INDUSTRIAL MOBILIZATION: ACHIEVEMENTS AND DEFICIENCIES

9 December 1946

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THE INDUSTRIAL COLLEGE OF THE ARMED FORCES

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PUBLICATION No. L47-50

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GENERAL McKINLEY:

Gentlemen, this morning we welcome an old friend of The Industrial College, Colonel Leo A. Codd, who is the Secretary of the Army Ordnance Association, and I think he has our welfare in his heart.

In 1918 Colonel Codd served as a junior chemist in the Procurement Division of the Ordnance Department. He was commissioned a captain in the Ordnance Reserve in 1925, promoted to major in 1930, lieutenant colonel in 1938. In 1937 he was invited to deliver the Cyrus Fogg Brackett lecture at Princeton University. Later that year he completed a study of industrial mobilization in England. He is the author of American Industry and the National Defense.

His subject this morning is "Industrial Mobilization: Achievements and Deficiencies."

I take extreme pleasure in introducing Colonel Codd.

COLONEL CODD:

General McKinley and Gentlemen: I came fortified with some books and pamphlets, thinking that I had better look professorial anyway! Frankly, I haven't had the opportunity to develop adequately the topic which has been assigned to me. It is one that is very close to my heart, and one to which I would like to do justice. This morning my remarks are entirely "off the cuff."

I would fear to undertake such an assignment in such a manner normally, but the subject is one with which I have had close contact over many years and in which I have taken such a deep interest for a long time. Realizing the broad policies of this great institution of learning which make allowance for the shortcomings and permits the contrary opinions of those who speak before it, I accepted the assignment with less hesitation than usual.

I have brought with me four documents. Before I develop the thoughts which I propose to present to you I would like to identify these documents, so that as we go along in the discussion, we won't have to take time out for a lengthy reference.

The first document I would like to present is one that has been prepared by the Army Ordnance Association within the past month and represents the hard work of one of our committees over the past six months. It is known as the "Bell Board Report" and gets its name from the Committee Chairman, Mr. Frank B. Bell, who was Chief of the Pittsburgh Ordnance District in peace and in war. He is one of the outstanding industrialists of the country. Under his direction a committee of some experienced civilians in the Army Ordnance Association prepared this report at the request of General Hughes, Chief of Ordnance, on the Scope and Organization of the Ordnance District System in time of peace and also in time of war. It was fortunate that the ability of those men was available to make such a study at this time. They have analyzed the Ordnance District System which has been in existence for some twenty-seven years; they have appraised it objectively in the light of its performance both in peace and war, and have come to a series of conclusions with recommendations as to what should be done about the Ordnance District System. Mr. Bell, as I have said was Chairman of the Committee. The other members of the Committee were: John Slezak, who was Chief of the Chicago Ordnance District during the recent war; Dean Winter, who is one of the leading bankers of San Francisco, and who was Deputy Chief of the San Francisco Ordnance District during the war; Jared Ingersoll, who stands very high in the transportation councils of the country and who was Chief of the Philadelphia Ordnance District in World War II; Russell Gardner, who was an industrialist in St. Louis and Deputy Chief of that District during the war; Lynn Peterson of Detroit, one of the leading manufacturers there, who was Chief of the Cleveland Ordnance District; and Whitney Stone of the firm of Stone & Webster, who was Deputy Chief of the New York District and later Chief of the Boston District in World War II. These very capable men have put their combined brain power into this report. It is a rather historic starting off point for what we of the Army Ordnance Association hope will be a system of decentralized operation of Ordnance procurement planning in the days of peace that lie ahead. The Bell Board Report on Ordnance Districts is my Exhibit No. 1.

Exhibit No. 2 is Lieutenant General Levin H. Campbell's book, The Industry-Ordnance Team. All of you here are familiar with it, I am sure. It contains a great deal of evidence on the design, production and supply of ordnance in World War II. It sets forth a great many of the experiences gained in those vast and costly operations. I am confident that you have this source material available here in the College for your detailed study.

Exhibit No. 3 is one that you have in your library, also. In the years to come, in my humble opinion, this study is going to loom larger with the passage of time. It is what we in the Ordnance fraternity call the "Engel Report." It was published by the Army Ordnance Association in August, 1944. It is an appraisal of the operations of the government-owned, contractor-operated powder, loading and explosives plants under the jurisdiction of the Ordnance Department of the Army. It presents an analysis of efficiency and also of costs. If we are again to experience the ordeal of Congressional investigation twelve or fifteen years after World War II as we did fifteen years after World War I, then the evidence in this document will be priceless because it presents those figures and the facts. Do not misunderstand me. We are not particularly concerned whether the next few years produce any of the witch hunt investigations or not. If such investigations are not intellectually dishonest they can serve a good purpose. That is not why this report was prepared and certainly not why it was published; but from the standpoint of the student of industrial mobilization and as an aid to the planning today for future war, the evidence adduced by Mr. Engel certainly is of prime importance and has many, many object lessons that we can take all to heart now.

The fourth and final Exhibit is a pamphlet which came over my editorial desk about two weeks ago. It is called: The Evolution of Military Policy in the United States. It is a series of lectures delivered before the Army Information School by Brigadier General Williston B. Palmer, the Commandant of that school. It is a very enlightening document. It is Exhibit No. 4 in my display this morning and completes my presentation of exhibits.

Exhibits Nos. 1, 2, and 3 are related to achievements of Industrial Mobilization in World War II; Exhibit No. 4 is related to deficiencies. I will be able to make that clearer as I go along.

In respect of the "Achievements of Industrial Mobilization", the first principle that I would like to restate is this: The method of supervision, which was not a method of operation, was largely responsible for the great Ordnance production achievement in World War II. I would like to explain that.

The ordnance job, as you all know, is unique; it requires industrial preparedness planning more than any other class of products. This is so because, practically speaking, in the major portion of ordnance design and production there is no civilian peacetime counterpart. An ordnance production problem is not like an aircraft problem; the former has no peacetime industry, the latter has. Ordnance production is not comparable to a ship or naval problem because there is a shipbuilding industry in private operation from day to day. In most of the categories of ordnance you have a brand new problem which requires all the techniques of industry buy yet which doesn't have industry's active participation in production from day to day in time of peace. This being so, it would have been a

calamity of the first order for any group, civilian or military, in controlling a tremendous ordnance production program in time of war to have undertaken that problem with any other point of view than that of "Let industry do the job its way." If you tell industry what is needed, keep in close contact with that industry in time of peace before operation is undertaken on a large scale in time of war, and use from day to day in time of peace the contacts, techniques, and personalities that go to make up our huge industrial machine, then when war comes you can with full confidence give the job to industry to do. I venture to say that when all the records are filed you will find that there was less of the operational control in the way the Industry-Ordnance team did the job than in many other fields that involved equally great civilian production effort. It was no place for bureaucrats!

Now the successful outcome wasn't by chance. That came about through the Ordnance District System, which is so faithfully described in the Bell Board Report. It is prudently and objectively analyzed, and being one of the methods by which this war was fought on the industrial front, it is the feeling of the Board and of our Association that the good things in the Ordnance District System should be preserved. Certain revisions, of course, should be made, but there are definite attitudes which must be preserved: Mass production of weapons in time of war is a job which American industry knows much more about than any military group or any arsenal, with the one proviso only that industry produce the kind of weapon which the military services have prescribed. Therefore I can't stress too greatly the importance of decentralized operation under centralized supervision. The Ordnance System in this war operated differently from other kinds of military operation. First the job was broken down. It was decentralized to 13 Ordnance Districts which throughout the years under the guidance of outstanding civilians had day-to-day contact with the industrial people who were going to have the wartime responsibility. It was predominantly the civilian industrial point of view--it was that close cooperation which existed between the military and industry which in large measure was responsible for the phenomenal results obtained, and with those results you are even more familiar than I. Therefore, my first point among the achievements of industrial mobilization in World War II is: The value and the correctness of bringing the armament production problem down to the grass roots and not approaching it from the distant bureaucratic point of view. What must govern is the point of view which prevails in the shop: Things are made in the shop and not at the desks in Washington! So we should begin now to cultivate that same kind of approach and contact. It resulted in one of the great achievements of World War II and proved itself certainly in the field of ordnance in a very heartening and thrilling way.

My second principle is somewhat akin to the first. It was the simplicity of the method of coordination which was applied throughout the Industry-Ordnance program. Industry was taken as it was found and as it

was located, and very much on its own fair economic terms. If you examine General Campbell's book you will see that the whole thesis of it is the one principle: That it was purely a coordinating job that he had as Chief of Ordnance, and in practically no case was it the kind of job that called for the institution of any new controls, any new directives or any new rules other than the very rules and directives by which industry itself operates. I don't know how familiar you men are with this record; I presume that at some place in your course it will come in for a critical analysis. There are two chapters in the book that I know something about and would like to call to your particular attention when you come to the study of this phase of your problems here at the college.

In the chapter on Industry Integration Committees is described a very ingenious scheme. It was peculiar to the Industry-Ordnance team. It was one of the really unique operations of this war. It was so unique that it took a special action of the Department of Justice to clarify in advance that there were no violations of the Anti-Trust Laws involved! Through these Industry Integrating Committees the Ordnance Department job was tremendously accelerated and brought up to somewhere near its proper goals by putting together on particular committees representatives of all of the prime producers and some of the principal sub-producers under the counsel of a representative of the Chief of Ordnance so that there was a complete interchange of information--and even of material where shortages were involved--among a number of producers who were manufacturing that particular item.

Let me give you an objective case. In the production of one of the difficult types of artillery fuses it was perfectly obvious that the facilities then engaged in the program were not nearly enough to meet the demand so that other industries had to be brought in to help out. There was at least one case where the newcomer's production line was literally moved into the plant of an older producer, employees were interchanged between one production line and the other, until finally when the new production line was up to the proper efficiency they were moved out and put over into the plant of the new producer, and both were operating under their respective rules without interruption. As to the sharing of technique and the integration of facilities, when one producer was in long supply on a certain component and another was in short supply the items were interchanged between the factories as though there were no distinction in contractual relationship and no distinction as to operating organizations. They might just as well have been one operating organization.

I am confident that, as you study these Ordnance Industry Integration Committees, you are going to find that in the days to come they can play a large part in the planning and in the studies looking to plans for industrial mobilization. They were a unique development of World War II, and having proved themselves, they should be preserved and made use of in future wartime operations.

There was a similar type of operation which I think was peculiar to ordnance and it is referred to in General Campbell's book as Machine Tool Panels. They likewise were groups of men who knew machine tools and who knew the machine tool industry. A great many of them were not manufacturers of machine tools at all but distributors. In each of the Ordnance Districts there was established a Machine Tool Panel. The panel had this very simple but very important job to do: Because the members of the panel have supplied the machines to private industry in time of peace in that area they knew where machines of various types were in private industry. When the machine tool industry was so heavily loaded with tremendous requirements in war rather than wait for new equipment to come off the lines the members of the Machine Tool Panels ferreted out in literally thousands of cases machinery that was in existence and made arrangements for the machinery to be loaned or to be bought, but in any event to be utilized in the production of Ordnance. It was a very informal, a most unorthodox type of operation, but it worked. It emphasized the fact that in operating a job of such magnitude all the steps in the operation depend on what you are able to do in the factory, and not what you are able to do at some remote control station far, far away.

All this emphasizes the principle which I cite as second on the list of achievements in industrial mobilization, namely there was a method of Industry Ordnance coordination; industry was as you found it and putting it to use. It was not always thus! Sometimes a point of view imposed on industry a set of rules wherein the red tape seemed to be the objective. Confusion and complaint--and certainly not efficient production--were the end products. Ours was the assumption that people are honest, that they are patriotic and are out to do a job, that they know how to do a job efficiently and well. Under such a philosophy it is not necessary to construct buildings by the acre and fill them with employees by the hundreds of thousands to check and police! Industry is doing a job somewhat analogous, and knows how to match a balance sheet. If you will take industry on those terms it will be able to do the job in far better fashion, in far quicker fashion, and far more economically than if you put on too many elaborate controls.

The third and final point I would like to suggest among the achievements of industrial mobilization is the success with which efficiency was increased by the Industry Ordnance Team. I suppose that in former wars a person who made a claim that efficiency was increased while war was being won would be howled down. In the public mind efficiency and winning a war didn't go together. The predominant thought all too frequently seems to be that we must spend billions and billions and billions, that waste is a synonym for war, and that anybody who tries to do such a thing as control costs or increase efficiency in time of war is talking through his hat.

Well, take a look at the Engel Report! It proves my point. In the greatest war the world has ever known there was such a thing as a constantly increasing efficiency and a constantly decreasing cost in a vast ammunition production program. The objective and the facts of the Engel Report are going to be matters of study for many a day. Mr. Engel, Congressman from Michigan, you may remember, was one of the leading critics of our World War II production program. He took time out to visit many of the producing plants, particularly the explosives and loading plants, to examine them carefully, to study their records and to draw his own conclusions, free and unfettered from all other influences. I shall not attempt to summarize it for you. I would like you to note, however, that he brings out such things as this: The total operating costs and the fixed fees under which these plants were operated from their beginning up until March 31, 1944, when this report was compiled. Startling figures, these! He shows, for instance, that the total operating cost of all types of artillery ammunition facilities, shell loading, smokeless powder, TNT, RDX, ammonia, up to the time of compilation was $1,477,000,130. The total fixed fees on the same operations were $65,002,278, or a ratio of earned fee to cost of 4.4 percent. He reports that during the year 1941 we produced 375 million pounds of powder and explosives; in 1942 we produced nearly 2 billion pounds; and in 1943 we produced over 3 billion pounds. During the first four months of 1944 we produced more than twice as much powder and explosives as we produced during the entire year of 1941. Nearly 6 billion pounds of powder and explosives were produced during the years 1941, 1942, 1943, and the first four months of 1944—6 billion pounds of smokeless powder, TNT, pentolite, RDX, rocket powder, and other explosives. 6 billion pounds! Enough to make the heart of every Jap and German who saw the record quake with fear. We produced TNT so fast by a new method that we had to close down the plants! In 1941 we had practically no Ordnance-Industry chemical production. In 1942 GOCO Ordnance plants produced 583,510,000 pounds and 67,805,000 gallons of chemicals required to make powder and explosives. In 1943, mind you, these same plants produced 1,018,403,000 pounds and 137 million gallons of the required chemicals, while during the initial four months of 1944 the War Department plants produced 386,006,713 pounds and 39,390,000 gallons of chemicals that were required in the making of powder and explosives. Then he has a very interesting analysis of costs. Here is one paragraph:

> "It cost $27.28 and took 9.88 man-hours to load a 1,000-pound bomb in January, 1943. The same bomb was loaded in February 1944 at a cost of $16.48 against $27.28, with 4.31 man-hours against 9.88 man-hours. It cost $19.36 and took 7.25 man-hours to load a 500-ton bomb in January 1943. The same bomb was loaded in February 1944 at a cost of $9.28 and with 3.15 man-hours."

Mr. Engel goes on through any number of the categories of artillery ammunition. Here, for example, he gives a tabulation on ammonium nitrate.

A ton in 1942 cost $39.60; in 1944 $28.80. A gallon of toluene in 1942 cost .3040; in 1944 .1906. And so you can go through pages of a critical analysis of production where the efficiency was increased and the production cost was lowered. To my way of thinking this is proof positive --that the Industry-Ordnance production system was good, and it did produce results which the average citizen seldom, if ever, connects with war operations. In time of war there was saving; there was increased volume; there was increased efficiency.

That brings me to the fourth and concluding point. Despite the rosy achievements there were certainly very disheartening deficiencies. With a perspective now of nearly two years what would you put down as the main glaring deficiency? If that job were given to me I would frankly say the greatest of all was the error in the method of computing military requirements. It seems to me that the problem of requirements--costing billions of dollars--was approached entirely from the point of view that the sky was the limit; that it was an all-out war; that there had to be complete production throughout the entire civilian economy of the weapons of warfare, and that cost was no consideration whatever. After all, the objective in this war--as in all wars--was to defeat the enemy. Nonetheless there was an unwarranted abandon in the computation of requirements in this war. And it is going to affect the work that all of us are trying to do in time of peace in this College, the Army Ordnance Association, and thousands of patriotic fair-minded people. We must admit that the profligate way in which material was produced and not used doesn't speak well for the way military requirements in this war were computed. We are left not only with countless graves throughout the world of our young manhood but we are left with a national debt which will plague our economy throughout the lives of generations of those who are to come after us. It seems to me that we have got to develop in some way in the minds of our strategists an appreciation of the fact that they must pay some attention to the economy of the country for you are trying to preserve the country and its way of life. Once the military tacticians have decided upon a type of equipment, for God's sake, don't let them scrap it after you have put billions of dollars into it simply because fanciful development has come along that has a little lighter construction or a little longer range. If we are going to be equal to the demands of another modern war and have fair assurance of winning it we can't be as profligate as we were in this war in permitting military requirements to be produced in fabulous quantities without some serious concern for the cost to the people and the country we were trying to defend.

The next deficiency the record shows is the errors in handling human relations--primarily an error of psychological attitudes toward personnel. I think this is most essential if we are going to keep the sustained interest of that great group of people that came into the service during this war, and those who worked in it before this war, if we are to get anywhere with our industrial mobilization planning in the post World War II period.

I will say no more on this score if you suspect that anything I say may have a personal bias to it. I am a Reserve Officer and have been for many years. I was exceedingly fortunate in this war in the assignment that I drew and in the people with whom I worked and in the matter of promotion, and even in the matter of an ill-deserved decoration, so there can be no possibility on my part of the slightest personal discontent. But there were thousands--tens of thousands--of highly qualified men who were anxious to give their very best but who were prevented from doing so by reason of an ill-chosen assignment and by working under people who had no understanding whatever of the human equation, in whom there was an utter lack at times of the human approach and who insisted instead on a hard and fast military approach in purely technical and industrial matters. If there had been less command and more human relations in the industrial prosecution of the war, the scars and wounds that are in the hearts of thousands of men throughout this country today would not be nearly so deep or so lasting.

I believe that the human equation in military as well as in civilian affairs is of the very essence of success, and if you are going to have an industrial job done you need all the know-how you can get to do it and you need all the practices that prevail in industrial affairs to do it well. You certainly can't afford to have too many misassigned technical people in fields where they can't produce to their maximum efficiency. Unless you bend the rigid military attitude a bit to fit scientific and industrial conditions, I fear that you are not going to have the same numbers and the same enthusiasm upon which to depend among your officer personnel--and even among your industrial personnel who never wore a uniform--the next time we have to fight.

Finally, in the first of a series of lectures presented by General Palmer whose brochure I have already mentioned, there is what I consider to be a very unfair analysis of the relationship throughout the years between the Technical Services of the Army and the General Staff. It seems to me that it is part and parcel of the success of your operations in industrial mobilization to have a clear understanding, and certainly to have no warped ideas about the job that has been done and must be done by the Technical Services of the Army. They are the people who with American industry design, procure, produce, supply and maintain the equipment with which our Army fights. It is a great pity that the mental attitude has grown in many quarters which is expressed in the shop-worn phrase, "Well, we won the war didn't we?" That same mentality found expression during the war when some very inefficient and usually lazy individual came at you with "Don't you know there is a war on?"

One of the deficiencies in connection with industrial mobilization which was most obvious in this war and which bids fair to continue is the proper relationship between the Technical Services of the Army and American industry. Many students of the subject feel that that problem was best answered by the National Defense Act of 1920, which was the charter of industrial mobilization in the United States. The essence of

that Act, as you all know, is that there must be direct counsel between the chiefs of the industrial services and the one man who under the National Defense Act is made responsible for industrial preparedness within the War Department, and that is, under the Act, the Assistant Secretary of War, and under present regulations the Under Secretary of War. It is fatal, it seems to me, when the CHC is interposed between those two levels--as the 1946 organization of the War Department provides. One of the great deficiencies in World War II was the fact that the command point of view--the Army Services Forces--was interposed between the civilian heads of the War Department and these civilian operating production people lower down the line. That deficiency was due to the fact that two different points of view--the "command" and the "industrial"--were trying to be brought together in the same people. That was a pretty costly mistake. One of the convictions we of the Army Ordnance Association hold--and you can count on it we intend to hold against all odds in the years to come--is the rightness of the National Defense Act of 1920 when it put industrial mobilization planning directly upon the civilian Assistant Secretary of War. He was to be an industrialist who knew industrial principles, who knew manufacturing techniques. The scrapping of that provision of the Act took away from those industrial Technical Services of the Army that direct leadership and contact which are essential. One of the great deficiencies of this war which resulted in much confusion and delay and unnecessary cost was that lack of direct contact between the head of industrial mobilization planning--the Assistant Secretary--within the War Department and the Chiefs of Technical Services. These latter are the men who work directly with industry; they give to the industrial set-up its smooth operation without the interposition of military points of view which have no experience or background in that field.

It is that type of organization that we must return to if we are going to be successful in industrial mobilization again as we were so eminently successful in the years preceding 1942.

If there are any questions I will be delighted to try to answer them.

GENERAL McKINLEY:

There are going to be questions because I am going to ask you the first one. I have reference to your Integrating Committees. You said that you had cleared with the Department of Justice, the Attorney General's Office, before they went into operation. Was that clearance purely a war measure, or would such a committee be permitted to plan and operate in your procurement planning in time of peace?

COLONEL CODD:

No, that was a war measure.

GENERAL McKINLEY:

That is all of the question part. Of course you know we have Industry Advisory Committees down here, and the Army and Navy Munitions Board is setting up Industry Advisory Committees. They are having their own troubles now with the Attorney General's Office on the subject. We got a clearance because we are an educational institution and have nothing to buy.

COLONEL CODD:

General Campbell considers that on page 126 where he gives the details.

A STUDENT OFFICER:

In talking about these War Department ammunition plants you mentioned that we have no civilian counterpart in peacetime as ammunition sources. It would seem to me that we would be in a pretty bad spot with regard to the ammunition industry. In other words, as you know, we have taken 21 of those 63 War Department plants and placed them in reserve. Those plants were used by contractors during the war. There is no doubt that those contractors will retain the know-how, but the point I want to make is are we going to approach the production effort again right away or go through the same thing again. It would look as though history were repeating itself from an economic standpoint. I don't see how the arsenals with their limited production and their very limited funds, considering you have no private capital, are going to accomplish the effort again. I would like your views on that.

COLONEL CODD:

There is a difference of viewpoint as to what is the most efficient way in which to meet that problem. There seemed to be a general consensus that by all means you should hold the plants if you thought you were going to have a need for them within a reasonable time.

As to continuing the know-how, certain leaders on the industrial side feel that if they could come once a year to an arsenal and see what techniques were being employed that would help keep his know-how up. If the contact became too remote, then educational orders again will be the best question.

A STUDENT OFFICER:

With reference to your personnel, what is your opinion as to Selective Service exemptions for those people before they come in there on assignments?

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COLONEL CODD:

That is where you have technical skills involved both for industrial plants and for government plants. If you want a violent expression of opinion on that score talk to some of the chemical fraternity in this country who, as you know, have just literally blown the lid off about what happened to some of the outstanding people in the chemical field. It is very important that you get a tool made by the fellow who knows how to make it. As it was we lost months and months in trying to train somebody else to make the tool because the tool maker was drafted for a military police job to require visitors to park in Line No. 8 at the Pentagon rather than Line No. 6!

GENERAL McKINLEY:

In my work with these Industry Advisory Committees I have noticed that the members of each industry think that they should be favored because they are technical people and that they shouldn't have to furnish their people but that military personnel required should come from somewhere else. They think that everyone should be assigned in the Army to do what he did in peacetime in order to use his skill to the best advantage. I always go back at them and say, "We will have to get our infantrymen from the gangsters because they are the only ones who are shooting in time of peace." They must come from somewhere.

COLONEL CODD:

You have to have both tool makers and infantrymen, of course.

GENERAL McKINLEY:

Each one takes the attitude that his industry is absolutely unique and should be left alone, which is not the case altogether; but it is a problem that has to be considered and solved, especially with regard to instruments and things of that kind.

COLONEL CODD:

That is true.

A STUDENT OFFICER:

I would like to have your comment on what you said about the Technical Services and the Assistant Secretary of War and not industry working together without any authority between the Secretary of War and the Technical Services. I can visualize that some rivalry might develop between the Chiefs of the Technical Services when attempting to get certain experts in industry working on their side, and that would be extended to the Navy also, and you might have ten or twelve agencies of the Government working on a particular group of industrialists, which might cause some problem in the case of another emergency.

COLONEL CODD:

The old coordinating group was the Planning Branch in the Office of the Assistant Secretary of War. It was distinctly a coordinating and not an operating agency. It was always expected that in time of emergency the Planning Branch would evolve into the Army and Navy Munitions Board, and that ultimately it would evolve into a super-agency of greater power, a War Resources Administration or a War Production Board. The point I would like to make is, of course, that there must be coordination. That is best accomplished by a group like the Army and Navy Munitions Board, rather than some other group in the military organization.

GENERAL McKINLEY:

Even now the Under Secretary of War is channeling his material to the Technical Services through what was G-4 and is now S.S. and P. He is using that as his agent now.

COLONEL CODD:

Yes.

GENERAL McKINLEY:

If those people are trained in the same fashion that his own Planning Branch would be trained and he uses that as his Planning Branch, it seems to me that would solve it best if you can't get it out of the way.

COLONEL CODD:

You don't approach a big industrial problem with the same frame of mind that you approach a big military problem. It is an entirely different thing from saying "We are going to move the Division down the Potomac on such and such a date on the right side of the river." That is purely a military operation. It is entirely a different type of thing from saying "We are going to get that plant up in production from a million shells a week to a million and a half." You don't follow the same techniques, and least of all can you follow the command technique. That is where the difficulty is.

GENERAL McKINLEY:

I agree with you thoroughly. The Navy apparently recognizes that very strongly, and the Army also, as is evident in the kind of people they are sending here. Thirty-one out of the seventy Army officers that are in the class this year are from the line, and over 50 percent of the class from the Navy are from the line.

COLONEL CODD:

Grand! More indoctrination!

GENERAL McKINLEY:

What I am trying to get at is the military viewpoint that you are talking about. It seems to me that we are going to avoid a big headache in the Army and Navy by creating an appreciation of the industrialist's viewpoint in the higher military echelons. That is what we are trying to accomplish in our program.

COLONEL CODD:

Fine.

A STUDENT OFFICER:

I would be interested to know what training the young people in industry are getting so that they will be capable of studying industry from a national viewpoint.

COLONEL CODD:

I think the competitive life they lead under normal conditions will give them some of the national viewpoint. I think one of the grandest things that could happen to this College would be for you to start to bring industrialists in here. I don't mean for them to talk to you. I mean for you to talk to them. Industry has much to learn from the Services --but the Services have much more to learn from industry.

A STUDENT OFFICER:

What is your theory about correcting the first deficiency you spoke of, the computation of requirements?

COLONEL CODD:

I really think it is a matter of teaching and indoctrination just as these other points we are speaking of are. If we can get along with ten thousand tanks it is criminal to order a hundred thousand. Our statesmen and our military commanders must be impressed with the seriousness of costs. We now have a national debt of nearly 300 billion dollars. For my part I would hesitate to say what might have been saved if the attitude had been to use what we have got instead of piling more and more and more on top of it. I think it is purely a matter of indoctrination. One thing is sure--we have fought our last 300 billion dollar war!

A STUDENT OFFICER:

Do you believe indoctrination would take the place of a structure of fiscal controls?

COLONEL CODD:

Well fiscal controls would be part of it too. But the fiscal control man wasn't given much consideration. The one question was: How much can we produce by putting everybody to work? I will give you a case in point where the fiscal man didn't have a thing to do with it. A great production plant was ready to turn out tanks, subcontracts had been placed in nearly all the 48 States of the Union, production of components was in high gear. If I remember correctly the total amount of money involved was something like 226 million dollars. That production was cancelled overnight in the midst of war because the Ground Forces didn't want that one any more and said, "You stop that and go into production on some other model." The fiscal man didn't have a thing to do with it. It was because the military mind didn't want that tank any more regardless of money and time already spent on it. Yet that weapon had met all the O.K.s. But when it was ready to come off the line in quantity it was cancelled. The GHQ mind must learn that you can't be that profligate with the substance, the wealth and the economy of the American people. You can't forever scrap the substance of the American people. It wasn't a defective thing that was abandoned, but it wasn't quite as good as one that had since been evolved. It is morally wrong to waste 225 million dollars of the American people's wealth.

A STUDENT OFFICER:

I would like to have your comment as to whether procurement should be divorced from the military and given to the Ministry of Supply as we do in Britain. The Ministry of Supply is a separate organization.

COLONEL CODD:

I made a study of that subject in England in 1937. At that time they referred not to a Ministry of Defense and that was a ministry for the coordination of defense. I do not know much about the present system but if we are going to have a vast supply organization in the Army, a vast supply organization in the Navy, and a vast supply organization in the Air Forces, maybe the most efficient thing that could happen in this country would be to have one organization that does all of the industrial planning and production for the three Services. From my point of view I certainly wouldn't rule out a separate Department of Supply under civilian leadership. We must have efficiency and economy if we are going to sell national defense to the American people in time of peace.

A STUDENT OFFICER:

In your remarks about the economy of war I wonder if you thought of that from the point of view that they just chose to use a 75 mm. gun instead of building armor just to burrow in the ground rather than expand.

In your remarks about the M-7 tank it would seem to me that that particular example is chosen rather unfortunately because that tank in the Armed Forces prior to the war was in a very much undeveloped state, and the M-7 was very much inferior to the M-4 which it replaced in the production line. It was only due to the fact that Congress and the people of the United States wouldn't give the Army money to develop the armor equipment that we were forced to bear that burden of the 250 million dollars cancellation. At that particular time it was no further advanced than the M-7 and the M-7 was a new production, but subsequent developments in North Africa showed that that particular type of tank was not desirable, and when the Germans came out again with a better contribution it was too late.

COLONEL CODD:

My only point is that a quarter of a billion dollars is a terrific tax burden--in war as well as in peace. And we must not waste the national wealth in that way.

GENERAL McKINLEY:

Colonel Codd, I certainly want to thank you for coming here and giving us so generously of your time. Your talk has been most stimulating and enlightening. Thank you very much.

COLONEL CODD:

Thank you.