will be developed more in detail throughout the lecture program, and in our discussion groups.

My purpose this morning, however, is three-fold:

1. To acquaint you with some background information which we feel is necessary for a full appreciation of the materials problem.

2. To tell you a bit more about the plan of the Unit than appears in the Curriculum Book, and

3. To suggest to you some important considerations in developing a possible solution to the present problem.

In that connection, I think that I should make it clear that when I use the word "problem," I am not referring to a stated problem in the sense that there is a stated problem in your Curriculum Book and you will be expected to submit a report. There are no written reports in this Unit. When I speak of the "Materials Problem," I have reference to the fact that all is not well, that an unsatisfactory situation exists with respect to our natural resources position.

First, let us look at the background for this problem. It is pretty well agreed that in the last century the general public gave little thought to the possibility that this nation would consume the vast mineral wealth which was hers.

President Theodore Roosevelt was one of the first responsible persons who had the foresight to realize that some day we might be confronted with a materials problem. Throughout his second term--1904-1908--he pushed a policy of conservation of the nation's natural resources. Still the subject was not considered serious until World War II demonstrated our vulnerability to materials shortages.

The Bureau of Mines and the Geological Survey recognized in 1944 the need to take stock and appraise the outlook for the future and they conducted quite a detailed study of our mineral position. They studied 39 materials. The gist of this Interbureau Committee study was that, although the United States was by no means a "have not" nation in minerals, they came to the conclusion that there were certain major deficiencies in several important minerals and the outlook for major improvements in most of the areas was not favorable.

This was an objective analysis of the situation. There were no recommendations in the report.

Mind you, this study was conducted only 10 years ago, a very short span in time--the really first study presenting the problem in some detail. Indeed, the very fact that money could not be obtained to even publish the study attests to the fact that we in this nation had still not become aware of the seriousness of the problem.

The report was finally published in 1947--three years later--as an appendix to a Senate Committee report.

That brings me to the next study which looked into this Natural Resources issue, and that was by a Senate sub-committee headed by Senator George W. Malone of Nevada. This committee met in May 1947 and had as its purpose "To make a full and complete study and investigation of the factors affecting minerals, fuels, forestry, and reclamation projects."

The study was not too comprehensive. Hearings were conducted for only three days. In general, the study more or less repeated about what the Interbureau study by the Bureau of Mines and the Geological Survey had concluded. No important legislative action resulted from this 1947 Malone report, nor did it have a significant effect on our economic policy. However, this report once again highlighted our complacency. In spite of the fact that the Secretary of the Interior and the Bureau of Mines and the Geological Survey recommended procedures for making this subject a matter of continuing review, no funds were appropriated for that purpose and the matter more or less died.

There are two more recent studies of this problem which are making front page news today and about which you will hear a lot in this Unit. These are the important ones.

The first study is commonly referred to as the "Paley Study" or the "Paley Commission Report." Actually the official title of the body constituted to make the study is "The President's Materials Policy Commission", which was headed, as you have probably guessed, by Mr. William S. Paley, who is Chairman of the Board of the Columbia Broadcasting Company.

This body was commissioned in January of 1951 by President Truman for the purpose of "Studying the materials problem of the United States, and its relation to the free and friendly nations of the world."

The report of the Paley Commission was transmitted to the President in June of 1952 and comprises five volumes. I would like to acquaint you with this literature because I am sure you will have occasion to look into it. Here are the five volumes. These are very well illustrated volumes--nice graphs. They are easy reading and I think they are very interesting. In addition to those, there is a little pamphlet which is a summary of Volume I. This is the volume which goes into an analysis of the problem and which also contains the general philosopny of the Commission. This little summary is a part of your room set and is

listed as required reading. The volumes which are in your room sets are required reading. The others, which are not required reading, are in the library for future reference.

The Paley Study is a very comprehensive one. It examines our supply and consumption of materials, and the overall political and economic factors. It takes in problems of international trade. It has a detailed analysis of each mineral's position; it includes a selected study for certain key commodities, a volume on energy sources, and a volume on the progress of technology.

I can't give you much of a summary of the Paley Report in a couple of short sentences, but for my purpose here, and without trying to color it with my own personal interpretations, I can say that in general the Paley Report (1) takes cognizance of our increasing difficulty in meeting the needs from domestic sources; (2) it says that our military and economic security demands a vast international exchange of materials--that the United States must reject self-sufficiency as a policy and instead adopt the policy of lowest cost acquisition of materials (with some exceptions); and (3) that all Free World nations must coordinate their resources to the ends of common growth, common safety, and common welfare.

That's a thumb nail sketch of the Paley Report. You will learn more about it later.

The other major study and the most recent on this subject is generally referred to as the Malone Committee Report--at least that is what we call it around here. It is a study by the Senate Minerals, Materials, and Fuels Economic Subcommittee headed by Senator George W. Malone of Nevada, the same Senator Malone who headed the 1947 committee which I mentioned a moment ago.

The Malone Committee--this last one--was directed by the Senate in July of 1953--very recently; in fact these reports following were published in the last couple of months--to: (1) determine the accessibility of the critical raw materials to the United States during a time of war; and (2) to recommend methods of encouraging the production of the critical war materials adequate for the expanding economy and the security of the United States.

The Malone Committee conducted 58 hearings extending over a period of 10 months and heard over 360 witnesses.

The transcript of the hearings comprises 11 volumes. This is quite fine print, and is direct testimony, of course. This is the actual transcript of the hearings. As you can guess from this, in case you don't already know, a lot of palaver goes on over on the Hill. As a matter of fact, all of these hearings were not conducted in Washington. Quite a few were held in other places, particularly in the Middle West and the Southwest. At one time we considered having you read all of those, but we decided it was out of the question. Dr. Reichley wouldn't give us any more time for the Unit.

There are three complete sets of these in the library. The report of the Committee, or summary, is contained in another volume. This is the actual report of the Committee. It is the summary. You won't see the word "Summary" written on it, but you will see "Report" written here. This is part of your room set and certain minor parts are considered essential reading.

The Malone report takes great issue with the Paley report. It says in effect that the Western Hemisphere is self-sufficient in natural resources; that the State Department has been running our natural resources policy--in fact Senator Malone uses some rather harsh language in the hearings in accusing what he calls Junior Statesmen of using our resources as a "political pawn." He says that some of them "don't know the difference between a ton of ore and a bale of hay." He also says that the Paley Commission has created a minerals "have-not" philosophy throughout the Nation, which has made us dependent on trans-oceanic sources of supply--a great menace to our security and harmful to our domestic mining industries. So much for the thumb-nail sketch of the Malone Report. You will hear more about that.

Perhaps you have gathered by now, from my brief discussion of the Paley and Malone Reports, that there are two major philosophies on this Natural Resources problem. Of course, there are some areas of general agreement. I don't think either of the reports is particularly concerned with our coal situation-I think both would agree that we have enough coal in this country to keep miners striking for the next 3260 years.

Unfortunately--or perhaps fortunately-educated, experienced men in the field do not agree on one or the other. Natural resources, unlike our manpower resources, can't be accounted for too accurately. For instance, we talk about reserves. The term "reserves"--when related

to natural resources--often has different connotations to various people. In addition, natural resources have more of an international flavor than does manpower--which adds to the controversy.

Well, that's the background information. Let's take a look at the curriculum--my second point.

Now we in the Natural Resources Unit, in spite of our individual or group convictions, are not going to preach an answer to this problem.

I would like to quote Doc Reichley again in his talk on orientation day when he said, "When we, the school, deal with controversial subject, we will try to present all sides of the question. With all the facts in hand, you are then in a position to decide for yourself the best line of action or the proper policy to adopt."

Bearing in mind that this is a controversial subject, and that there is no school approved solution, we have tried to formulate our Unit III curriculum so as to best afford you the opportunity to obtain the facts from which you can evaluate the problem and arrive at your own conclusions.

Looking at the curriculum from an overall point of view, it is composed of 10 lectures, 3 periods devoted to group discussions, 3 periods of films, 12 student oral presentations, and essential and suggested reading. In carrying out the general purpose of the Unit--as listed on the easel--we have planned the curriculum as follows:

As a kick off, the monograph acted as a general introduction to emphasize the importance of natural resources and to give you a general picture of the world-wide distribution of raw materials. Also, as a means of orientation and to better acquaint most of us with some of the mineral exploration problems and the language of our lecturers, there are three periods devoted to films.

The lectures have the mission of expanding our knowledge of the Free World minerals position--with decided emphasis on the United States position. Eight of the lecturers will deal with specific categories of natural resources, such as materials used in the production of steel; another on non-ferrous metals, light metals, food, industrial agricultural products, atomic energy material, water resources, and petroleum. Those will be narrowed to specific subjects.

From these lectures, we hope to learn more about the various materials, their uses, and the United States and Free World availabilities. Our lecturers have also been asked to comment on the latest technology insofar as it pertains to the extraction of materials and their processing.

In addition to the eight lectures, this year we have also scheduled a lecture on stockpiling, which, of course, encompasses many materials. I am sure you will recognize the importance of that subject. We feel this subject of utmost importance in the consideration of our materials policy.

For the final lecture, we have scheduled one entitled, "A United States Mineral Policy." We are hoping that by that time we will be able to put together some of the varied facts and contradictions to which we have been exposed, and come up with some convictions of our own, though they might not, and probably will not, necessarily agree with those of our cohorts.

This first part (these lectures) I mentioned give the Free World picture. Actually, in order to be of true significance, our materials position must be studied in relation to that of our enemy. For that reason, we have introduced this year a study of the natural resources position of the Soviet Bloc. There are two discussion periods scheduled for this purpose. I will not expand on that because your student Discussion Group Leader will explain it to you in detail on Thursday afternoon and will give you your work assignments.

I might warn you, however, that any study of Soviet resources can be a frustrating experience, because of the scarcity of reference material and the questionable validity of some of the data you do get your hands on. So don't give up right at the first.

Another feature of our curriculum, not uncommon to the other units of the College, is that 12 students will have an opportunity to get up here and expound on various subjects. We are asking the 12 oral presenters to speak on subjects dealing with technological developments in the extractive industries. In this manner we feel that these oral presentations will supplement our other learnings with important information which time will not permit us to explore during the normal run of the Unit.

The overall plan of the curriculum has been based on the following philosophy:

We do not expect that when you finish these studies you will have remembered a mass of statistics. You will be exposed to a liberal share, to be sure, but they are important only insofar as they illustrate a point or a principle.

It is expected and hoped, however, that when you leave this Unit and the College, these studies will have given you a general knowledge of our resources position, the major problems connected therewith, and, of course, an added appreciation of the part which natural resources play in our peacetime and wartime economies.

And it is for that reason--to give you the overall picture--that we have devoted a considerable part of the Unit time to a study of the Paley and Malone Reports. These two reports cover all the major aspects of the problem, and they are current. They recognize present international problems and modern methods of warfare. And, I might add, both of these reports are exerting powerful influence on the formulation of our national policy. I think for that reason, if for nothing else, it behooves us to take a look at them.

Because of the importance of these two studies, we have concentrated the bulk of the essential reading thereon, and, in addition to the final lecture by Mr. Pehrson, who has been asked to comment on the two reports, we have a discussion period devoted to them.

So much for the Curriculum, my second point.

I'd like next to throw out on the table some important considerations which we must take into account in devoloping a possible solution to our materials problem. They are three in number.

Whatever the solution, it appears to me that it (the solution) must:

a. Provide for our military security

b. It must give us economic security, and the answer to this problem.

c. Must recognize the role of politics in the International struggle--in other words, the solution of the problem must be politically feasible.

In considering military security, we should first recognize that at the present time we are highly dependent on overseas sources for supplies of great quantities of strategic and critical materials. We need chrome from Turkey; copper from South America; tin from southeast Asia and South America; manganese from India and Africa. Those are but a few.

The question arises as to how secure would be these foreign sources during wartime. From the standpoint of shipping, it is well to remember the following examples: (1) For the first 6 to 8 months of World War II, German subs sank from 88 to 90 percent of our ships carrying chromite and manganese from South Africa; (2) likewise, 85 percent of the ships carrying bauxite from the northern coast of South America were sunk before the submarine menance came under control.

I don't want to get into an argument here as to whether our sea lanes can be protected, but for the purpose of expediting discussion, let's assume that our shipping lanes could be protected. Isn't there the possibility that these foreign materials might otherwise be denied us for political or other reasons? It certainly is conceivable that during wartime, areas adjacent to the Soviet Union could be pressured by the USSR into a neutral status, thus denying us materials on which we had become dependent.

A policy, as advocated by the Paley Commission, would make us considerably dependent on foreign sources for materials--much more so than a policy favored by the Malone Committee. So we can toss that problem around a long time in our study of these two reports.

As regards economic security, our second consideration, we might ask ourselves the question: "Does our domestic mining industry warrant economic protection in the form of tariffs and subsidies, in order that they might compete with inexpensive foreign labor and high-grade foreign ores?" In lead and zinc for instance, the Malone Report refers to 40 cents a day foreign labor as compared to our $15 a day domestic rates, and cities foreign copper ores of 4 to 5 percent copper content as against ours of less than 1 percent.

As you might have guessed the Malone Committee leans decidedly in favor of such protection.

That sounds very good from the standpoint of economic protection; it sounds good from the standpoint of military security; but what would

be the consequences on our standard of living? The resultant price increase in any one metal certainly wouldn't have too great an effect on our pocketbooks, but if that were multiplied manyfold, it could have far-reaching effects on the purchasing power of your and my dollars. The cost to our economy would run into huge figures.

There is a powerful school of thought that such economic protection as advocated by Senator Malone is contrary to the principle of obtaining materials according to least cost--a practice, which its advocates say, is necessary if we as a nation are going to continue our economic expansion and maintain our position of leadership in world affairs.

The Paley Commission in subscribing to this least-cost principle sizes up the issue in the following words:

"The growth of the United States has depended upon the availability of materials from low-cost sources of supply, and the continued growth of this country is dependent on the maintenance of this situation. If we are forced to procure materials from higher and higher cost sources, the growth on which both our security and prosperity depends will eventually be checked. Procurement from higher cost rather than lower cost sources means essentially the diversion of manpower and capital away from efficient and toward inefficient employment."

The third consideration which I suggest as important to the solution of our materials problem is the political one. Is the destiny of our nation inalterably bound with that of other Free World countries? I think that is the question we have got to answer. The Paley Commission thinks so. Judging from our political alliances (NATO AND SEATO), it appears that this is a struggle between the Free World as a whole and the Soviet Bloc.

If that's the case then, is it politically feasible for us to adopt a policy of economic self-sufficiency?--a policy which would have serious effect on the already weak economies of many Free World countries, countries with a low standard of living but whose people nourish with fervor a desire for a better way of life.

The international struggle today is not solely that of a military threat, nor a battle for the control of men's minds. It is an economic struggle in a big way. In fact, many of the experts feel that the danger is not one of military action, but one of long-range economic considerations. As Dr. Piquet stated from this platform a few weeks ago the USSR is vigorously pursuing a policy of economic warfare in all corners of the globe at the present time.

If, indeed, we believe that this is going to be a long drawn-out, cold-war struggle, then political and economic considerations must assume an increasingly important role in the formulation of our natural resources policies.

If, on the other hand, we are going to gamble that this is not going to be a long drawn-out, cold war which we hope will come in one, two, or three years from now, if military security and, hence, minerals self-sufficiency at any cost are to be the overwhelming considerations, then I think we must ask ourselves: "How much time do we have to reach the objective of materials self-sufficiency?" because that certainly goes hand-in-hand with military security. We can't push a lot of buttons and attain that status overnight. People who know seem to think that it would take years--10 or 15, or maybe 20 years--to attain such a status and we would need some interim policy. Certainly time is a factor in this equation.

Well, that winds up my announced purpose for being up here on the platform this morning, but before I step down, I would like to leave you with this final brief thought. Technology has made great contributions in the past to materials supply. New methods of discovery, new mining and processing techniques, substitutes for scarce materials. As a result, the Paley Commission warns that "Most Americans have been nurtured on the romantic notion that technology will always come to the rescue with a new miracle whenever the need arises."

It is true, we do seem to have a blind faith in technology. But we can't take refuge in the hope that today's problems will somehow be averted. The stakes are just too high. We may never have to fight the Russians, but still we must be prepared.

Instead of alleviating the materials problem, future technology might very well create new products and uses which would have the net result of adding to the demand for already scarce materials, thus creating new scarcities.

I contend that we must face up to the problem. We must take into account the things we can now safely predict, not place too much reliance on a crystal ball. We have to plot our course from here with what we can safely predict and alter our minerals policy as we go along as future developments dictate.

Thank you very much.

(Nov. 10, 1954--250)mad

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INDUSTRIAL COLLEGE OF THE ARMED FORCES

Washington, D. C.

Dr. Dale Yoder, Director, Industrial Relations Center, University of Minnesota, was born in Gibson City, Illinois, 4 February 1901. In 1923 he received his A. B. degree from James Millikin University. He did graduate work at Iowa State University, receiving his A. M. degree in 1926 and Ph. D. in 1929. He was instructor at Iowa State University from 1924-29; assistant professor from 1929-31; and associate professor, from 1931-34. From 1932-34 he was professional lecturer at Minnesota University and professor of economics from 1934-35. He became director, Industrial Relations Center, Minnesota University in 1935. During World War II from 1943-44 he was director, Planning Division, War Manpower Commission, and chairman, Sixth Regional War Labor Board, 1944-45. He also served as consultant, U. S. War Department, 1944-45, and consultant to the U. S. Senate Subcommittee on Labor-Management Relations of the 82nd Congress. Professor Yoder is a member of numerous professional societies. He has written many articles and books dealing with personnel management and industrial relations. Two of his latest books are: "Personnel Principles and Policies" published in 1952 by Prentice-Hall, and "Manpower Economics and Labor Problems" published in 1950 by McGraw-Hill.

THE PRINCIPLES OF MANPOWER UTILIZATION

29 September 1954

COLONEL NORMAN: Admiral Hague, General Niblo, ladies, and gentlemen: I am sure I would be safe in assuming that all of us sometime in our careers have asked ourselves: How can I get more accomplished with the people I have working for me? Or, how can I better manage and utilize those whom I supervise and direct? How often have we as managers, not only of material resources but human resources as well, said to the next higher echelon "I have just got to have more people if I am going to accomplish the mission assigned," without first very seriously asking ourselves: How can I better use what I have and thereby accomplish the mission?

These are important questions, it seems to me, any time. But in the framework of mobilization, I think the need for the answer to the question of how to utilize our manpower resources effectively becomes more impelling.

Our speaker this morning, Dr. Yoder, Director of the Industrial Relations Center of the University of Minnesota, has been grappling with and studying this problem of personnel management for many years. I am not going to suggest that he has a concise formula already to give us this morning, much as, I am sure, he would like to do so. We are all well aware that problems concerning people are not amenable to solution by formula. But I am quite confident that Dr. Yoder's long experience and intensive study in this area of manpower management has enabled him to formulate certain basic principles, concepts, guidelines, as it were, which will be of material value to us not only in our immediate concern with this problem but, more important, for future guidance as managers and supervisors of people.

Dr. Yoder, we are very happy to have you aboard this morning to discuss with us the problem of "The Principles of Manpower Utilization."

DR. YODER: May I say, Admiral Hague, General Niblo, and gentlemen, it is a real pleasure to be back here. It is more of a pleasure than ever before because a couple of the members of this class were so thoughtful as to drop me a few words of welcome.

I come to you to talk on this subject with a good deal of hesitation. It would be much easier to introduce this subject to a class at the University of Minnesota this morning than to discuss it with a group of men who are mature and have had a lot of experience in managing manpower.

Now, I couldn't retain my membership in the union of college professors if I didn't do a little defining. Every college professor has to have his definitions. Perhaps I should start out by defining three or four terms so we will all know what we are talking about in the remarks that follow.

The general area that you describe as manpower utilization is essentially that which is usually described as manpower management. It begins with the idea of manpower as a resource comparable to all other resources that a nation or a region has. The problem is how to make the most effective use of that resource. A part of that effectiveness depends upon the allocation of resources. Another part reflects the most effective use of the resources after they have been allocated or disposed of.

This is much like the problem which each of you faces in your use of military manpower.

We have asked large numbers of firms to tell us what they do, what activities they carry on, to assure effective use of manpower.

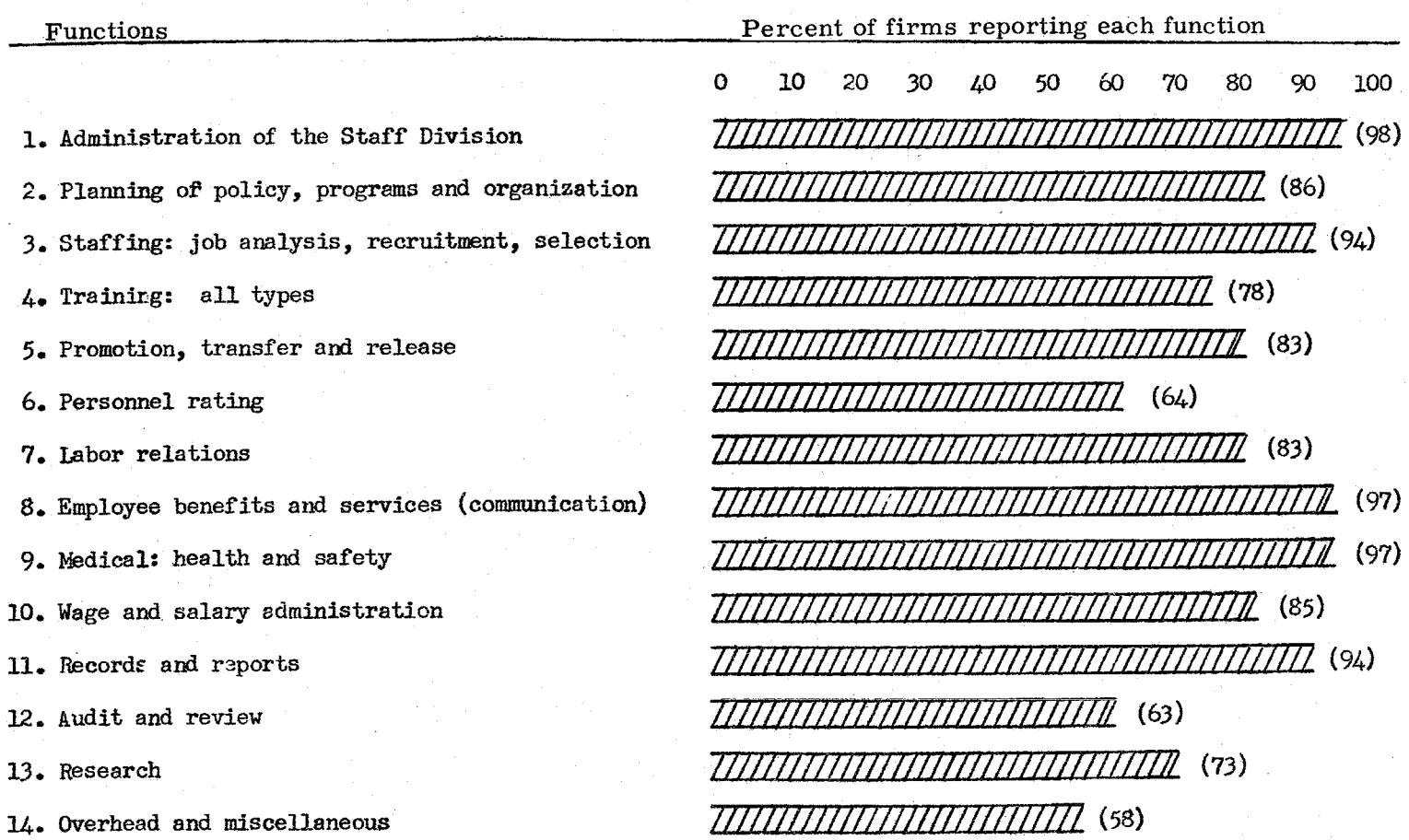
Chart 1, page 3, reports what the industries of the country tell us that they do. We ask them, as well as they can in their own words, to describe the major activities in which they engaged in managing manpower.

You will see there that there are 13 major divisions plus a miscellaneous categoy at the end. You will also notice that you have a broad summary of what appears in all the personnel textbooks. That is just about what it amounts to. As the years have passed, we have each year resubmitted this outline, asking employers how much they do in each of these fields and how much time they allocate to each of them.

Some of you know of our studies of personnel ratios. Results of the 1954 survey have just become available. This report indicates that 98 percent of the firms are active in administration and 86 percent in planning both policy and programs, and so on as shown in the chart. This is a report of what they said they did.

CHART 1

PERCENT OF FIRMS REPORTING FUNCTIONS OR ACTIVITIES



We are not suspicious of them, but we do have a check on what they say they do. For they also report on how they spend their money.

Chart 2, page 5, gives the results of the 1954 survey of the personnel and industrial relations budgets. It shows not only what firms spent their money for but how much they spent for each of these 14 activities.

This is essentially an industry picture and would not be appropriate, I am sure, for example, for the armed services, nor is it appropriate for the public service. We have only a few public agencies included in the survey. We do not have a separate breakdown for Government services.

You can see from the charts the broad outlines of major activities in the field of manpower utilization or manpower management. You can see essentially what is done and the amounts being expended to carry on these functions. These are staff expenses, staff salaries and administrative expenses. They are not "fringe" benefits. Fringe payments, actual dollars paid to employees for fringes, are running at the present time just under 20 percent of the payroll and would run much higher than these staff expenditures. Staff costs amount to $69.34 on the average per employee per year.

If you don't mind, let us turn our attention from these current activities in manpower utilization to some major changes that have taken place and are taking place in this field.

The first of these changes is the long-term change, going back over hundreds, perhaps thousands of years, which may be described as a change from slavery to self-management. The second of these changes is the change in the position of the employer in our society, which for convenience may be called a change from boss to business agent. The third change may be called a change from custom to competence. Let us talk briefly about these changes.

The first change from slavery to self-management may be the most significant of all of them. It is such a long-term change that we can view it in perspective. If you look at the way in which our manpower is managed today and then glance back down through the ages, back past the industrial revolution into the Middle Ages and the manorial system, back to the time when men's primitive societies were the only societies, when work teams were clans and family groups, you will be impressed by the degree of self-management that has developed in employment. Consider first the working relationships when nations were little tribes or clans,

CHART 2

AVERAGE PER CAPITA COSTS OF EMPLOYEE RELATIONS STAFF ACTIVITIES, 1953 AND 1954

(These averages include only administrative costs for Industrial Relations, Personnel and Labor Relations staff units. They do not include the costs of "fringes" or employee benefits and services, such as pensions and insurance.)

Activity or function	Dollars per employee		Percent	
	1953	1954	1953	1954
1. Administration of the Staff Division	4.32	4.73	7.1	7.8
2. Planning of policy, programs and organization	2.95	2.31	4.8	3.3
3. Staffing: job analysis, recruitment, selection	11.36	8.40	18.6	13.8
4. Training: all types	6.01	5.25	9.8	7.4
5. Promotion, transfer and release	1.33	2.76	2.2	3.4
6. Personnel rating	1.29	1.23	2.1	1.1
7. Labor relations	4.60	4.86	7.5	7.3
8. Employee benefits and services (communication)	9.38	9.02	15.3	14.7
9. Medical: health and safety	9.94	14.49	16.2	22.0
10. Wage and salary administration	2.53	2.75	4.1	4.2
11. Records and reports	3.25	4.24	5.3	6.8
12. Audit and review	0.78	1.57	1.3	1.4
13. Research	1.02	1.19	1.7	1.4
14. Overhead and miscellaneous	2.50	6.54	4.0	5.4
Average overall cost	61.26	69.34		

when hand workers under the lash of a Simon Legree performed most of the work, or when the pyramids were built. Recall the manorial system of serfs and slaves.

Consider how men were managed then and compare such management with the situation today. Now every boy and girl is trained to become his own manager. Each may choose his own job. Each may make up his own mind 10 years later concluding that he doesn't like the job he holds. He may change jobs again and again. This change to the self-allocation of manpower involves a revolution in one important part of manpower management.

There are two important changes which underlie this shift toward self-management. First, there is the change from an era in which manpower was always in excess supply to an era in which demands for manpower exceed supplies. From an economic standpoint today, this is an impressive change. Our manpower today is scarce. Our manpower is likely to be scarce as far ahead as we can see. No one living now is likely to see an era of excessive manpower in our society.

What has made our manpower so scarce? We do not have less manpower than we used to have. From an economic standpoint, what makes manpower scarce is the expansion of our other resources. Manpower is scarce in proportion to our other resources. We made it scarce and will keep on making it scarcer. We have done so by building our capital resources. We used to tell our students, and we were greatly impressed with the fact, that we had $5,000 worth of capital per employee in American industry. Do you realize that value is approximately $20,000 today? As we move on, it will probably be $30,000 and $40,000, for we want it to be. We want our manpower to be the most productive manpower in the world. We can make it so by putting added tools and equipment--added capital--in the hands of our manpower. We may have short periods of recession, but the long-term trend is toward an ever higher capital-worker ratio.

This puts manpower in the driver's seat. If you have a short resource, it is always in the driver's seat. A short resource always has the advantage. Manpower is and will continue to be a short resource. That means higher living standards because manpower can demand more. We want it that way. It means shorter hours and higher wages. I think we may have a 35-hour week by 1970. We may have a 24 or 28-hour week by the year 2000. The trend in wages is clear. Compare what has happened to interest rates in the last 50 years to wage rates in the last 50 years.

The second underlying change is the trend toward increased mobility of manpower. As you look back at early times, you find a man had one job, one employer, one community. If men were born to the land, they worked for their master.

Today men are free to be managers or employees. Children don't even know what they want to do when they are in college. They are not born into any position. If they don't like what they are doing, they can change. If people don't want to be employers, they can become employees. If they don't like the climate in Minnesota, they can move to California, and a great many of them do. If they don't like working conditions, they can join with their fellow employees to change them. The employer doesn't have to keep his work force around. He has no obligation to keep them from year to year.

Mobility studies show that one-fourth of our manpower resources, one-fourth of the labor force, changes jobs every year on the average. European studies have found nothing comparable to the mobility of our manpower. It is a marvelous change.

This freedom to move has done much to encourage self-management. It is a major element in the change from slavery to self-management.

The second change, from boss to business agent, is an interesting one. The boss who used to make the rules and may have considered himself the great white father of his employees no longer thinks of himself that way. He has made an interesting and basic change in his attitudes. This change is taking place right before our eyes.

Bosses think of themselves today as coaches. The real boss in a free society is the consumer. Employers organize and develop work teams. They manage and sell the services of employees. They compete for the best players. They are much concerned about the team spirit and morale.

One evidence of this change is the great interest in "human relations." The employer's current motto is "Be human more in fifty-four." We have more conferences on the subject of human relations and managing manpower than on any other subject.

In effect, our modern employers as agents say to potential employees "Come work with me. I am the best agent in this part of the country. I can put you in a job where your production will be maximized. I can

make you a productive employee." That is a striking change. We are really thinking as a team and of a team in employment today in a way we never did before.

The third major change I have described in the field of manpower management is that from custom to competence. I could have used other words--from superstition to science; from folklore to facts. In essence, what I am saying is that until recently we were managing manpower in industry by a bunch of traditional rules. We have been doing it the way grandpa did because it seemed all right. Our predicament reminds me of the Australian who got a Montgomery-Ward catalog which advertised some modern boomerangs. He ordered one and then nearly went crazy trying to throw the old one away. This is essentially what happened to us. We were caught in our own folklore of manpower management.

One evidence of this change may be seen in the increasing expenditures for staff services. Our figures show a 12 percent increase in expenditures for manpower management from 1952 to 1953 and another 12 percent increase from 1953 to 1954. The clear-cut identification of a specialized manpower or industrial relations staff division in most firms is another. The fact that we are demanding so much in the way of manpower research today is another.

An interesting study by one of our graduate students at Minnesota, Robert Bosin, shows the extent to which top management now demands expertness in its manpower management. He found that about 40 percent of the presidents of companies thought that personnel staff members ought to take public examinations like those in medicine and law before being allowed to practice. One hundred percent of the presidents favored completely free exchange of research findings. Most of them expected that their manpower staff would carry on a continuing research program.

If you will look at the $1.02 per employee spent for research in 1953, you may also vote that it is up to $1.19 in 1954. That is only one-eighth as much as we are spending for product research, but it is a step in the direction of developing a manpower management program on the basis of knowledge and understanding instead of tradition and folklore.

In summary, may I reemphasize three major changes in manpower management--the change from slavery to self-management; the change from managing as bossing to that in which the employer has become an effective agent for his employees, building them into an effective work team and selling their services at the highest possible rate; and the

change from dependence on custom and tradition in manpower management to an emphasis on competence based upon professional training and professional knowledge.

I wish I knew where these trends will take us. I can tell you this, that the first trend has pretty well run its course. I would assume that long-term trend has pretty well reached where it is going. We may have gone as far in self-management as we can go.

The second trend, the trend toward agency management has developed recently. It is so sensible in a free society that we may expect it to persist.

The third trend, the trend from custom to competence, is one in which we have only begun. We must expect it to become more important in the future. So I would suggest as a motto that might be helpful in looking toward the future this one: "To stay in front for 10 years more, we'd better make that one buck four."

You have been a delightful audience to talk to. Thank you very much.

QUESTION. What would you say has been the effect of unions on the three changes that you mentioned?

DR. YOKER: This is obviously a pertinent question. There have been numerous studies of the effects unions have had on manpower utilization and particularly on wages and earnings. Possibly because of defective methodology, the studies have not been conclusive. Some studies seem to provide evidence that unions have tended to make the individual employee more independent, both financially and otherwise. Other studies seem to show that the changes in the status of employees in unionized industries are no different over a period of years than those in other industries. All of you no doubt know of the possibility that the unions have had their effect and that it has spread to the other industries, which is a very real possibility. It is my belief that unions have contributed to this development, but that is a matter of opinion.

All of us, it seems to me, should regard our current practice in collective bargaining as an experiment. We are trying to discover how free men may best organize themselves for effective performance and satisfaction in employment. We ought to study the experiment, trying to keep an open mind and trying to learn as much as we can at the same time trying to watch for the hazards.

It is apparent that unions have improved the status of employees in many industries. It is apparent at the same time that some of the things that unions propose may adversely affect productivity. It is also apparent to all of us that productivity is not the be-all and end-all of everything. We need to be as honest, unbiased, and fair as we possibly can in assessing what unions can do, and how they can do it, and what the hazards are.

For example, mobility is an enormous asset in our society. The opportunity for employees to move from one job to another is probably the greatest single reason for our enormous productivity. Anything that reduces mobility may be purchased at an excessive price. But we also want security. Only research can tell us how much that security will cost.

We need research on the effects of various practices in collective bargaining. The values to be gained, the price to be paid for them, and the manner in which unions and managers are to cooperate should be regarded as one of the most dramatic and most important of our current developments; we ought to be studying them very carefully and very objectively.

QUESTION: The first two trends you mentioned--from slavery to self-management and from boss to business agent--are two that the military establishment of necessity finds it very difficult to follow in the civilian pattern. Could you give us some conditions in which we could study such problems as help, such things as recruitment rates?

DR. YODER: You may wonder why I chose to talk to you about these trends, for I am thoroughly aware that they may not be evident in or characteristic of the military service. You can't have self-management to the same degree that we can in civilian industry.

One reason that I chose to present them to you is the fact that the military services may have to assume leadership throughout the entire economy in times of emergency. You gentlemen need to be thoroughly familiar with changes in civilian industry because no one knows at what moment you may have to assume responsibility, either for collaborating in the management of industries or in some cases actually managing them. At the same time you have a heavy responsibility for making effective use of the manpower in your own ranks. If you make your manpower more effective, you also make it more valuable, and the trend in industry ought to be paralleled by a similar trend in the military service. It ought to be paralleled by a similar trend, not only in greater productivity, but also in higher earnings.

QUESTION: In 1952 you prepared a report. I think it was "Blueprint of Manpower," known as the Humphrey Report. In that report you indicated the dire need for more effective manpower utilization within the Armed Forces. What do you consider now are the main deficiencies in manpower utilization in the Armed Forces?

DR. YODER: In essence, it seems to me that our plans for the use of manpower in the military services should involve a sharp distinction between those who enter the military as a career and those who are brought into the military for relatively short periods as a means of building a trained reserve. My own observations--and they are extremely limited--have made me suspicious that the second group involves some relatively poor utilization. I think this is probably because we have attacked the problem en masse rather than in terms of individuals, a characteristic of our management of manpower in industry as well as in the military services.

As a result we talk in terms of two-year or three-year stints without reference to the wide differences in the job requirements in the military service. The military service should be able to tell how long it takes to make a man useful as a reservist in each of the major jobs to be performed. I am thinking now of the major jobs within the individual services. If it takes three years to make a man adequate in radar, then we should plan for a three-year training period. If it takes only six months to make a man adequate for a foot soldier, then we should take him in for only six months.

QUESTION: Dr. Yoder, how far do you think your second change can be carried? I have in mind particularly the change from boss to manager or coach. That can go just so far in my opinion and can't go any further. You can get to the point where the janitor in the basement calls the president of the company Ed. Jack and French have tried that out but how are they making out? How far can you go?

DR. YODER: No one knows what the ideal situation is, but we are learning more about it. We can learn if we regard our experience as an experiment. We are trying out a lot of highly significant arrangements. For example, many firms are trying profit sharing at the present time. Profit sharing is just one example of the possibilities of such cooperative relationships.

One further illustration--many of you have heard of the Scanlon Plan. This plan involves the special motivation of employees in unions

through the cooperation of the union with management. The Scanlon Plan is another experiment that should be carefully reviewed and evaluated.

QUESTION: The third item in this list of activities--staffing, job analysis, recruitment, and selection--is the one showing the most significant dollars and percentage decrease in application. Does this represent industry's disenchantment with job analysis?

DR. YODER: The answer is no. If you will recall, during the last quarter of 1954 there was talk about a readjustment that was coming, a cutting back in employment, research, and all that sort of thing, and there was some such readjustment during the spring months. The number of new people recruited and employed declined sharply. For that reason, expenditures for this purpose were reduced.

QUESTION: Would you give us some ideas as to the extent of coverage of the companies involved, large or small and so forth, that these statistics were generated from?

DR. YODER: These budget figures, which are quite complicated, were drawn from a very large sample of firms scattered across the country. (Chart 2, page 5). The data are based upon complete returns from 261 firms. The total number of returns is twice that or more. However, many firms are unable to allocate the funds which they expend in detail. In order to get these average figures, we can use only completed returns. They have come from 26 States, the District of Columbia, Hawaii, Puerto Rico, and 3 Canadian provinces. They represent a wide industry distribution with very heavy weighting in manufacturing. They include banking firms, insurance companies, transportation, public utilities, and other industries.

I might add that if any of you fellows are thinking of leaving the service, you should go into banking, finance, or insurance. They afford the highest pay. Further, be sure your title is "director of industrial relations"--don't settle for "personnel manager"--it is worth at least $1,000 more. It is worth at least $5,000 more if you can get them to make you a vice president.

QUESTION: You have answered part of my question but I would like to ask the rest. It was not surprising to note that medical: health and safety had increased, but it was a rather surprising comparison to note that employee benefits and services had decreased. Have you an

explanation as to why employee benefits and services decreased? Or you might explain whether or not any compulsion was behind this health and safety increase, or what was the reason for it?

DR. YODER: In part, those changes, we think, represent improved accounting and reporting. We discovered, beginning about three years ago, that staffing divisions were handling very large sums of money that were not, strictly speaking, staff expenditures. We found that all sorts of money was put into the Industrial Relations Director's budget. For example, we found thousands of dollars allocated to the Industrial Relations Director's budget for unemployment compensation insurance. We found a blanket sum for dinners for employees with seniority. There were items for guests; items for vacations and holiday pay. This year for the first time we have data showing an average of $151 per employee in these uncontrollable funds.

I think, as a result of asking firms to include all uncontrollable funds that they have for the first time clearly distinguished administrative costs from the amounts held in trust to pay for insurance, pensions, and other such services. That probably explains the increase in medical: health and safety costs and the decrease in employee benefits and services.

COLONEL NORMAN: We appreciate your coming down and taking your time to share with us your ideas and experiences in this field. I know I speak for everyone of the group here when I say it has not only been very beneficial to us, but we appreciate it very much, Dr. Yoder.

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