INDUSTRIAL CONSERVATION

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Mr. Howard Coonley was born 22 November 1876. He graduated from Harvard University with an A.B. in 1899. He was employed by Walter Baker and Company, chocolate manufacturers, from 1900 to 1902. He was vice president of Coonley Manufacturing Company from 1902 to 1908 and president from 1908 to 1930. He was president of Walworth Company, manufacturers of valves, pipe fittings and tools, 1913-1915. He later served as chairman of the board of that company for several years. He is a director of many important concerns, including Engineers Public Service Company, Inc.; Research Corp.; Barlum Metals Corp.; Liberty Mutual Insurance Company, Boston; Malleable and Steel Casting Company, Cleveland; Link Belt Company, Chicago. Mr. Coonley served as chief of the Chemical Warfare Procurement District from 1925 to 1932 and as director of the Conservation Division of the War Production Board from 1942 until the close of the war. He was the United States adviser to the Chinese Government in organizing the Chinese War Production Board. He is a past president of the National Association of Manufacturers and the American Standards Association. He now occupies the position of chairman of the Executive Committee of the American Standards Association and since early 1947 has been president of the International Standards Organization.

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COLONEL SEAWARD: Gentlemen, the subject of our lecture this morning is "Industrial Conservation." Conservation is one of the important elements of economic mobilization. Our speaker is no stranger to our college. He has been on this platform before and has spoken to the college on the subject of "Conservation." He is a past president of the American Standards Association and is currently the chairman of the Executive Committee of that organization. During World War II, he directed the conservation activities of the War Production Board and at present is an adviser to the National Security Resources Board. It is a pleasure to introduce to you this morning, gentlemen, Mr. Howard Coonley. Mr. Coonley.

MR. COONLEY: Thank you, Colonel. It is really very pleasant to me, too, to come back to the Industrial College. I said to General Holman this morning that it seemed to me that soon I was going to wear out my welcome, but he assured me that there is a group of new faces here each year so they may not be bored by hearing me say some of the things I repeat year after year.

Naturally, this subject that I am going to try to talk about is one of tremendous interest to me and is one of supreme importance to the work that you are doing. I shall try to treat the various aspects of it so that it will at least set you thinking. I want to say, too, that I have been down on my new advisory job with NSRB for a very short time. I think today is my fourth or fifth day. In that short time I certainly can't have gained a full view of what is going on in conservation work in the government agencies. I have had to make some assumptions, and if I have been wrong, I hope you will forgive me. Perhaps I will correct the assumptions before the proof of this talk is corrected. I see some authorities on this matter sitting in my audience, and I am sure they will be frank with me after I am through.

In the 11 months that have intervened since I last spoke on "Conservation" at the Industrial College, many events have changed the surface pattern of the world picture, but none has modified, in the least, the fundamental importance of our preparedness program. I spent a term of months in China during the period of its greatest war danger, and was privileged to have a part in the successful termination of its heroic World War struggle. To me the collapse of the forces of Generalissimo Chiang Kai-Shek--with the overrunning of the greatest portion of China's vast areas by the Communists, and the subjugation of its half-billion people, exhausted by 14 years of continuous fighting and sacrifice--is one of the greatest tragedies of all time. Unhappily, it is my belief that a considerable portion of the blame rests on American shoulders.

Perhaps this is not the time or place to indulge in retrospective philosophy. Yet my conviction is so profound that we have been outmaneuvered in our diplomacy and in our strategy, and thereby placed in a position that calls more than ever for clear thinking and preparedness, that I feel called upon to state my opinion. Yet in doing so, I want to emphasize the fact that I am giving my personal views, without committing the many others who believe as I do.

China, I feel certain, could have been saved had there been a Wedemeyer instead of a Stillwell in charge of the American forces (and incidentally also the Chinese) in the Far East during the early years of the war; also had our leaders at home believed then, as they are convinced now, that communism of any shade or color will not meld with any other philosophy. Under such circumstances we would have had effective cooperation between the Commanding General and the Generalissimo. The months of bickering and delay that sapped the strength and ultimately broke the spirit of the Nationalist troops would have been avoided. And finally the futile, though courageous, effort of General Marshall to bring about a coalition between the Nationalist and Communist Governments would not have been undertaken. The delay that this effort caused gave added time to the Communists to strengthen their armies and pour out munitions from the Japanese arsenals that the Russians had turned over to them. It halted the preparations of the forces of Chiang Kai-Shek, and, with the deliberations reaching the inevitable conclusion of failure, caused a crash in the weakened spirit of the long-suffering of four hundred million noncommunist Chinese from which they could not recover.

If any one of you has not read the series of three articles by Joseph Alsop in the January 1950 issues of the "Saturday Evening Post," I urge that you do so. They paint in clear and accurate relief the jigsaw puzzle that I saw.

The loss to communism of the great proportion of the Far East and the trend of a similar debacle in the Near East cries aloud for courageous diplomacy and complete preparedness; and for preparedness, sound conservation planning is a prime essential.

I think this phase of the Chinese situation may end soon. But I want to stimulate your thinking to a realization of how important it is to look forward, how vital it is to plan. And if you plan effectively, the result is almost always favorable.

To plan for preparedness, the Administration has set up an ideal agency in the National Security Resources Board. Its authority is restricted to the planning function, clearing through other government agencies for any action required in time of peace. Under the law creating the National Security Resources Board, it is estopped from being transformed into a War Production Board should we unhappily have another war.

The National Security Resources Board was established to advise the President on the coordination of military, industrial, and civilian mobilization. In this capacity it has two major responsibilities. The first is mobilization planning. This requires the listing of the problems that will arise if the Nation is called upon to move from a peacetime to a wartime economy. The second involves current programs and policies that will best and quickest put the Nation in a position of readiness against the eventuality of a war.

In both the area of mobilization planning and the development of programs and policies, conservation plays an outstandingly important part. In my discussion I shall devote myself largely to an outline of the conservation activities as they exist in the various government agencies today, and express my views as to the steps that can best be taken to coordinate them and make them effective.

Naturally, in doing so, I have reappraised the methods used by the Conservation Division of the War Production Board, of which I was director, and modified them to meet the requirements of the National Securities Resources Board for which I have recently taken over the conservation responsibilities on an advisory basis. I shall not, however, attempt to review the experiences of the past, since I understand that you have been asked to read my previous report and in that you will find an outline of the policies and procedures of the War Production Board and an appraisal of the board's accomplishments and failures in the field of conservation. I believe a review of that discussion will convince you that the record of this country's conservation activities during World War II was creditable and that it contributed substantially to the Allies' success in the field of battle. I might say also that I think it will persuade you that a better job can be done next time.

Both the accomplishments and failures of the conservation activities in the last war should provide a guidepost for our present efforts. Unfortunately, in times of peace some of the incentives to retain and develop the procedures that proved fundamentally successful under war conditions disappear. But no matter how worth while the goal may be, it is difficult for the elements in our economy to retain the enthusiasm for conservation that influenced them during the war period. Even their keen appreciation of the benefits of product simplification faded when the shortages of wartime demand were followed by the pressures of a buyers' market.

In my talk last year I divided conservation measures into six broad categories.

The first is "standardization"; the second, "measures to determine and safeguard the supplies of critical materials"; third, "the development of substitutes where necessary and possible"; fourth, "a

program of salvage and saving at the source"; fifth, "a cataloguing of supplies to avoid duplication and waste"; sixth, "international cooperation in conservation measures." These categories I continue to adhere to.

Before undertaking the complicated task of painting a picture of the conservation setup with the government agencies as it exists today, let me say that the possibility of another armed conflict cannot be overlooked, although it is to prevent such a universal catastrophe that our preparedness program is so completely justified. Should a third world war occur, it is my belief that a counterpart of the War Production Board should be created, modified to overcome the weaknesses that were discovered in World War II. As for conservation under such circumstances, I should favor a division almost identical to that which existed in the latter years of the late war, set up as a staff activity, streamlined on a nonfunctional basis and reporting directly to the chairman of the proposed board, rather than to a vice chairman; the impact of conservation measures spreads over every activity involved in planning and carrying out an armed conflict.

Let me pause to say that in my occupation as director of conservation I was handicapped many times by the fact that I was reporting to a vice chairman instead of to the chairman. Although I liked the several operations vice chairmen to whom I reported successively, the other vice chairmen did not feel the importance of conservation because it didn't come up directly to them. I urged several times that the division be transferred to either the chairman or the executive vice chairman but was not able to accomplish that.

In proposing a nonfunctionalized staff, I have in mind our experience in the early years of the war. Then there were three separate branches, each manned with specialists--the Specifications Branch, the Simplification Branch, and the Substitution Branch. When budget restrictions forced a substantial reduction in our force, we eliminated these functionalized activities, and by educating the very excellent group of specialists of each branch in the techniques of the others with which they were automatically becoming familiar, we found that an individual skilled in the science of developing specifications could very rapidly become expert in simplification and substitution practices. The same proved true of the simplification and substitution specialists. For the rest of the war there were only two major departments of the Conservation Division--one having supervision over materials; the other, over products. It is this latter type of organization that I should recommend for the future. It would undoubtedly be wise, however, to have a small group of experts in the science of substitution, for the development of some substitutes requires specialized training and talents.

There is one other change I would recommend. My fourth category covered a program of salvage and savings at the source. Savings at the source is undoubtedly a proper function of conservation as a staff activity. But salvage is not only a planning responsibility but for complete effectiveness must become an operating function as well. In the last two years of the war a Salvage Division was established as a separate activity. This I would again recommend.

As to the status of conservation planning within the government agencies today, the activities are scattered and lack proper coordination. It is important that the responsibilities be clarified, brought under centralized supervision, and energized. The National Security Resources Board has the authority and responsibility for this job.

Those of us who have been intimately associated with the standards movement from a civilian point of view have been accustomed to think of standardization as embracing specifications, simplification, and substitution. This in fact was the attitude in the War Production Board, the Office of Price Administration, and in the other nonmilitary government agencies. Yet in the few days I have spent in Washington recently I find that standardization and specifications are considered by the military departments as completely separate problems involving different techniques. My assumption--and I must say this is a bare assumption because I haven't had time to check--is that specifications are regarded as schedules set up for prompt procurement purposes, while standards establish patterns to be followed over a period of time.

There are today four major groups concerned with the development of standards--the Munitions Board, on behalf of the Department of Defense; the Federal Specifications Board, on behalf of the government agencies as a whole; the approximately 100 technical societies and trade associations, federated under the American Standards Association and using ASA procedures to develop American Standards; and the National Bureau of Standards, within the Department of Commerce.

In the writing of standards the Munitions Board's operations are by far the most rapid. This board has set up a Standards Agency, under the chairmanship of a graduate of the Industrial College, to schedule its specification and standardization programs, to select the department within which each project that shall be developed, to approve the membership of the project committee, and to give the board's O. K. to the work when it has been completed. As the Standards Agency's responsibility is strictly within the area of "the military aspects of industrial mobilization," it confines its operations to those items which are within the control of the Department of Defense and for which that department has sole responsibility. Hence, the Standards Agency can proceed expeditiously and effectively. The record of the first nine months of its operations is remarkable.

The Federal Specifications Board is an activity of the Bureau of Federal Supply. For many years this bureau was a division of the Treasury Department. But on 1 July 1949, under Public Law 152, it was transferred to a new agency known as the General Services Administration. Under its new aegis the Bureau of Supply, and, therefore, the Federal Specifications Board should assume greater stature. The Federal Specifications Board is made up of designated representatives of the major supply departments of the Government. The preparation of Federal Specifications is carried out by 77 technical committees chosen "by Federal agencies having specialized technical competence in the commodity fields covered." (I take that from an article by Mr. W. S. MacLeod in "Standardization," March 1950.) The procedures of the Federal Specifications Board are inevitably less rapid than those of the Standards Agency of the Munitions Board, but still are reasonably expeditious. The American Standards Association's procedures as well as those of the National Bureau of Standards require a longer time before completion.

The constitution of the American Standards Association requires that all groups having a major interest in a proposed standard should be given an opportunity to participate in its development and only when there is a substantial consensus of agreement shall the standard be qualified as an American Standard. This procedure inevitably takes time both because the project committees are made up of experts assigned to the project from the staffs of the member-bodies and the company members, who give their time to and absorb the expenses of their committee work, but also because the very nature of the procedures involve consideration of many aspects of each problem. At the same time, when an American standard has been established, the subject has had such complete consideration ("thorough scrubbing," as a former ASA president described it) that it has received almost universal acceptance.

A somewhat similar statement could be made of the commercial standards and the simplified practice agreements developed by the National Bureau of Standards. Both the standards developed by the Bureau and American Standards are voluntary schedules to which adherence is in no way mandatory.

I have brought these varied standardizing activities into my discussion, because all of them have important significance in our progress toward peacetime efficiency and all would be essential cogs in a wartime machine. The Federal Specifications Board, the American Standards Association and the National Bureau of Standards were all called upon for assistance in World War II, and each gave a good accounting of itself in meeting emergency requirements.

At this point I should call your attention to the great importance of properly processing standards. This processing should cover far more than the shuffling of papers and the wielding of a rubber stamp. It should be the result of thorough study and discussion by experts of all groups having a major interest. Standards should be periodically reviewed--the American Standards Association, for instance, does this every three years. Every one of its standards is reviewed every three years and is improved where possible by amendment or otherwise. Also it is both highly desirable and urgently important that so far as possible there should be unification between military and industrial standards. That is one thing I want to leave in your minds because I think that is of vital importance and not enough of it is being done as yet.

An important illustration of what I have in mind is found in ball and roller bearings.

Owing to the lack of standards and a standard numbering system, the Navy found itself overprocuring and overstocking bearings, even when they were in critical supply. At one time, 11 naval agencies and 3 army agencies were attempting to solve the problem by each developing its own system. In fact, the Navy found completely interchangeable bearings stocked in as many as 50 places. One Navy yard was found to have three separate stocks, unknown to the men in charge of each stock. In one instance, a combat ship went nearly 500 miles off her course to pick up a vital bearing, only to learn that the needed bearing was on board, but stocked under a different number.

The Navy submitted the problem, with a suggested possible solution, to the American Standards Association for coordination with industry. While controversies developed and the problem was a very difficult one, a standard method of testing bearings has been agreed upon and issued. Another standard on dimensions and tolerances is now in page proof, and work on a standard numbering system is approaching completion.

Another illustration of even greater significance is the following:

Many of you will recall that in the closing stages of the last war an urgent need arose for the unification of drawings and drafting practice, not only in industry, but between the various departments of the military services. By request of the United States Government, a special War Committee on the subject was organized under the procedure of the American Standards Association, and a staff engineer of the ASA served as its full-time secretary. In spite of this concentration of effort it was not possible for the War Committee to complete its job, the establishment of a Manual of Standard Drawing Practice, before the end of the war. However, this work is being continued under the

regular peacetime procedure of the ASA. About a year and a half ago the old ASA Committee on Drawings and Drafting Practice was reorganized and its work assigned to 17 subcommittees. Each of these is now at work on an exhaustive review of the existing American standard, taking into account the progress made as a result of the wartime project, a survey made by the ASA of practices developed by its members, and standards issued since the war by the military establishments. The work has been so arranged that sections dealing with specific subjects may be published, upon approval by the ASA, as they are completed by the various subcommittees.

About 30 national technical and trade associations are thus cooperating in efforts to establish a nationally uniform standard for drafting practice. Certainly complete agreement between all parties on what is often called the "language of the engineer" is a basic requirement for successful cooperation in any future war production effort, should the need arise.

One of the outstanding needs in our preparedness program, as I have already stated, is a complete coordination of standardizing activities of government agencies and free enterprise groups. I understand that the Industrial College, at the request of the National Security Resources Board, has undertaken a study of the present status of the conservation programs of departments of the Federal Government and their relation to mobilization. I want to say that is a big assignment. I trust this study is well advanced for I feel that such a survey is essential for planning a program of intelligent coordination and cooperation which is a major responsibility of the work I have undertaken for the NSRB.

Without intending criticism, I cannot escape the belief that the able men who drafted the documents setting forth the purposes and authorities of the NSRB and other similar agencies did not have a clear conception of the outstanding importance of conservation to the whole preparedness program or the wisdom of concentrating conservation planning at one central point. As a matter of fact, in my preliminary studies of these documents I can find only an occasional use of the word conservation, and then not in its broad meaning.

Turning back to the six categories I mentioned last year as the important ones into which conservation should be divided, I have already discussed at considerable length the one I place first, "standardization," with which I include specifications and simplification. Much can be accomplished by bringing up to date the specifications and simplification provisions of the War Production Board's Limitation Orders.

A recommended plan for coordinating and expediting standardization is of the utmost importance and such a plan should be forthcoming from the National Security Resources Board as soon as the survey to which I have referred is completed.

As to my second category, the "availability of critical materials," if my understanding is correct, the responsibility for preparing and keeping up to date this list has been given to the Munitions Board with the cooperation of the Materials Office of the National Security Resources Board. While I feel that logically this responsibility belongs to the National Security Resources Board, I can appreciate fully that the effective carrying out of an assignment does not depend so much on the position it occupies in an organization chart as it does upon the competence of the individuals who are responsible for it. In this instance, assuming close cooperation between the Munitions Board, representing military requirements, and the National Security Resources Board, representing essential civilian requirements, an excellent result may be expected.

"Substitution" remains my third most important category. Most of us civilians consider substitution a corollary of standardization. Whether or not it is so considered by government agencies is a minor matter. When the enormous demands of war for certain materials exceed the available supply, then substitution becomes a major issue deserving of the best brains and talents that can be applied to it. With an intelligent appraisal of military and essential civilian requirements, substitutes may be found by normal research and experiment that could not be developed under emergency pressure. In the preparedness program the search for substitutes can be delegated to industry through the medium of Industry Advisory Committees which are now being used by the Munitions Board and could properly serve also the needs of the National Security Resources Board.

As for the fourth category, "salvage and savings at the source," I have already indicated that salvage involves to a large extent an operating program. It, therefore, should be separated from planning for savings at the source and removed from the jurisdiction of the National Security Resources Board.

One of the great weaknesses in the late war was the absence of a "supply catalog" which I place fifth in my list of categories. Since the war's end there has been much discussion and considerable planning for a comprehensive supply catalog. It is my understanding that at long last such a project is on the way, under the supervision of the Munitions Board. If so, this is an important step of progress toward the goal of conservation.

Last year when I named "international cooperation" as my sixth and final category, the agreement on the unification of screw threads between the three English-speaking nations had shortly before been reached. This was an accomplishment of outstanding importance--one that before the war seemed impossible. Much remains to be done along similar lines. As a matter of fact, not only the English-speaking countries, but standardizing bodies of many nations are learning to cooperate over a broad area of products. The International Standardization Organization, established in 1946, now includes membership of 28 national standardizing bodies. During the short life of this federation, 72 technical projects have been set in motion and technicians from industries scattered over the world are learning to work together. In the unhappy eventuality of war, some of these national bodies would, of course, be in the camp of our enemies. But those who remained loyal to the cause of democracy would have learned so thoroughly the art of working together, their combined drive for efficiency would be greatly simplified and expedited.

In a nation of rugged individualists, even though they have learned the science of working cooperatively, what would seem the perfect plan to some might appear undesirable to others. My own ideal conservation program, as I attempted to explain it last year, is now not possible. The developments within the various government agencies have already established guideposts by which the program must be adjusted. Yet it is altogether probable that the final form which the conservation program takes may be better than my mental design of a year ago. So far as the success of the National Security Resources Board is concerned, what has been needed more than anything else has been the appointment of a man of outstanding ability and high reputation as its chairman. Given the confidence and full support of the President, such a chairman would assure the development of a preparedness program that would accomplish the high purpose for which the National Security Resources Board was created. W. Stuart Symington is well qualified for this important task and fulfills the required qualifications for the difficult task that I have suggested.

Thank you very much.

COLONEL SEAWARD: We will now entertain questions. I now invite participation by the guests if anyone has a question he wants to ask.

QUESTION: Sir, could you amplify a little on the size of your staff in the Conservation Division of the War Production Board and its mode of operation?

MR. COONLEY: We had altogether in the two activities--what I called the Salvage and Savings at the Source and the Technical Conservation--about 385 men. As I remember, they were pretty well divided half and half. I know that when the separation came between the Conservation

Division and the Salvage Division I had 192 men in the Conservation Division. Some of our responsibilities which I did not refer to this year but I did last year were very important, that is membership on a good many of the boards that made the decisions for the War Production Board.

We had a representative on the Appeals Board, the Program Adjustment Committee, the Clearance Committee, the Requirements Committee, the Combined Conservation Committee, and several others. We also had a representative of the Conservation Division in London who was working with the American Mission--what we called the Harriman Mission--but the several who went over in succession were specialists. They were chosen for their ability in specifications, simplification, and substitution. I came down to Washington originally to set up the simplification activities and I had nine people in that Simplification Branch at first. It was never larger, I believe, than 15, and I had a hard time getting my men paid decently because my staff was so small. I had a long argument with a youngster from the Bureau of the Budget who said I couldn't qualify a man in a certain category--I forget which category it was--but I couldn't qualify him because I had less than 25 in my branch. That I considered a poor conservation policy. An exception was finally agreed to.

QUESTION: I presume your department is the one that started the salvage campaign of tin cans, aluminum pans, and other things. What I would like to know is, did it serve any useful purpose, other than to make people war minded?

MR. COONLEY: You mean the aluminum pans or the general salvage program?

QUESTIONER: I mean the breaking up of tin cans, somebody collecting them; turning in an old sword because it was good for steel.

MR COONLEY: I think probably the least advantage came from the aluminum collection because we were increasing the production of aluminum very rapidly. But the tin cans were made great use of and helped tremendously. I think all the other things such as the salvage program on greases, paper, and so on, were of enormous importance. I remember we were trying at one time in our planning to bring back our destroyed planes to have more aluminum, and then aluminum began to be abundant as the new plants came into production.

QUESTION: Sir, did I understand you to say that there were some 28 member groups belonging to the standardization agreement and that in case of another war some of them might be on the side of our enemy?

MR. COONLEY: Right.

QUESTIONER: Would you mind elaborating on that, sir? I thought the agreement was limited to the United Kingdom, the United States, and Canada.

MR. COONLEY: Not in an organization of the type of ISO. Russia is one of our large members. The Russians have a larger standardization activity than any other nation. They have 700 men working in their standards agency. As I understand it, they are trying to turn out a standard a day. I don't think that reliable standards can be produced at that rate. We have Hungary, Poland, and Czechoslovakia. Those are the ones that I think of that might be in the enemy camp. Unless they could get out of the yoke, they probably would have to fight on the other side.

GENERAL HOLMAN: Mr. Coonley, in all your surveys in the field, have you developed anything that would approximate incentives to manufacturers for production and conservation in the production field as a result of the perfection of processes or the ability of a processing plant to accomplish its purpose with improvement in equipment and with fewer materials? And do you have something written in the contract which would be a reward and an incentive?

MR. COONLEY: So far as I know the answer is "No." It would be a most advantageous thing. Now some of the companies which were particularly cooperative in their conservation efforts gave incentives to their own employees. I think it would have been very helpful for WPB to have done the same thing, but nothing of that kind was done so far as I know.

I think there was an example of conservation within the Conservation Division that we might have done much earlier had we had our minds on conservation within the Conservation Division rather than conservation for every other division and activity. Most of the government agencies and, particularly, the military worked very closely and effectively with us. When it came to some of the government bureaus that reveled in printed matter, we didn't get to first base.

QUESTION: Sir, you placed extreme emphasis on conservation or on standardization as a conservation measure. I can see that. But our first job is not to conserve but to win a war, and if conservation helps, I think we should do that. In this standardization problem aren't we in danger of fighting the war at times with inferior weapons because of the many weapons or many types of items on which we have standards? If we have a smaller number of items without standardization, can't we, through technical improvement, get better weapons much easier?

MR. COONLEY: May I say very frankly, "No." I am glad you brought that question up because I think there is great misconception of what standardization does. Standardization is not a job of putting all products into a strait jacket. Standardization is for purposes of interchangeability; it is for purposes of increasing and not decreasing the quality. The American Standards Association does not develop standards. It does not initiate standards. It provides the machinery for doing that work on the part of the groups interested.

The war effort in standardization was largely devoted to the interchangeable aspect of components; also to simplification in order to conserve materials, manpower, and inventory. There were a few standards that we had to set up that we called emergency standards, the purpose of which was simply to cut down the requirements of material. We set up emergency standards on steel, on timber, and motors. In the case of motors the standard was developed by an emergency standard that actually down-rated motors for a 10-year life instead of a 25-year life. They were perfectly good for wartime requirements but they would last only 10 years on the job if they were used full time. Standardizing, in that case, lowered the level of quality, but this is the only instance of the kind that I know of. Proper standardization should increase the output and the quality, and expand the field of usefulness.

QUESTION: Mr. Coonley, may I comment on General Holman's question? It seems to me that the incentive that the General seeks in our free enterprise economy is nothing more than the dollar sign in which proper conservation gives increased profit and an increased volume of business. Would you comment, sir?

MR. COONLEY: Yes, I followed you. In a war emergency if you can get increased output and improved quality by paying a little more to the individual for the service performed, we will get the product quicker and cheaper. It is a question of the ultimate cost not the amount of the incentive. Our whole incentive system is proof that by giving men something that they want—which is money—give them an opportunity to earn a little more money, we will get a return that is far greater than the amount the individual earns.

QUESTION: Carrying that a little bit further, in war our profit control limits profits and takes away some of the profit motive. Now it seems that in a little different field of renegotiation of contracts—both in war and now in certain military contracts—efficient operation and economic operation were taken into account in determining what profit would be allowed to the contractor, and they would carry that profit principle forward into a time when profit is limited, not limited to a fixed amount but put on a sort of sliding scale. I believe that the military services do have that in mind and did have it in mind during the war.

MR. COONLEY: I think the moment you limit profit in percentage figures, you not only take away the incentive, but you deaden the activity because during war, and even in peacetime, nobody is going to get rich in this day and age. You just can't keep a human being in an attitude of mind of sweating blood for something that is written out on paper as a restricted job that he is doing. I just don't think it works.

QUESTION: It appears to me that a conservation program is more or less in opposition to the state of mind of the American people. We have been so used to abundancy in everything that we are naturally wasteful and in order to get a conservation program over and really sound, you would have to sell the American people, more or less start an educational program now. Would you comment on that, sir?

MR. COONLEY: That is very definitely true. I think that is something I should have brought into my discussion. But we did attempt a job of that kind during the recent war. The Advertising Council was tremendously helpful in advertising our salvage programs, and when we were so desperately short of paper, the Advertising Council developed a remarkable program of appeal, and out of that program and with other efforts, we got in eight million tons of waste paper in one year. It is an attitude of mind. Some of the savings that seemed at first so small ultimately bulked very large. I know in this perfectly abominable substitute penny that they are still circulating and which every time one of my friends gets one, he blames it on me, we saved 30,000 tons of copper by changing the content of that penny, and 30,000 tons of copper were diamonds and gold in those days. We had to go to such extremes to save copper that we used 19,000 tons of silver to replace the copper in bus bars. Those little savings when added to other little savings go a long way. It is true, conservation is a frame of mind. You can do a tremendous amount by developing that attitude of conservation. It is not a natural American habit.

QUESTION: Sir, I would like to offer the comment that during the war one of the greatest places where we wasted was right in the design engineer's mind. The American engineer never designs specifically for the job, but he overdesigns. In my mind I believe one of our greatest savings would occur if we could teach our design engineer, for example, that if a bored type metal will do the job not to specify in the drawings and in the design stainless steel. I really believe that is one of our greatest fields of waste.

MR. COONLEY: I think that is true. I know engineers and they have revolutionized our methods of life. They do love to do things individually. One of my greatest troubles during my years as president of a valve company was to keep my own engineers from designing new valves every month and to keep my customers' engineers from designing a new type of outlet so we would have to make their stuff special.

GENERAL HOLMAN: I would like to come back into the picture for just a minute on this incentive idea and this gives me an opportunity. Suppose you had a standard item which utilized a great many of our critical and strategic materials as a matter of basic design and you accepted that standard and that price. Along would come some other chap saying, "Now I can produce a satisfactory item if I am permitted to use substitute materials, but it is going to cost a little more; it may take a little more labor; it may take a little different kind of tooling; but it will certainly save strategic materials." I think that possibly a system could be worked out whereby you could introduce that latitude in the contract itself and come out with possibly a little higher price and more labor, but you would save the thing which is all-important and that is your extra copper, nickel, or manganese, or whatever it amounted to. That philosophy, that way of thinking, say, applied to the chemical industry or perhaps to paper products might go a long way in the industry. That was what I had in mind. The normal laws of supply and demand and the effort of the manufacturer to produce under the normal profit motive would be just a little out of the ordinary under such a procedure.

QUESTION: Sir, following on from the point of the American attitude toward conservation, to what extent were compulsory regulations applied or was the whole program based upon voluntary cooperation?

MR. COONLEY: To a very small extent were they compulsory. Of course where the creation of new standards and particularly war emergency standards was a necessity, those were made compulsory. Most of the standards that were developed during the war for war purposes were compulsory standards during the war. They became voluntary standards in most instances after the war. But aside from that, there was little compulsion in the general conservation program.

QUESTION: Sir, on this international standardization, can you cover that field without many difficulties from the two measuring systems that are present? You were talking about interchangeability. How do you get interchangeability between English or United States measures and metric measures?

MR. COONLEY: We have a standard translation table that takes care of most of that. We don't have much trouble between the metric system and our system because there is a standard for the translation of one table to the other.

QUESTIONER: How about production under the metric system--those companies that are producing and using machines that are set, for instance, rolling mills and things like that, to metric measurements?

MR. COONLEY: We built most of our shells on the metric system during the war. My company was making a lot of them. We didn't have any trouble with the system. We haven't had any trouble since. I think the logical change to make is for us to go to the metric system because that is right down our alley. Strangely enough, the British oppose it more than Americans do. The British don't like the metric system.

I want to give you another example. Some of this I may want to take off the record.

We Americans are individualists. In this international work the greatest handicap to a completely successful job of setting up international standards that would really be a unification of standards is the American manufacturer. We have done so much and gone so far that we become a law unto ourselves. Industries like the automobile industry and the airplane industry have done a perfectly marvelous job of setting up standards of their own and they just don't think it is any business of other nations what those standards are. They don't particularly want to sit in on international conferences.

We had one experience where one industry refused to participate in an international project. The American Standards is the representative of all American industries in international work. The ASA only takes a position on a committee when it is so requested by that industry. In this particular case the European nations were setting up a standardization project in an important field. One of the vice presidents of one of our great companies heard suddenly that the ISO Committee was preparing to set standards on an item that would rule out all American-made like items on the other side. So that company became immediately interested. One of the vice presidents called me up and said he wanted to be designated as the American member on that committee. I said, "You can't be designated. You turned the opportunity down. I have told them that the U.S.A. would not participate." After some further conversation I said, "What I can do is to give you a letter of introduction to the chairman of that committee. I think he will treat you kindly." So he went over there and the chairman welcomed him with open arms. He sat in and participated and really guided the development of that particular standard--actually to a better standard--which will not rule out our American-made item.

To my mind, international standardization is one of the great peace movements because in the long run the peace of the world is going to depend on the exchange of goods and services and you can't exchange goods and services effectively if you have to build them on one standard for this country and another for the rest of the world.

We are working further on the unification of screw threads and of cylindrical fits and Acme threads and buttress threads. When we have to do a thing, we find a way to do it; and when we have done it and discovered its advantages, we like to do some more.

Let me say this about the International Standardization Organization: One of my great regrets is the position that the United States industry takes. There are 72 projects now being undertaken in the international field. The French are represented in 68 of those project committees; Great Britain is represented in 42; the United States participates in 18. We ought to be participating in all 72, and some day we will.

COLONEL SEAWARD: Mr. Coonley, on behalf of the Commandant and the college, I thank you for your very fine presentation this morning.

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