AMERICAN EXPERIENCE IN ECONOMIC MOBILIZATION TO THE END OF WORLD WAR I.

2 September 1948

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DR. REICHLEY: Gentlemen, this morning we begin a series of two lectures on the historical background of economic mobilization. Dr. Hunter will bring us up to the year 1919, to include World War I experience. He will be followed tomorrow by Colonel Neis, who will cover the period from World War I to the present time. Dr. Hunter.

DR. HUNTER: Two days ago I discussed here the nature and problems of economic mobilization in our times. This morning I am going to try to show how we got to this point, up to 1919, to the end of the First World War, by reviewing some of our history.

History does not repeat itself, of course. Often we find some common elements in different historical experiences, but we have to be careful not to be misled by the common elements. It is useful, however, to trace the development of conditions down to the present time, because it gives some better understanding of just how we got to this place. The roots of all our present institutions, of course, go back deeply into the past; and if we trace those roots down to the present, we have a better understanding of the present even though we cannot expect to find the answer to present-day problems in any important degree in past experience.

A review of our experience in the field of economic mobilization demonstrates one thing very clearly; that is, that the kind of war you can fight depends on the kind of economic system that you have, and upon the way in which that economic system is organized and the way in which it operates. It depends upon the amount and the kind of goods that your economy can produce and the speed with which those goods can be produced. Economic mobilization in a certain sense is a very new thing; but war in any age, in any period of history, of course, has its economic base, and its conduct has to be confined within the limits of that base. The broader that base becomes and the greater the efficiency of its organization and operation, the larger is the scale and the greater the intensity of military operations that can be supported.

Let us start with certain fundamental facts. The purpose of any economic system is to supply its people with the necessities of living: food, clothing, shelter, and all the rest. Standards of living vary with the economic system. They vary with the age. But whatever the system and whatever the age, there is a certain bare minimum of goods essential to keep the civilian population going.

Some economic systems are so inefficient that a great proportion of the population lives close to the poverty line nearly at all times. Any natural catastrophe, such as a serious crop failure can drive many of them below that poverty line into starvation. This was true of the primitive economies of the Middle Ages in Europe. It is also true of the present-day peasant economies in many parts of the world, especially in the Far East. Such economies cannot produce much of a surplus beyond the immediate bedrock necessities of the population.

Now, the conduct of warfare, on however primitive or however advanced a basis, depends on the supply of military goods. Warfare requires, first of all, manpower--manpower to fight and manpower to serve those who fight. These men must be equipped. They must be supplied with many items--clothing, weapons, food, shelter, medical attention, and transportation. They have to be paid, in plunder if not in cash. There must be some provision for their families, even if it is only the provision that comes from charity or the help of their neighbors and relatives. All these economic goods for civilians and for the military must come from your system of production. They are the product of your economy.

It follows, therefore, that the ability of any people, of any nation, to wage war depends on the ability of its economy to produce a surplus, that is, a surplus beyond the bedrock requirements of its civilian population. Of course, to some extent you can cut into these bedrock requirements of the civilians through expropriation or heavy taxation of property. You can drive people below the subsistence level. You can drive them into a condition of malnutrition or starvation by the methods, for instance, used in the Chinese Civil War. But to the extent that you drive your civilian population below the bedrock requirements level, to that extent you are lowering your economic capacity and thereby weakening your military potential. You are reducing the capacity of your whole population for either military or productive purposes.

In general, the scale and the intensity of any military program are limited by the size of the surplus which the economy is capable of producing. Notice that I say "limited by the size of the surplus." The mere fact that you have a surplus does not necessarily mean that you will be able to appropriate it and apply it to military purposes. You must have, generally speaking, two things in addition to this surplus. You must have the governmental authority plus the administrative machinery to appropriate and collect that surplus. Then you must have the transportation facilities to gather the surplus and make it available where it is needed.

Now, there is a technical term for this surplus of economic goods. You might as well get acquainted with it, because you will hear much about it later on. It is "economic war potential" or, as it is sometimes phrased, "economic potential for war." The total productive capacity of a nation, the total, mind you, is its economic potential. The greater part of this total productive capacity ordinarily has to be devoted to supplying the civilian needs, because, as I suggested earlier, if you don't keep your civilian population and economy in a state of efficiency, the productive output of your economy will decline. So you subtract from the Nation's economic potential--that is, its total productive capacity--what is essential to maintain the civilian economy, and what you have left is what you can fight a war with--that is, your economic war potential.

One more preliminary point. This is a warning not to exaggerate the importance of economic factors in warfare. Of course they are of the greatest importance; but they are not everything. They are the most important single set of factors affecting the conduct and outcome of modern war. But there are, of course, many other factors. Such, for example, is the factor of skill in the science and art of war, a factor which you will not be inclined to minimize. If we have placed too much emphasis on this in military history, there is no reason for swinging to the other extreme at the present time. There is also the question of morale--civilian and military. Morale depends upon a variety of conditions and circumstances--political, economics, and so on. There are many other factors which influence the outcome of wars, apart from the economic ones. Let's not forget this.

With this general analysis of the problem, I want to review briefly our own national experience with war, touching briefly on three major wars--the Revolutionary War, the Civil War, and the First World War.

The significant features of the Revolutionary War were, in the first place, the small scale on which it was fought, the prolonged duration of the war, and the low level of intensity of military operations. The numbers engaged were small; the campaigns were relatively short; the actions were never long sustained. The Colonies, with a population of only two and a half million in 1775, found it very difficult to keep armies in the field of an aggregate strength that did not often or for long exceed 20,000 men. At this same ratio the 140 million people in this country during the recent war could have supported armed forces of only 125 million persons, instead of something over 10 times this number.

The reasons for the limited scale of the Revolutionary War are to be found principally in the limitations of the colonial economy. It was almost entirely an agricultural economy. Nine-tenths of the people made their living directly from farming. Farming methods were

very crude and very inefficient. Nearly every farmer did many things besides farm. He had to supply most of his necessities other than food--clothing, textiles, home and farm equipment, tools, and so on. He was a jack of all trades, not simply a farmer. He produced chiefly for his own use and very little for market.

Agricultural surpluses were necessarily small under these conditions. Manufacturing in this period was also not very advanced. From our point of view it was quite primitive.

There were no factories, no steam power, and no machine production. In fact, there was very little manufacturing at all; and that little was carried on in the home for the use of members of the families. All that I have been saying adds up simply to this: The colonial economy was so inefficient that only a very small surplus was available for military purposes. Take men, or what we now call manpower. The difficulties of making a livelihood in farming were such as to keep many men from joining the Army, and, once they joined the Army, from staying in it very long. In most families they couldn't well be spared for very long, especially during the harvesting season. This situation was the principal reason for the very short terms of enlistment--the average enlistment was around three months--and for the high turnover in the Army which resulted.

Take the matter of food. Actual scarcities of food were increased by the difficulties of land transport. The surpluses were small and they were distributed very widely over the countryside. Roads at the time were very poor. Unfortunately, the water lines of communication along the seacoast were controlled by the British most of the time. The roads were poor in good weather and in bad weather they were more often than not impassable. Again and again our armies were reduced to half, quarter, and eighth rations for weeks and even months at a time, simply because the available food stocks could not be moved where needed.

The difficulties in supply were not all of an economic character, of course. Many of the difficulties were due to the administrative weaknesses and the general inefficiency of the Government under the Continental Congress, which was the central government during most of the war. The Continental Congress had very little authority. What authority it had it was very reluctant to delegate to anyone. For the first year or so of the war the Continental Congress attempted to handle problems of supply directly through special committees. It set up a committee for salt, a committee for meat, a committee for clothing and so on. These committees were given little authority to act. All they could do really was to look into the situation and report back to the Congress. You can imagine how things went along under such a system. Later on these committees were replaced

by boards with somewhat greater powers; but it was not until the last phase of the war that Congress reluctantly accepted the plan of departments headed by single administrators with some measure of authority to act.

It is not necessary to go into our Revolutionary experience in any greater detail. We had a very simple agricultural economy, which could at best make available only a very small surplus of goods and manpower to be devoted to military purpose. Because of difficulties of transportation and difficulties of administration, it was not possible to make effective use of the surplus goods that the economy produced. The war was fought on a very small scale and at a very slow tempo. We won it partly because of outside aid, partly because England was unable to devote any large part of her own resources to the war.

Now I am going to jump 75 years to our second major war, known south of the Potomac as the War Between the States. During these 75 years very important changes took place in the American economy. Our population increased about tenfold. Our wealth increased in a much greater proportion--about thirtyfold. But most important of all was the rapid advance in industrialization in some parts of the country.

Now, let me just call your attention briefly to those developments. In a later lecture Dr. Allen will discuss the evolution of the American economy, and I do not want to anticipate his discussion. But let me point out a few of the major developments during this period.

For one thing, steam power became for the first time a very vital factor in the economic system--first, in the field of water transportation, with the steamboat and later the steamship; next, increasingly as a source of power for manufacturing industry; and finally in rail transportation.

The iron and coal industries underwent a tremendous expansion in this period. The fuel and metal industries during the generation before the Civil War became for the first time the foundations of our industrial system. Still another important development was the mechanization which was introduced widely in a number of industries. Not in all, by any means; but an important beginning was made. Nor was it confined to manufacturing. At least a beginning was made in the mechanization of agriculture with the introduction in the years before the Civil War for the first time of the binder, the reaper, and a few other agricultural machines.

Important beginnings were made also in developing techniques of mass production in the generation before the Civil War. Such developments included specialization of jobs, standardization of parts, the assembly of interchangeable parts, and the introduction of the automatic

principle. And along with these changes, and in considerable part as a result of them, came the steady shift from the small shops, with handicraft production, to factories of increasing size. The beginnings of large-scale production date from the generation before 1860. They were only the beginnings, but they were important.

Now, the significance of these developments, which were concentrated especially in the quarter century before the Civil War, is rather obvious. They resulted in a marked increase in the productive efficiency of the economy and in the economic surplus available for war purposes. The economic war potential of this Nation was greatly enlarged. For example, our per capita wealth increased about five times. These developments in turn made possible the conduct of military operations on a far larger scale, proportionately to the size of the population, than in the Revolution. Instead of having armies measured in a few thousands of troops, we have armies of tens of thousands, even hundreds of thousands, in size. In the Civil War the military operations extended over a large part of the eastern half of the continent.

Now, to train, clothe, equip, and supply armies totaling many hundreds of thousands was a tremendous task. The logistic problems involved were correspondingly great, and they were solved only as a result of the new means of transport--the railroad and the steamboat. The Civil War was the first major war in which rail transport was used. Those who are familiar with the military history of this war know how essential a role the railroads played, in establishing strategic objectives, for example, and in making it possible to move and supply large armies. Sherman stated that the movement of his army from Chattanooga to Atlanta would simply have been impossible without the railroad that was at his disposal. He calculated the number of wagons that would have been required for the operation--something like 130,000 six-horse wagons. This was on the assumption that the roads were in a condition to handle the tremendous traffic involved, which they were not.

While for the Nation as a whole there was a greatly increased war potential, this productive capacity was divided very unequally between the two belligerents. The North was far ahead of the South in population, wealth, transportation facilities, shipping facilities, foreign trade, and, above all, in industrialization. Because of its great economic superiority, the North was able to raise and support its large armies without great difficulty. In the first year of the war there was a great deal of confusion and disorder in getting organized to do the job. The Government at Washington was quite unprepared for the war; but after that first year the equipment and supplying of the Union armies was simply a large-scale procurement job, and it was handled without any material disturbance of the normal economic life

in the North. Industrial and agricultural expansion continued at only a slightly reduced rate. There was some check to emigration and a slowing down in the building of railroads during the Civil War period. But throughout the war there were few major scarcities. The civilians in the North knew virtually no hardships growing out of the war.

There was no economic or even industrial mobilization in the proper sense of the term in the North. We didn't have such mobilization because the situation did not require it. There was almost nothing of the central planning and direction which mark the true war economy. No controls were established over resources, over production, over prices, or over labor, except, of course, for the draft.

The position of the Confederacy, as you can readily understand, was very different and far more difficult, because the southern economy centered in the production of a few staple crops chiefly for foreign markets. The loss of these markets and the resulting income was a very serious blow for the South. The South was dependent for manufactured goods of most kinds on imports from the North and from England. The South had almost no heavy industry, and was very deficient even in such items as textiles, clothing, shoes, and leather goods. She had no munitions plants at the outset of the war. Her transport facilities were far inferior to those of the North. She was dependent on the North or Europe for transportation equipment, both railroads and steam vessels. This deficiency in transportation, which became more and more serious as the war advanced and wornout equipment could not be replaced, affected seriously her ability both to move and to supply her armies in the field and to mobilize her economic resources by drawing supplies from all parts of the Confederacy to the points where the supplies were needed.

The Confederacy, it is true, did have certain advantages over the North. The Confederacy had the advantage of inside lines. She had stronger incentives in the war and a stronger will to fight. It is generally conceded that she had the edge in military leadership, in the early days of the war at least.

The outcome of the war, of course, did not depend solely on economic factors; but to the extent that it did one thing seems pretty clear. Because of her limited resources, the South could hope to win only if these resources were used to maximum effectiveness.

The South was fortunate in one respect. The weapons used during this conflict were chiefly hand weapons and did not differ greatly from those used in the Revolution. They were muskets, rifles, sabers, pistols, and bayonets. Field artillery was chiefly of the old muzzle-loading variety and did not represent a great advance over that used in the Revolutionary War. The breech-loading repeating rifle

had been invented; but the South was not able to make any use of it, and the North made surprisingly little use of it. The diary of a Confederate veteran remarked that certain Union companies were equipped with what he called the Sunday rifles. You loaded them on Sunday and they could be fired all through the week! If the materiel of war had been more complicated, the industrial North would have had the South at even greater disadvantage.

Surprisingly enough, the supply problems of the South were not primarily in the field of munitions, as this term is narrowly defined. The military position of the Confederacy was never seriously threatened by a lack of small arms, powder, and shot. Such needs were met without too great difficulty by blockade running, by manufacturing, and by battlefield salvage. It is surprising to learn the number of small arms which the South "procured" on the battlefield. One authority estimated that from some eight major battles the Confederate armies collected some 152,000 U. S. 1861-model rifled muskets. The Confederacy lacked adequate supplies of artillery. It was definitely handicapped in this respect as compared with the North.

The really serious problems of war production and supply in the South centered in such commonplace items as clothing, shoes, harness, and, especially, transportation equipment such as rails, rolling stock, locomotives, and steam vessels. Another of the most serious shortages in the South--and a surprising one--was horses for cavalry and for wagon trains. Medical supplies were another serious headache for supply officials. The shortage of salt was perhaps in many respects one of the most serious economic shortages, since meat packing and preservation depended upon and required huge quantities of this article.

The Confederacy found itself in a stiuation which really called for an economy directed and controlled by the central government. To overcome the limitations of the economy a mobilization of the basic resources of the South was essential. Unfortunately, there were numerous and serious obstacles to such a mobilization. For one thing there was no experience in this country, or elsewhere for that matter, to provide guidance in doing this kind of job. Also the Confederacy not only did not have the strong centralized administration required for the mobilization, but most southern leaders were opposed on principle to having a strong central government. After all, the South was fighting for the cause of States' rights. You may recall the continual squabbling that went on between the central Confederate Government and the states which persisted in the assertion of their sacred rights. But in spite of these limitations, in spite of the difficulties, the Confederate Government did take measures to mobilize its economic resources for the war. This was done, however, under the pressure of urgent necessity. It was not a matter of conscious planning. It was not a matter of deliberate consideration of all the factors involved.

These measures, taken collectively, represent the beginnings of a centrally directed war economy. They covered a wide variety of activities and can be mentioned only briefly here. They included the establishment and operation by the Government of plants for the manufacture of many products--especially clothing and shoes, small arms and artillery, transportation equipment, powder, and salt. They included, also, the establishment of certain controls over manpower and materials--crude and imperfect controls it is quite true, but they were controls, operating indirectly through the draft and through priorities with respect to transport. They established certain controls over rail transportation of a very crude kind. A few crude measures of price control were adopted. Foreign trade was subject to close regulation. The Government itself engaged not only in foreign trade, but also in domestic trade. They even engaged in trade with the North, despite its "illegal" character. Certain supplies were needed so badly and speculators in the North were so anxious to get cotton supplies that a kind of blockade running across the border developed in which the Confederate Government participated. There were restrictions also on tobacco and cotton planting.

In terms of the things that the Confederacy tried to do, the record is an impressive one. But most of the measures mentioned here had only a very limited success. The fumbling, groping efforts to mobilize resources failed and in the end the economy almost literally broke down. The South lost the war, not on the battlefield, but on the economic and administrative fronts.

The experience of the South is interesting because the Confederacy was, in some respects at least, closer to total war than anything reached in this country in either the First or Second World War. For example, substantially the entire white male population of military age not exempted by law was enrolled in the Confederate Army. They got the equivalent of three years service from some over a million men out of a total white population of only five and a half million, which is something of a record. Toward the end, some attempt was even made to use slaves in the army. So far as civilian hardships and deprivations are concerned, there was nothing in the two World Wars in this country to compare with the experience of the Confederacy. Yet little attention has been given by military students to this experience. The campaigns of the Civil War have been studied exhaustively in their tactical and strategical aspects, but the experience of the Confederacy in trying to mobilize its economic resources for war has been largely ignored. The lessons of this experience, such as they were, have been neither understood nor appreciated.

In the 50 years between the collapse of the Confederacy and the outbreak of the First World War, a great deal happened in this country and in the Western World generally. The population expanded many times. Industrialization advanced rapidly. Large-scale organization and mass production became characteristic features of the industrial system. There were great advances in mechanization in nearly all branches of economic activity. New materials, such as steel and rubber, and new sources of power, like the electric motor and the internal combustion engine, came into the picture. Entire new industries were created--the electrical industries, the petroleum industry, the automotive industries, and many others.

The economic results of widespread industrialization were, of course, very great. For example, the aggregate wealth of the United States increased from about 16 billion dollars in 1860 to some 320 billion dollars in 1922; or 192 billion at the 1860 price level, a twelvefold increase. The increase in per capita wealth in this 60-year period was nearly fourfold. There were tremendous increases in productive capacity and efficiency; these resulted in even greater increases in economic war potential, because although the standard of living of the people--the living requirements of the civilian population--did rise, this increase was not nearly so great as the increase in productive capacity.

Not only was there a tremendous increase in the economic war potential, but the new industrial techniques, materials, and machinery made possible new types of weapons and other war materiel which radically altered the whole military scene. The new weapons and materiel provided the basis for a new kind of warfare. The key to this new warfare is found in the mechanization of combat on the one hand, which was quite new, and in the industrialization of supply, which was not so novel. An important beginning has been made in the industrialization of supply so far as this country was concerned during the Civil War. But in the Civil War the combat was carried on mainly as a hand operation and with hand weapons. At the time of the outbreak of the First World War, however, combat itself had become mechanized to an important degree in consequence of the development and introduction of important new weapons--the breech-loading rifle and the metallic cartridge, the automatic and semiautomatic rifle, the machine gun, the breech-loading, rapid-fire field gun, and similar advances in the mechanization of naval weapons. Combat, of course, was further mechanized by the introduction of the airplane and the tank, both made possible by the internal combustion engine. The motor truck in turn made possible further mechanization in transport and supply.

By 1914 the ground had been prepared for the conduct of warfare on a scale and with an intensity that were completely without precedent. Huge conscript armies of hundreds of thousands, even millions, of men

were mobilized and put into the field. The early attempts of Germany to force a quick decision were followed, as you will recall, by the prolonged stalemate of trench warfare, on fronts hundreds of miles long.

The large numbers engaged, the long-sustained actions, and the high rate of fire produced enormous expenditures of ammunition as well as of fuel and other supplies. For example, the average weekly expenditure of shells by the British in France increased from 2,000 tons at the end of 1915 to 100,000 tons by the end of the war. In the preliminary bombardment of the third battle of Ypres, 2,300 guns on a 15-mile front expended 103,000 tons of shells.

The scale of the supply problem not only far exceeded anything we had experienced before, but far exceeded anything that had been anticipated. The war was expected to be a short one and the belligerent powers simply were not prepared to meet the tremendous requirements. The traditional methods of procuring and producing munitions were inadequate. Extraordinary emergency measures were necessary to deal with the supply crisis. Gradually, one by one, the techniques of industrial mobilization, the term devised to describe the process, were worked out, quite without plan, because there were no plans. They were worked out under the compelling pressures of the military situation.

When the United States entered the war in April 1917, the position of the Allies, as some of you may recall, was pretty critical. The military campaigns of the Allies had failed to achieve their objectives. The unrestricted submarine campaign of Germany was taking a tremendous toll of shipping and supplies. The production of new tonnage of shipping was not keeping pace with the losses. The trend was in the other direction. Then in that year came the revolution in Russia followed by the withdrawal of Russia from the war. Germany was gathering her forces for a final, and, she hoped successful, drive. There was a very real danger that a German victory would come before we could get fully into the war. The Allies were approaching the limits of their resources in industrial capacity, in manpower, in materials, and in the funds, the credit, to buy goods from the outside, that is from the United States.

The problem we faced in 1917 was that of effecting a quick conversion of our enormous economic war potential into actual military force. At first it was rather generally assumed that our contribution to the war would take the form principally of an increased flow of munitions and of supplies of food, raw materials and productive equipment to the Allies. The Chairman of the Senate Appropriations Committee on being told of the cost of placing a fully equipped soldier in France replied: "My God, you don't intend to send men over there, do you?"

The decision to send to France a huge expeditionary force increased tremendously the size of the production job. The provision of the shipping to get the Army over there, an army which reached something over two million men eventually, and to supply this expeditionary force when it got there was in many respects the most difficult part of our war production effort. Fortunately, our industrial mobilization had actually begun to get under way before we entered the war, though it had not progressed very far--a result of the increasing flow of Allied munitions orders during 1915 and 1916. Yet only a fraction of American industry was producing munitions at the time we entered the war. The main job of converting industrial facilities to war production was still ahead of us. It was not only a difficult process, but it was an extremely slow process. On major items of military equipment it required anywhere from 12 to 18 months to get into mass production.

In all this, of course, we were not taken completely by surprise. The military had followed closely the developments in the European war from the very beginning. It is worth noting that a comprehensive General Staff report in 1912 on our Military Establishment made only the barest reference to the problems of procurement and supply, chiefly in two small footnotes. However, another General Staff report, made in the spring of 1915, called attention to the new military situation. It said: "Of all the features disclosed by the war in Europe, none stands more clearly revealed than the power to be derived from national organization behind the armed forces." The report further urged that steps be taken "looking to a national organization of our economic and industrial resources as well as our resources in fighting men."

It is one thing to recognize a situation and quite a different thing to get something done about it. But as the war advanced, the Army and Navy took a number of steps looking toward industrial preparedness. They set up a number of commissions and boards to look into various military production problems and a number of useful studies of our productive resources, and of production problems connected with critical munitions items, were made. In the fall of 1915 the General Staff issued a report calling for a variety of measures in preparation for a possible industrial mobilization in the United States. Yet, measured by the standards of what had to be done, really very little was accomplished; the preliminary steps taken did not add up to a great deal.

When we actually entered the war, both the military and some civilians had some idea of the nature and size of the job to be done, but we were almost completely lacking in plans for doing it. Clarkson in his book "Industrial Mobilization in the First World War" points out that the military had no plans for equipping a large-scale army; and that the National Defense Advisory Commission, of which he was Secretary, had

to set to work to determine the requirements for equipping an initial army of a million men. We had very little conception of our requirements in materials--everything from raw materials to end items. We had very little conception either of the extent of our industrial capacity, or of our requirements for industrial capacity. We had no conception of what we lacked and needed in respect to manpower. In addition, there was very little awareness generally--although there were a few who saw the need--of the necessity of central planning and central direction of our war production effort. And, as you can imagine, there was tremendous resistance to the introduction of controls, even of the mildest kind.

Moreover, the administrative resources of the Federal Government were far less in 1917 than in 1939. As Dr. Williams pointed out in his very revealing chart yesterday, we had a very small Federal establishment. We hadn't had the experience that we were to get later in the depression years in dealing with a crisis situation. We lacked administrative know-how. We lacked in the old-line agencies a reservoir of trained, skilled administrators who could be drawn into the war agencies. We didn't have the statistical data and the statistical agencies which could provide the data essential to doing this tremendous job or organizing and running the economy of the country as one vast machine.

The result was that we moved very slowly and we moved very reluctantly in mobilizing our economy for war. During the first year of our actual participation in the war, there was a great deal of confusion, a great deal of waste motion, a great deal of misdirected effort, and a great deal of bickering. Scarcities quickly developed in materials, in equipment, and in facilities. In the scramble to place contracts to purchase materials and supplies of all kinds, very keen, even bitter, competition developed, not only between contractors, but between the Armed Services, between procurement branches within the same service, and between the United States and our Allies.

I am not going to go into the details of this administrative development. I will simply point out a few of the major developments.

The first step toward setting up a central agency for directing and coordinating the war production program came in December 1916, with the setting up of the Council of National Defense and its working body, the Advisory Commission of the Council for National Defense, which consisted of seven leading businessmen and industrialists. This Advisory Commission went to work with a will and did a great many useful things. It made a good beginning in bringing some order out of a chaotic situation. A long list of industry committees were set up to deal with shortages and other production problems in specific

industries. But it was seriously handicapped by lack of authority. It had advisory powers only. It operated chiefly through persuasion.

This was followed in July 1917, three months after we got into the war, with what became our key war production agency, the War Industries Board. It carried on for a time in pretty much the same fashion as the old Advisory Commission. It was not, in fact, until March 1918, after we had been some 11 months in the war, that the War Industries Board was given real authority through priority and other powers granted by the Overman Act.

Under Bernard Baruch the War Industries Board became a kind of industrial general staff for directing the efforts on the economic front. It was built up into a large organization. Functional divisions were established to deal with requirements, facilities and inventories, priorities, and price fixing. Then a wide variety of commodity sections were set up. The main attention of the Board was given to the conversion and expansion of facilities, to the opening up of new sources of raw materials, to the effective distribution of materials to the points where needed, to the conservation of scarce materials and labor, and to price control.

While the War Industries Board was the most important of the war agencies, it was only one of a score or more of them—such as a Food Administration, a Fuel Administration, a Railroad Administration, and a Shipping Board. There were still other agencies set up to deal with labor, communications, foreign trade, and so on.

In all this we moved very slowly. We had been at war fully a year before our organization for economic mobilization was even reasonably well advanced. There was strong resistance throughout to the controls essential for effective mobilization. For example, take the automobile industry. This was the real problem child in the First World War. It was something of a problem child too, as you may recall, in the defense effort of 1940 and 1941. The automobile industry succeeded in opposing all efforts of the War Industries Board to restrict auto production until the spring of 1918. We had been in the war a year before it got anywhere. Then the industry finally agreed that it would gradually cut down production to about 30 percent, finally stopping production entirely by the end of 1918. Even then, one of the automobile manufacturers was reluctant to go along with this program. He was finally brought to see the light by the threat of commandeering his whole fuel supply, and of denying him the use of railroad cars. This brought him into line.

Eventually, very sweeping controls were established in some fields, especially in manufacturing and construction. Key controls were established over scarce materials through a system of priorities and allocations, especially over iron, steel, copper, and brass. A number of other commodities--rubber, mercury, chrome, etc.--were also brought under some form of controls. Controls over the production and distribution of scarce foodstuffs and over petroleum production were also established through a licensing system.

Very little was done about price controls until July 1917. At that time the price level was already nearly double the prewar level. Thereafter there were only moderate increases in the price level to the end of the war. On the other hand, rationing of civilian goods was almost unknown except on a quasi-voluntary basis in the cases of wheat and sugar. Domestic fuel rationing began in the spring of 1918. We did not introduce labor controls or wage controls. There was no direct control over production.

Some of the toughest problems, as some of you may recall, developed in the field of transportation. The threat of a breakdown of rail transportation led the Government to take over the railroads and operate them in January 1918. Water transportation was later taken over, too. Direct controls were also established over the communications industries. The Government embarked on a huge shipbuilding program under the Shipping Board's Emergency Fleet Corporation.

Of course, as you will recall, the story did have a happy ending. We did win the war; and the mobilization of our economy was in many respects a great achievement. With only a moderate head start from Allied orders we built up a war production system of tremendous capacity. We supplied our allies with great quantities of food, raw materials, and various manufactured materials. We recruited, equipped, and transported to France something over two million troops. We moved from an economy without controls to one which was in many respects highly regimented.

But against these accomplishments must be placed certain shortcomings. The failure to establish central direction and controls until the war procurement and production program was bogging down in confusion and failure resulted in great delays and great losses of manpower and materials. Another serious weakness was the failure to restrict sharply nonessential production in order to force conversion to war production. Then there were mistakes and delays in the determination of military requirements. There were mistakes in setting production goals too high. The result was that a disproportionate share of labor, facilities, and materials was absorbed in tooling up for production. When the war came to an end, our war production was just getting into high gear and was just beginning to

turn out the stuff in quantity. In major items of materiel (airplanes, shells, artillery) our expeditionary force was supplied chiefly by our allies. Finally, the government agencies and services gave little or almost no thought to the problems of industrial demobilization and reconversion; so we completed the war in just about the same confusion as we began it.

In the past fifty minutes I have gone over a lot of ground. What does it all add up to? Well, we come back to a point that I started with. The kind of a war and the size of a war that you can fight depend on the kind of economy you have. They depend on the amount and the kind of goods you can produce and at what speed. They depend on the amount of your productive resources that can be diverted from civilian to war production, in other words, on the size of your economic war potential.

Throughout our history we have seen a steady and accelerating growth in our economic war potential. We have seen a much slower growth in our awareness of our growing capacity to wage war, and a very retarded recognition of the fact that a war economy is essentially a planned and controlled economy. We have been very reluctant to abandon, even temporarily in wartime, our freedom for the sake of security. And that, of course, was the dilemma in which our democracy continued to find itself during the period between the two World Wars.

In the next lecture Colonel Neis will take up the story from this point.

(3 March 1949—750)S./mmg