McNAIR PAPER 50

# Mobilizing U.S. Industry in World War II

*Alan L. Gropman*



*A popular Government,*
*without popular information or the means of acquiring it,*
*is but a Prologue to a Farce or a Tragedy; or perhaps both.*
*Knowledge will forever govern ignorance;*
*And a people who mean to be their own Governors,*
*must arm themselves with the power which knowledge gives.*

JAMES MADISON to W. T. BARRY
August 4, 1822

# MOBILIZING U.S. INDUSTRY IN WORLD WAR II: MYTH AND REALITY

Alan L. Gropman

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Of course, I bear responsibility for all errors of fact and judgment—probably arising because I failed to heed the sage advice of Dr. Weir and Mr. Gough and the sagacious suggestions of Mr. Candon.

# MOBILIZING U.S. INDUSTRY IN WORLD WAR II: MYTH AND REALITY

## 1. INTRODUCTION

At a dinner during the Teheran Conference in December 1943, Joseph Stalin praised United States manufacturing:

> I want to tell you from the Russian point of view, what the President and the United States have done to win the war. The most important things in this war are machines. The United States has proven that it can turn out from 8,000 to 10,000 airplanes per month. Russia can only turn out, at most, 3,000 airplanes a month . . . . The United States, therefore, is a country of machines. Without the use of those machines, through Lend-Lease, we would lose this war.[1]

It was more than airplanes, of course. The Soviets received, in addition to thousands of tanks and airplanes, hundreds of thousands of trucks from the United States, which vastly enhanced the mobility of the Soviet ground forces. The United States also supplied Stalin's factories with millions of tons of raw materials and thousands of machine tools to assist the Soviet Union in manufacturing trucks and all the other implements of modern war including tanks.[2]

World War II was won in largest part because of superior allied armaments production.[3] The United States greatly outproduced all its allies and all its enemies and, at its output

peak in late 1943 and early 1944, was manufacturing munitions almost equal to the combined total of both its friends and adversaries. The prodigious arms manufacturing capability of the United States is well known by even casual readers of World War II history, if its decisiveness is not as well understood. But myths provoked by sentimentality regarding United States munitions production have evolved in the half century since the war ended, and these have become a barrier to comprehending the lessons of that era.

When viewed in isolation the output is indeed impressive. United States Gross National Product grew by 52 percent between 1939 and 1944 (much more in unadjusted dollars), munitions production skyrocketed from virtually nothing in 1939 to unprecedented levels, industrial output tripled, and even consumer spending increased (unique among all combatants). But United States industrial production was neither a "miracle" nor was its output comparatively prodigious given the American advantages of abundant raw materials, superb transportation and technological infrastructure, a large and skilled labor force, and, most importantly, two large ocean barriers to bar bombing of its industries.[4] Germany, once it abandoned its *Blitzkrieg* strategy, increased its productivity more than the United States, Britain, and the Soviet Union, and despite German attacks on Britain and the Soviet Union, these states performed outstandingly too.[5]

This is not to say that United States logistics grand strategy[6] was not ultimately effective. The United States and its allies were, of course, victorious, and we lost far fewer lives than any of our adversaries and fewer than our main allies. Stalin was correct when he hailed American production. But the halo that has surrounded the era needs to be examined because there were enormous governmental, supervisory, labor-management relations,[7] and domestic political frictions that hampered the effort—and there is no reason to think that these problems would not handicap future mobilization efforts. With enormous threats looming in the mid 1930s and increasing as Europe exploded into war at the end of the decade, the United States was in no way unified in its perception of the hazards, nor was there any unity in government or business about what to do about it.[8] In the end, America and its allies were triumphant, and logistics played the

decisive role, but the mobilization could have been more efficient and America could have produced more munitions more quickly and perhaps have ended the war sooner. A nostalgic look at United States industrial mobilization during World War II will not make future mobilizations of any size more effective.

Certainly none of the major World War II adversaries was less prepared for war in 1939 than the United States. There were fewer than 200,000 men in the Army, only 125,200 in the Navy, and fewer than 20,000 in the Marine Corps. Those troops on maneuvers in 1939 and 1940 used broomsticks to simulate rifles and trucks to represent tanks.[9] Despite war orders from Britain and France in 1939 and 1940 and Lend-Lease shipments to Britain, the Soviet Union, China and elsewhere after Lend-Lease took effect in March 1941, there were still five million Americans unemployed at the end of the year.[10] Hitler's Germany had long since absorbed its unemployment by building arms and German infrastructure. In the United States, great progress had been made by the time production peaked in late 1943, compared with the situation in 1941, but output could have been even higher. The fact that it took from August 1939, when the first federal agency designed to analyze mobilization options—the War Resources Board—was inaugurated, to May 1943, when the final supervisory agency was put in place—the Office of War Mobilization—should be instructive. Because it had been less than effective in World War I, industrial mobilization was studied throughout the interwar period—a fact that should be sobering. Certainly the interwar planners hoped to improve on the World War I experience with industrial mobilization and they believed because of their efforts the next round would be more efficiently and effectively executed. They were wrong.

## NOTES

1. Stephen Donadio, Joan Smith, Susan Mesner, Rebecca Davison, eds., *The New York Public Library Book of Twentieth-Century Quotations* (New York: Warner Books, 1992) 184. The Lend-Lease Act, a controversial law, authorized the president to send munitions or other supplies to any country that he deemed "vital to the defense of the United States." The law at once gave essential munitions and supplies (and raw materials) to our future allies to fight and also deprived the United States armed forces of needed materiel. Lend-Lease was a

major part of United States grand strategy. The bill was passed by the Senate on 9 March 1941 and signed on 11 March by President Franklin D. Roosevelt. Jerome Peppers argues that the "survival of many of the Allied nations is a direct result of [Lend-Lease] support." In operation 9 months before the United States entered the war, it "permitted the early war to be carried on in great proportion by the Allies since the United States was, by law, unable (unwilling?) to participate then." Well before the law was passed, the British (and French until their surrender) prodigiously purchased munitions. Until Lend-Lease was passed, however, the president could not send the British, by then almost flat broke, munitions without payment. Lend-Lease, Peppers asserts, often permitted the allies to do more than their share of the combat. It also created a high degree of allied munitions standardization, simplifying logistics and stimulated United States industrial production. Finally, it enhanced United States leverage over allied strategy and policy. Jerome G. Peppers Jr., *History of United States Military Logistics 1935-1985* (Huntsville: Logistics Education Foundation Publishing, 1988), 24-25. See also David C. Rutenberg and Jane S. Allen, eds., *The Logistics of Waging War: American Logistics 1774-1985 Emphasizing the Development of Airpower* (Gunter Air Force Station: Air Force Logistics Management Center, 1986), 81-82. More than $48 billion worth of supplies were furnished, and aircraft and parts amounted to more than 16 percent of that total. About two-thirds of the total went to the British Empire, and most of that went to the United Kingdom.

2. Aircraft were probably the most valuable item in the Lend-Lease catalog. More than 15 percent of the aircraft in 1943 and more than 16 percent in 1944 (a year in which more than 96,000 aircraft were produced) were sent to allies. Over the war, 34,500 airplanes went overseas to the allies. But there is more to the story. During World War II, the United Kingdom produced about one-third the number of airplanes produced in the United States (about 100,000 airplanes), and most of the raw materials to build that number and much of the petroleum to fuel them came from the United States. See Donald M. Nelson, *Arsenal of Democracy* (New York: Harcourt, Brace and Co., 1946), 237.

3. Alan Milward writes, "The war was decided by the weight of armaments production" [*War, Economy and Society: 1939-1945* (Los Angeles: University of California Press, 1979), 75]. World War II was extraordinarily different from World War I, given that only 20 years separated them. A typical U.S. Army division in WW II required the support of 400,000 mechanical horsepower to keep it moving, versus

3,500 for one of General John J. Pershing's divisions, and a WW II division was less than half the size of a WW I similar unit. Considering the relative sizes, a WW II unit required 228 times the mechanical horsepower of the one 20 years earlier, thus the demand on industry in World War II was truly striking. See James L. Abrahamson, *The American Home Front* (Washington, DC: National Defense University Press, 1983), 132.

4. Milward, 73-74. The United States "had advantages in terms of size of labour force and raw material supply that were shared only by the Soviet Union, or would have been had not so much of Russia been in German hands. Nor was there any active interference by the Axis powers in the workings of the United States economy apart from sinking its ships and killing its citizens, whereas a considerable amount of industrial plant in the Soviet Union and the United Kingdom were reduced to rubble by the German armed forces."

5. Paul A.C. Koistinen is probably the most assertive and cold-eyed revisionist dealing with U.S. WWII industrial production. Koistinen sees utterly nothing miraculous about American munitions manufacturing. See his "Warfare and Power Relations in America: Mobilizing the World War II Economy," in James Titus, ed., *The Home Front and War in the Twentieth Century: The American Experience in Comparative Perspective: Proceedings of the Tenth Air Force Academy Military History Symposium* (Washington, DC: Office of Air Force History, 1984), 101. For an opposing view, see in the same volume Robert D. Cuff's commentary on Koistinen's essay (Cuff, 112-115). Cuff explicates President Franklin D. Roosevelt's problems and cites the president's "political constraints inside and outside the administration." Given the nature of American business and politics, Roosevelt had little wiggle room in the late 1930s and into the early years of the war. "Private business decision-makers in the United States had already demonstrated unparalleled ability to retain prerogatives notwithstanding economic and wartime crises. And they continued to exact a price for their private performances. . . . Henry L. Stimson caught the essence of it in the early stages of American war mobilization: 'If you are going to try to go to war or to prepare for war in a capitalist county, you've got to let business make money out of the process or business won't work.'"

6. Milward, 40. The U.S. strategy for WW II was openly based on logistics. Roosevelt had no desire to squander lives as they had been wasted in WW I. He expected to win the war "through industrial production. The strategic assumption was that over a long period of time the United States must be ultimately victorious if war came to a battle of production."

7. Labor was generally discontented during the war, and there were numerous strikes despite no-strike pledges and legislation barring strikes. Wages rose from $.64/hour in 1939 to $.81/hour in 1944 and there were gains from overtime work, but taxes and "voluntary" bond allotments drove some of these wage gains down. At the height of the war, however, corporate profits (after taxes and in constant dollars) were up more than 100 percent (vice labor's 21 percent gain). Farmers income went up even more. Business, moreover, benefited from government building of factories and generous tax credits if it invested in plants (Koistinen, 106-109). Alan Milward estimates that industrial profits rose by 350 percent before taxation, and 120 percent after taxation while wages rose by only 50 percent before taxation and prices rose by 20 percent (Milward, 63-72).

8. Koistinen, 107-108. He argues the United States economic mobilization was fragmented because "public opinion was not only confused and contradictory during the war, but also manifested a callous, selfish and uncaring streak." Mobilization was also seen by Koistinen as inefficient because of Roosevelt's approach to administration and the special interests of the military and industry. "No doubt," he writes, "the vast majority of Americans accepted victory and security as primary goals during the war. But they divided acrimoniously along interest groups and class lines about how those aims could best be achieved" (Koistinen, 92). See also in the same volume John Morton Blum's essay, "United Against: American Culture and Society during World War II," 5-14. "During the war the American people united against those enemies in a measure greater than they united for any other wartime or post war purpose. That unity was never complete. Periodic exhortations to refresh it drew, as one cabinet officer put it, on 'nothing inspirational,' nothing 'Wilsonian'." Rather the American people responded to their visceral hatreds. . . . In the spring of 1942 surveys indicated that some seventeen million Americans 'in one way or another' opposed the prosecution of the war." After a series of defeats in the Pacific in 1942, "public morale sagged." Blum does assert, however, "American troops . . . united against their foe with less need for artificial stimulation than was the case with their countrymen at home." Blum is critical of the West Coast Japanese-American internment, because he believes it was racially based, and is even more critical of the antiblack outrages during the war, which cannot be rationalized by the attack on Pearl Harbor. Blum finds racism to be the basis of these abominations: the war did not create "antisemitism, anti-labor attitudes, segregation and hostility to racial minorities," but neither did "it subdue them." In the United States, as elsewhere, "the war at

once aroused and revealed the dark, the naked, and shivering nature of man."

9. Jerome G. Peppers, Jr., *History of United States Military Logistics, 1935-1985, A Brief Review* (Huntsville: Logistics Education Foundation Publishing, 1988), 6. Peppers has written an orthodox history of World War II industrial mobilization. See also Nelson, 41. In 1940, according to Nelson, who was Chairman of the War Production Board, the Army had on hand 900,000 Springfield rifles from World War I and 1,200,000 British Enfields, all obsolete, and only 50,000,000 pounds (not tons) of fresh powder and 48,000,000 pounds left over from WW I.

10. Peppers, 19

# 2.
# MOBILIZATION ACTIVITIES BEFORE PEARL HARBOR DAY

Despite the fact that World War I had been raging for 32 months when the United States declared war, despite the large numbers of war orders received by U.S. industry to arm the French and the British, and despite the National Defense Act of 1916,[1] which, among many other things, established a mechanism for mobilizing industry, United States ground and air forces that fought in World War I were largely supplied with French and British munitions.[2] Industrial mobilization had been so inept that Congress passed legislation soon after World War I ended to build an apparatus to ensure that if the United States went to war again it would be better mobilized industrially.

The National Defense Act, June 4, 1920 (41 Statute 764), explicitly outlined responsibilities in the Office of the Secretary of War that streamlined procurement for that day's military and also planning for future wars:

> The Assistant Secretary of War, under the supervision of the Secretary of War, shall be charged with the supervision of the procurement of all military supplies and other business of the War Department pertaining thereto and the assurance of adequate provision for mobilization of materiel and industrial organizations essential to wartime needs. . . . There shall be detailed to the office of the Assistant Secretary of War from the branches engaged in procurement such numbers of officers and civilian employees as may be authorized by regulations approved by the Secretary of War. . . . Chiefs of branches of the Army charged with the procurement of supplies for the Army shall report direct to the Assistant Secretary of War regarding all matters of procurement.[3]

## NATIONAL DEFENSE ACT OF 4 JUNE 1920

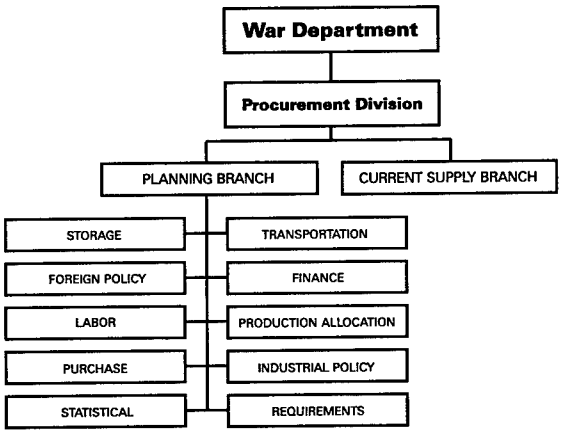
- Charged the Assistant Secretary of War with supervision of the procurement of all military supplies and other business of the War Department to assure adequate provision for mobilization of materiel and industrial organizations essential to wartime needs
- Detailed to the office of the Assistant Secretary of War officers and civilian employees from the branches engaged in procurement, as authorized by regulations approved by the Secretary of War
- Directed that all chiefs of branches of the Army to report directly to the Assistant Secretary of War regarding all matters of procurement

The Assistant Secretary of War now had under his control something that had been lacking in the Army for 150 years a more unified procurement apparatus and a directive to plan for future industrial mobilization. In October 1921 in his first memorandum orders the Assistant Secretary established a Procurement Division to supervise "the procurement of all military supplies and other business of the War Department . . . and the assurance of adequate provision for the mobilization of material and industrial organizations essential to war time needs." This Division was further subdivided into a Planning Branch and a Current Supply Branch. From the start, the Planning Branch was under the direction of a full colonel, signifying its importance in those days of spare rank. He was accountable for planning for wartime procurement and industrial mobilization and was also the agent who dealt with the Navy Department and all other government departments on "all matters pertaining to the allotment of industrial facilities and materials required for war." The Planning Branch was further subdivided into 10 sections, including Industrial Policy, Purchase, Production Allocation, Labor, Finance, Foreign Relations, Transportation, and Storage. It survived into World War II, and for more than a decade was the only agency engaged in industrial mobilization planning.[4]

People who worked in the Assistant Secretary's office, however, received no respect from members of the General Staff, and throughout the 1920s and 1930s there was friction between the logisticians and the operators. At times the relationship became sulfurous, for example when General Charles P.

Summerall, Army Chief of Staff from 1926 to 1930, "forbade his subordinates to cooperate with" the Office of the Assistant Secretary of War, "which he recommended be abolished." He called the Assistant Secretary's Executive Officer, Brigadier General George Van Horn Mosely, a logistician, a "traitor" and a "scoundrel."[5]

PLANNING BRANCH
ORGANIZATIONAL CHART




In addition to the Planning Branch in the Assistant Secretary's office, there was another logistics entity: the Army and Navy Munitions Board, created in 1922 to coordinate "the planning for acquiring munitions and supplies required for the Army and Navy Departments for war purposes and to meet the needs of any joint plans." This Board was also charged with developing "a suitable legislative program" to be put into effect at the appropriate time to "enable the procurement program to be" established. Unlike the procurement and planning duties assigned to the Assistant Secretary, the Army and Navy Munitions Board had no specific legislative sanction and no appropriation until 1 July 1939, when President Franklin D. Roosevelt directed that this organization and several other joint boards come under the direct supervision of the president. Prior, the Board included the Assistant Secretaries of the Army and Navy and whomever they designated to serve with them and

whatever staff they hired. The Army segment of the Board's staff came from the Office of the Assistant Secretary of War.[6]

It was clearly understood that the Army and Navy Munitions Board was not subordinate to the Army and Navy Joint Board, mainly an operational planning organization, but parallel to it. Through the early 1930s there was little life and no power in the Board because of interservice problems. The Army G-3 did its planning for troop mobilization without reference to the Navy, and the Planning Branch did its industrial mobilization planning similarly oblivious to the Navy's potential needs. In 1932, however, the Board was reorganized to include the Director of the Planning Branch and similar personnel from the Navy logistics community. A secretary was authorized and eight divisions formed dealing with such items as price controls, contracting, commodities, power, etc. In that year the Board was charged with coordinating and controlling the national industrial effort in an emergency, and coordinating plans for wartime procurement. The next year the Board took over sponsorship of the industrial mobilization plans and began to compile lists of strategic and critical materials.[7]

## NOTES

1. Marvin A. Kreidberg and Merton G. Henry, *History of Military Mobilization in the United States Army, 1775-1945* (Washington, DC: Headquarters, U.S. Army, 1955), 192-194.

2. J.M. Scammell, "History of the Industrial College of the Armed Forces 1924-1946," unpublished manuscript (National Defense University Library), 5. Scammell quotes David Lloyd George's memoirs thusly: "it is one of the inexplicable paradoxes of history, that the greatest machine-producing nation on earth failed to turn out the mechanisms of war after 18 months of sweating and hustling. . . . There were no braver or more fearless men in any Army, but the organization at home and behind the lines was not worthy of the reputation which American business men have deservedly won for smartness, promptitude and efficiency" (Scammell, 4). The author quotes General John J. Pershing similarly: "It seems, 'odd' that with American genius for manufacturing from iron and steel, we should find ourselves after a year and a half of war almost without these mechanical contrivances which had exercised such a great influence on the western front in reducing infantry losses" (Scammell, 4).

3. Kreidberg and Henry, 493.

4. Kreidberg and Henry, 496-497. How to prepare Army officers for this responsibility, when knowledge of industry was absent in the military, became a problem early on. This difficulty led to the creation of the Army Industrial College (Scammell, 18, 19).

5. Terrence J. Gough, "Soldiers, Businessmen and US Industrial Mobilization Planning Between the World Wars, " *War&Society* 9, no. 1 ( May, 1991): 68, 69. Gough writes: "important elements of the army continued to give short shrift to the critical role of procurement in the 20s and 30s." George Marshall himself was criticized by a logistician for paying insufficient attention to supply planning. There was so much acrimony between G-3 (Operations) and the logisticians that there was a lack of coordination between G-3 and the Office of the Assistant Secretary of War throughout these two crucial decades.

6. Kreidberg and Henry, 499-502.

7. Kreidberg and Henry, 499-502.

# 3.
# EDUCATION FOR MOBILIZATION

When the Planning Branch was formed in 1921 and the Board in 1922, however, there was no formal schooling for the people who joined the staffs of each organization. That was rectified in 1924 with the establishment of the Army Industrial College. Staff officers in the Assistant Secretary of War Office recognized from the start that formal education was needed if those who worked in the Planning Branch were to be effective. In 1924 the War Department issued a general order establishing the College: "A college to be known as the Army Industrial College . . . for the purpose of training Army officers in the useful knowledge pertaining to the supervision of all military supplies in time of war and to the assurance of adequate provisions for the mobilization of materiel and industrial organizations essential to war time needs." The College was assigned to the Assistant Secretary for supervision rather than the General Staff, which supervised all other general service schools. The first course lasted 5 months and had only 9 officers in its student complement, but soon after the College was established a small number of Navy and Marine officers began attending. From the beginning, the focus was on general logistics and not just on procurement. In the 1920s the prestige of the school was low, but over time it improved, although probably no officer—and certainly no combat arms officer—saw it equal in importance to the Army War College.[1]

The motivations of the school's founders—field grade officers in the Planning Branch—went beyond just understanding the mechanics of procurement and industrial mobilization. They hoped to educate military officers about industry to the point that such educated people could control industrial mobilization and in fact direct the war industries. These officers believed it had been

a mistake to leave control of war industries in the hands of financiers and industrialists like Bernard Baruch during World War I and thought that military control would yield efficiency. The officers in the Planning Branch who conceived of the Army Industrial College thought their "professional interests diverged from the ambitions of businessmen" in conducting industrial mobilization. "Neither side viewed the other primarily as a partner in a mutually beneficial endeavor." The two sides were in competition with each other.[2]

The staff officer most involved in fostering the creation of the College, James H. Burns, wrote: "While actual production was essentially the task of industry, planning and control—in the broad sense—of the production of War Department supplies . . . were primarily military responsibilities." He argued that the "authority" to plan and control "should not be surrendered" to agencies outside of the War Department, and that the Army "should organize" to supervise industry. He believed that the War Department "should not only have a plan worked out, but that military men should be thoroughly trained in the plan so that they could man key positions in time of war." Once war production was started "these men could be replaced by 'Captains of Industry' working as part of the War Department organization." Thus the Army Industrial College was to provide logistical officers with the expertise to ensure their dominance over civilians in mobilization. The Assistant Secretary of War in 1924, Dwight F. Davis, shared this view and saw the Army Industrial College as a school to "fit officers for the mobilization and direction of the industrial power of this country."[3]

The notion of the Army directing industry in the United States strikes one as naive at best, but it is most symbolic of the attitude of soldiers and their view of businessmen—the former dedicated to their mission and to victory for which they would sacrifice their lives if necessary, and the latter dedicated to improving the bottom line. The notion that somehow soldiers (sailors and marines, too, since they became Industrial College students soon after the school opened) could master industry after a 5-month and later a 10-month program is, of course, preposterous, and General Hugh Johnson, a World War I

manpower and industrial mobilization authority, wrote so in 1938 and again in 1939:

> The Army Industrial College is a get-rich-quick course in which professional Army officers are taught, in a few months, all about running the industries of this country by military instructors, most of whom never even ran a peanut stand. I am not knocking its purpose or its personnel in the least. It is highly necessary to have some officers in the Army who have at least a bowing acquaintance with our economic and industrial problems. The average officer lives a life as remote from our day-to-day business struggle as a cloistered monk.
>
> The executive assistant to the Assistant Secretary of War is quoted . . . as having said: 'An Army Industrial College is now training about 60 Army and Navy officers each year to direct the mobilization of industry.' No cramming course in 'industry' and nothing he can read out of any books can make the average officer fit for business administration—much less to 'direct the mobilization of industry.' The War Department itself has no business whatever 'directing' industry in war. That is a mammoth and vital task—as great and vital as fighting a war. The Army already has the latter task. It should not jimmy up the works by taking on another just as big the moment the guns begin to roar . . . it would be just as absurd and disastrous to use them on this job as it would be to elbow all the generals aside and put industrial leaders in command of armies. Put armies under soldiers and industrial mobilizers under industrialists and let all shoemakers stick to their lasts.[4]

By December 1941, the College had trained about 1,000 officers of whom 15 percent were from the Navy and Marine Corps. Many of these Army graduates worked in the Planning Branch and Army and Navy Munitions Board. During World War II there were about 25,000 officers in Army procurement, and no more than 2 percent of these could have been Industrial College graduates.[5] The students of the Industrial College studied industry intensely, examined the activities of the War Industries Board and other World War I mobilization agencies, and analyzed mobilization problems from that war. They also

provided analytical support to the Planning Branch and to the Army and Navy Munitions Board when these organizations wrote the various Industrial Mobilization Plans.[6]

## NOTES

1. Marvin A. Kreidberg and Merton G. Henry, *History of Military Mobilization in the United States Army, 1775-1945* (Washington, DC: Headquarters, U.S. Army, 1955), 497-498.

2. Terrence J., Gough, "Origins of the Army Industrial College: Military Business Tensions After World War I," *Armed Forces & Society* 17, no. 2 (Winter, 1991): 270-271.

3. Gough, "Soldiers, Businessmen, And US Industrial Mobilization," 70. Gough cites works published by Burns and Davis. His view is supported by Joanne E. Johnson, "The Army Industrial College and Mobilization Planning Between the Wars," unpublished executive research paper (Washington, DC: Industrial College of the Armed Forces), 1-43. Johnson used archival sources often different from Gough's to come to the same conclusion.

4. The former quote was from the *Washington News,* 1 November 1938, and the latter from the *Philadelphia Inquirer*, 5 May 1939; both are cited in Johnson, 20-21. This demonstrates that the belief that the War Department and soldiers in it would run industry permeates the thinking throughout the period.

5. Gough, "Soldiers, Businessmen and US Industrial Mobilization," 72.

6. Johnson, 1-43. Donald Nelson wrote that the Industrial College produced a "reserve of practical experience and research," but that it was not used by the early groups Roosevelt appointed to manage industrial mobilization (Donald M Nelson, *Arsenal of* Democracy (New York: Harcourt, Brace and Co., 1946), 92).

# 4.
# INTERWAR PLANNING FOR INDUSTRIAL MOBILIZATION

The National Defense Act of 1920 (which was the foundation for the Planning Branch, the Army and Navy Munitions Board and Army Industrial College) directed that the Assistant Secretary of War prepare an industrial mobilization plan to prevent the fumbling that occurred during World War I.[1] During the interwar period there were four plans developed. The first, in 1922, written in the Planning Branch, was really an outline of a plan to be prepared in three volumes that later became an Industrial Mobilization Basic Plan in 1924—but which still lacked detail. The latter "plan," or the 1924 "plan," recognized the need for an industrial mobilization superagency to be "established by act of Congress or by the President, under congressional authority for the purpose of coordinating, adjusting and conserving the available agencies for resources so as to promptly and adequately meet the maximum requirements of the military forces and the essential needs of the civilian population." This was basically a procurement plan. The keystone of the 1924 plan and all those that followed was a hypothetical Mobilization Day (M-Day), the date of the first day of mobilization, considered simultaneous with a declaration of war. The officers in the Planning Branch (and subsequent authors) found it inconceivable "in the light of American practice and thinking" that the "United States would ever begin mobilizing before the outbreak of war."[2] As it actually happened, Roosevelt indeed began to plan for mobilizing industry even before Germany invaded Poland, and legislation to assist mobilization was passed well before 7 December 1941. Four mobilization agencies were tried and all failed before the Japanese bombed Pearl harbor. M-Day thinking was a mistake.

The next plan, written in 1930, had additional flaws, all of which were carried through in subsequent Industrial Mobilization Plans. One was the assertion that existing executive and other government agencies should not be used as any of the government's tools for industrial mobilization. This provoked hostility in the senior departments. Another was the failure to recommend a branch to collect, assess and distribute statistics. Most significant was the failure to recognize that the United States would probably have to assist in arming its allies.[3] The 1933 Plan's preface summarized the thinking behind all of the interwar industrial mobilization planning:

> Complicated weapons and machines are used up rapidly in war. Armies and Navies must not only be well supplied initially, but maintenance must be adequate and continuous. Thus, the success of a modern fighting force, is directly and immediately dependent upon the ability of the Nation's resources to satisfy promptly its requirement in munitions. . . . War is no longer simply a battle between armed forces in the field—it is a struggle in which each side strives to bring to bear against the enemy the coordinated power of every individual and every material resource at its command. . . . The following comprise the essentials of a complete plan for mobilization of Industry:
>
> a. Procurement planning
>
> (1) Determination of requirements
>
> (2) Development of Plans for the procurement of such requirements
>
> b. Plans for control of economic resources and mobilization of industry
>
> (1) Determination of the measures to be employed to insure the proper coordination and use of the Nation's resources.
>
> (2) Development of plans for the organization and administrative machinery that will execute these control measures.[4]

The Plan was approved by both the Secretary of War and Secretary of the Navy (the first to be approved by both and the first written by the Army and Navy Munitions Board). Only 102 pages long, it came with an appendix of proposed industrial

mobilization bills drafted for congressional consideration. This plan called for the appointment, by the president, of an "Administrator of War Industries."[5]

The Army and Navy Munitions Board prepared a plan for a transition organization to implement industrial mobilization during the period immediately after a declaration of war and before the War Industries Administration was fully formed. Staff officers wrote in a memorandum of 19 July 1934: "In order to make the War Industries Administration responsive to the needs of the Army and Navy, it is proposed to take from the Army and Navy Munitions Board and from the Army and Navy Departments a limited number of seasoned officer personnel . . . to assist the Administrator of the War Industries Administration and to act as advisors to him." The memo also suggested that the Army and Navy Munitions Board "conform its structure to that planned for the War Industries Administration." This meant that at the outset of the war the country's economy would be controlled by Army and Navy officers.[6]

The 1936 plan, a further revision of the 1933 plan (which was a revision of the 1930 plan) was only 75 pages long, including suggested legislation![7] This plan called for a War Resources Administration and War Resources Administrator, an individual with powers similar to those that Bernard Baruch had in 1918 as head of the War Industries Board and James F. Byrnes was to get in May 1943 as Director of the Office of War Mobilization. Baruch, who was asked to review this plan, was critical of it because it failed adequately to consider the production needs of the civilian population. He was also insistent that industrial mobilization be implemented under civilian control and that specific plans for the use of industry should be made by civilian industrial experts in the respective fields. He found intolerable the degree of involvement in industrial mobilization of the Army and Navy Munitions Board.[8]

The 1939 plan was even shorter than the 1936 revision, only 18 pages (although there were more than 100 pages of annexes dealing with commodities, facilities, labor, power, fuel, prices, transportation, finance and trade). Similar to the 1936 edition, the new plan called for an Administrator of War Resources to be at the top of the entire mobilization apparatus. All other agencies

formed to mobilize the country's industries were to assist the War Resources Administrator.[9] This plan was published after Germany invaded Poland and it was not used. The muddling that had accompanied World War I mobilization was being repeated. Given the eagerness expressed by the Assistant Secretary of War and the Assistant Secretary of the Navy, why?

For one reason, the plans were thin—the last being only 18 pages—and therefore superficial. One reason for this superficiality was the number of staff officers who could be in Washington either on the Army General Staff or in the Assistant Secretary's Office was severely limited by Congress. There were simply too few staff officers to perform significant industrial mobilization planning at the same time as operational planning and other staff functions. Congress, moreover, was always leery of expanding the powers of the executive and never more so than in a period when the country was at peace. Representatives and senators were especially concerned that the president might drag the country into an unnecessary war. The disillusionment and resentment that followed World War I hamstrung the president because it was deeply reflected in Congress and the decisions of that body.[10]

Although perhaps better than nothing, and certainly better than anything on the shelf in April 1917 when Congress declared war on Germany, the Industrial Mobilization Plans were flawed. They were prepared entirely by military agencies with some knowledge of industry but no real depth. They were, moreover, rigidly based on the M-Day concept and lacked the flexibility needed for adaptation to a gradual mobilization. The mobilization planners, moreover, assumed a one-front war like the one they had experienced in World War I. The Army and Navy Munitions Board, furthermore, was unwilling to work with existing governmental departments. Most importantly, President Roosevelt could not possibly abide a plan that put so much power in the hands of the uniformed military.[11] The implementation of such a plan in 1939 when Poland was conquered or even June 1940 when France fell would be out of the question politically. It was not even possible when the Soviet Union was invaded in June 1941. And Roosevelt was still

not ready to put direction of the economy under the military when the United States was attacked on 7 December 1941.[12]

In addition to political problems perceived by the president, internal difficulties existed within the Army. The rancor between the General Staff and the Assistant Secretary's office was echoed in the lack of coordination between the logistics element (G-4) and the operations element (G-3) on the general staff. The operations plans drawn up by G-3 and various joint planning elements were logistically unrealistic. With the 1933 Industrial Mobilization Plan and a survey of industry in hand (by 1940 the Planning Branch and other planners had surveyed 30,000 industrial firms that supplied 70,000 different items the Army required[13]), the G-4 wrote in 1936 that the forces to be mobilized in the first 30 days after M-Day could be fed, transported, and sheltered in a "reasonably satisfactory manner" and could also be "supplied with required equipment from storage or procurement *except* (emphasis added) for airplanes, tanks, combat cars, scout cars, antiaircraft guns, searchlights, antiaircraft fire control equipment, .50 caliber machine guns, pontoon equipment, . . . gas masks, radio and telephone equipment and equipment for medical regiments."[14]

In addition to the political climate militating against implementation, superficial planning, and disharmony between operators and logisticians, the United States business world was not too keen on being mobilized until the president and Congress and the people were behind it. Although the attitude of business toward mobilization warmed as the military situation in Europe darkened in 1941, the real change in perspective did not occur until the bombing of Pearl Harbor. Fifteen years of contact between the military and industry had not improved the attitude of businessmen.[15] They were hurt by the boom and bust cycle of World War I and were not to be hurt willingly again.

Ultimately it came down to Roosevelt. He did indeed scuttle the Industrial Mobilization Plan of 1939, only to be driven back to its "essential form in 1943 after years of wasted administrative motion." Why? Because in the period from 1939 to 1941 he saw himself bound to his political base. He had to rally and sustain a "New Deal political coalition for reelection" and a country for a "united world war effort." He simply had to

avoid confrontation with "major power groups both inside and outside of Washington." In the end, the president rejected the Industrial Mobilization Plan because "he could not afford politically to be seen to support a plan that organized labor and agricultural spokesmen and influential New Dealers opposed, even if he had wanted" to himself. Big industrialists, furthermore, were opposed to government control, had been hostile to much that Roosevelt had done during the New Deal, and had "demonstrated unparalleled ability to retain prerogatives notwithstanding economic and wartime crises. And they continued to exact a price for their private performances." The president "had to bargain" with the industrialists, "and bargaining means joint decision making and shared power."[16] In other words, the president was not at all a free agent in this matter, or, at least, he did not see himself as one.

It is not that the Army Industrial College, the Planning Branch, and the Army and Navy Munitions Board accomplished nothing. Their procurement recommendations were followed, although not immediately, and their surveys of industry helped the service procurement agencies. This was significant because the Planning Branch and Army and Navy Munitions Board retained procurement authority throughout the war. More than 90 percent of the ordnance contracts that were negotiated during World War II went to firms that had been surveyed in the 1920s and 1930s. The vast bulk of the work for Signal, Engineer, Army Air Forces, and Chemical Warfare procurement went to surveyed firms. And during 1942, the Army and Navy Munitions Board set priorities for all contracts for the Army, Navy, Maritime Commission, the Coast Guard, and even some Lend-Lease orders. The Army and Navy Munitions Board was the medium through which the services presented their requirements to the War Production Board. In late 1942, Board members were directly transferred to the industry divisions of the War Production Board, ending this role.[17]

Surely the president was aware of the general planning processes that produced the Industrial Mobilization Plan, because in August 1939, on the initiative of Assistant Secretary of War Louis Johnson, he permitted appointments by the Secretary of

## INTERWAR MOBILIZATION PLANNING: THE FOUR PLANS

- **The 1930 Plan**
  - Set forth the general principles which the Assistant Secretary of War would follow in wartime procurement policies
  - Created plans for priorities, price controls, commandeering, trade with foreign countries, and government corporations
  - Proposed a "War Cabinet to be composed of the Secretaries of Army and Navy, the Chief of Staff, the Chief of Naval Operations and the officials of four superagencies: Director of War Industries, Director of the Selective Service, Director of Public Relations, and Administrator of Labor (The next three plans used the 1930 plan as a model.)
- **The 1933 Plan**
  - Redesignated key superagency the War Industries Administration and centralized internal organization
  - Provided for a Federal labor organization in wartime which was to be highly centralized
  - Contained a "Legislative Appendix" listing seven bills deemed necessary, should war break out
- **The 1936 Plan**
  - Called for War Resources Administration (formerly the War Industries Administration) to be established at outset of war which would assume all functions destined for other superagencies until they could be organized. (Administration still lacked coordinating control over the other superagencies.)
- **The 1939 Plan**
  - Called for an Administrator of War Resources to be at the top of the entire mobilization apparatus
  - All other agencies formed to mobilize the country's industries were to assist the War Administrator
  - Published after German invasion of Poland and was not implemented

Source: Marvin A. Kreidberg and Merton G. Henry, *History of Military Mobilization in the United States Army, 1775-1945* (Washington, DC: Headquarters, U.S. Army, 1955), 511-40.

War to the War Resources Board—Edward R. Stettinius, Jr., Board Chairman of United States Steel, and four prominent industrialists, educators, or investment bankers to study the plan and recommend adoption or revision.[18] Louis Johnson apparently hoped that Roosevelt was about to implement the Industrial Mobilization Plan when he appointed members to the War Resources Board, because Johnson welcomed the members of the Board (with Assistant Secretary of the Navy Thomas Edison) on 9 August 1939 with an announcement that in the event of an emergency or war, the Board would become a superagency analogous to the War Industries Board in World War I. Before it went out of business in November 1939, the board endorsed most of the 1939 Industrial Mobilization Plan, but it was disbanded by the president and its report was classified.[19]

Why? For one thing, Board membership included no one from either labor or agriculture. For another, the plan contemplated speedy enactment of a full range of legislation required to permit a War Resources Administration to control prices, profits, wages, labor allocation, imports, exports, etc. But the president, who did not see the Board's likely metamorphosis in the same light as Louis Johnson, was not ready to ask for this legislation because he believed Congress was not ready to pass it. The president was fully aware of the vocal criticism of the plan—that it was a scheme to drive the United States into war and also to put control of the economy in the hands of the military. At that time Roosevelt was also not primed to turn over the domestic economy to such an entity as the War Resources Board. Finally, Roosevelt had not tested the board and was unsure about the members' political loyalties, competence, and agendas. A combination of domestic politics and Roosevelt's personality forced the demise of the War Resources Board, the Industrial Mobilization Plan, and the War Resources Administration.[20]

## NOTES

1. Marvin A. Kreidberg and Merton G. Henry, *History of Military Mobilization in the United States Army, 1775-1945* (Washington, DC: Headquarteres, U.S. Army, 1955), 692-693.

2. Kreidberg and Henry, 502-504. These Industrial Mobilization Plans (1922/1924, 1930, 1933, 1936, 1939) can be found in the National Archives. The 1933, 1936, and 1939 plans (all published by the Government Printing Office) can also be found at the National Defense University Library Archives. Kreidberg and Henry rely very heavily in this section of their massive work on mobilization on Harold W. Thatcher, "Planning for Industrial Mobilization 1920-1940 (Washington, DC: Office of the Quartermaster General, 1948). There is a circulation copy of this work in the National Defense University Library collection.

3. Kreidberg and Henry, 516-517. Given the situation in World War I, this seems like an odd lapse.

4. Industrial Mobilization Plan, Revised 1933, vii-xi, National Defense University Library Archives.

5. Industrial Mobilization Plan, 1933, 18. See the cover for the dates of approval by both service secretaries. The Gerald P. Nye Committee (Special Committee Investigating the Munitions Industry) was highly critical of this plan because it did not sufficiently control war profiteering and because the Committee saw a threat of press censorship in the public affairs parts of the plan.

6. Kreidberg and Henry, 518-525.

7. Industrial Mobilization Plan, Revised 1936 (Washington, DC: Government Printing Office, 1936). Available in National Defense University Library Archives.

8. Kreidberg and Henry, 529-530.

9. Industrial Mobilization Plan, Revision of 1939 (Washington, DC: Government Printing Office, 1939) 1-18, and Annexes to 1939 I.M.P.[Industrial Mobilization Plan]. Available in the National Defense University Library Archives.

10. Kreidberg and Henry, 581, 593. Witness the passage of the draft extension bill on 12 August 1941 by just one vote, with Germany about to invade Poland and with Japan deep into an 8-year war with China. See also *Emergency Management of the National Economy: Vol XIX Administration of Mobilization WWII* (Washington, DC: Industrial College of the Armed Forces, 1954), 67-68 (hereafter referred to as ICAF) for Roosevelt's trials with a wary and suspicious legislature. Only 93 Army General Staff Officers were permitted to be assigned in Washington, and that did not change until legislation passed on 2 July 1940, increased it.

11. Kreidberg and Henry, 692-693, highlight the reasons for the failure to implement the Industrial Mobilization Plan. The Special Senate Committee Investigating the National Defense Program studied the failure too and found that "public opinion prior to the outbreak of

the war was sharply divided as to the role this country should play in the European conflict." The Senate committee also blamed the Congress for not suspending competitive bidding, a time wasting process in an emergency and permitting the War and Navy Departments to negotiate prices as had been recommended by the various Industrial Mobilization Plans. See Kreidberg and Henry, 692-693. Kreidberg and Henry argue that the planning was not a total waste, however, because the War and Navy Departments did get permission, on 2 July 1940, to negotiate prices, but were still competing some contracts 4 months into the war. The procurement recommendations embodied in the various plans were followed, and the military did learn a great deal about industry in the process of studying it since 1924 (Kreidberg and Henry, 689-691). See also Director of the Service, Supply, and Procurement Division, War Department General Staff, *Logistics in World War II: Final Report of the Army Service Forces* (reprint) (Washington, DC: Center for Military History, 1993), 5. Public policy was "confused" and as long as that was true, nothing as bold as implementing the Industrial Mobilization Plan could be accomplished.

12. For all that, the United States was far better prepared for a World War in 1941 than it was in 1917. Defense spending was mounting rapidly in 1941 before the Japanese attack on Pearl Harbor. While war expenditures were about one-tenth of nonwar expenditures in 1939, they became one-fifth in 1940 and almost half in 1941 (they were 16 times greater in 1943 and almost 20 times greater in 1944). From January 1941 to December 1941, munitions production increased 225 percent. There were two million men in the Army and Navy by the end of 1941. Lend-Lease was an ongoing operation supplying our future allies with vital munitions, raw materials, and food. In sum, the foundation had been laid for the prodigious buildup that followed the attack on Pearl Harbor. Alan Milward, *War, Economy and Society: 1939-1945* (Los Angeles: University of California Press, 1979), 63-72.

13. Donald M. Nelson, *Arsenal of Democracy* (New York: Harcourt, Brace and Co., 1946), 35.

14. Kreidberg and Henry, 468.

15. Gough, "Soldiers, Businessmen and U.S. Industrial Mobilization," 81-83.

16. Robert D. Cuff, commentary in James Titus, ed., *The Home Front and War in the Twentieth Century: The American Experience in Comparative Perspective: Proceedings of the Tenth Air Force Academy Military History Symposium* (Washington, DC: Office of Air Force History, 1984),112-115. A history of this era written for the Industrial College of the Armed Forces states that it "was necessary to induce

manufacturers to accept defense contracts" because of negative past experiences. Industry feared being left with excess capacity and was reluctant to build new plants even for fat contracts. Before Pearl Harbor was attacked "private enterprise was . . . reluctant to invest its money in plants to produce weapons for a war that might not come," and through that era this country seldom invested public funds in manufacturing facilities. But on 25 June 1940 Roosevelt secured legislation that authorized the Reconstruction Finance Corporation "to make loans, to . . . purchase capital stock in any corporation (a) for the purposes of producing, acquiring, and carrying strategic and critical materials as defined by the President, and (b) for plant construction, expansion and equipment." 54 Statute 573, cited in ICAF, 21-23.

17. Kreidberg and Henry, 689-691.

18. Industrial College of the Armed Forces, 12.

19. Kreidberg and Henry, 682-683.

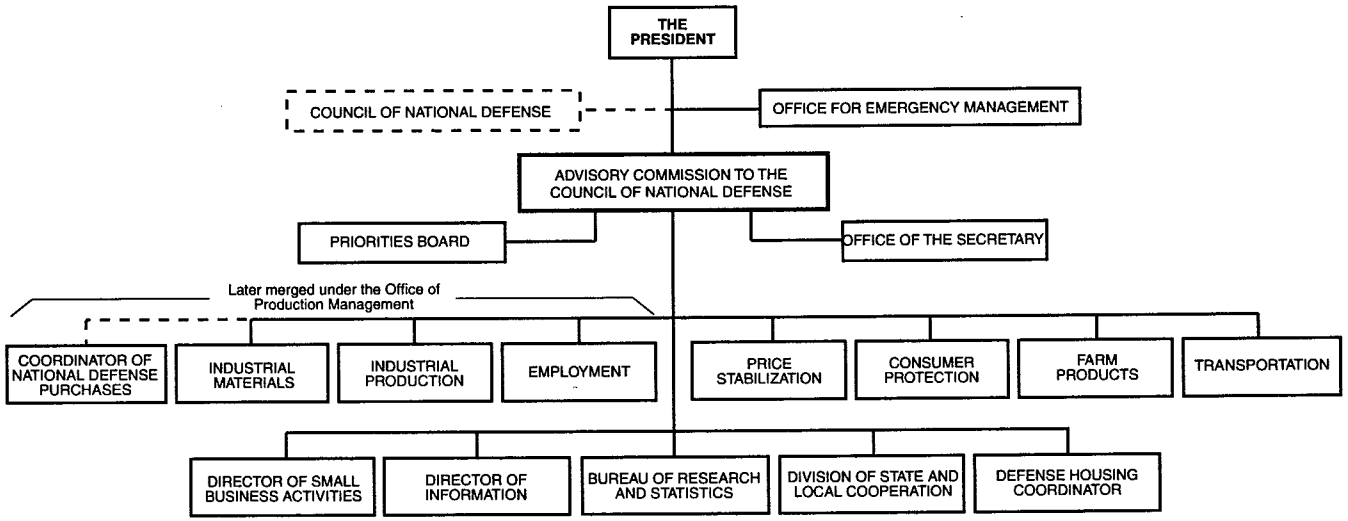
20. Herman M. Somers, *Presidential Agency: The Office of War Mobilization and Reconversion* (Cambridge: Harvard University Press, 1950), 6-7; Kreidberg and Henry, 682-683.

# 5.
# MOBILIZING FOR WAR: 1939 to 1941

With the defeat of Poland and the onset of the *Sitzkrieg* (between October 1939 and May 1940) during the so-called Phony War period, there was little bureaucratic momentum in Washington affecting industrial mobilization, although the General Staff, the Office of the Assistant Secretary of War, and the Joint Board were busy. There was no "referee of claims made by either armed service except the Army and Navy Munitions Board."[1] With the attack on the Low Countries and France, however, several key industrial mobilization decisions were made. On 25 May 1940, Roosevelt established by Executive Order the Office of Emergency Management inside the Executive Office of the President. This new organization helped coordinate and direct emergency agencies that were beginning to proliferate, and it spawned a number of important war organizations like the National Labor Relations Board, Office of Civilian Defense, Office of Defense Transportation, War Food Administration, War Manpower Commission, National Housing Agency, and Office of Price Administration—all of which germinated in the Office of Emergency Management, headed by William H. McReynolds, as Liaison Officer for Emergency Management. He was to assist the president in information clearance and to maintain liaison between the chief executive and the Council of National Defense and its Advisory Commission, which was reestablished 3 days later, also by Executive Order, and any other agencies, public or private, the president might direct to meet the demands of an emergency.[2]

Immediately after creating the Office of Emergency Management, Roosevelt resurrected the Council of National

# ORGANIZATION OF THE ADVISORY COMMISSION TO THE COUNCIL OF NATIONAL DEFENSE, 30 OCTOBER 1940




Source: James W. Fesler, ed. *Industrial Mobilization for War: History of the War Production Board and Predecessor Agencies, 1940 - 1945* (New York: Greenwood Press, 1969), 238.

Defense and its Advisory Commission. The Office of Emergency Management served as a secretariat for the Advisory Commission.[3] These bodies had been sanctioned by legislation in 1916, and Congress had never repealed the authorization. The president, therefore, could recreate these agencies without congressional approval, an important element in Roosevelt's political tactics. The Council was made up of key cabinet officials: Secretaries of War, Navy, Commerce, Interior, Agriculture, and Labor—those departments essential to mobilizing for war—but the Advisory Commission "made no pretense of reporting to the Council."[4] Its seven civilian leaders (chosen with "political astuteness" by Roosevelt)—Edward R. Stettinius, Jr., (advisor for industrial materials matters), William S. Knudsen (advisor for industrial production), Sidney Hillman (labor), Leon Henderson (price stabilization), Chester C. Davis (agriculture), Ralph Budd (transportation), and Harriet Elliot (consumer protection)—reported individually and directly to Roosevelt. The National Defense Advisory Commission (emphasis on the third word in the title) did meet often, but it had neither a chairman nor decisionmaking authority.[5]

The members of the Commission organized into many divisions and subdivisions to be productive. Knudsen's industrial production element had subdivisons run by senior, experienced industrialists: W.H. Harrison (of American Telephone and Telegraph) advised on construction, Harold S. Vance (of Studebaker) on machine tools and heavy ordnance, Dr. George Mead (inventor of the Wasp aircraft engine) on aircraft, E. F. Johnson (retired executive from General Motors) on small arms and ammunition, Rear Admiral Emory S. Land (chairman of the Maritime Commission) on shipbuilding, and George M. Moffett (of the Corn Products Refining Company) on food and chemicals. Stettinius, who ran the Industrial Materials Division had three subdivisions: mining and mineral products, chemical and allied products, and agricultural and forest products, all of which were run by big businessmen.[6]

However it was divided and subdivided, and no matter the caliber of the people in it, the Advisory Commission was not the agency to supervise industrial mobilization—it had no formal leader (critical in an organization with powerful men who see

themselves as equals), and more importantly, no authority. And it is indicative of Roosevelt's frame of mind and approach to bureaucracy and domestic politics that this organization existed for more than a year,[7] even after subsequent organizations were founded. This is not to say, however, that the Advisory Commission accomplished nothing.

Airplanes, especially bombers, were central to Roosevelt's strategic viewpoint, and the president turned to a key member of the Commission, William Knudsen, to help him generate the facilities that would eventually lead to construction of the greatest air armada in history, before or since. Purchases by the British and French before 1940 and by the British after 1940 helped lay the foundation for the unprecedented growth in the aviation industry, but Knudsen's work on the conversion of the automobile industry for aircraft production was certainly essential.[8] Creative funding to build the necessary aircraft manufacturing plants was also an initiative of the Advisory Commission. Unlike Germany, the United States mobilized by building armaments in depth rather than in width by first spending money and allocating resources to build factories. By contrast the Germans pushed more arms out of existing facilities by allotting materials for manufacture of munitions.[9] Leon Henderson, a commission member, and Donald M. Nelson, an adviser to the Commission, came up with a 5-year amortization scheme to permit industrialists to write off plant construction costs if these were expended for building munitions. Knudsen carried the ball in testimony before the Senate Finance committee where it passed 11 to 10 in July 1940, spurring new construction at a critical time.[10] After Pearl Harbor was attacked, the government generated the funds for most factory construction,[11] but Roosevelt would have found it impossible to get this kind of funding in 1940. There was more to the Commission, though, than gearing up industry.

The Advisory Commission, perhaps because Sidney Hillman was a commissioner, perhaps because the industrialists were sensitive to labor anyway, made a pronouncement on labor to the president, who sent it to Congress on 31 August 1940. The Commission called for fair treatment of labor during the emerging crisis and for using the emergency to sop up

unemployment. It insisted on a 40-hour week with overtime pay for extra work; demanded compliance with the Walsh-Healy Act, the Fair Labor Standards Act, and the Labor Relations Act; called for adequate housing for the labor force, and asserted the need for nondiscrimination in the labor force on the basis of age, race, or gender. The Commission understood the relationship between a happy labor force and efficiency.[12]

Though the Commission industrialists could advise the president and cajole industry, especially their own, the group failed because Roosevelt would give them neither the authority to succeed nor, in many cases, even the information they needed. The president, for example, called in 1940 for industry to tool up to build 50,000 airplanes per year (in 1944 the United States produced 96,000, but at the time of Roosevelt's call 50,000 seemed out of reach). But nobody told the Commission what kinds of airplanes to produce or the numbers of each model. Everybody knew that tanks would be needed in great numbers after Germany's lightning war in Poland and France, but nobody told the Commission what kind of tanks to build.[13]

Nobody was satisfied with the results of the Advisory Commission—neither its members nor the president nor mobilization gurus like Bernard Baruch.[14] Congressional dissatisfaction was reflected in Senator Robert Taft's 21 November 1940 announcement that he would introduce a bill in the legislature to create a War Resources Board under a single administrator. Others outside of government were also disturbed. Alfred P. Sloan, Jr, Chairman of the Board at General Motors, called in late November for a single person to direct a National Defense Board, and several weeks later National Association of Manufacturers president J.W. Prentis made a strong plea for a single civilian leader with decisionmaking authority.[15]

This general dissatisfaction led Roosevelt to create, by Executive Order on 7 January 1941, the Office of Production Management, a "curiously blended compromise of many pressures" designed to stimulate production. Knudsen was appointed Director General, a logical choice it appeared at the time, and because labor support was essential to winning the battle of production, Sidney Hillman was made Associate Director General. Presumably the president thought that two

heads were better than one. The Secretaries of War and Navy were members of the Office of Production Management policy council, but Knudsen and Hillman were to run the office, rationalize war production, and coordinate the many other government agencies involved in producing for rearmament.[16]

The office was chartered to increase and regulate the production and supply of defense materials, equipment and factories. It was also to analyze and summarize the requirements of the two services as well as foreign governments, now a major demand. The office also was charged with ensuring the supply of raw materials, formulating plans to mobilize defense facilities further, and planning for the future creation of industrial plants. The office was to establish a priorities mechanism, but the Director General could only advise the president on industrial priorities and all other mobilization matters. Once again, because Roosevelt created this office as only an advisory body to the president, it was doomed.[17]

The office had three functional divisions: purchases, production, and priorities, and two staff divisions: a Bureau of Research and Statistics and a Production Planning Board. But there was extensive overlap in these functional and staff divisions, which caused friction, and also much duplication between the Office of Production Management and a proliferation of liaison groups. "Businessmen, industrial representatives, and Army and Navy procurement officers seeking decisions were shunted back and forth from division to division, sometimes for days and weeks."[18] It was ineffective from the start and lasted only about a year.

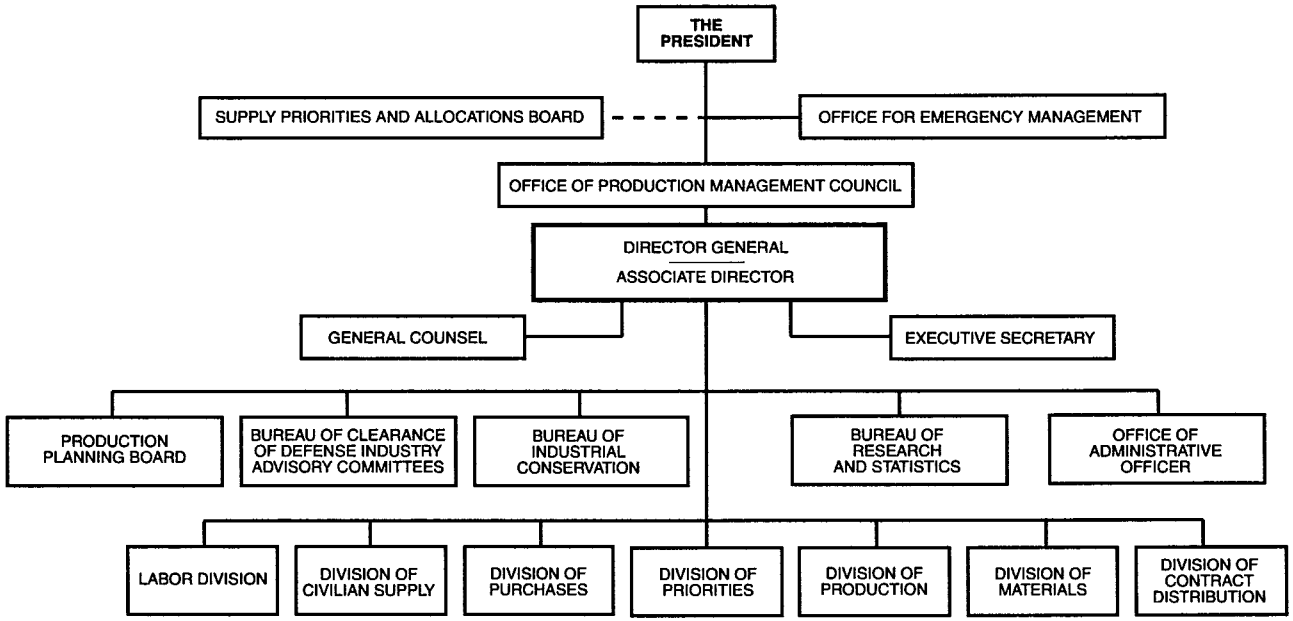
The key problem with this new office was similar to the central difficulty with the Advisory Commission—the lack of clear authority. To make matters worse, several parts of the Advisory Commission were spun off as independent entities, such as the Office of Defense Transportation and the Office of Price Administration. These operated as equals to the Office of Production Management. There were other agencies established by the president that had not been a part of the Advisory Commission. The Petroleum Coordinator for National Defense, for example, was established in May 1941 and run by White House insider Harold Ickes. This was only the first of the many

parallel entities created by Roosevelt.[19] There developed factions, frictions, prejudices, and parochialisms, and Knudsen and Hillman were not able to cope with the resultant clashes,[20] perhaps because Roosevelt did not give his support when these inevitable disputes occurred. Another crucial problem was this new office never had control over civilian production,[21] and from the time the Office of Production Management was founded, munitions production competed fiercely with manufacturing items for the civilian population. Industry would rather produce for civilians than for the government.[22]

Even Roosevelt's declaration of an unlimited national emergency on 27 May 1941 did nothing to improve Knudsen's lot. That act on the part of the president was supposed to create a merger of the Army and Navy Munitions Board and the Office of Production Management, but nothing like that occurred.[23] However, some progress was made. On 22 March the Office of Production Management issued Order M-1 requiring that producers of aluminum give preference to defense orders and specified the sequences in which nondefense orders should be filled. In the following months copper, iron, steel, cork, certain chemicals, nickel, rayon, rubber, silk and other materials were brought under similar controls. The office also prohibited the use of affected materials for less essential purposes. While the Army and Navy Munitions Board was permitted to give priorities to military products, the Office of Production Management could assign ratings to indirect defense and essential civilian products. Although this system did not cover the entire industrial system, and broke down in time, it demonstrates where the Office of Production Management fit in early 1941.[24]

Additionally, the office began to survey industry during this period to explore what production capacity existed. For example, Merrill C. Meigs, chair of the Joint Aircraft Committee for the Office of Production Management surveyed the aircraft industry to explore its potential output. Meigs also began to examine standardization potentialities so that something like mass production could be achieved in an industry that heretofore had resisted such approaches. Meigs, like other industrialists, found that the most serious shortage confounding defense production was the scarcity of machine tools.[25]

# ORGANIZATION OF THE OFFICE OF PRODUCTION MANAGEMENT
## 1 October 1941




Source: James W. Fesler, ed. *Industrial Mobilization for War: History of the War Production Board and Predecessor Agencies, 1940 - 1945* (New York: Greenwood Press, Publishers, 1969), 238.

## MOBILIZATION PLANNING BETWEEN THE WARS

### Chronology

| | |
|---|---|
| **1920** | |
| *4 June* | National Defense Act of 1920 (amendments to Act of 1916) |
| **1921** | |
| *October* | Establishment of Procurement Division in the War Department, included in which is the Planning Branch |
| **1922** | |
| *29 June* | Army and Navy Munitions Board created |
| *1922-1939* | Four Industrial Mobilization Plans written and revised |
| **1924** | |
| *25 February* | Army Industrial College founded |
| **1939** | |
| *9 August* | War Resources Board formed |
| **1940** | |
| *25 May* | Office of Emergency Management established within the Executive Office of the President |
| *28 May** | Advisory Commission to the Council of National Defense reestablished |
| **1941** | |
| *7 January* | Office of Production Management founded |
| *March* | National Defense Mediation Board created |
| *11 April* | Office of Price Administration and Civilian Supply established |
| *June* | Committee on Fair Employment created |
| *28 August* | Supply Priorities and Allocations Board formed |

* Reestablishment of the Advisory Commission rooted in the National Defense Act of 1916.

As defense production was accelerating, moreover, manufacturers began to complain that they faced training problems and labor discontent. New skills were needed. Labor leaders tried to use the looming emergency to bid up wages. Roosevelt appointed a National Defense Mediation Board in March 1941 to settle controversies between employees and employers. This 11-member board had four representatives each from labor and management and 3 appointed by the Federal Government. The agency was instructed to act when the Secretary of Labor certified that a dispute threatened production or transportation of equipment or materials essential to national defense that could not be adjusted by a conciliation commission inside the Department of Labor.[26] As an example of Roosevelt's management style and his penchant for creating competing institutions, the Office of Production Management was not a partner to this Mediation Board, nor were its successor organizations. This structure plagued the war effort until 27 May 1943, when the Office of War Mobilization was founded, and the president decided to support its director explicitly. Until then disputes between agencies like the Office of Production Management (or the War Production Board later) and any other significant organization could only be settled by Roosevelt himself, and he was too busy and burdened before Pearl Harbor to adjudicate disputes between powerful departments, bureaucrats, or personalities. After Pearl Harbor, such an effort by the President was out of the question.

The Office of Production Management was obviously concerned about the labor pool and initiated large retraining programs. Also, in August 1941, the office urged manufacturers to employ women and entreated women to enter the laboring force. Roosevelt made public and private statements to help ensure that minorities received a fair deal from industry and labor unions. In June 1941 he created the Committee on Fair Employment Practices to investigate and redress grievances growing out of departures from his policy against employment discrimination on grounds of race, creed, color or national origin.[27] This was more than political, however; it was pragmatic. If the United States was to be the Arsenal of Democracy, it needed to eliminate barriers to employment.

Typical of Roosevelt, in April 1941 he established an organization that had, within its portfolio, elements the leaders of the Office of Production Management believed properly belonged to them. Under Leon Henderson, a New Dealer bureaucrat and not an industrialist, Roosevelt established the Office of Price Administration and Civilian Supply. This newest entry was responsible for recommending procedures to dampen inflation and also to ensure that civilian needs received adequate attention. Civilians were not to have priority during the defense buildup; at the same time they were not to be neglected, because to do so could destroy morale and weaken health and safety standards. But they could not be pampered. Unemployment, while still high, was in sharp decline, and many people had money to spend at a time when industry was supposed to be gearing up for war. Henderson, called an "all-outer" because he believed in an all-out war effort, one that paid attention to victory before considering business profits and civilian discomforts. Henderson believed he had the power to curtail civilian production, in order to promote industrial conversion. But the Office of Production Management thought it had this authority. The latter was staffed by industrialists who wanted to produce for the civilian market. Henderson was disturbed by widescale automobile manufacturing and production of appliances that were consuming steel and other materials needed for the war effort. In July 1941, when he took the initiative and ordered curtailment in future production of raw material devourers like automobiles, the Office of Production Management forced Roosevelt to mediate. In August Roosevelt ruled that the civilian supply function was to be broken off from Henderson's office and given to the Office of Production Management.[28] It was all a matter of priorities, and clearly the business leaders who predominated in the Office of Production Management had different priorities from Henderson and perhaps even the president. The political moment had not yet arrived for Roosevelt when he could ask civilians and their suppliers for sacrifices.

Establishing grand priorities was essential in the summer of 1941 because it was during this period, on 9 July 1941, that Roosevelt directed the War and Navy Departments to collaborate on a report "on the munitions and mechanical equipment of all

types which . . . would be required to exceed by an appropriate amount that available to our potential enemies. From your report we should be able to establish a munitions objective indicating the industrial capacity which this nation will require." On 30 August he told the services to factor Lend-Lease requirements into their analysis and wanted a final answer in 10 days.[29]

The War Department's answer, the "Victory Plan," called for 61 armored divisions and 61 mechanized divisions, but the Army created only 16 of the former and none of the latter, although American infantry divisions were, by comparison to any other country's, lavishly mechanized. The requirements of Lend-Lease frustrated this. The Army estimated that the United States sent enough equipment to the United Kingdom and other parts of the British Empire, the Soviet Union, France, Italy after it switched sides, China, and other allied and associated states to create 101 United States type divisions. Because of Lend-Lease it was impossible for the War Department to create as many United States armored divisions as the Victory Plan demanded. Where the Victory Plan called for 215 Army divisions of all kinds, only 89 were created.[30]

Remarkably, however, the size of the Army the Victory Plan called for was close to the number actually mobilized. The Victory Plan called for an Army of 8.8 million (reaching 8.3 million at its peak), a ground force of 6.7 million (which peaked at 6 million) and an Air Force of 2 million (which peaked at 2.3 million). The Victory Planners were assisted by Army Air Force planners, who determined that the United States would need 6,680 heavy bombers, 3,740 very heavy bombers, and 13,038 bombers for replacements. They also called for 8,775 fighters and an equal number of replacement fighters.[31] The Navy had been building since the mid 1930s and had a two-ocean Navy that dwarfed Hitler's (except for submarines) and Mussolini's and was larger than Japan's. It was not until 17 December 1941 that the Bureau of Ships presented its first "Master Plan for Maximum Ship Construction," which became the guiding document for the president and his agencies devoted to munitions production.[32]

| | Victory Plan* | Actual 31 May 1945* |
|---|---|---|
| **DIVISIONS** | | |
| Armored | 61 | 16 |
| Infantry | 71 | 66 |
| Infantry, mechanized | 61 | 0 |
| Airborne | 10 | 5 |
| Mountain | 10 | 1 |
| **Total** | **213** | **89**** |
| **STRENGTH** | | |
| **Total** | **8,795,658** | **8,291,336** |
| Ground Forces | 6,745,658 | 5,980,900 |
| Air Forces | 2,050,000 | 2,310,436 |

*Different sources list different numbers.
**This number has been rounded up.

Source: Marvin A. Kreidberg and Merton G. Henry, *History of Mobilization in the United States Army, 1775 - 1945* (Washington, DC: Headquarters, U.S. Army, 1955), 623.

By this time, however, Roosevelt and his advisors believed that the Office of Production Management was failing. Production was not accelerating as necessary, and the most nagging problem was establishing priorities—what was to be built first, to whom would it go (domestic or overseas military) and for which armed service in the United States, what essential civilian items were to be manufactured, who got which raw materials and when? The office had limited priority-setting authority, although after August it could set military priorities above producing civilian goods. Bernard Baruch and the Director of the Bureau of the Budget called for the creation of a single agency to centralize priority authority over all production, civil and military. Because of such advice, Roosevelt created the Supply Priorities and Allocations Board, under the leadership of Donald Nelson, a key member of the Office of Production Management, as Executive Director. Vice President Henry Wallace was Chairman of the Board and there were other powerful people on the Board, like Harry Hopkins. But Nelson was in charge.

This new Board was to be both a part of the Office of Production Management and superior to it in matters of allocating resources and setting priorities. Thus William Knudsen's subordinate, Donald Nelson (Knudsen's Director of Purchases and later Director of Priorities) was now his superior in the most important control element: establishing priorities and allocations. The Executive Order establishing this new agency was explicit: "to assure unity of policy and coordinate consideration of all relevant factors involved in the supply and allocation of materials and commodities among the various phases of the defense program and competing civilian demands." The Board could also "determine policies and make regulations governing allocations and priorities with respect to the procurement, production, transmission, or transportation of materials, articles, power, fuel, and other commodities among military, economic defense, defense aid, civilian and other major demands of the total defense program." But there were other agencies that had been granted similar responsibilities. Not only were there entanglements with other departments not subordinate to the Board—for two critical examples, the War and Navy Departments—but the relationship of the Board to the Office of Production Management was snarled.[33] The Board's first meeting was on 2 September 1941 and its last on 13 January 1942 (when it was absorbed in the War Production Board). In that time production indeed increased.[34]

The Supply Priorities and Allocations Board recognized early that efficiency lay in establishing an allocation system versus spending time on priorities. Trying to establish priorities corrupted the system, because everybody wanted everything now and certainly ahead of everyone else. Because too many systems received A-1 ratings, the Office of Production Management established a higher rating, A-1-A. Then too many systems got that rating, so a new priority rating system was established that rated materiel from A-1-A through A-1-J. And when that system became clogged, an AA band had to be superimposed. Then the system broke down. It took time for the Board to become cognizant of the fullest dimension of the priorities program breakdown, and then to understand completely the availability (or really, the unavailability) of raw materials.[35] Many agencies were in the business of establishing requirements and the order in

which they would be manufactured. The Joint Chiefs of Staff, of course, played a major role and beneath them the Army and Navy Munitions Board. But the Army and Navy, which did their own procuring, might not always agree with the decisions of the chiefs. Other powerful agencies were also involved in this process: the Maritime Commission, Lend-Lease, and the War Production Board. The last was, "in theory, empowered to make decisions on reductions if its Planning Committee indicated the necessity for such a step. Because of its composition, however, the Board itself could rarely agree on such matters, and it never claimed authority to determine the order of strategic necessity." Grand strategy was supposed to be the governor, the province of the Joint Chiefs, which would send its munitions priorities to the War Production Board based on it.[36]

The Board's task was enormous. Once the needs for the military and the civilian economy were known, and of course these essentials changed, how much steel, aluminum, copper, rubber, and dozens of other materials was needed to build the millions of weapons and other necessities? It was crucial not to manufacture too much of a munition, because with the people and facilities stretched tight, superfluous production would cost money, effort, energy, and most importantly time. All the money in the world will not buy time. Sequencing was also critical; there was no sense in allocating steel for aircraft engines if there is insufficient aluminum to build airframes. The board, like the Office of Production Management, found that the estimates of the Army and Navy Munitions Board of raw material requirements were "practically worthless." For example, the Munitions Board estimated the requirement for copper for the first 2 years of the war to support a 4-million person army was 25,000 tons, when the real requirement turned out to be nearly 1 million tons. The Navy had been no more realistic in its estimation of raw materials.[37]

The Army and Navy were not comfortable with civilians responsible for prioritization and allocation, and in November 1941 made a move to put a super priorities committee above Nelson's Supply Priorities and Allocations Board. The military constructed this new agency in such a way that uniformed people would be dominant, but President Roosevelt rejected the idea.

As the president got increased funding from Congress in summer and fall 1941, Nelson's Board began in August 1941 (effective 30 November that year) to reduce production for civilian goods. Automobiles were first to be cut back.[38] On 9 October, nonessential building and construction was stopped so that the Board could allocate building materials to war plant construction. On 21 October manufacturers were told to stop using copper in almost all civilian products. The Board sharply limited the production of refrigerators, vacuum cleaners, metal office furniture, and other "nonessential" products.[39] On Pearl Harbor Day, Nelson and other principals from the Supply Priorities and Allocations Board agreed that complete conversion of the automobile manufacturing industry was the "first and biggest item" on their agenda.[40]

In the end, the Supply Priorities and Allocations Board also failed to solve the problem. Adding it to the Office of Production Management in many respects made decision-making more difficult than it had been in the past, but the bigger problem was getting decisions once made to stick without further appeal to department secretaries and, ultimately, the president. This problem was not solved until May 1943, and only then because Roosevelt allowed it to be solved. Herman Somers wrote: "From the beginning, the ever resounding demand for reform centered around the absence of coordination, centralized authority, and central policy-making—all facets of the same problem."[41] Unfortunately, the War Production Board was to suffer from the same fatal flaw.

## NOTES

1. Donald M. Nelson, *Arsenal of Democracy* (New York: Harcourt, Brace and Co., 1946), 87-88.

2. Marvin A. Kreidberg and Merton G. Henry, *History of mIlitary Mobilization in the United States Army, 1775-1945* (Washington, DC: Headquarters, U.S> Army, 1955), 683; Bureau of the Budget, *The United States at War, Development and Administration of the War Program by the Federal Government* (Washington, DC: Government Printing Office, 1946), 22. These weak institutions, such as the Office of Emergency Management and the National Defense Advisory Commission, did not bar the president or Congress from actions. In the last half of 1940, for example, Congress appropriated $10.5 billion for munitions contracts, nine times the total expenditures for both the Army and Navy for fiscal year 1937 (which ended on 30 June 1938) (Somers, 9).

3. Nelson, 87-88.

4. Kreidberg and Henry, 683-684; Nelson, 20-21. Nelson underscores the point that in May 1940, "business was fearful, labor was anxious" of an extensive increase in government power and authority.

5. Kreidberg and Henry, 683-684; Nelson, 66; *Emergency Management of the National Economy: Vol. XIX Administration of Mibilization WWII* (Washington, DC: Industrial College of the Armed Forces, 1954), 29 (hereafter cited as ICAF). The seven advisors did more than just counsel the president; they helped advance mobilization by solving problems as facilities, machine tools, and materials became tight. Unemployment was evaporating, and people with jobs wanted to spend money. Businessmen wanted to manufacture for this market and were reluctant to expand production facilities for munitions work when there might be no war. Labor also wanted to be rewarded in the tighter employment market. Sidney Hillman, a key labor leader, on 2 July 1940, about 5 weeks after being appointed to the Commission, established a Labor Policy Advisory Committee with representatives from the American Federation of Labor, the Congress of Industrial Organizations, and the railroad brotherhoods. (One of these men, Joseph D. Keenan, later became a vice chairman of the War Production Board). Hillman and his partners worked successfully to solve labor relations problems before they became issues. They helped prevent strikes by removing trouble spots before breakdowns occurred. There were strikes during this period, but fewer than there would have been had Hillman not worked his powers of persuasion on an increasingly militant labor force (Nelson 308-311). Nelson reports elsewhere that

Roosevelt deliberately failed to appoint a chairman, thinking he could direct the Advisory Commission, and when the president chaired meetings, infrequently as it turned out, progress was made, but in his absence little could be jointly accomplished (Nelson 82-86).

6. Nelson, 92-93. The Commission understood the intimate relationship between raw materials and industry and soon after being formed drew up a list of 14 strategic and 15 critical materials, some of which were not available (or barely so) in North America—for example rubber, silk, tin, manganese, quinine, magnesium (Nelson, 94-97).

7. Herman M. Somers, *Presidential Agency: The Office of War Mobilization and Reconversion* (Cambridge: Harvard University Press, 1950), 14.

8. Nelson, 46, 48, 82-86.

9. The common policy of the United States, United Kingdom, and Soviet Union on the verge of the war was to "follow a much more 'intensive' rearmament rather than the approach adopted by Germany, which stressed a relatively high level of allocations to mechanization and reequipment, compared with the German policy of creating a large fighting force based on only limited military stockbuilding. . . . The low proportion of German military stockbuilding to armed forces personnel reflected an essential weakness of Germany's war preparations. . . . After 1940 German munitions production rose only slowly whereas Allied production multiplied. As a result, when German production finally accelerated in 1943-4, it was already too late to close the gap." Even with the reverses in 1941 and 1942 the German number of work hours were virtually unchanged from that of 1939. While the percentage of German women in factories was already higher than it would be in Britain, it did not rise between 1939 and 1943. Mark Harrison, "Resource Mobilization for World War II: The U.S.A., U.K., U.S.S.R., and Germany, 1938-1945," in *Economic History Review* XLI, no. 2 (1988): 175-177, 187, 190.

10. Nelson, 106. In 1940, Nelson, a senior Sears executive, was seconded to the Department of the Treasury where he was acting director of the Procurement Division. Here he was authorized to make purchases for all government departments except the Army and Navy. He soon became associated with the Advisory Commission as Coordinator of National Defense Purchases (and later Director of Small Business Activities), but he was not a member at the outset [Nelson, 82-86, and *Emergency Management of the National Economy: Vol. XIX Administration of Mobilization WWII*, hereafter cited as ICAF (Washington, DC: Industrial College of the Armed Forces, 1954), 20]. Coordination of purchases was desirable to prevent government agencies

from competing with one another for supplies, and thus bidding up the price. By this time orders were pouring in from overseas, the armed services were spending more. Consumers had more money in their pockets and were eager to buy. There were also standardization problems. In 1940 Douglas aircraft company was making seven different variations of one aircraft for seven different customers, creating major production problems (Peppers, 32-35).

11. ICAF, 24

12. ICAF, 23-25. Of course, none of these recommendations came without debate. The authors of the Industrial College study argue that the "process of getting the country squared away for rearmament was accompanied by prolonged and vitriolic debate over the terms on which various interests would participate in the defense program." Labor seriously distrusted management—with good reason, assert the authors—and management was suspicious of labor. "Business was accused by labor and politicians, and by others of conducing a 'strike of capital' until they were able to get contracts on their terms. Everybody was clamoring for the Government to knock heads together, i.e. other people's heads."

13. Nelson 99, 105. Nelson brought much organizational capability, expertise, and additional personnel with the right skills to this group, added a statistical section in October 1940, and must have seemed like the superstar because it was he who eventually became the industrial mobilization "czar" (although he, too, was to be chopped down well before the end of the war).

14. Baruch, who wanted industrial committees (there were 57 on the War Industries Board during World War I), saw the lack of a priority setting apparatus in the Advisory Commission as a major problem, and perceived the failure to establish a mechanism for controlling prices as critical. In general, he saw as crucial the lack of an individual with real authority to make decisions in this critical period. See Nelson, 90-91.

15. Somers, 14.

16. Kreidberg and Henry, 684-685.

17. Nelson, 117-118.

18. Kreidberg and Henry, 684-685. Nelson wrote that the Office of Production Management was ready for the "oxygen tent" by mid-summer of 1941. Nelson, 139.

19. Somers, 16-17. The Office of Production Management also had an oil unit, but it could not control this basic industry because of competition from Ickes. The Federal Power Commission was also a competitor. When the Office of Production Management tried to

control power for defense purposes, the Federal Power Commission argued back that only it had statutory authority to allocate electricity. Only the president could resolve such disputes. Even the services sabotaged the efforts of the Office of Production Management by providing Knudsen with "unrealistically small, inadequately calculated, and internally inconsistent" figures, although this was done out of incompetence rather than maliciousness.

20. Nelson, 124.

21. ICAF, 52.

22. Paul A. C. Koistinen, "Warfare and Power Relations in America: Mobilizing the World War II Economy," in James Titus, ed., *The Home Front and War in the Twentieth Century: The American Experience in Comparative Perspective: Proceedings of the Tenth Air Force Academy Miltiary History Symposium* (Washington, DC: Office of Air Force History, 1984), 93. "Desiring to exploit growing civilian markets, fearful of creating excess capacity or disturbing intra-industry power patterns . . . doubtful or distrustful of the president's foreign and domestic policies, industrial America set the terms for cooperating with the Roosevelt administration." Koistinen asserts that the Advisory Commission and Office of Production Management were a "facade of broad interest group representation," but were "actually dominated by industry." Decisions that were made by the "dollar a year men" in these organizations "reflected the attitude of their firms and organizations. " Koistinen notes that the "nation's giant corporations" received the "overwhelming percentage of defense and war contracts." True enough, but where else would one turn in a national emergency? Was this the time to remake industrial relations, or to win the war?

23. Somers, 17. The most severe critic of the infighting that went on in Washington in this era is Bruce Catton (who may have ghosted Nelson's book). Catton was an eyewitness to the infighting and recorded the displeasures of those who were responsible for making the Office of Production Management and the War Production Board work. He found throughout the war that the industrial sector remained undemocratic and that only an "armed truce" existed between American industry and the government on one hand and management and labor on the other. He cites one example that will serve for many. Business put up a terrific fight over establishing joint management/labor committees to suggest ways to enhance production. Manufacturers called this a plan to "Sovietize American industry." Catton argues that there were many good suggestions that came out of this partnership, but that poor relations between labor and management limited the potential. See

Bruce Catton, *The War Lords of Washington* (New York: Harcourt, Brace and Co., 1948), 150, 147-148.

24. ICAF, 56-58.

25. Nelson, 123, 139. Machine tool production expanded more than six times during the war (Peppers, 63-65). The surveying done by the Office of Production Management was considered less than superficial by Bruce Catton. He writes about a meeting chaired by Knudsen soon after the Japanese attacked Pearl Harbor in which the industrialist tells automobile manufacturers that he needed to know where war production would come from. Catton quotes Knudsen regarding machine guns: "We want to know if you can make them or want to try and make them. If you can't, do you know any who can?" Catton remarked: "Here we were eighteen months after the beginning of the defense program and a full month after Pearl harbor; and the 'Office of Production Management' which had been set up to marshal the nation's industrial strength, was desperately asking, 'Who can make what (Catton, 107)?'" Catton was hardly unbiased in these matters, but all sources agree that the Office of Production Management was a failure and so was Knudsen (with Sidney Hillman) as its Associate Director.

26. ICAF, 58.

27. ICAF, 59.

28. Koistinen , 93-94; ICAF, 68-75.

29. Kreidberg and Henry, 621-623, 625. See also Charles E. Kirkpatrick, *An Unknown Future and a Doubtful Present: Writing the Victory Plan of 1941* (Washington, DC: Center for Military History, 1990), 52-53. In the case of the Army the resulting effort was called the Victory Plan which became the blueprint for both the general mobilization of the Army as well as the concept by which the United States would fight the war. The leader of the Army's effort was Major Albert Wedemeyer, an officer well schooled in the German art of war. To him it was more than a logistical question. To answer it properly he believed he had to discern the national objective, the military strategy to achieve it, the military forces required to execute the strategy, and the equipping and training of those forces. See Kirkpatrick, 1, 60-61.

30. Kirkpatrick, 107-108. Compare with Kreidberg and Henry, 623.

31. Kreidberg and Henry, 625, and James C. Gaston, *Planning the American Air War, Four Men and Nine Days in 1941* (Washington, DC: National Defense University Press, 1982), 9. The Army Air Force planners thought that 17,550 fighters would do the job, but built almost

that many P-47 Thunderbolts (15,863), 14,686 P-51 Mustangs, and 33,000 P-40s, P-38s, and P-39s. The number of Very Heavy Bombers (3,740) came close to the number of B-29s built (3,898), but the total of heavy bombers, about 20,000 was less than two-thirds of the total B-24s and B-17s actually built 30,882). See R. Elberton Smith, *The Army and Economic Mobilization* (Washington, DC: Center of Military History, 1985), 27. As it turned out the ground force was barely large enough to fight the war, and at the end of the war there were no more combat troops in the United States to send anywhere. All of the Army's ground forces were committed to battle by May 1945 (a total of 96 percent of all tactical troops were in overseas theaters). The Army had dispatched the last of its new divisions from the United States in February, 1945, 3 months before V-E day. No new units were in the United States or were being formed. There was no strategic reserve (Kirkpatrick, 113)! The War Production Board, responsible for producing the Arsenal of Democracy, saw the problem this way: "By late 1944, the manpower recruitment drive was a race in a squirrel cage. Men were desperately needed not only in the textile mills and lumber camps and coal mines and steel mills, but also in the tire plants, lead mines and smelters, ship repair yards, rocket and shell loading plants, foundries, many chemical plants, most of the aircraft plants, and elsewhere. By early 1945, and after the German offensive in the Ardennes and the step-up in Selective Service withdrawals of previously deferred industrial workers, there was scarcely an industry which was not short of manpower or afraid it was about to lose its skilled workers. The German collapse staved off what might have been a desperate manpower shortage" [War Production Board, *Wartime Production Achievements and the Reconversion Outlook*, (Washington,DC: 1945), 8-9]

32. Duncan S. Ballantine, *U.S. Naval Logistics in the Second World War* (Princeton: Princeton University Press, 1947), 56. Of course this, like all of the plans, was modified as the war progressed. The Navy's plan was short of landing craft and destroyer escorts (and the Army Air Force's plan was short of escort fighters). The Navy had received a big boost in construction funding and authorization a year previously when the president signed the Two Ocean Navy Expansion Act on 19 July 1940, which authorized a vast increase in ship construction and up to 15,000 airplanes. At this point the Navy was authorized 35 battleships, 20 aircraft carriers, and 88 cruisers in addition to hundreds of destroyers and other smaller ships. Peppers, 13-14. See also Robert H. Connery, *The Navy and the Industrial Mobilization in World War II*, (Princeton: Princeton University Press, 1951), 11-30 for

the Navy's logistics organization, 31-54 for naval planning, 76-111 for industrial mobilization before Pearl Harbor was attacked, and 154-178 for revitalizing the Army and Navy Munitions Board.

33. ICAF, 68-75; Nelson, 155-156, 159-160, 162-163. Nelson is, of course, a key source for writing on the Supply Priorities and Allocation Board. His work there was as effective as Roosevelt's tortured administration allowed it to be, and his reputation came out of this period and position quite high. So much so that he was made the "czar" of war production in the next phase. I tend to see his writing here as objective. When he writes about his experiences, and especially his fights, when he was Chairman of the War Production Board, I am more skeptical. See also Kreidberg and Henry, 685-686.

34. ICAF, 75; Nelson 162-163.

35. Nelson, 163. See also War Production Board, 13-14. Nelson later in his volume charged the Army with an attempt from 1942 onward to "gain control of our national economy." Their establishing of priorities was a tool in their approach. Nelson, 362-367. In the end, however, with the initiation of the Controlled Materials Plan in fall 1942, the military, along with the commander in chief, did secure their priorities. The Controlled Materials Plan was indeed administered by the War Production Board, but the armed services received the raw materials to be distributed as they saw fit to their prime contractors based on the priorities they deemed strategic.

36. Somers, 113-114. "If any single issue constantly loomed larger than any of the rest, it was that of priorities." Somers writes that the priority machinery broke down very early in the war and that it was reformed often. See also Nelson, 107-109.

37. ICAF, 76-77. Regarding the relationship between money and time, Nelson wrote: "The hardest lesson for us to learn in 1941 was that a lot of money was not enough" (Nelson 152-153).

38. United States manufacturers produced 4.7 million automobiles in 1937, and virtually none in 1942. The capacity to build that many automobiles (more than the entire rest of the world combined, in fact 78 percent of the cars produced in the world and 64 percent of the trucks and buses) was an asset beyond rational value once converted. The output of aircraft was tiny by comparison. Only 3,100 aircraft were produced in the United States in 1937. About 30 times that number would be produced in 1944. See Bureau of the Census, *Statistical Abstract of the United States, 1941* (Washington, DC: Government Printing Office, 1942), 900. See Nelson, 53, for the statistics on world automobile output.

39. ICAF, 78-80. Koistinen comments on the frictions between the Supply Priorities and Allocation Board and the Army and Navy Munitions Board (which now was an executive agency under the president). He writes that the uniformed military on the Munitions Board bult a parallel structure to Nelson's board so that the military could analyze and dispute and fight for their view of a proper prioritization. The leader of the Munitions Board, Ferdinand Eberstadt, was trusted by the uniformed military and by their service secretaries. Whenever he could, his board prioritized production and construction through its contracting authority. Eventually bad blood developed between Eberstadt and Nelson, with the former joining the War Production Board ostensibly to work for Nelson, who eventually fired him ( Koistinen, 95).

40. Nelson, 184. Conversion was indeed the issue because the United States had a negligible munitions industry in 1939, but it was the manufacturing center of the world. In automobiles, steel, and petroleum products, no country came close to the United States (Nelson, 35).

41. Somers, 42-46.

# 6.
# THE WAR PRODUCTION BOARD

Roosevelt tapped Nelson to be Chairman of the War Production Board in mid January 1942. Certainly of all the civilian advisers the president had assembled, Nelson seemed best to appreciate the production problem. Probably nobody had a better background—for more than a decade he was the chief merchandising executive of the world's largest distributing firm, Sears. Perhaps nobody in America knew better where almost everything in the United States was manufactured, "how much and how well."[42] Nelson was given a charter by the president to draft the Executive Order that would establish his new organization,[43] and Roosevelt set the tone nationally in an address to the country on 6 January 1942 in which he described the production task at hand:

> The superiority of the United States in munitions and ships must be . . . so overwhelming that the Axis nations can never hope to catch up with it . . . to attain this overwhelming superiority, the United States must build planes and tanks and guns and ships to the utmost of our national capacity. We have the ability and capacity to produce arms not only for our own armed forces, but also for the armies, navies and air forces fighting on our side. . . This production of ours . . . must be raised far above its present levels, even though it will mean the dislocation of the lives and occupations of millions of our own people. We must raise our sights all along the production line. Let no man say it cannot be done.
>
> I have just sent a . . . directive to the appropriate departments and agencies . . . ordering that immediate steps be taken:
>
> To increase our production rate of airplanes so rapidly that we shall produce 60,000 planes, 10,000 more than the goal set a

> year and a half ago. This includes 45,000 combat planes—bombers, dive bombers, pursuit planes. The rate of increase will be continued so that next year, 1943, we shall produce 125,000 airplanes.
>
> Only this all-out scale production will hasten the ultimate all-out victory. Speed will count. Lost ground can always be regained—lost time, never. Speed will save lives; speed will save this nation which is in peril; speed will save our freedom and civilization—and slowness has never been an American characteristic.[44]

The Roosevelt aircraft figures (he called for an enormous increase in tank, artillery, and merchant shipping too) are cited to give an idea of his extravagant thinking and to underscore the nature of his grand strategy. We know from the Victory Program that such numbers were not contemplated, but in 1944 the United States did produce nearly 100,000 aircraft, dwarfing all allies and adversaries.

Roosevelt's Executive Order establishing the War Production Board on 16 January 1942, granted Nelson as Chairman broad powers: to exercise general direction over the war procurement and production programs, to determine policies, plans, procedures and methods of the several federal departments and agencies in regard to war production and procurement, to grant priorities for construction, and to allocate vital materials and production facilities. And while Nelson was the "Chairman" of the War Production Board, the rest of the board only existed to advise him. He could accept or reject its advice.[45] Nothing in Nelson's charter indicates he was to be involved in grand strategy formulation. Nelson did not want to know anything about war plans. He limited himself to filling the materiel requests of those responsible for formulating grand strategy. If the services' plans called for a specified quantity of a system that industry could not produce, however, Nelson would inform the leaders.[46]

This board grew into a bureaucracy of 20,000 people[47] and remained in existence through the war and even into the post-war period under another name (Civilian Production Administration). Although the media pronounced Nelson the "arms czar" and "dictator of the economy" and "the man who had to tackle the biggest job in all history" the organization was superseded in 16

months when its authority was severely diluted by the creation of the Office of War Mobilization. Roosevelt did not give Nelson the support he needed to succeed, Nelson was not strong enough to demand both the president's support and noninterference from competing agencies (especially the Army and Navy), and he refused to seize all of the levers of power he needed in order to flourish.[48]

## THE WAR PRODUCTION BOARD

**Established by Executive Order 16 January 1942 giving Chairman Donald Nelson power to**

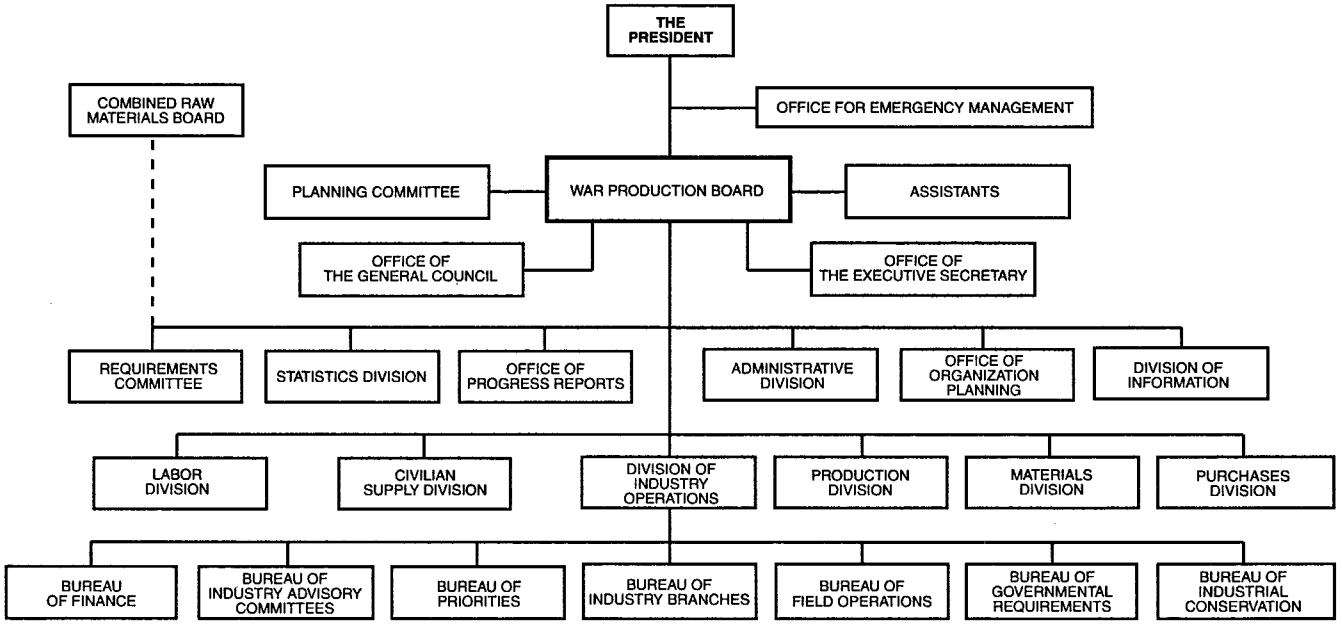
- Exercise general direction over the war procurement and production programs
- Determine policies, plans, procedures and methods of the several federal departments and agencies in regard to war production and procurement
- Grant priorities for construction
- Allocate vital materials and production facilities

His charter was to keep the economy strong while he mobilized American industry to produce to win the war as quickly as possible. There were two parts to the job—to build up materiel production and, where production could not be achieved quickly enough, to divide the shortages so that the least important elements would receive the least support. There were three basic problems that occupied Nelson and his staff throughout the war as they fought to increase production:

- Supplying raw materials from which the war materiel and essential civilian products were made
- Providing the plants and equipment in the factories to manufacture the tools of war
- Staffing the plants with enough people with the right skills.

"There was never a time" during World War II "when material supplies, plant facilities, and manpower were in perfect balance."[49]

## ORGANIZATION OF THE WAR PRODUCTION BOARD, 30 March 1942




Source: James W. Fesler, ed. *Industrial Mobilization for War: History of the War Production Board and Predecessor Agencies, 1940 - 1945.* (New York: Greenwood Press, Publishers, 1969), 238.

Having inherited the people and the organization of the Office of Production Management, the Supply Priorities and Allocations Board, and even the National Defense Advisory Commission, Nelson organized the War Production Board in similar fashion. Sidney Hillman, for example was chief of the Labor Division; the Production Division was put under William H. Harrison; the Industry Operations Division was under James S. Knowlton (president and chief executive officer of SKF Industries); the Statistics Division was run by Stacy May, etc.[50] The Board also had divisions responsible for monitoring specific war industries and also had large numbers of people in the geographic regions of the country collecting data, providing advice, assisting plants, negotiating contracts, etc.[51]

If America was to become the Arsenal of Democracy, it had first to convert its civilian-based industry to the task of producing war materiel. Nelson recognized that aspect of his responsibilities immediately, and the main industry to be converted was automobile manufacturing. This American enterprise was equal to the total industry of most of the countries in the world. In America the automobile industry was spread over 44 states and 1,375 cities. The primary contractors numbered more than 1,000, and there were tens of thousands of subcontractors. More than 500,000 workers produced autos and trucks when the United States entered the war—one of every 260 Americans. And 7,000,000 others—one out of every 19 Americans—were indirectly employed in the industry. Automobiles made Americans machine minded and made American industry oriented to mass production techniques. They consumed 51 percent of the country's annual production of malleable iron, 75 percent of plate glass, 68 percent of upholstery leather, 80 percent of rubber, 34 percent of lead, 13 percent of copper, and about 10 percent of aluminum. One of Nelson's first orders was to cut off car production, and the last automobile to come off the production line during World War II did so on 10 February 1942. This was an essential move because during the war, General Motors, Ford, Chrysler, Packard and a few other automobile manufacturers produced more than 50 percent of all aircraft engines, 33 percent of all machine guns, 80 percent of all tanks and tank parts, one-half the diesel engines,

and 100 percent of the trucks the Army moved on. This industry also produced airplanes by the tens of thousands. Most of the B-24s, the most heavily produced airplane in the United States inventory, were manufactured by what had been the automobile industry and most of those were manufactured at one factory, Willow Run. About 20 percent of total U.S. production came from the automobile industry.[52] In addition to tanks, jeeps, and trucks, "motor vehicle manufacturers were the largest single group of suppliers to aircraft manufacturers." The automobile industry produced more than $11 billion worth of aircraft, subassemblies, and parts, or about 39 percent of the dollar value of all military production by the automotive industry. It manufactured 455,522 of a total of 812,615 aircraft engines and 255,518 of a total of 713,717 propellers. The industry also produced 27,000 complete aircraft.[53]

Of course, more than the automotive industry converted to war. One of the most striking examples is International Silver, which at the beginning of the war made tableware. By the end of the war this medium-sized firm was producing surgical instruments, Browning automatic rifles, 20-mm shells, cartridge and shell brass for many calibers of weapons, machine-gun clips and cartridge belts, magnesium bombs, gasoline bombs (3,000,000 of them monthly at peak production), adapter casings, combination tools, large and small rotors, contact rings, spring assemblies, forgings, connecting rods, trigger pins, lock bolts for all pins, flange and tube assemblies, front-sight forgings for guns, etc.[54]

In addition to the shortages of time, plant, materials, and people, the War Production Board also suffered from unrealistic demands by the president, the Secretaries of War and Navy and various service chiefs. Through 1942 and 1943, the grand strategists set goals that were well above what could actually be produced given the status of American industry. In time the output was prodigious, growing almost geometrically into 1944. But in the first 2 years of effort, the overestimation of capacity by those not responsible for producing materiel was frustrating to those called on to produce it.[55] Some of the demands, however, were not unrealistic, and Nelson underestimated the capabilities of American industry. For example, the president

and the Joint Chiefs of Staff wanted to expand the military to a higher level than Nelson thought could be adequately supplied. The president announced a 10.8 million peak strength less than 6 months after Nelson became the Board chairman, and Nelson demurred. In time, more than an extra million men were added to that figure, and they were well supplied indeed.[56]

Almost from the start, because the president and warrior chiefs expected more production than the Board seemed to be able to deliver, there was dissatisfaction with the War Production Board and Chairman Nelson. Nelson's sharpest present-day critic is Paul Koistinen (but, then, every serious student of the War Production Board is a critic except Nelson's public relations officer, Bruce Catton), who argues that Roosevelt deliberately chose Nelson because he was not likely to be a strong leader and that the president never intended to place full confidence in Nelson's management. Koistinen also argues that Nelson faced three tests at the outset if he wanted to achieve dominance over the wartime economy, and he failed them all. From the start he needed to get "tough with the industrialists who were coming to" his new organization from the Office of War Production and the Supply Priorities and Allocations Board. These businessmen, to Koistinen, were more eager to protect their narrow interests than to "harness the economy for war." Nelson, to win, also had to "bend the military which had grown powerful and practically independent to the board's will." Many commentators agree with Koistinen's first two points. His third is that Nelson should have given "labor, New Dealers, and small business a meaningful voice in mobilization matters so that the" War Production Board "involved broad-based, not simply big business, planning, and thus tapped the nation's full economic potential." Koistinen's criticism of the entire mobilization effort is slanted in this direction, and this third argument does not find resonance.[57]

Senator Harry S Truman's (D-Missouri) Senate Special Committee Investigating National Defense reported about a year after the Board was established that Nelson, with the expressed powers Roosevelt granted him, could have "taken over all military procurement," but he chose not to do so. Truman's committee argued that had Nelson indeed taken procurement from the Army and Navy "many of the difficulties with which he

has been confronted in recent months might never have arisen. Instead, Mr. Nelson delegated most of his powers to the War and Navy Departments, and to a succession of so-called czars. This made it difficult for him to exercise the functions for which he was appointed. At the same time, none of the separate agencies had sufficient authority to act alone."[58] Other commentators agree that Nelson's Board was fatally undermined within in its first trimester by voluntarily yielding "to the Armed Services both priorities power and the right to clear military contracts before the contracts were let to suppliers." With General Administrative Orders 2-23 and 2-33 in March and April 1942, Nelson "surrendered direct decision-making authority over the great bulk of the finished output needed for war."[59] This was certainly costly to the power of his influence and his freedom of action, but he may have had no other realistic options.

The reader must consider here what battles might have ensued had Nelson decided to acquire for the Armed Forces. Surely the Truman Committee statement minimizes the turbulence that would have developed had Nelson fought the Army and Navy over acquisition of weapons systems. The service departments had been procuring for themselves for more than two centuries and would not have seen the wisdom of altering their practices abruptly and fundamentally in wartime. In addition to objecting to a War Production Board made up of manufacturers making key equipment procurement decisions, the departments would have opposed central and essential systems decisions being made by civilians not involved in the fighting. Arguing that Nelson should have procured for the Army and Navy is one thing; making such a system work is something entirely different.

The War Department, however, was almost certainly too generous with itself, and the number of contracts it let were enormously inflated. There were plants that the War Department ordered built that were superfluous, and given the limited amount of materials and construction workers, a surplus in one area meant a shortage in another. Locomotive plants went into tank production, "when locomotives were more necessary" than tanks. Truck plants "began to produce airplanes," which produced "shortages of trucks later on."[60] Alan Milward makes a similar point, and bases his criticism on the lack of firm priorities.

"Completely new factories," he writes, "were built with government help when there was no possibility that they would ever get the necessary raw materials to sustain their planned production."[61]

One should not, however, make the mistake of believing that the War Production Board was impotent. It had the power to compel acceptance of war orders by any producer in the country, and it could requisition any property needed for the war effort.[62] Advertising this potency meant that the Board's fullest rights did not have to be exercised too often. And Nelson's Board also controlled the supply of raw materials.

## NOTES

42. Donald M. Nelson, *Arsenal of Democracy* (New York: Harcourt, Brace and Co., 1946), 35.

43. Nelson, 18-19.

44. Nelson, 186. Nelson and vice president Henry Wallace were called to the White House on 15 January 1942 to discuss war strategy and deficiencies in war production organizations. Roosevelt assured both men that when he had promised that the United States would be the "Arsenal of Democracy," he had not merely been making a phrase, and when he outlined the amounts of munitions and ships he was not exaggerating. The president made clear that "our fate and that of our Allies—our liberties, our honor . . . depended upon American industry." Nelson, 16-17.

45. Marvin A. Kreidberg and Merton G. Henry, *History of Military Mobilization in the United States Army, 1775-1945* (Washington, DC: Headquarters, U.S. Army, 1955), 686-687; *Emergency Management of the National Economy: Vol. XIX Administration of Mobilization WWII*, hereafter cited as ICAF (Washington, DC: Industrial College of the Armed Forces, 1954), 100-104; Paul A. C. Koistinen, "Warfare and Power Relations in America: Mobilizing the World War II Economy," in James Titus, ed., *The Home Front and War in the Twentieth Century: The American Experience in Comparative Perspective: Proceedings of the Tenth Air Force Academy Military History Symposium* (Washington, DC: Office of Air Force History, 1984), 95-96).

46. ICAF, 100-101.

47. David Robertson, *Sly and Able: A Political Biography of James F. Byrnes* (New York: Norton, 1994), 316. Harold G. Vatter, *The United States Economy in World War II* (New York: Columbia University Press, 1985), 67, writes that the War Production Board

inherited 6,000 employees in January 1942 from the Office of Production Management and the Supply Priorities and Allocations Board and employed 18,000 people just 6 months later. During World War II, the federal civil service more than tripled during the war, from 940,000 when Germany invaded Poland to 3,126,000 at its peak in mid-1943. The War Production Board was only one of dozens of newly created war boards that consumed civil servants. The War and Navy Departments had many times the number employed by Donald Nelson and his successors (in fact between them more than two million civilians). Jerome G. Peppers, Jr., *History of United States Military Logistics 1935-1985* 37-38.

48. See Nelson, 194, for media expectations; Kreidberg and Henry, 686-687; Koistinen, 95-96; James F. Byrnes, *Speaking Frankly* (New York: Harper Brothers, 1947), 15-16. Byrnes writes that he told Roosevelt on 12 January 1942 that Nelson "will last only as long as it is recognized that he has your complete confidence." Byrnes was an associate justice of the Supreme Court at that moment and had been a new dealer congressman and senator from South Carolina. He was an intimate of Bernard Baruch and also a close ally, friend, and confidant of Roosevelt's.

49. War Production Board, *Wartime Production Achievements and the Reconversion Outlook* (Washington, DC: 1945), 7. Nelson's policy, followed by his successors, was to avoid overregulation, to impose only those controls within their authority that would significantly speed victory, and not to impose restrictions that added little. He promptly dropped those restrictions that proved "unworkable or outlived their usefulness" (War Production Board, 13).

50. Nelson, 204-205.

51. Nelson, 211. On 3 March 1942 Nelson directed that contracts were not to be competed for, but rather negotiated. This saved an enormous amount of time (Nelson, 369). Cost-plus fixed-fee contracts were the norm. These had a legal limit of 7 percent fee, but most often the fee was only 5 percent, and the Army Air Forces usually paid only 4 percent (Nelson, 79). This award system, of course, does not encourage controlling costs, since profits are directly tied to costs.

52. Nelson 212-224. The aircraft industry expanded more than 4 times during the war from fewer than 500,000 people to more than 2 million, but production exploded by almost 50 times (Nelson, 227-228, 235-236).

53. Vatter, 13.

54. Nelson, 277-289.

55. War Production Board, 10-13.

56. Herman M. Somers, *Presidential Agency: The Office of War Mobilization and Reconversion* (Cambridge: Harvard University Press, 1950), 159.

57. Koistinen, 95-96. Nelson admits that small businesses were slighted during the war and did not get their fair share of the contracts. Many small firms, because they could not get an allocation of raw materials, were bankrupted. But Nelson argues that he did not have the manpower to go to the 184,000 manufacturing firms in existence at the outset of the war. About 100 giants received the vast bulk of the contracts, and the subcontracting was left to big industry. Nelson's justification was that time was the issue, that winning the war was the goal. Nelson's orders on 23 February 1942 and 5 May 1942 that stopped production of more than 400 civilian products using iron and steel further added to the suffering of many small firms that could not convert to war production (Nelson 269-271). See Kreidberg and Henry, 686-687, for a critique of Nelson. They assert that "either Mr. Nelson was the wrong man for the job or else the [War Production Board] was created so late that it was impossible for its chairman to successfully challenge existent, entrenched agencies which were made subordinate to [War Production Board]." Further: "The frequent reorganizations of [the War Production Board], together with the tangled maze of its relationships with other agencies, continued to delay, harass, and anger businessmen who needed decisions. [The War Production Board] was so fully occupied with directing the flow of materials that by 1943 it had relinquished overall control of economic mobilization." The Industrial College Study noted that "almost from the beginning" Nelson's authority was challenged by other agencies, most notably the War Department. Before the War Production Board was 6 months old, the Army and Navy Munitions Board "almost succeeded in a coup to require its concurrence in the principal actions by the War Production Board." The report cited a "running fight" between the military and the Board fought out in the media by spokesmen from each. The War Department "belittled the principal officials of" the War Production Board "and challenged its technical ability. Under cover, other efforts were made to bring about the removal of" board officials [*Emergency Management of the National Economy: Vol. XIX Administration of Mobilization WWII*, hereafter cited as ICAF (Washington, DC: Industrial College of the Armed Forces, 1954), 100-101, 104]. Somers argues that Nelson had been given the powers the president had been granted by the Congress under Title III of the War Powers Act, but Nelson did not seize all he could, and the president himself "diluted and diffused the powers given to Nelson" (24).

58. Kreidberg and Henry, 686-687. Nelson deliberately refused to procure for the Army and Navy, arguing that had he done so the warriors would have been critical of such a move because people associated with the War ProductinBoard from industries producing the tools of war would have been buying systems from their former industries, and as importantly, it would have taken too long to train War Production Board civilians in these arts (Nelson, 196-199). The War Production Board history asserts, however, that it was not without influence here, but that its approach was to collaborate and coordinate, but never to dictate. The board "assisted other agencies, or enlisted their help"—two nondynamic verbs. The board said that it "cooperated" freely with agencies all over the land and was careful not to take any "important actions which would affect the field of jurisdiction of another agency without prior consultation with that agency. . . . For example, in contrast to the British policy of centralizing munitions procurement in civilian hands, procurement in this country was handled by the military services, which received direct appropriations from Congress. But procurement policies were determined cooperatively by the Procurement Policy Board, on which [the War Production Board] sat with the Military. Through this Board, the [War Production Board] made special efforts to secure such distribution of both prime and subcontracts as would promote maximum use of the nation's materials, labor and facilities." Regarding people, a vital concern to the War Production Board in order to maximize production, the Board worked with the War Manpower Commission to guide labor to where it was most needed through its Production Urgency List—which was frequently updated—and also collaborated with Selective Service to determine which workers in war industries were actually essential and should therefore be exempt from the draft. The Board also certified to the War Labor Board when and where wage increases were justified to attract an adequate labor supply (War Production Board, 15-17).

59. Vatter, 72-73. According to Vatter, Administrative Order 2-23 gave the services just what they wanted, the right to "direct production themselves." It stipulated that the War Department, through its Services of Supply and the Army Air Forces, was to carry on "its supply functions of research, design, development, programming, purchase, production, storage, distribution, issue, maintenance, and salvage." (The Navy's order was 2-33 in April.). The Secretaries and their flag officers were thus armed "with a hunting license . . . to freely trespass upon the territory the President had assigned to the War Production Board." There ensued a "running fight" between the War Department and the War Production Board that lasted until Nelson was removed. Vatter

agrees that a "rough division of labor emerged where the Services of Supply assumed the ultimate decision-making power over all finished goods, leaving more or less to the [War Production Board] the domain of vital raw materials and semifinished products." Vatter argues that money and time could have been saved and less money and time wasted had Nelson stood his ground. Vatter does not note that Administrative Order 2-33 stipulated that the War Department was to carry out these functions in accordance and compliance with the policies and directives of the "War Production Board." So, the War Production Board "surrender" that Vatter refers to was not an unconditional one. The War Department, however, took it that way and pushed their prerogatives to the limit.

60. Vatter, 72-73.

61. Alan Milward, *War, Economy and Society: 1939-1945* (Los Angeles: University of California Press, 1979), 122-123. "Locomotive factories were turned into lorry factories in spite of the fact that within a year American locomotives would be required in many parts of the world." Later: "The best efforts of the War Production Board . . . could not enforce priority decisions when so high a proportion of the programmes emanating from industry and the armed forces were unrealistic in their conception." Milward cites other problems, in addition to the unrealistic estimates of raw materials needs, the chief one being strategic shortsightedness. The services "fought strenuously against all raw material allocations to the Soviet Union." [When keeping the Soviet Union in the war was literally vital to the cause.] And, for one gross example that will stand for many, the navy "insisted on aluminum being made available for furniture on its ships instead of being allocated to aircraft manufacture."

62. Nelson, 206, wrote: "It wasn't up to me . . . to tell industry how to do its job; it was our function to show industry what had to be done, and to do everything in our power to enable industries to do it, placing our chief reliance on the limitless energy and skill of American manufacturers." Nelson firmly believed that whatever he did had to be done "within the framework of American tradition." Not just defeat the enemy, but do it "in our own way." He believed that the United States "had to prove that . . . our system of political and economic freedom was in fact more efficient, more productive, more able to respond to the demands of a great emergency than the dictatorial system of our enemies. If we failed to do this, we might win the war in a military sense yet lose everything that we had fought for." Nelson acknowledged that he had vast powers but wanted not to use them. The

one he used most often was to order industry to end production of less important materiel in favor of producing essentials (Nelson 208-209).

# 7.
# THE CONTROLLED MATERIALS PLAN

Nelson's major task, as it turned out, was administration of the Controlled Materials Plan—the allocation of raw materials to the specific industries that produced the weapons systems. Nelson wrote, in an oversimplification, that war production could be broken down into three sections, only one of which was truly his. First was establishing requirements. What kind of and how many of the munitions were needed by each armed service and ally. The president and the joint chiefs and the combined chiefs determined the requirements, and the War Production Board translated those decisions into production requisites. Once that was known, the Board had to decide how much of what systems the economy was capable of producing. And with that known, the next task was balancing resources against demands. Balance was critical. Everything could not be produced at once; raw materials had to be carefully apportioned because to overproduce one munition would mean that another would be underproduced.[1] To ensure that production was tightly balanced, the War Production Board centralized control of raw materials. To ensure that the British were operating under the same plans as the Americans, Roosevelt established a Combined Raw Materials Board in late January 1942.[2]

The Controlled Materials Plan replaced the Production Requirements Plan (a November 1941 voluntary program) that had permitted manufacturers to state production material requirements for government orders. The Controlled Materials Plan, administered by the Production Executive Committee, chaired by Charles E. Wilson of the War Production Board, was a "vertical allocation plan, under which allotments were made by programs and passed down through the chain from procurement agency [i.e., the armed services] to prime contractors to sub- and

sub-sub-contractor, whereas in the [Production Requirements Plan] direct applications had been received from all levels in the subcontracting plan." The Controlled Materials Plan was a "more accurate" and "more equitable and more effective distribution of materials." It was announced on 2 November 1942 to become effective in the second quarter of 1943 and fully effective in the next quarter. It was certainly superior to the Army and Navy Munitions Board priorities system in rationalizing the distribution of materials.[3]

In reality the Controlled Materials Plan was a method of forcing all consumers of raw materials to plan for themselves. No order for raw materials could be accepted until the Production Executive Committee had in hand an exact statement of raw materials requirements. The allocations were made quarterly and, for the first time in the war, the Armed Forces procurement agencies were forced to consider their future demands within the "context of long-term strategy."[4] Controlled materials planning was a massive undertaking. Two streams of paper carried requirements and allotments information through the "interlocked industrial and governmental structure:"

> The first stream of paper, leading up the supply-demand balance for the total economy determined each calendar quarter by the War Production Board Requirements Committee, began at the lowest layer of manufacturing subcontractors. Bills of materials (detailed schedules of amounts of each controlled material required to make one unit of a fabricated product) were transmitted up the manufacturing ladder to the assemblers of end products and other prime contractors. There they were accumulated, each prime contractor combining his own and his subcontractors' material requirements, and transmitted to the procuring claiming agency. From bill-of-material information and other sources, each claimant agency prepared estimates of controlled-materials requirements in total and by program detail and submitted the estimates to the [War Production Board] controlled-material branches (steel, copper, and aluminum)and the Requirements Committee staff. . . . The second stream of paper began at this point with the allotment of materials to each claimant agency representing its share of the anticipated supply of each controlled material available for purchase directly by the agency and by its prime and subcontractors . . .

> the claimant agency distributed allotments (authorizations to purchase) to its prime contractors. The prime contractors retained that part of the allotments necessary to cover their own direct procurement from the metal mills and reallocated the remainder to their suppliers.[5]

Although the literature usually speaks of three raw materials in the Controlled Materials Plan—steel, copper, aluminum—there were actually 13 categories of carbon steel and 10 of steel alloy to be allocated separately, and 4 classes of copper-based alloy products, 3 classes of copper shapes, and wire mill and foundry products. Aluminum products came in 21 classes of shapes and alloys. But the revolutionary step in the Controlled Materials Plan was not in these refined allocations. It rested rather on the principle that the delivery of materials were "not affected by preference ratings." Meaning once the Requirements Committee "determined the distribution of steel, copper and aluminum which in its judgment was best calculated to meet war, export, and essential civilian needs, all approved programs had equal validity."[6] To the War Production Board, that is. Certainly the War and Navy Departments (and other claimants like Lend-Lease Administration, Maritime Commission, Office of Civilian Supply, and even other agencies later in the war) did not think that all approved programs had "equal validity." At times different systems had higher priorities, like the necessity of accelerating the building of landing craft in 1942 and 1943, and especially in the first half of 1944 for Operation *Overlord* and amphibious assaults in the Pacific.[7] The Controlled Materials Plan forced a strict accounting on all users of steel, copper and aluminum, but the key civilian agency turned over most of these precious materials to the military for their further allocation based on grand strategy.

The Controlled Materials Plan worked well to solve a nagging problem—controlling what was built and when by releasing or withholding raw materials—but it consumed many thousands of people and much time. Nelson was in the sorry position of simply not being able to satisfy everybody all the time. "He was battered, abused, and cajoled by other agencies" of the government. Instead of being the interwar planners' ideal of a wise man surveying the war from an unmatched viewpoint

and apportioning economic strength where it would do the most good, he was thoroughly inside the turbulent milieu, a "much abused referee of a free-for-all fight among agency heads who knew no rules and were not above loading their gloves with Congressional blocs, pressure groups, and an occasional chit initialed by Roosevelt at their urging."[8]

Nelson's two biggest problems, and thus those of his organization, were Roosevelt's unwillingness to support him in his inevitable disputes with the plethora of wartime agencies and Roosevelt's continued penchant for creating potentially rival agencies. There were powerful prewar New Deal agencies like the Reconstruction Finance Corporation (which added to its authority the Defense Plant Corporation, Defense Supplies Corporation, Metals Reserve Company, Rubber Reserve Company) whose role might conflict with Nelson's Board. And there were venerable institutions like the War and Navy Department that had been created in the 18th century that might see activities of the War Production Board as usurping their authority. Many other war agencies were founded before the War Production Board—like the Board of Economic Warfare, the Office of Lend-Lease (with the powerful Harry Hopkins in charge initially), the Office of Defense Transportation—that had charters that overlapped Nelson's. Other agencies founded after Nelson's, such as the Petroleum Administration for War, Rubber Development Corporation, War Manpower Commission, and dozens of others, had charters that seemed to authorize powers that the War Production Board also possessed. Soon after Nelson was appointed chairman, the War Shipping Administration and National Housing Agency were founded, and Nelson failed to move quickly to have these subordinated to him. He willingly gave away rationing authority to the Office of Price Administration. Probably his most serious lapse (other than permitting the services to procure their own munitions) was permitting the War Manpower Commission to be independent of him. This agency, created on 18 April 1942 to "assure the most effective mobilization and maximum utilization of the Nation's manpower in the prosecution of the war," was offered to him by Roosevelt. However, Nelson permitted it to be independent.[9] All this might have been manageable if Roosevelt were a manager,

which he was not; *and* if he had appointed a person to run the War Production Board whom he trusted explicitly, which he did not; *and* if Nelson were more aggressive bureaucratically. Nelson was ineffective, thus the industrial mobilization effort suffered.

The military never saw itself as Nelson's partner and involved itself in "every facet of the home front war program." When there was a problem such as with deliveries of finished goods, the military would intrude in the transportation business. If there were a labor problem, manufacturers would deal with the military rather than to the War Labor Board to solve it—turning to the agency paying the bills. It was easy to turn to the military to solve problems in time of a total war. It might not have been wise over the long term, or even efficient, but it was easy because the military had enormous prestige. The military was seen at least as equal to the War Production Board in power and influence, and that perception helped the military outmaneuver the Chairman of the War Production Board.[10]

Philosophical differences also marred the relationship. Nelson's concern for the civilian population, those who worked in the factories and operated the farms, was interpreted by some in the Army as "pampering" civilians. Nelson complained about "bitter fights" with the Army over manufacturing tractors or spare parts for cars, washing machines, refrigerators, etc.[11] Nelson, from the beginning of the war well into the peace that followed, insisted that the economy had to be controlled by civilians. He argued that "military men are bound to place above everything else the needs of specific munitions programs." If they did gain complete authority over the country's resources, Nelson maintained, they "would inevitably produce disorder, and eventually balk their own efforts by undercutting the economy in such a way that it could not meet their demands." He saw other dangers. He had a bitter and "long-drawn-out" argument with the Army over allocation of newsprint to newspapers. "Since the demand for paper was so much greater than the supply, we had to limit each publisher to a certain amount of newsprint. . . . But reducing the amount of paper a publisher may have is one thing, and telling him what he may do with it is quite another. The Army vigorously maintained that we should adopt the latter course." The Army was especially eager to stop publishing of

comic strips. Nelson asserted that a government that uses "its control of newsprint to forbid the printing of comic strips is in the publishing business. If it can stop the printing of comic strips it can—and inevitably *will* forbid the publication of cartoons and other material, perhaps ultimately of certain classes of editorial matter, which, in its opinion represents a waste of newsprint." His running battle got into the press, much to his chagrin. "The Army had at its disposal and freely used many unfair methods of needling anyone who stood in its way. . . . Very soon after I had made, and stuck to" the decision on making spare parts for appliances and automobiles, U.S. factories were no longer producing in order to keep these labor-saving machines in some working order, "articles began appearing in the press stating that 1,500 plants making munitions of war were going to have to shut down because they could not get materials. War Department officials in high places were feeding out those [false] stories."[12]

The Army leaked similar stories regarding Nelson's decision to produce synthetic rubber for civilian automobiles, trucks, and buses. The press following the Army's lead reported that bombing operations would soon be stopped because Nelson was diverting materials for civilians. Of course, bombing operations did not stop. To Nelson at least, the Navy Department seemed more attuned to the needs of civilians—after all how would workers get to factories or shipyards without automobiles and buses, and how productive would they be if their needs were neglected? But the "top men in the Army's supply setup . . . consistently opposed giving any consideration to even the most essential civilian needs." A major example was their fight against "allocating material or machinery for the production of farm machinery, insisting that the farmer could use his old equipment and did not need anything new." General Brehon Somervell, Chief of Army Services of Supply, "insisted that repair parts were not needed, not even for coal-mining machinery" and insisted that a major coal mining machinery manufacturer be forced to make munitions.[13]

Nelson began this battle before the U.S. declaration of war. In 1940, the Army Air Forces stopped the building of 40 aircraft by Douglas Corporation that were slated for civilian airlines to

divert Douglas' effort to the military, but Nelson recognized something the Army Air Forces could not or would not see—all airplane construction could not go to the military because some airplanes had to be used to move passengers and cargo around the United States quickly. This myopia on the part of the services frustrated Nelson to the point that he petitioned Roosevelt to let him return to Sears. Nelson at this time was working for the National Defense Advisory Commission and believed that making the Commission non-advisory would change everything. As it turned out, he was wrong.[14]

Nelson writes that Roosevelt told him that both he and the President had to beware of the Army acquiring "too much power." In a democracy, the president argued, the economy "should be left in charge of civilians." Roosevelt told Nelson "to fight for" his rights when "such issues" as civilian versus military control arose. Nelson was proud of the fact that "no other outfit in the world ever fought the Army of the United States to a standstill more frequently than the intrepid patrol of the [War Production Board]".[15] Pundits 50 years later can draw their own conclusions about the Nelson vs. Somervell (et al.) conflicts. Civilian patriotism coexisted with opportunism within the same breast, and both the Army and the Navy wanted to promote and exploit the former and dampen the latter. They wanted to ensure that the latter did not hurt their mission of winning the war as quickly as possible with a minimum loss of American life.

Most serious students of the period agree that the Army wanted to direct the economy in wartime, something it had desired because it was wary of the motivations of big business during a war. Somers notes that, soon after the War Production Board was formed, General Brehon Somervell made a play to put the new Board under the control of the Joint Chiefs of Staff. By permitting Somervell and his Navy counterparts to control procurement, Nelson undermined his own position of civilians controlling the economy. Somers writes: "The Army and Navy came to regard Nelson and the [War Production Board] as advocates of a comfortable civilian economy, which would resist to the end curtailments to expand military production." Somers observed that the dispute with the Army and Navy became rancorous.[16] We have seen, however, that Nelson wanted to

convert the automobile industry to munitions production well before the Japanese attacked Pearl Harbor, and that his first action as chairman was to do just that.

In addition to leaving military procurement to the Navy and War Departments, Roosevelt did not give Nelson the authority (nor, apparently did Nelson insist on it) or the tools to control inflation, which increased as the large pool of unemployed workers dried up. The president recognized that wages, prices, and rents had to be stabilized if the politically costly boom-and-bust experience that followed World War I was to be avoided. In September 1942, Roosevelt asked Congress for the powers necessary to fix wages and prices, including agricultural prices. Congress yielded on 2 October, granting the president authority to issue a "general order stabilizing prices, wages, and salaries affecting the cost of living, and empowering the president to create the Office of Economic Stabilization. On 3 October 1942, Roosevelt appointed James F. Byrnes as Director.

The ultimate insider, Byrnes quickly resigned from the Supreme Court and began his new job on 15 October. He had blanket authority "relating to control of civilian purchasing power, prices, rents, wages, salaries, profits, subsidies, and all related matters." The Director of the Office of Economic Stabilization was to be the final judge of any jurisdictional disputes among the various wartime agencies and within the president's executive office regarding economic policy. Byrnes was to the civilian economic strategy what Roosevelt was to the war's grand strategy. Very significantly, Byrnes was able to set up his office in the White House. Roosevelt told Byrnes: "Your decision is my decision, and . . . there is no appeal. For all practical purposes you will be assistant President."[17] Had he said that to Nelson (or had Nelson demanded and received such power), the War Production Board might have turned out to be the supreme mobilization agency the interwar planners called for.

Might have, rather than would have, because it is not clear that Nelson's personality was up to using such a full grant of authority. Somers argues that Nelson, a man of "great abilities and character," was "probably not temperamentally suited to the onerous job he undertook . . . He was mild mannered and intellectual, not given to quick decisions. He was not adept at

and did not welcome the 'infighting' or the power struggles involved in high administration" jobs for "high stakes." Somers concludes that Nelson was "too nice a guy for the job."[18]

The dispute between the Army and Nelson that drove him out of office was over industrial reconversion. Reconversion has always been badly handled in the United States; indeed, the Woodrow Wilson administration mishandled it in the late teens (causing heightened unemployment) and cost the Democrats control of the Congress and White House in 1920. Nelson wanted to begin reconverting industry as soon as feasible, and many in Congress were eager to have factories in their districts and states reconvert, too. Nelson directed one of his key assistants to study reconversion in April 1943, making clear that he intended to move into this controversial area. War production peaked in November 1943, although for some items, like airplanes, 1944 was a bigger year.

There was a sharp decline in war orders in 1944. But the Army wanted no reconversion of industry because it might lead to a slackening of the war effort. The Army would have been happy if there were pools of unemployed workers forced to seek positions in war industries and unable to opt for better paying or more secure jobs in factories producing for the civilian market. Truman is on record calling for "an orderly resumption of civilian production in areas where there is not manpower shortage and with materials not required for war production." Nelson began to reconvert slowly, but the Army was powerful, and some business leaders also fought reconversion because they were tied to war production and did not want competitors to get a leg up in the potential market. The Army forced Nelson's removal in summer 1944.[19] By the time Roosevelt sent Nelson to China on assignment to get him out of town, the president had already established, on 27 May 1943, an agency that superseded the War Production Board: the Office of War Mobilization, the last of the series that began with the War Resources Board in August 1939. Significantly, the president installed James F. Byrnes to run this new organization.

## NOTES

1. Donald M. Nelson, *Arsenal of Democracy* (New York: Harcourt, Brace and Co., 1946), 200-202.

2. Nelson, 205-206.

3. *Wartime Production Achievements and the Reconversion Outlook* (Washington, DC: War Production Board, 1945), 14-15. This method of allocation lasted through 10 quarterly periods, essentially until the end of the war [Herman M. Somers, *Presidential Agency: The Office of War Mobilization and Reconversion* (Cambridge: Harvard University Press, 1950), 116; Paul A.C. Koistinen, "Warfare and Power Relations in American: Mobilizing the World War II Economy," in James Titus, *The Home Front and War in the Twentieth Century: The American Experience in Comparative Perspective: Proceedings of the Tenth Air Force Academy Military History Symposium* (Washington, DC:Office of Air Force History, 1984) 97, 98]. Koistinen, ever critical, sees the Controlled Materials Plan as an approach that "served to increase the hold of the military and the corporate giants on the [War Production Board] and the economy" (Koistinen, 97). Others found that the Production Requirements Plan failed for two basic reasons: it was poorly administered, and the armed services objected to the key role played by the War Production Board in controlling production. Under the new plan, the services were allocated the materials by the War Production Board then to be reallocated based on military priorities. See David Novick, Melvin Anshen, and W.C. Truppner *Wartime Production Controls* (New York: Columbia University Press, 1949), 129, 133, 165. "The fundamental objectives of the Controlled Materials Plan were clear from the start. They were (1) to assure a balance between supply and demand for the principal production materials designated under the plan as 'controlled materials'—carbon and alloy steel, brass [really copper], and aluminum; (2) to secure that balance by a coordinated review of military export, and essential civilian programs in terms of their controlled material equivalents, and by adjustments, wherever necessary, to yield that total commitment of our production resources calculated to secure maximum output for world military victory; (3) to schedule production for each approved end product program in order to secure the maximum level of balanced output at all levels of production from metal mill to final assembly plant; (4) to maintain continuing control over production and over the distribution of materials required to support approved production levels in all parts of the economy; and above all (5) to cut down the size of the total arms production program to realistic proportions by expressing all projects in addable currency common to virtually all programs—steel, copper, and

aluminum . . . The original group of claiming agencies was . . . composed of the War Department, Navy Department, Maritime Commission . . . Aircraft Resources Control . . . Lend Lease Administration, Board of Economic Warfare, and Office of Civilian Supply. . . . The Controlled Materials Plan was the most complex piece of administrative machinery created during the period of the war emergency."

4. Alan Milward, *War, Economy and Society: 1939-1945* (Los Angeles: University of California Press, 1979), 123-124.

5. Novick, Anshen, and Truppner, 167-170.

6. Novick, Anshen, and Truppner, 169-170. Nelson wrote that there was no single "vital to victory" war program. "We had a dozen or more, and all of them had to go along together. For example, steel plate was needed by merchant ships, but steel plate was also needed by the Navy for its warships, by the Army for its tanks, by Lend-Lease for the requirements of our Allies; it was essential, too, for the building of high-octane gasoline plants, rubber plants, and for the expansion of our overall industrial capacity." Nelson wrote of the complicated nature of the Controlled Materials Plan. One yard needed each month no fewer than 763 different kinds of steel plates and 455 different steel shapes. Many of the components came from subcontractors who received their materials from the primes. There were 6,000 subcontractors in the merchant shipbuilding business supplying thousands of parts. Nelson, 249-251.

7. Nelson, 251-256. Nelson cites Roosevelt for raising the priority of landingcraft to the Navy's "most urgent category." The president in 1942 saw the need before the Navy did, because the latter was focusing on destroyers and other anti-submarine craft for the Battle of the Atlantic. Nelson notes that landing craft expansion cut into many other shipbuilding programs, and there were still never enough landing craft.

8. Industrial College of the Armed Forces, 113.

9. Somers, 26-27. Nelson was also supine in front of the various synthetic rubber agencies. Kreidberg and Henry, 687-689, found the War Manpower Commission to be ineffective because it had no power to draft, assign. or punish civilian workers. "Manpower procurement and allocation activities were divided among a host of operating agencies, including the Army, Navy, Selective Service System, Department of Labor, Department of Agriculture, the Federal Security Agency, Civil Service and the [War Production Board]. Among the War Manpower Commission's successes was ensuring that too many dentists, physicians and veterinarians were not drafted, thus seeing that civilians were adequately covered."

10. Somers, 109-112. Nelson, on the other hand, despite the implications in Koistinen that the War Production Board Chairman had to fight both big business and the military, asserts that his authority was rarely challenged by industry. Nelson, 211. Moreover, Nelson's great defender, Bruce Catton, puts the onus on the military for weakening Nelson and the War Production Board. Although he does see big business allying itself with the military over the reconversion fight. Catton also recognized something that Koistinen asserts—Nelson had difficulty controlling the membership of his War Production Board. There were many strong personalities on the Board, some with different agendas. Routine tensions also helped make it an unharmonious agency. Bruce Catton, *The War Lords of Washington* (New York: Harcourt, Brace and Co., 1948),196-273, 80, 73.

11. Nelson, 167-170.

12. Nelson, 359-362.

13. Nelson 357-359

14. Nelson, 107-109, 112

15. Nelson, xvii-xviii.

16. Somers, 29-31.

17. David Robertson, *Sly and Able: A Political Biography of James F. Byrnes* (New York: Norton, 1994), 316-321. Byrnes already had been indispensable to Roosevelt. While in the Senate he had drafted and helped move key war powers and other emergency legislation, and even while an Associate Justice he continued to draft and expedite legislation. Attorney General Francis Biddle reported to Roosevelt on 9 January 1942 that "all defense legislation is being cleared by the departments and then through Jimmy Byrnes, who takes care of it on the Hill." Byrnes had been the "behind the scenes" sponsor of the first and second War Powers Acts passed in March 1942, that gave Roosevelt enormous powers to conduct the war without seeking additional legislation. Byrnes was so central to the president that the Chief Justice lightened his workload on the Supreme Court to give him the time he needed to assist Roosevelt. Byrnes' biographer asserted that Byrnes was not happy on the bench, and that he thoroughly enjoyed his new position, responsibilities and authority. This appointment, however, obviously undercut Nelson. Letter from Biddle and other comments cited in Robertson, 312-314. Byrnes had been the floor manager for Roosevelt's Lend-Lease Act, certainly the most controversial piece of emergency legislation to that point, and it is a testimony to Byrnes' skill and reputation in the Senate that Roosevelt won (Robertson, 296-297). Byrnes came to the task with enthusiasm—he openly favored aid to Britain and was a committed internationalist (Robertson, 294-295).

18. Somers, 38-39. Bruce Catton took it one step further declaring that the "firing of Nelson marked a defeat for the people." Catton, 289.
19. Nelson, 32, 391-415.

# 8.
# THE OFFICE OF WAR MOBILIZATION (AND RECONVERSION)

In early 1943 the president was being pushed to establish a war mobilization office by Senator Harry Truman and his committee. Truman's committee and other congressional investigative committees were dismayed by the lack of unity in the industrial effort and demanded a single civilian-directed procurement agency for all Army, Navy, Maritime Commission, and Lend-Lease needs. Truman knew that Nelson had much more authority than he exercised and therefore called for a War Mobilization Board, stating that he would create one by legislation if Roosevelt did not take the initiative.[1] Other efforts also fostered the establishment of the Office of War Mobilization.[2]

For its part, the Senate Military Affairs Committee recognized the weaknesses in the War Production Board. There were too many agencies with a say in too many parts of the economy for efficiency. The press was also vocal in its criticism. Roosevelt either sensed the pressure or understood the necessity, or both, and created by executive order the new office, designating a handful of government officials as advisers (Nelson was one of the five), and chartered the Office of War Mobilization to "develop unified programs and to establish policies for the maximum use of the Nation's natural and industrial resources for military and civilian needs, for the effective use of the national manpower not in the armed forces, for the maintenance and stabilization of the civilian economy, and for the adjustment of such economy to war needs and conditions."

The key to the Executive Order was in this sentence: "To unify the activities of the Federal agencies and departments

engaged in or concerned with production, procurement, distribution or transportation of military or civilian supplies, materials, and products and to resolve and determine controversies between such agencies or departments." The new office could issue "directives and policies" to carry out its charter, and "it shall be the duty of all such agencies and departments to execute these directives, and to make to the Office of War Mobilization such progress reports as may be required."[3] James F. Byrnes drafted the Executive Order and wrote the language to make the new agency effective. From the start he was called Assistant President, and I know of no others with that title. The only things missing in James Byrnes portfolio were foreign affairs and military grand strategy.[4]

Before May 1943 and his appointment to the new office, Byrnes had become completely immersed in economic planning and manipulation and thereby enormously powerful. As Director of the Office of Economic Stabilization he was intimately concerned with all major segments of the economy because his office was charged with eliminating inflation. No similar office had been established during World War I, and as a result, consumer prices rose and the national debt ballooned. The Office of Economic Stabilization was not able to eliminate inflation, but it did dampen it, and in the process Byrnes learned a great deal about the economy and how segments of it—agriculture, industry, etc.—worked to profit or benefit their narrow interests rather than the general welfare.[5] Byrnes' powers were extensive. The Executive Order establishing the Office of Economic Stabilization permitted him:

> to formulate and develop a comprehensive national economic policy relating to the control of civilian purchasing power, prices, rents, wages, salaries, profits, rationing subsidies, and all related matters—all for the purpose of preventing avoidable increases in the cost of living, cooperating in minimizing the unnecessary migration from one business, industry or region to another, and facilitating the prosecution of the war. To give effect to this comprehensive national economic policy the Director shall have power to issue directives on policy to the Federal departments and agencies concerned.[6]

Interestingly, the Office of Economic Stabilization did not disappear with the creation of the Office of War Mobilization. Fred M. Vinson, a former congressman and appeals judge (and later Chief Justice) replaced Byrnes, and his office was subordinate to Byrnes's new one. (Vinson eventually became Director of the Office of War Mobilization and Reconversion, its new title after October 1944.) The arrangement worked well because the men knew each other and had worked together in the past. Further, Vinson clearly understood Byrnes's relationship with the president.[7]

## OFFICE OF WAR MOBILIZATION

- **Established by Executive Order 27 May 1943. James F. Byrnes was appointed director.**
  - Directed to unify activities of all Federal agencies and departments involved in mobilization effort and to resolve disputes between these agencies
  - Given authority to issue "directives and policies" to carry out its charter

Soon after taking office, Byrnes wrote to the chiefs of all the procuring agencies and pointed out his duties as prescribed by the president. He put everybody on notice that he intended to scrutinize all procurement. He called for establishing, within and at the top of each agency, a procurement review board that would include a representative of the Office of War Mobilization. Some offices, notably Lend-Lease and the Maritime Commission did so immediately, but the Army had to be told a second time and the Navy only did what it was told when the president insisted they follow orders. The Navy dragged its feet for months trying to subvert Byrnes's authority. Byrnes wrote the president that General George C. Marshall was cooperating and that billions of dollars were saved through this cooperation, but that the Navy was recalcitrant. The Navy, counting on its special relationship with Roosevelt, tried to go around Byrnes, but the president forwarded their memoranda to Byrnes for answering.[8]

The Office of War Mobilization was certainly in a position to rationalize industrial mobilization, but what should be its role vis-a-vis the Joint Chiefs of Staff? Byrnes was indeed more powerful than any civilian cabinet member, for he had jurisdiction over all agencies, bureaus and departments,[9] but the Joint Chiefs were in another realm. Some in Byrnes's office thought that he should sit with the Joint Chiefs of Staff so that grand strategy and procurement would be harmonized. But the services, especially the Navy, resisted civilian participation in military affairs, especially war planning. Byrnes established within the Joint Chiefs of Staff a Joint Production Survey Committee, with representation from the Office of War Mobilization, a compromise between full integration of procurement and military strategy; previously, Nelson's War Production Board was not represented on Joint Chiefs of Staff committees. Byrnes still did not consider his relationship with the Joint Chiefs to be satisfactory. The Chiefs still wanted a great deal of the say regarding industrial mobilization, but Byrnes was able to establish his authority over the Joint Chiefs on matters of supply, although doing so was not easy.[10]

He informed the Chiefs at the outset that he and the Office of War Mobilization were responsible for the balance that must be maintained between civilian and military production, and therefore he had to know what was being procured by the services. Moreover, he had to know that the amounts being procured were not excessive. For example, he set up a procurement review board for the Army, which found it needed some testimony concerning military matters. The Army refused to show any such data to civilians, and Byrnes told the Chief of Staff that he would take the Army's refusal to the president. The Army gave in.[11]

Prior to the creation of the Office of War Mobilization there was no synchronizing of grand strategy and production. Although the new Office was an imperfect mechanism for effecting this synchronization, it did have the president behind it, plus Byrnes's extensive experience, keen intelligence, and high common sense. The problem was the active competition for limited resources that kept agencies in permanent conflict. Byrnes's approach was to exercise control by listening to

arguments from disputing agencies after conflicts had developed and making the necessary decisions. This is, more or less, the role the industrial mobilization plans had reserved for the War Resources Administrator, except that the planners hoped that this bureaucrat would resolve conflicts before they occurred. Byrnes did not need a big staff to do that job; in fact, he kept his staff tiny (ten initially, 16 in November 1944, 80 in June 1945, and 146 in May 1946 during the height of reconversion, compared with 20,000 in the War Production Board).[12] He used the staffs of the various agencies to provide him with the information he needed. Byrnes deliberately safeguarded the autonomy of the agencies he dealt with, acting as a disinterested decisionmaker—in effect a judge.[13] Moving the decisionmaking power to the Office of War Mobilization diminished Nelson's authority and prestige and also that of the War Production Board. There was only one authority higher than Byrnes, and the president was adamant that Byrnes' decisions would stick. Even the War Department tended to accept Byrnes' decisions as final.[14] Roosevelt loved it, even telling a friend that "since appointing Jimmy Byrnes to [the Office of War Mobilization] he, for the first time since the war began, had the leisure 'to sit down and think.'"[15]

Byrnes took on the dispute with the Joint Chiefs that had caused Nelson to be fired: reconversion. As a politician who was painfully aware of the costs to his party for failing to implement an ordered demobilization after World War I, he was sensitive to the demand. His aim (and that of civilians in the war agencies) was to prevent unemployment and severe industrial dislocation with the ending of war production. Almost all agreed on the objective, but timing was everything. For at least 18 months before the end of the war in Europe, a large proportion of Byrnes' time and that of people in numerous agencies like the War Production Board was devoted to the problem of reconverting industry. Two actions were involved: early planning for the changeover that would occur after victory and a gradual resumption of peacetime enterprise while the war was still going on.[16]

Some aspects of demobilization planning came easily, like agreement on how to clear away government property and how

to settle cancelled contracts. "The sharp policy questions . . . were over how much, if any, resumption of normal civilian activity" could be undertaken with the war going on. "The heat engendered caused a greater wave of name-calling in Washington than any other conflict." Nelson and his supporters were accused of being willing to prolong the war to give certain business interests an early advantage. Big business lined up on both sides of the issue, as did government agencies and even people on the War Production Board; where people stood on the issue depended very much on where they sat. For example, the War Manpower Commission sided with the military because manpower was so tight—it was the major bottleneck by the time this issue became prominent. The Commission wanted no freedom for workers to opt for civilian products employment while there were still landing craft and other tools of war to be built. The Office of War Mobilization and Reconversion was "indispensable" in adjudicating this issue because it was superior to all the competing agencies and departments, and when it made reconversion decisions it was "never seriously challenged." In August 1944, it sanctioned limited reconversion. It slowed reconversion dramatically in December 1944 during the Battle of the Bulge, but it reopened the gates in March 1945. "From early 1944 to the end no agency made any policy decisions in the reconversion field without clearing with [the Office of War Mobilization and Reconversion]."[17] Make no mistake, however—reconversion was not a factor until munitions production actually peaked. The unremitting drive was for output, and the system produced arms prodigiously.

## NOTES

1. Herman M. Somers, *Presidential Agency: The Office of War Mobilization and Reconversion* (Cambridge: Harvard University Press, 1950), 35.

2. One of these was Roosevelt himself. Herman Somers argues that the creation of the Office of War Mobilization was neither driven by personality conflicts nor by military-civilian rivalry. It was that no one short of the president could make decisions across so many agencies and departments, therefore an assistant president who could do so was essential if Roosevelt was to focus on grand strategy. "The government lacked a place where, within a reasonable time, a synthesis

could emerge from the struggle" (Somers 38-40). Koistinen argues that Roosevelt created the Office of War Mobilization because he was suffering heat from the [John H.] Tolan Committee (House Select Committee Investigating National Defense and the[James E.] Murray Committee (Senate Special Committee to Study and Survey the Problems of American Small Business). These committees called for centralization of the mobilization process. Koistinen, without documentation, asserts that Byrnes's "most important task became that of guarding the industry-military production team that had come to dominate the [War Production Board]. This protective role was clearly evident in two areas: the mobilization of manpower and the controversy over reconversion." In the case of the former, Koistinen argues, Byrnes acted to ensure that "industry and the armed services needs would be met without a large labor influence," and on the latter Byrnes generally sided with the military to delay it as long as possible [Paul A. C. Koistinen, "Warfare and Power Relations in America: Mobilizing the World War II Economy," in James Titus, ed., *The Home Front and War in the Twentieth Century: The American Experience in Comparative Perspective: Proceedings of the Tenth Air Force Academy Military History Symposium* (Washington, DC: Office of Air Force History, 1984), 99].

3. *Emergency Management of the National Economy: Vol. XIX Administration of Mobilization WWII*, hereafter cited as ICAF (Washington, DC: Industrial College of the Armed Forces, 1954), 119-123. On 25 May 1943 the *New York Times* editorialized: "Intramural bickering and inter-bureau politics are moving to a new high point in bitterness with energy that might be devoted to outdoing the Axis being turned by subordinate officials to undoing one another" (Somers, 33, 34). Nelson underwent the humiliation of one of his division heads, Joseph Weiner, Civilian Supply Division, testifying before a congressional committee against Nelson's leadership and administration. Nelson had recently fired one his most senior officials, Ferdinand Eberstadt who had come to the War Production Board from the Army and Navy Munitions Board, and many people from the War Production Board resigned in sympathy with Eberstadt (who was seen by Nelson as undermining his position by favoring military control of industrial mobilization). Somers continues, by mid-1943 "the conflicts among agencies . . . reached the stage of public scandal."

4. The situation demanded the creation of the arms czar that Roosevelt had avoided since August 1939. It was not the president's style to appoint an assistant president, and the Congress usually avoided permitting such powers to unelected officials, but when the Office of

War Mobilization was created, most people applauded because the need for this type of authority had become widely recognized (Somers, 5). Roosevelt wrote Byrnes in January 1944 in answer to a request by Byrnes to have his powers augmented by being permitted to take over the War Production Board. The president turned him down, but told him: "As you know you are indispensable on the handling and the actual settling of scores of problems which are constantly arising." [David Robertson, *Sly and Able: A Political Biography of James F. Byrnes* (New York: Norton, 1994), 322; Executive Order 9347, 27 May 1943, cited in Somers, 47-51].

5. ICAF, 104-110. Byrnes wrote: "The fight to hold wages and prices was a bitter struggle. It was a struggle against the desires of the producers to obtain increased prices and of workers to win increased wages. Senators, representatives, labor leaders, businessmen, farmers, and spokesmen for groups of all kinds would present their special case. Whenever they could, they would go to the President to present their complaint" [James F. Byrnes, *Speaking Frankly* (New York: Harper Brothers, 1947), 19]. The Bureau of the Budget was heavily involved in economic policy too, and its powers were vastly expanded during the war. See Industrial College of the Armed Forces, 93-97. But the relationship between the Office of Economic Stabilization and the Bureau of the Budget was not friction free. Byrnes inevitably engaged in formulating policy that, prior to his appointment, was the province of the Budget Bureau, and Bureau Director Harold D. Smith challenged Byrnes's authority. But Byrnes had proximity—being located in the White House. He was also a long-time Roosevelt confidant—one who Roosevelt liked to call a BC—that is, a Roosevelt supporter for the Democratic party nomination for president Before the 1932 national democratic convention in Chicago.

6. Somers, 35. Quote is from the Byrnes drafted Executive Order 9250, 3 October 1942. Byrnes, 17. Byrnes succeeded in that inflation was dampened better than in previous wars. While the cost of living had risen rapidly in the first year of the war, from April 1943 to September 1945 it rose only another 4.8 percent. Koistinen notes that farmers and industrialists greatly benefited from the war, but that laborers made the least gains. Koistinen 98, 99. Byrnes was really at home in this venue. He had overseen the legislative passage of the Administrative Reorganization Act of 1939 which permitted Roosevelt to establish dozens of agencies and bureaus like the Office of Economic Stabilization, the War Production Board and the Office of War Mobilization before and during World War II. The law removed from congressional oversight and centralized within the Executive Office

agencies essential for the war effort. See David Robertson, *Sly and Able: A Political Biography of James F. Byrnes* (New York: Norton, 1994), 290.

7. Somers, 66-70.
8. Somers, 118-121.
9. Somers, 47-51. 203-233.
10. Somers, 70-75.
11. Somers, 63-64.
12. Somers, 51-54, 80-81; Marvin A. Kreidberg and Merton G. Henry, *History of Military Mobilization in the United States Army, 1775-1945* (Washington, DC: Headquarters, U.S. Army, 1955), 687.
13. Somers, 65. Milward argues that decisions to be made on priorities were decisions of extreme significance, and these could only be made by "possessors of great political power." To make such decisions one had to have full knowledge of the circumstances leading to a priorities dispute, one had to have under one's control the administrative machinery to carry out a priorities decision, and one had to have the will to make such essential decisions. Byrnes had all these. He was indeed the "supreme umpire over the powerful" [Alan Milward, *War, Economy and Society: 1939-1945* (Los Angeles: University of California Press, 1979], 110-113. Byrnes's biographer notes that he received from the president "additional authority to arbitrate without further presidential appeal any disputes arising among the numerous war production agencies and other civilian defense agencies headquartered in Washington. . .. [and Roosevelt was] happy to be relieved of the political and logistical responsibilities of the home front . . . ." Byrnes intended the Office of War Mobilization to be a "one man show" (Robertson, 327).
14. Somers, 137; Harold G. Vatter, *The United States Economy in World War II* (New York: Columbia University Press, 1985), 82-83. Herman Somers, the scholar most knowledgeable about the Office of War Mobilization, thinks that the "allegation that the military wished to 'take over' the economy" is "questionable" and that Byrnes with the Joint Chiefs of Staff maintained a "clear civilian dominance over all home front issues." Somers cites a dispute between Byrnes and the Navy late in the war (March 1945) over the number of aircraft that were needed to complete the war. The Army Air Forces had reduced their demand by almost 44,000 airplanes, saving more than $7.5 billion, but the Navy cut very little. Both Byrnes and Vinson found the Navy's insistence untenable (Somers 122-124, 133-134). The Joint Chiefs in January 1945 demanded 40 additional tankers. The Joint Production Survey Committee said the number of tankers requested was excessive.

The Joint Chiefs overruled the Joint Production Survey Committee, but the Office of War Mobilization denied the Chiefs' petition. Somers, 130-132. In April 1945 the Joint Chiefs tried to influence shipping priorities in terms of the ratio of space allocated for civilian and military goods. Vinson wrote Admiral William D. Leahy that the "responsibility for making final decisions as to the proper balance in the employment of manpower and production resources to obtain the maximum war effort rests with this office" (Somers 128-130). The Navy in January 1945, probably at some prodding by representatives and senators with shipyards in their districts and states, requested an additional 84 ships (644,000 tons) beyond the 1945 program. The Navy went directly to the president, bypassing the Office of War Mobilization. Byrnes counseled the president to cancel most of the order, and Roosevelt eliminated 72 ships (514,000 tons) saving$1.5 billion (Somers, 125-128).

15. Robertson, 328-330.

16. Somers, 200-202. The Congress was seriously concerned with this aspect of economic planning, and it was a major factor in the push for orderly demobilization and in fact legislated the issue because of their political concerns. Representatives and senators called for planning on such elements as orderly contract termination, surplus disposal, orderly service men and women demobilization, relaxation of wartime controls, curtailment of wartime production, resumption of banned civilian goods. Congress had surrendered powers to the president because of the war emergency, and wanted to take these back. Byrnes was sensitive and set up the Bernard Baruch-John Hancock postwar planning unit in the summer of 1943. These two gurus produced a report in February 1944 stressing the need for congressional leadership in postwar reconversion. The Congress passed the Office of War Mobilization and Reconversion Act on 3 October 1944 granting vast powers to the Office and its director, calling on Byrnes, subject to the president's direction, to "formulate or have formulated reconversion plans . . . issue orders and regulations to executive agencies regarding reconversion plans" which would have the force of law, recommend reconversion legislation, determine which war agencies should be simplified, consolidated or eliminated, submit quarterly reports to Congress and the president on post-war adjustment, "determine whether any prime contract for war production scheduled for termination, should be continued either to benefit the government or avoid substantial physical injury to a plant or property." Somers 76-78.

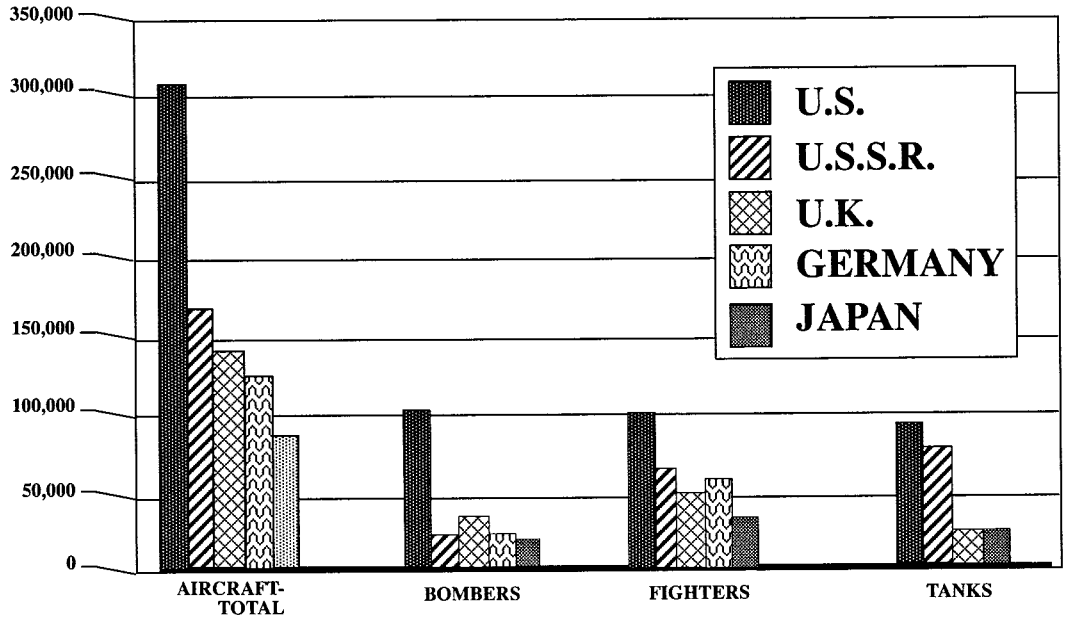
17. Somers, 200-202.

# 9.
# U.S. PRODUCTION IN WORLD WAR II

Everywhere one looks there are very impressive American production statistics throughout World War II. The war on the ground in Europe was often tank warfare. Between 1918 and 1933, the United States produced only 35 tanks, and no two of them the same model. In 1940, after witnessing Germany's *Blitzkrieg* in Poland, Belgium, the Netherlands, and France, the United States produced 309 tanks, versus 1,400 in Britain and 1,450 in Germany. In 1943, however, the United States manufactured 29,500 tanks, more in 1 year than Germany produced in the entire war from 1939 to 1945. In all, the United States manufactured 88,430 tanks during World War II versus 24,800 in Britain and 24,050 in Germany.[1]

Consider also aircraft. In 1940, the United States had 41 engine and propeller plants; in 1943 it had 81, with 5 built in Canada with U.S. funds (nearly all of the 40 new factories were of considerably larger size than those that existed in 1940). Aircraft production floor space increased from 13 million square feet in the prewar period, to more than 167 million square feet in 1943, and the value of the facilities mushroomed from $114 million prewar to almost $4 billion in 1944. In 1939, the United States produced 5,865 aircraft valued at about $280 million, and in 1944 America produced 96,379 airplanes valued at almost $17 billion. (The dollar figure is deceiving because during the war the costs of manufacturing aircraft dropped dramatically.) Between 1 January 1940 and 14 August 1945 the United States manufactured 303,717 aircraft, and between 7 December 1941 and the Japanese surrender, 274,941 aircraft. And the power, weight, and speed of the aircraft dramatically increased during the war period.[2]

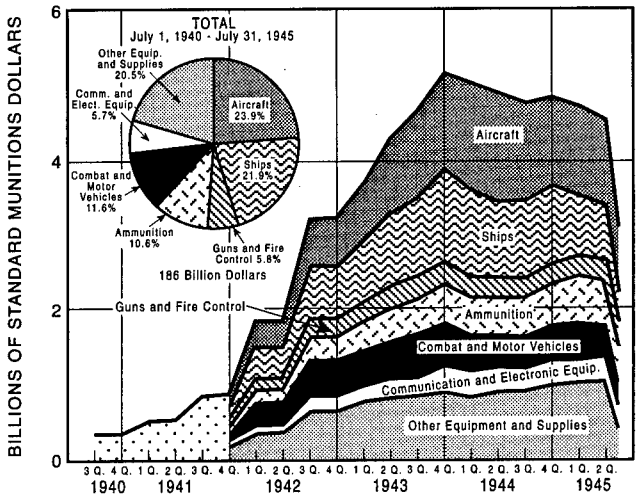
# Tank and Aircraft Production of the Major Belligerents: World War II*




* Different sources use different numbers

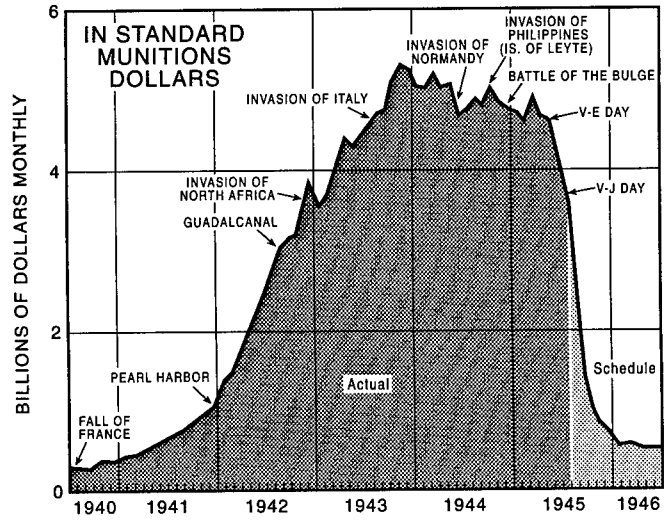
## U.S. MUNITIONS PRODUCTION

Average Monthly Rate, by Quarters, July 1, 1940 - July 31, 1945




Source: Wartime Production Achievements,105

## U.S. MUNITIONS OUTPUT




Source: Wartime Production Achievements, 13

## UNITED STATES PRODUCTION: WORLD WAR II*

| | 1940 | 1941 | 1942 | 1943 | 1944 | 1945 |
|---|---|---|---|---|---|---|
| **SHIPS, Total** | | 1,906 | 11,342 | 24,621 | 40,265 | 16,045 |
| Aircraft carriers | | 1 | 1 | 15 | 6 | 7 |
| Aircraft carriers, escort | | 2 | 13 | 50 | 38 | 13 |
| Battleships | | 2 | 4 | 2 | 2 | |
| Cruisers, heavy | | | | 4 | 1 | 8 |
| Cruisers, light | | 1 | 8 | 7 | 11 | 7 |
| Destroyers | | 16 | 81 | 128 | 78 | 74 |
| Destroyer escorts | | | | 306 | 193 | 6 |
| Submarines | | 11 | 34 | 56 | 79 | 37 |
| Landing Craft | | 1,042 | 9,488 | 21,533 | 37,614 | 14,521 |
| **PLANES, Total** | 6,019 | 19,433 | 47,836 | 85,898 | 96,318 | 46,080 |
| Bombers | 1,191 | 4,115 | 12,627 | 29,355 | 35,003 | 16,140 |
| Fighters | 1,685 | 4,416 | 10,769 | 23,988 | 38,873 | 20,977 |
| Transport | 290 | 532 | 1,984 | 7,012 | 9,834 | 4,426 |
| **TANKS, Total** | 331 | 4,052 | 24,997 | 29,497 | 17,565 | 11,968 |

*Different sources list different numbers.

It is equally true, however, that there was no production "miracle" in the United States during World War II. Unquestionably, munitions production expanded greatly, but the base on which the expanded production was measured was a depressed one. Compare, for example, the period 1941 to 1945 with another period of rapid industrial expansion (and peacetime at that), 1921 to 1925. Wartime farm output increased about 25 percent in the former and peacetime output increased by more than 28 percent. In the case of total industrial production, the peacetime output increase was double that of wartime (53 percent versus 25 percent). If the period 1941 to 1944, when wartime production peaked and before it turned down, is compared with the period 1921 to 1924, the wartime figure is 7 percent higher (45 percent compared to 38 percent).[3] How then did the United States produce the hundreds of thousands of airplanes, tens of thousands of tanks, tens of thousands of landing craft if the output increase in the early 1940s was no greater than it had been in the early 1920s? through massive conversion of the industrial base and generous government funding for infrastructure construction.

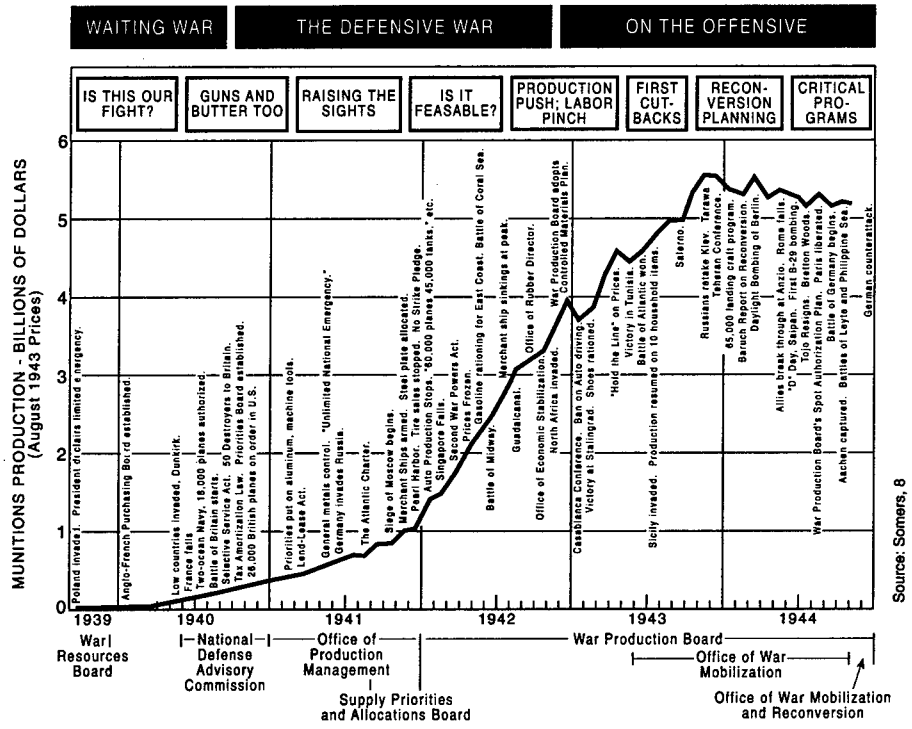
In 1939 the United States devoted less than 2 percent of its national output to war, and about 70 percent to satisfying immediate civilian desires. The rest went to civilian government expenditures, private capital formation, and exports. By 1944, the war outlays were 40 percent of national output. Industrial production doubled from 1939 to 1945 (but 1939 was still a depression year), with production increasing at the rate of 15 percent per year. Manufacturing employment increased from 10,151,000 in 1939 to 16,558,000 in 1944, and the percentage of the work force involved in manufacturing increased from 19 to 26 percent. The rest of the people were neither farm nor factory workers (more women were at home than were in the factories, on the farm as workers, or in the military). All segments of the labor force decreased their percentage of workers except industry, the military and civil service.[4] Agricultural employment fell from 9,450,000 in 1940 to 8,950,000 in 1944, while people in nonagricultural industries went from 37,980,000 in 1940 to 45,010,000 in 1944. Most of the increase came from

sopping up unemployment (which was 8,120,000 in 1940 and only 670,000 in 1944) and employing more women.[5]

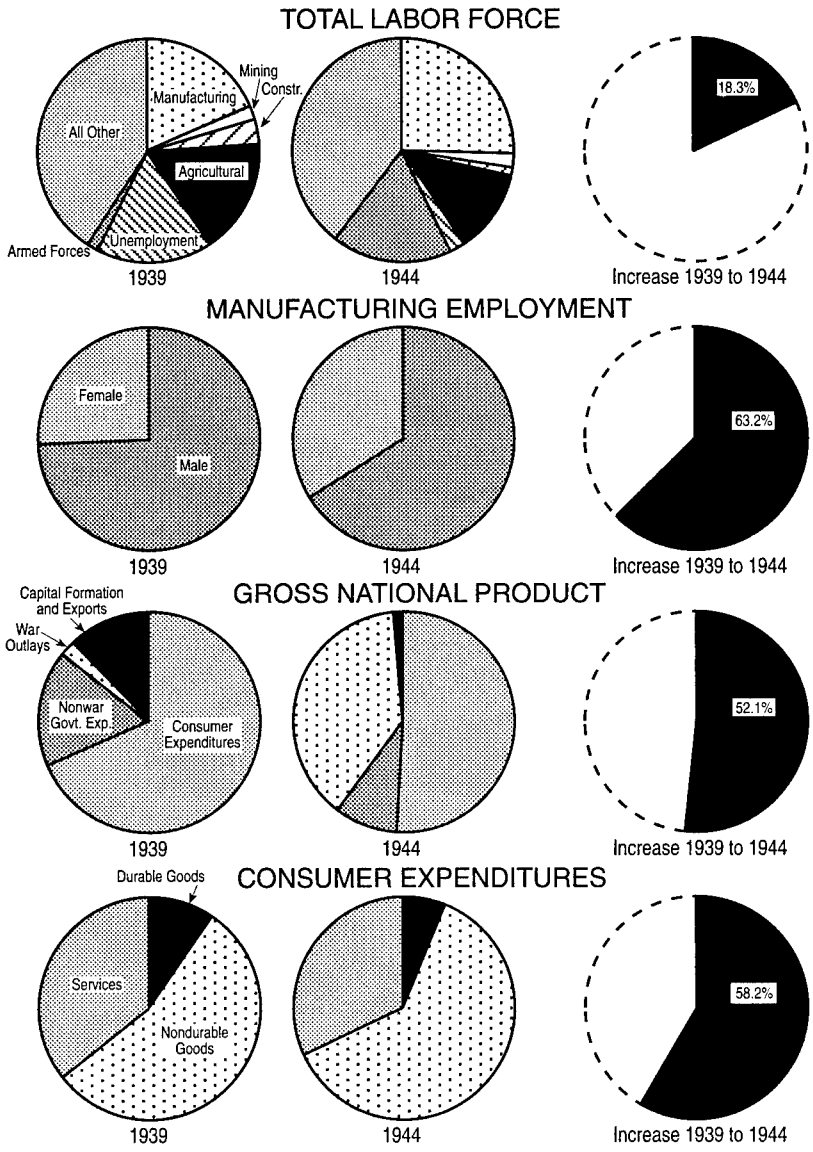
As can be seen in chapter 10, U.S. output in gross figures is impressive, but all belligerents produced munitions at a furious pace. There is no denying that U.S. logistics capabilities were a major (probably *the* major) reason for the allied victory, but the relative output must be kept in perspective. The United States was unquestionably productive and outproduced all its allies and adversaries, but it started from a higher technological base than all other combatants. Its wartime increase in productivity was not impressive by comparison to others, but it was sufficient to win the war![6]

The great advantage the United States had over Germany was that the former planned for a long war.[7] Conversion of industry alone would not have produced all the munitions needed; new factories had to be built and old ones modified. It was essential, therefore, for the government to expend scarce materials, machinery and manpower on building and expanding war plants at the expense even of current production. In 1940 about $2 billion was spent on factory construction, more than $4 billion the next year, and almost $8.5 billion in 1942. After the third quarter of 1942, the trend was downward for the rest of the war.[8]

## ARMS AND AMERICA

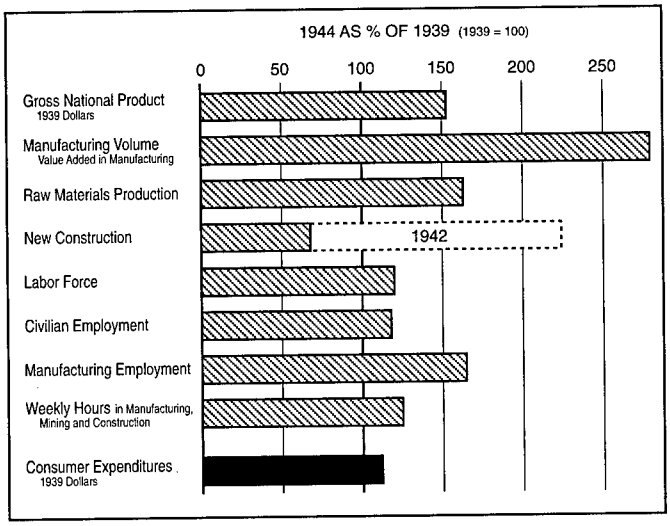


# SOME WARTIME SHIFTS IN U.S. ECONOMY



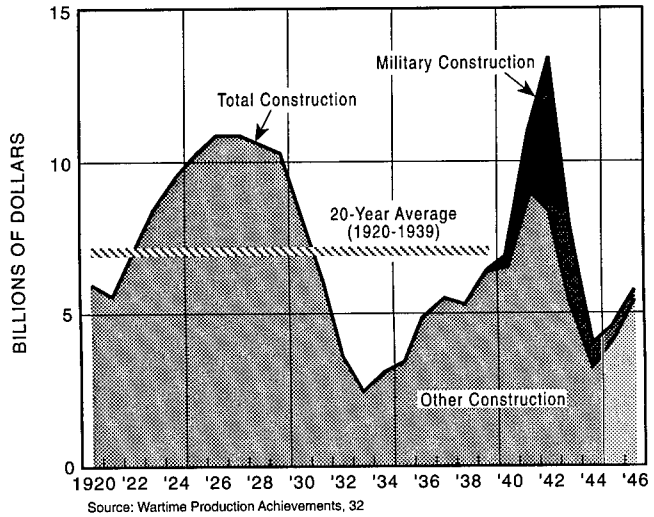

Source: Wartime Production Achievements, 4

## WARTIME EXPANSION IN THE UNITED STATES 1939 TO 1944




Source: *Wartime Production Achievements*, 2

## NEW CONSTRUCTION ACTIVITY IN THE U.S.




Source: Wartime Production Achievements, 32

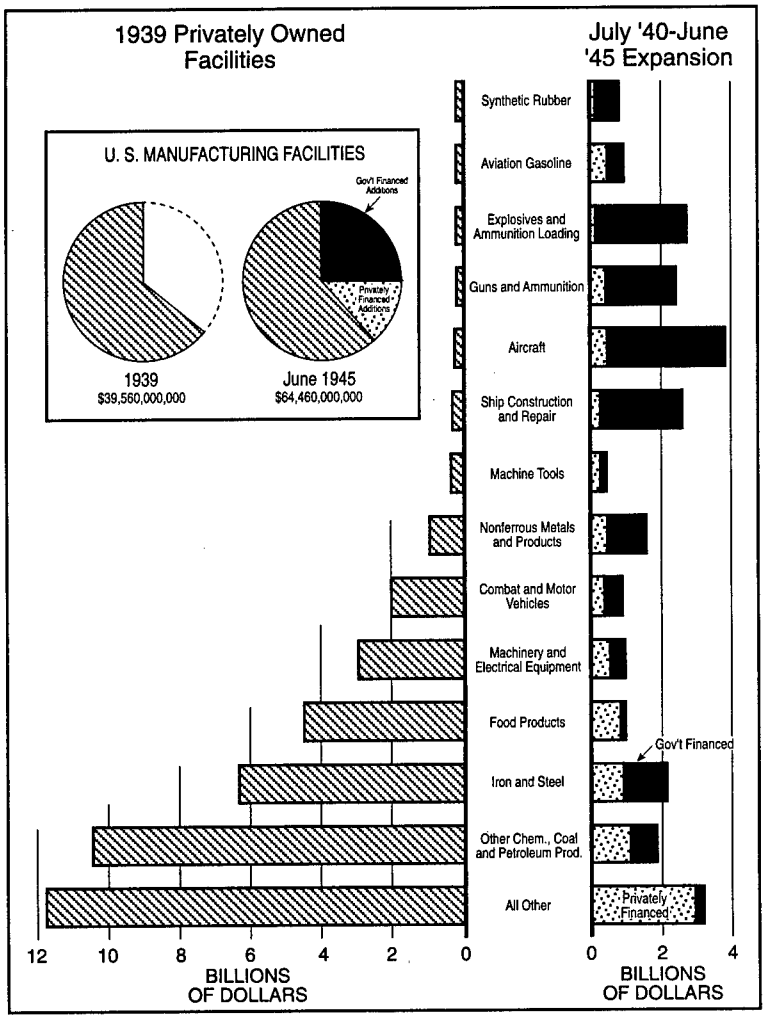
## NEW CONSTRUCTION ACTIVITY IN THE UNITED STATES
### (millions of dollars)

| | 1939 | 1940 | 1941 | 1942 | 1943 | 1944 | 1945 (est.) |
|---|---|---|---|---|---|---|---|
| TOTAL CONSTRUCTION | 6,302 | 6,830 | 10,757 | 13,434 | 7,732 | 3,935 | 4,500 |
| Total Public | 2,411 | 2,574 | 5,442 | 10,669 | 6,114 | 2,353 | 1,985 |
| Total Private | 3,891 | 4,256 | 5,316 | 2,765 | 1,588 | 1,582 | 2,515 |
| Military | 119 | 337 | 1,756 | 5,060 | 2,423 | 720 | 515 |
| Army | 89 | 270 | 1,411 | 3,934 | 1,559 | 319 | 260 |
| Navy | 30 | 67 | 345 | 1,126 | 864 | 401 | 255 |
| Industrial | 241 | 569 | 2,028 | 3,806 | 2,198 | 982 | 1,280 |
| Public | 14 | 145 | 1,350 | 3,485 | 1,973 | 748 | 640 |
| Private | 227 | 424 | 678 | 321 | 225 | 234 | 640 |
| Housing | 2,483 | 2,560 | 3,360 | 1,895 | 1,318 | 691 | 735 |
| Public | 76 | 204 | 480 | 600 | 702 | 192 | 85 |
| Private | 2,407 | 2,356 | 2,880 | 1,295 | 616 | 499 | 650 |
| Nonresidential bldg.[1] | 1,267 | 937 | 971 | 460 | 230 | 275 | 550 |
| Public | 762 | 357 | 330 | 239 | 134 | 131 | 200 |
| Private | 505 | 562 | 641 | 221 | 96 | 144 | 350 |
| Other Public | 1,440 | 1,513 | 1,526 | 1,285 | 912 | 562 | 545 |
| Highways | 869 | 896 | 850 | 670 | 410 | 310 | 320 |
| Conservation | 318 | 323 | 356 | 356 | 244 | 142 | 110 |
| Various[2] | 253 | 289 | 320 | 259 | 258 | 110 | 115 |
| Other Private | 752 | 914 | 1,117 | 928 | 651 | 705 | 875 |
| Farm | 226 | 246 | 315 | 200 | 160 | 170 | 220 |
| Utilities | 526 | 668 | 802 | 728 | 491 | 535 | 655 |

[1] Includes commercial, educational, religious, hospital, public administration, and miscellaneous buildings.
[2] Includes sewer and water facilities and miscellaneous projects financed by State and local funds.

Source: *Wartime Production Achievements*, 33

## WARTIME GROWTH OF MANUFACTURING FACILITIES




Source: Wartime Production Achievements, 6

## NOTES

1. Jerome G. Peppers Jr., *History of United States Military Logistics 1935-1985* (Huntsville: Logistics Education Foundation Publishing, 1988), 65. Not until 9 months after the invasion of Poland did the Chrysler Corporation, the country's first big tank manufacturer, receive its first set of tank blueprints and an order. In early 1943 there were 18 companies producing tanks, armored cars or other combat vehicles (including jeeps). Chrysler, before the war, made automobiles. During the war it made 35 different types of war equipment, including 59,000 antiaircraft guns, 3.5 million rounds of ammunition, 5,500 gyro compasses, 3,000 range finders, tanks, tank accessories, and also some devices for the Manhattan Project. Nelson 239-242. One finds different production figures in various sources, usually because the authors do not start or finish at the same date. The War Production Board figure for tank production in World War II is 86,333 between 1 July 1940 and 31 July 1945. War Production Board, 10-13. What is impressive about the United States figures is the acceleration rather than the gross total. Again, the United States had the population to produce, two vast oceans for protection, abundant raw materials and a strategy to use machines versus people in combat. Therefore the amount of production is less imposing than the speed with which the United States attained its maximum output.

2. Donald M. Nelson, *Arsenal of Democracy* (New York: Harcourt, Brace and Co., 1946), 237-238. The United States produced more than 40 percent of all the aircraft produced by all belligerents in World War II and supplied enough raw materials to its two key allies the United Kingdom and the Soviet Union to permit them to be the number two and three producers of aircraft (Peppers, 63-65). During the war United States industry produced 150 separate types of aircraft and 417 different models. Between 1 January 1940 and 14 August 1945 the United States spent $45 billion manufacturing aircraft. At the peak of the war the Army Air Forces had in its inventory 89,000 airplanes. Joshua Stoff, *Picture History of World War II American Aircraft Production* (New York: Dover Productions, 1993), xi. The Navy inventory at the end of the war contained 36,721 aircraft. U.S. Department of Commerce, *Statistical Abstract of the United States, 1950* (Washington, DC: Government Printing Office, 1950), 212. From 1 January 1940 to the end of the war the United States produced more than 300,000 aircraft, the United Kingdom 131,549 (many of them of United States' design),

the USSR 158,218, Germany 119,871 and Japan 76,320. Many of the latter two countries' aircraft were defensive fighters, whereas the United States two most heavily produced aircraft were offensive heavy bombers. Bombers were costly, but their price fell during the war. A B-24 cost in 1945 dollars $213,700. On average a Liberator lasted 237 days and 700 flying hours, and consumed about eight engines. The life cycle costs including fuel to fly it to the combat theater was $330,000 (Rutenberg and Allen, 113-114). Alan Milward notes that not all of the technological innovation went into just improving weapons, much went into improving the production processes. Thus production of the famous Oerlikon gun went from 132 hours to 35, and production costs for aircraft fell dramatically [Alan Milward, *War, Economy and Society: 1939-1945* (Los Angeles: University of California Press, 1979), 186].

3. Harold G. Vatter, *The United States Economy in World War II* (New York: Columbia University Press, 1985), 22.

4. *Wartime Production Achievements and the Reconversion Outlook* (Washington, DC: War Production Board, 1945), 3-5.

5. U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States, 1948* (Washington, DC: Government Printing Office, 1948), 174-176.

6. Milward, 73-74.

7. Mark Harrison, "Resource Mobilization for World War II: The U.S.A., U.K., U.S.S.R., and Germany, 1938-1945," *Economic History Review* XLI, no. 2 (1988): 173. Germany's success at the outset of the war depended primarily upon military (as opposed to economic) factors. But as the war continued, success depended on German ability to mobilize its resources speedily and fully. Germany's *Blitzkrieg* strategy was aimed at winning the war before an economic mobilization by Germany's adversaries could influence events. Hitler's lightning war in the Soviet Union failed, but, even then, Germany did not turn to the type of economic mobilization policies of its adversaries. Germany's economic effort remained divided long after the allies had pursued a more centralized course with much better results. Not only did Hitler turn to economic mobilization too late, but he did so without enthusiasm and within the framework of Nazi party tensions and rivalries. Both of Hitler's strategies failed (Harrison, 178-181).

8. War Production Board, 34-35. Most of the money went to build factories that would almost surely be surplus at the end of the war. Aircraft manufacturing facilities absorbed about one third of the money spent and shipyard construction another fifth. Another

astonishing statistic: in 1937 the Detroit Ordnance Office, a part of the Army, had in toto two officers, one clerk and one steno. In 1944 this same office was to occupy several large office buildings and make purchases equal to "three times the taxable value of the whole city of Detroit" ( Nelson, 55). In some industries almost all of the construction money came from the government: 97 percent of the synthetic rubber industry construction for example, military explosives 85 percent, and chemical warfare 100 percent (War Production Board, 86).

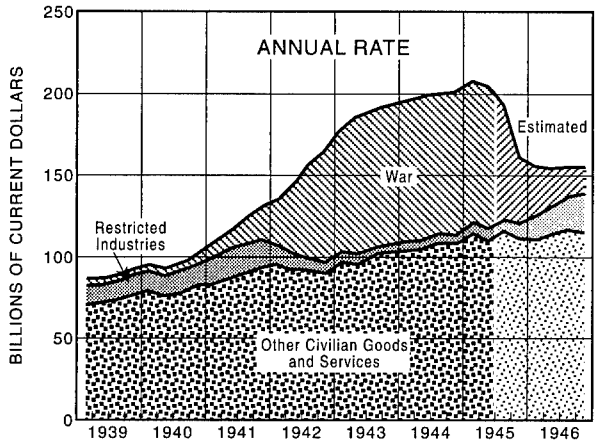
# 10.
# BALANCING MILITARY AND CIVILIAN NEEDS

Great as the output was, the United States war effort did not absorb more than 40 percent of the gross national product, which grew 50 percent in constant dollars between 1939 and 1944. The United States devoted a smaller percentage of its gross national product to the war than any other major belligerent. There was also a major effort during the war to improve the lot of the population whenever possible. Automobile production was stopped and tires and gasoline were rationed, but consumers could be compensated with soft goods and services. The War Production Board thought that the American people during the war were "subjected to inconvenience, rather than sacrifice."[1] By comparison to the situation facing civilians in all other nations at war, it would be hard to argue with that assertion. At the height of the war the government spent $94 billion, and of that $81.6 billion 87 percent was war spending. The budget was 80 times greater than in 1939, 54 times 1940 and 14 times 1941. But the budget expansion was such that civilians truly did not suffer because of the war, and when one considers that unemployment had all but disappeared and what joblessness remained was usually only temporary, the home front prospered. In terms of calories, people were generally fed better than they had been before the war, and they consumed more meat, shoes, clothing and energy.[2]

Population is always a country's greatest resource, and in a major mobilization like that of World War II, usually its greatest hinderance. The United Kingdom suffered a severe people crunch; its population was the smallest of the major belligerents. Germany and the Soviet Union found themselves severely limited, too, in terms of productive population. The United

States was also limited in terms of manpower, although its population was larger than all the belligerents (including the Soviet Union soon after the German attack in June 1941), except for China, and its losses were much smaller than all the major adversaries who remained in the war.

**GROSS NATIONAL**
Total Output of Goods and Services




Note - Restricted Industries include motor vehicles, consumer durable goods, nonwar construction, and consumer purchases of gasoline.

Source: Wartime Production Achievements, 28

The American manpower problem was exacerbated by the number of agencies involved in allocating this crucial resource. The War Manpower Commission was created by Executive Order by the president on 18 April 1942 as a policymaking agency, but the Selective Service System, which drafted more than 10,000,000 people, was completely independent of the War Manpower Commission. In January 1943, the War Manpower Commission lost control over the agricultural labor supply to the Secretary of Agriculture, and the Civil Service Commission recruited independently for the vastly increased responsibilities of the federal government. In time, railroad workers and sailors in the merchant marine were also independent of the War Manpower Commission's authority, and of course all of these agencies were independent of each other. Although the War Manpower Commission tried to establish policy on draft

deferments, the 6,500 separate draft boards were independent in their actions, reporting to the Selective Service and not to the War Manpower Commission.

When the manpower situation became desperate in 1943 and 1944, with superfluous people in selected industries or on farms clinging to draft deferments, it took the power of the Office of War Mobilization to solve the dilemma. There was, for example, an urgent manpower problem on the West Coast, where much of the United States shipbuilding and airplane manufacturing were located. By June 1943, one-third of the shipbuilding yards on the West Coast were behind schedule, and there was a shortage of workers in every production center. It took about a year for the Office of War Mobilization to implement a policy restricting the freedom of workers to move where they wanted to take advantage of better wages or working conditions, and to moderate the rights of employers to hire whomever they wanted whenever they wanted. The division of responsibility for making manpower decisions harmed the war effort, and only when Byrnes was put on the top of the apparatus, could problems be solved.[3]

The manpower demand was relentless. In mid-1945 U.S. Armed Forces included more than 12 million people; of these, more than 98 percent were men. However, during the war, the United States had mobilized more than 16 million for the military. More than 400,000 died or were missing in action, several times that number were wounded (and many of that total were invalided out), and a great number were discharged before the war ended for a variety of reasons. To reach the number that served, about 45 million men were registered for the draft, and 31 million of these were found physically and mentally qualified. About 10 million were drafted, with many additional millions being allowed to enlist. Voluntary enlistments, where one chose the service one wished to join, stopped in 1943 (although one could apply and be accepted to the officer accession programs). As we saw above, the Armed Forces ran out of men before the war ended, with the last tactical units in the Army going overseas in February 1945. It would be hard to argue with Jerome Peppers, who states, "We used our manpower unwisely and could have been in serious manning problems in war production

and military service had the war not gone so well for us. Fortunately . . . the war ended before our unwise manpower . . . policies could return to bite us . . . we really had no effective plan for the full scale manpower mobilization which was required."[4]

There were many draft deferments for individuals in both agriculture and "essential" war industries. Many others had deferments too: civil servants, hardship cases, religious officials, aliens, conscientious objectors, handicapped people, etc. Too many men had deferments when the crunch came in 1943 and 1944, but when the War Manpower Commission on 1 February 1943 issued a list of "nondeferable" occupations and called on draft boards to reclassify such people as category 1-A, the draft boards refused to obey. The Commission, demonstrating its impotence, withdrew the order in December that year. Byrnes was more effective; in December 1944 he issued what came to be known as his "Work or Fight Order" to use the Selective Service System to drive men either into essential jobs that were unpopular or into the service. Byrnes wanted to call into the services men under age 38 who left essential industries, or who changed jobs in a necessary industry without the authority of the local draft board. He got his way, but few men were affected fewer than 50,000 probably because the threat of such a possibility kept people working where the government needed them. Some men who refused to work where needed ended up in special Army labor camps doing needed work but under punitive conditions. Such frankly threatening measures were not terribly effective. From late 1943 until the end of the war, Byrnes called for national service legislation. Roosevelt included an appeal for such laws in his state of the union addresses in 1944 and 1945, and Byrnes tried to work his magic on the Congress, but to no avail; such legislation never passed.[5]

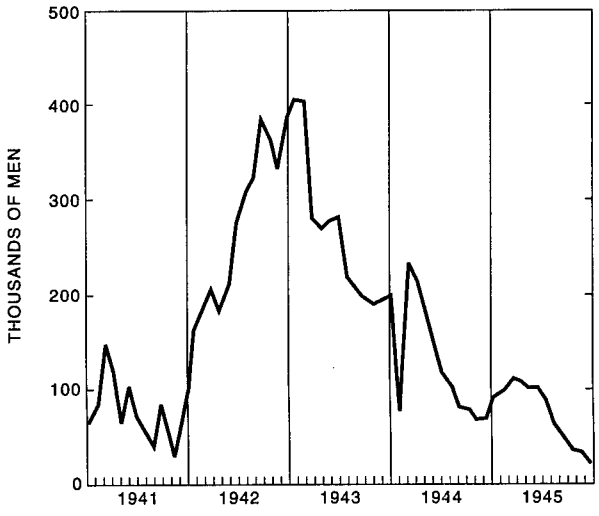
## MOBILIZATION OF THE WORKFORCE FOR WAR: U.S.A., U.K., U.S.S.R., AND GERMANY, 1939/40 AND 1943

(Per Cent of Working Population)

| | | Group I Industry | Armed Forces | Total War-related |
|---|---|---|---|---|
| U.S.A. | 1940 | 8.4 | 1.0 | 9.4 |
| | 1943 | 19.0 | 16.4 | 35.4 |
| U.K. | 1939 | 15.8 | 2.8 | 18.6 |
| | 1943 | 23.0 | 22.3 | 45.3 |
| U.S.S.R. | 1940 | 8 | 5.9 | 14 |
| | 1943 | 31 | 23 | 54 |
| GERMANY | 1939 | 14.1 | 4.2 | 18.3 |
| | 1943 | 14.2 | 23.4 | 37.6 |

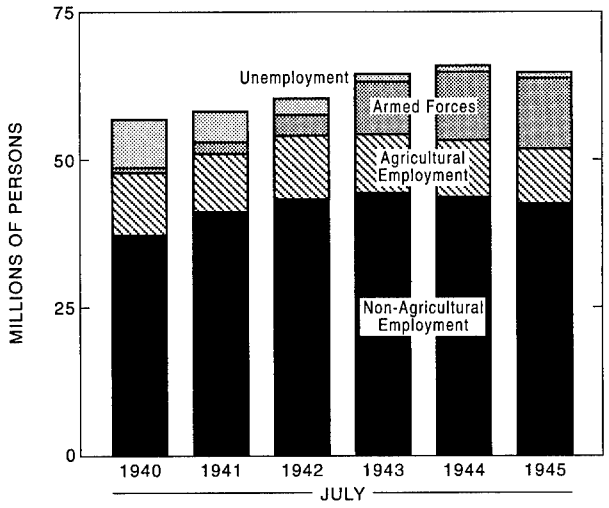
Source: Harrison, *Resource Mobilization for World War II: The U.S.A., U.K., U.S.S.R., and Germany, 1938-1945,* 186

## MILITARY INDUCTIONS THROUGH SELECTIVE SERVICE




Source: Bureau of the Budget,177

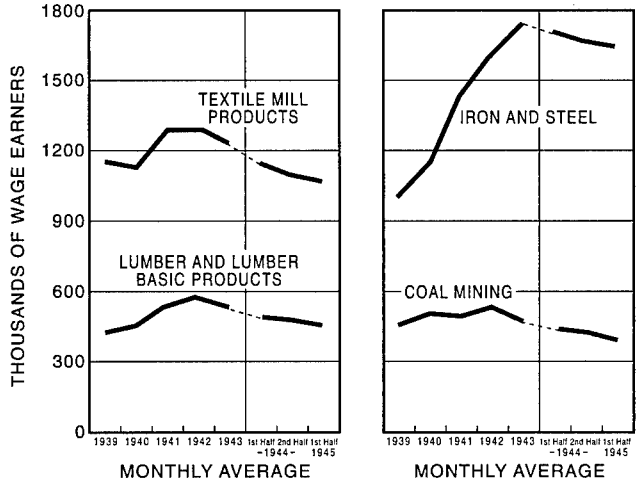
## THE LABOR FORCE




Source: Bureau of the Budget, 174

## MANPOWER: UP AND DOWN

Employment in Selected Industries




Source: Wartime Production Achievements, 9

One example of the Congress frustrating the president and his "assistant president," is the fight to draft superfluous farm workers. In November 1942, Congress amended the Selective Service Act to defer essential farm workers unless satisfactory replacement workers could be found. Local draft boards interpreted this to mean a "virtual universal deferment for agricultural workers." By 1944 this practice reached "scandal" proportions. Men were needed as warriors and certain industries were crying for men, but some industrial workers "trying to avoid the draft were transferring to agricultural work for refuge, while agricultural workers could not be persuaded to turn to the higher remuneration of industrial work for fear of losing deferred status." The farm bloc in Congress opposed any change to this situation. By January 1945 the only remaining pool of men in the right age category were the 364,000 people holding agricultural deferments. Byrnes appealed to Roosevelt, who authorized reclassification of farm workers. The Congress passed a bill in both houses to amend the selective service legislation to defer all registrants engaged in agriculture. This bill was vetoed by President Truman only days before V-E Day.[6]

## NOTES

1. *Wartime Production Achievements and the Reconversion Outlook* (Washington, DC: War Production Board, 1945), 1-2. The labor force went up from 54 million to 64 million in the war, but most of the increase here came from the 9 million who were unemployed in 1939. There were about 12 million in the armed services at the manpower peak. Most of the 10 million increase in the labor force went into factories (the volume of manufacturing output tripled), and agriculture. The construction trades lost workers after 1942. The workweek increased from 37.7 hours per week in 1939 to 45.2 hours in 1944, and productivity increased sharply.

2. James L. Abrahamson, *The American Home Front* (Washington, DC: National Defense University Press, 1983), 139-140. In Britain, real total personal consumption fell at the wartime nadir to 70 percent of the 1938-1939 level, whereas in the United States at the worst, in 1942, it was 5 percent higher than it had been in 1940. Thereafter it went up rapidly. In the United States, personal consumption never fell below 55 percent of a rapidly expanding gross national product, whereas in Britain it never topped 49 percent of a much smaller gross

national product [Harold G. Vatter, *The United States Economy in World War II* (New York: Columbia University Press, 1985), 20].

3. Herman M. Somers, *Presidential Agency: The Office of War Mobilization and Reconversion* (Cambridge: Harvard University Press, 1950), 140-158.

4. Jerome G. Peppers Jr., *History of United States Military Logistics 1935-1985* (Huntsville: Logistics Education Foundation Publishing, 1988), 51-52.

5. Peppers, 51-52; Somers, 167-174.

6. Somers, 158-167. Byrnes was the manpower "czar" and on his own, with doubtful legal authorization, declared at the end of 1944 that essential industries make 30 percent of their men eligible for the draft. Many industrialists and their sponsors in the War Production Board and in other agencies complained, but Byrnes succeeded in enforcing his decision.

# 11.
# OVERCOMING RAW MATERIAL SCARCITIES

People were not the only shortage; there were numerous other scarcities that hampered the production and war effort.

The production process requires raw materials. Although the United States was rich in minerals, the amount being produced in 1940 was a fraction of what was needed, and some raw materials were not available at all, rubber being an example.[1] When the war with Japan began, the United States was virtually cut off from essential natural rubber supplies. A whole new synthetic rubber industry was created from the ground up to help the war effort. First, the government created a synthetic rubber industry. Second, output from rubber producing areas still accessible to the United States was maximized. Third, the government eliminated rubber consumption of nonessential items and curtailed consumption on permitted items. Fourth, conservation measures were taken such as gasoline rationing primarily designed to conserve rubber, and tire rationing to conserve material for the military. Fifth, reclaimed rubber production was expanded.[2] When the United States declared war, the entire rubber stockpile in the United States was 540,000 tons. The United States consumed about 500,000 tons per year in its civilian economy. Rubber had to be conserved until the synthetic rubber plants could be built, and rubber was elevated to a highest priority. In 1943, the new plants produced 234,000 tons; in the final year of the war, more than 800,000 tons were produced.[3]

Another underproduced priority raw material was aluminum, needed especially for aircraft. In 1938 there was only a single United States producer of primary aluminum. This one producer was also the major aluminum fabricator, operating four bauxite reduction plants with an annual capacity of 300 million pounds. Secondary recovery produced only 100,000 pounds. When the

wartime expansion program was completed, the country produced 2.3 billion pounds and secondary recovery had increased six fold. As a result of this government-financed construction, at the end of the war 42 percent of the world's aluminum manufacturing capacity was concentrated in the United States.[4]

Copper was also a major raw material problem and it became a true bottleneck. By the beginning of 1942, copper was a most critical need. Bullets and artillery shells were the biggest requirement, but there were many other items, including wire, that demanded copper. Strenuous efforts were made to expand the mining, smelting and refining facilities, and miners especially had to be induced to work in copper mines. Gold mining was virtually stopped to encourage miners to seek employment where they were needed. The Army even released 2,800 copper miners from active duty in 1942 to help. The government formed a Metals Reserve Company to buy up ore from neutral countries, and the Combined Raw Materials Board worked to allocate copper between the United States and the United Kingdom. Substitutes for copper were tried and employed whenever a replacement was feasible (aluminum wiring and fuses, zinc pennies, etc).[5]

In some cases, the government did not turn to increased construction, but rather to conservation and better management. Electricity was a prime example. Aluminum and magnesium manufacture and the Manhattan Project demanded vast increases in electricity. The demand for electricity in the country went from 16.3 billion kilowatt hours in 1939 to 279.5 billion in 1944. In the same period, generating capacity of the country's power plants was allowed to increase only 26 percent, from 49,400,000 to 62,000,000 kilowatt hours. Yet at no time during the war was it necessary to curtail power consumption because of insufficient supply. The United States ended the war with its lights burning and every machine fully powered and with power to spare. The War Production Board decided that workers skilled enough to build generating plants were needed elsewhere building munitions plants or munitions. In 1942, construction on all but the most critically urgent plants was stopped. By then all of the country's power systems--private, municipal, county, state, and federal--

were essentially assembled into great operating pools. Power was allocated where it was needed by whatever power company, private or public, was most efficiently positioned to supply it. Federal regulations were waived; normal rules of competition were bent or eliminated; and integrated operating pools did the job without wasting time and money on unnecessary construction.[6]

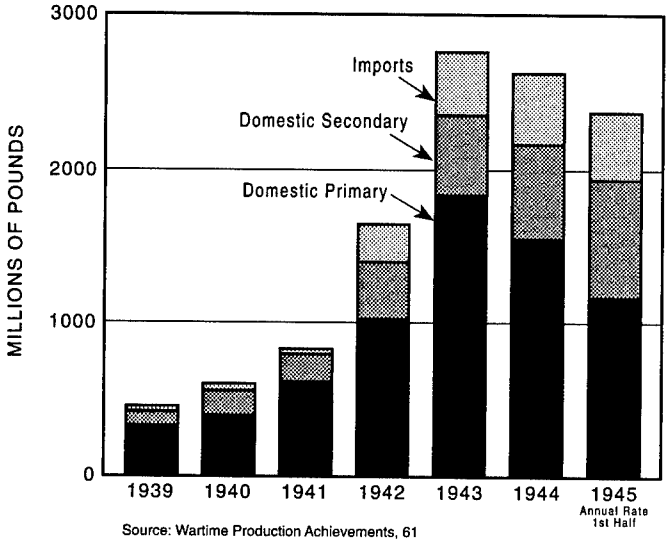
## UNITED STATES RUBBER SUPPLY
### Imports and Synthetic Production

| Period | Natural Imports | Domestic Synthetic Production |
|---|---|---|
| 1939: | *long tons* | *Long tons* |
| First quarter | 113,884 | [1] |
| Second quarter | 112,280 | [1] |
| Third quarter | 113,646 | [1] |
| Fourth quarter | 159,846 | [1] |
| 1940: | | |
| First quarter | 174,885 | [1] |
| Second quarter | 176,160 | [1] |
| Third quarter | 221,596 | [1] |
| Fourth quarter | 245,983 | [1] |
| 1941: | | |
| First quarter | 247,929 | 1,466 |
| Second quarter | 229,286 | 2,151 |
| Third quarter | 206,772 | 2,445 |
| Fourth quarter | 265,020 | 2,321 |
| 1942: | | |
| First quarter | 207,631 | 3,459 |
| Second quarter | 45,735 | 5,221 |
| Third quarter | 11,472 | 5,772 |
| Fourth quarter | 17,815 | 8,032 |
| 1943: | | |
| First quarter | 19,962 | 10,486 |
| Second quarter | 13,746 | 28,373 |
| Third quarter | 9,035 | 71,217 |
| Fourth quarter | 12,109 | 121,529 |
| 1944: | | |
| First quarter | 18,302 | 159,603 |
| Second quarter | 29,516 | 198,905 |
| Third quarter | 27,772 | 193,602 |
| Fourth quarter | 32,114 | 210,520 |
| 1945: | | |
| First quarter | 45,267 | 227,865 |
| Second quarter | 29,886 | 237,857 |
| Third quarter (est) | 27,416 | 222,966 |
| Fourth quarter (est.) | 31,612 | 256,051 |

[1] Not available.

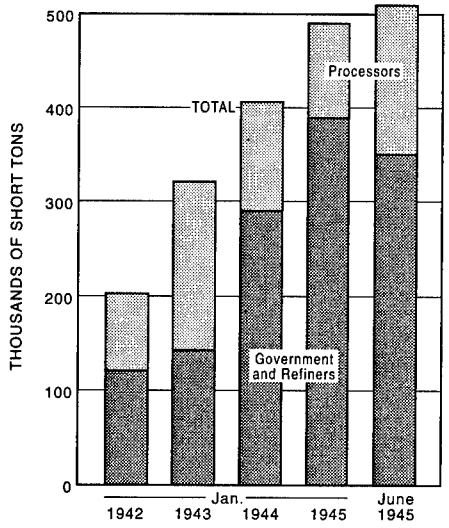
Source: *Wartime Production Achievements*, 92

## EXPANDING ALUMINUM INGOT SUPPLY




Source: Wartime Production Achievements, 61

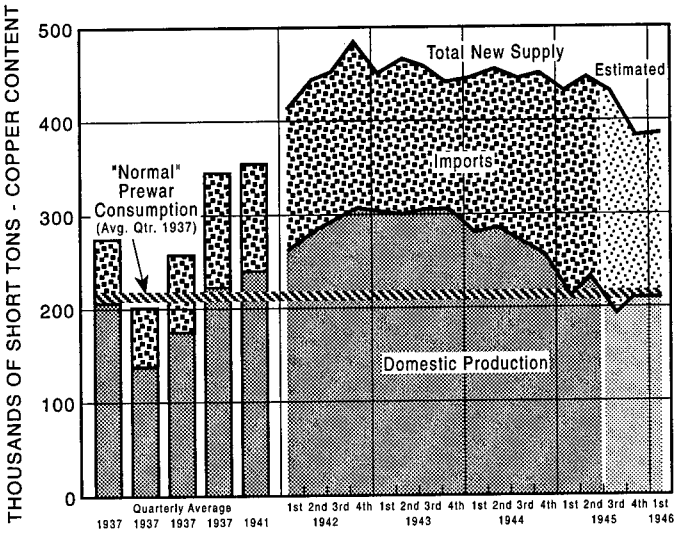
## REFINED COPPER STOCKS




Source: Wartime Production Achievements, 55

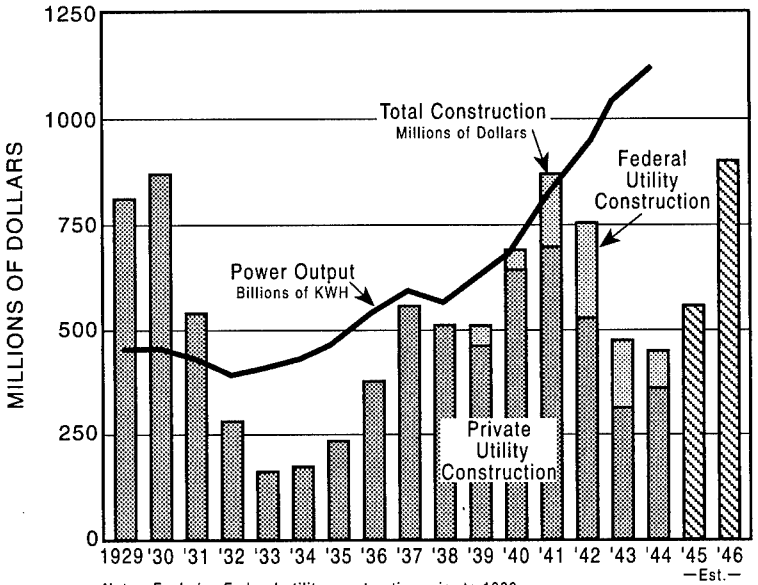
## COPPER AND COPPER BASE ALLOYS

New Supply vs. "Normal" Prewar Consumption




Source: Wartime Production Achievements, 54

## NEW PEAKS PLANNED FOR UTILITY CONSTRUCTION




Note - Excludes Federal utility construction prior to 1939.

Source: Wartime Production Achievements, 42

## NOTES

1. There were shortages across the board: in lead, aluminum, steel, copper, and zinc. This led to numerous improvisations to deal with these shortages. Sheradized or bonderized metal was used to substitute for galvanized coated metal; flashings were manufactured of asphalt coated fabrics to substitute for sheet metal or copper, many plumbing fittings were made of plastic rather than steel or brass. Copper uses were reduced to an absolute minimum. Instead of brass fittings and castings, iron and steel were substituted as "victory-type" plumbing facilities. Structural designs were lightened in residential construction reducing the weight of all metal per dwelling unit from a prewar average of 8,300 pounds to 3,200 pounds by mid-1942 (*Wartime Production Achievements and the Reconversion Outlook* (Washington, DC: War Production Board, 1945), 90-91).

2. War Production Board, 90-91.

3. Donald M. Nelson, *Arsenal of Democracy* (New York: Harcourt, Brace and Co., 1946), 290, 296, 297, 303, 305. Synthetic rubber production expanded about 100 times during the war from 8,300 tons in 1939 to 800,000 tons in 1944 [Jerome G. Peppers Jr., *History of United States Military Logistics 1935-1985* (Huntsville: Logistics Education Foundation Publishing, 1988), 63-65].

4. War Production Board, 57-62. Aluminum production expanded about 6 times during the war from 327 million pounds in 1939 to 1.8 billion pounds in 1943 (Peppers, 63-65).

5. War Production Board, 53-56. Silver was also a substitute because the government had a stockpile of silver and none of copper (Nelson, 353-358). Steel was a pacing material, obviously. By January 1943 total steel production was up 44 percent from the beginning of the war (Nelson, 44-46, 50).

6. War Production Board, 39-41.

# 12.
# MARITIME CONSTRUCTION

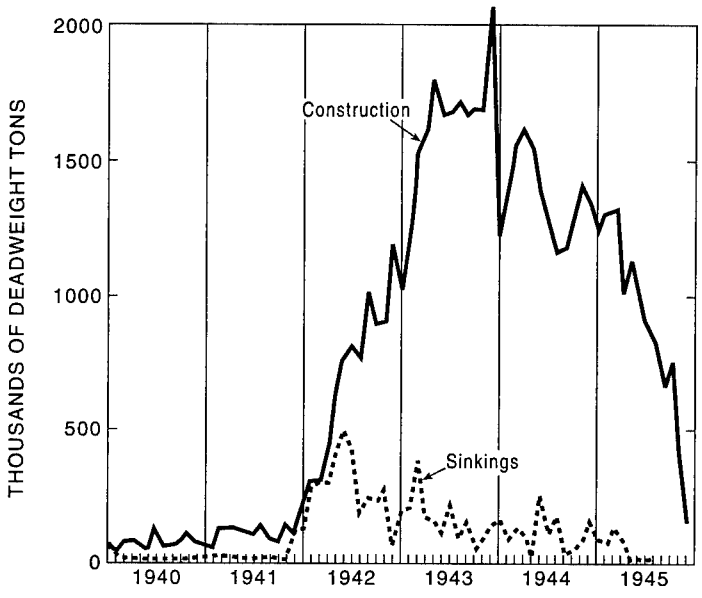
Two products, aircraft and ships, demanded the most investment in people, materials, and infrastructure, and both were equally key to the grand strategy. The production story for both is spectacular. In 1941, the United States completed 1,906 ships, and in 1944, 40,265.[1] The central tenet of the grand strategy was that the United States should be the "Arsenal of Democracy." But producing the munitions would have been useless if the United States could not move its armaments to its allies. Merchant-shipping production, therefore, was as critical an aspect of the production program as any other, especially given Germany's attempt to starve American allies with the use of surface raiders, airplanes, and submarines. So critical is this aspect of the war production story that in Donald Nelson's memoir, he failed to mention aircraft carriers and battleships at all, and concentrated overwhelmingly on building merchant ships and landing craft and, to a lesser degree, destroyer escorts. In the last half of 1943, the United States was completing 160 merchant ships per month, and in December that year 208 merchant ships were completed, for a total dead-weight tonnage of 2,044,239 tons. In July 1942, it took 105 days to construct a Liberty Ship; less than 1 year later it was just over 50 days; and before the end of the war, it was 40 days from laying the keel to delivery. In World War I, a ship two-thirds the size of a Liberty Ship took 10 months to build.[2]

Of course, more than cargo ships were built. From 1 July 1940 to 31 July 1945, the United States built 64,500 landing craft, and that number was still insufficient. Some 6,500 other naval vessels were also built. Navy firepower during the war increased ten fold.[3] The United States built 10 battleships during the war (8 of them 35,000 tons or more), 17 large aircraft carriers

(able to carry 100 aircraft and displacing more than 27,000 tons), more than 80 smaller carriers (able to carry from 21 to 45 aircraft), 49 cruisers, and 368 destroyers.[4]

No country produced as many warships, cargo ships, airplanes, tanks, trucks, jeeps (650,000 of these "faithful as a dog, as strong as a mule, and as agile as a goat" quarter-ton carrying vehicles),[5] rifles, etc. Where the Allies in 1941 produced about as many munitions as the Axis in mid-1941, by the end of 1944 the allied output of combat munitions was three times greater than that of their enemies. Over the war the allied output was 80 percent greater than the total for the Axis, and most of that increase came from the United States.[6]

## U.S. MERCHANT SHIP CONSTRUCTION AND SINKINGS




Source: Bureau of the Budget,137

### NOTES

1. U.S. Department of Commerce, *Statistical Abstract of the United States, 1950* (Washington, DC: Government Printing Office, 1950), 212.

2. Donald M. Nelson, *Arsenal of Democracy* (New York: Harcourt, Brace and Co., 1946), 259. Nelson considered shipbuilding to be the greatest production success story. In September 1939 the United States merchant fleet comprised about 1,500 ships of 10,500,000 deadweight tons. By the time Germany surrendered the United States had built 5,200 large ocean-going vessels with a total deadweight tonnage of 53,000,000 tons (and built hundreds of smaller types of ships). All this was done while warship construction was also exploding. The Maritime Commission, responsible for civilian shipping production, fixed on the Liberty Ship as the standardized merchant ship in order to accelerate production. The United States built almost 2,700 of these 10,800-ton ships—"the ship that won part of the war for the United Nations" (Nelson, 243-245). In World War I, the United States shipped more than half of its people, goods, munitions and materials in foreign bottoms, but in World War II 80 percent of a considerably larger total of men, munitions, supplies, food, cargo, and materials was sent in American ships [James L. Abrahamson, *the American Home Front* (Washington, DC: National Defense University Press, 1983),147].

3. *Wartime Production Achievements and the Reconversion Outlook* (Washington, DC: War Production Board, 1945), 10-13. Again, the numbers vary considerably by source, some official documents stating that 82,000 landing craft were build during the war. In 1944, more than 27,000 landing craft were built with a tonnage of 1,512,710 tons; on 1 January 1945 there were 54,206 landing craft on hand and 1,167 warships (on 1 January 1941 there were only 322 combat ships and a year later only 347) (U.S. Department of Commerce, *Statistical Abstract of the United States, 1948* [Washington, DC: Government Printing Office, 1948], 229). The variety of landing craft is staggering. Some were ocean- going vessels, others were designed to run from a mother ship to the shore only. Some carried cargo, some people, some both, some tanks. Regarding the latter, a Landing Ship Tank (LST) carried 13 to 20 heavy tanks, while a Landing Craft Tank (LCT) carried 3 heavy tanks. The former was ocean going, the latter was not [Jerome G. Peppers Jr., *History of United States Military Logistics 1935-1985* (Huntsville: Logistics Education Foundation Publishing, 1988), 106].

4. For warship figures, see John Ellis, *World War II, A Statistical Summary The Essential Facts and Figures for All the Combatants* (New York: Facts on File, 1993), 293-301.

5. Peppers, 98-100.

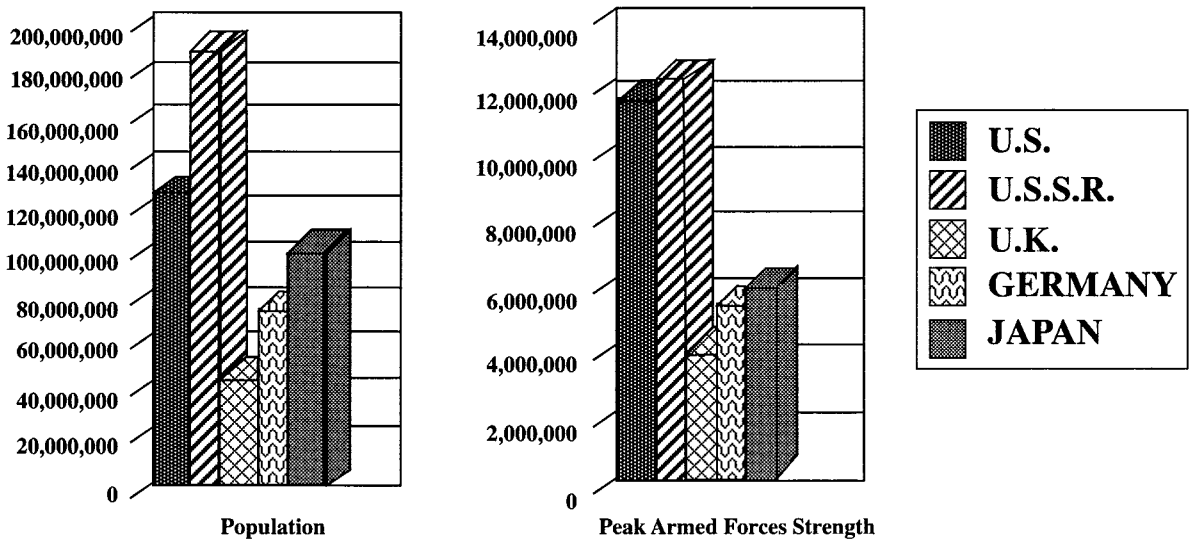
6. Alan Milward, *War, Economy and Society: 1939-1945* (Los Angeles: University of California Press, 1979), 59.

# 13.
# PEOPLE MOBILIZATION:
# "Rosie the Riveter"

No country kept a higher percentage of its labor force in armaments production and out of the fighting services than did the United States. In Germany, 1 in 4.5 men was a fighter, in Japan one in five, in the United Kingdom, one in five, but in the United States, it was one in six. No other country expanded its civilian production as much. In fact, our major allies severely contracted civilian production as did Germany after 1942. In the United States, manufacturing for the Armed Forces accounted for 59 percent of all manufacturing, but in the United Kingdom it was 66 percent. So rich was the United States that it could tolerate labor strikes. There were 3,000 labor strikes in 1942; in 1943, the number of man-days lost to strikes increased three fold. to 13.5 million lost man-days; and in 1944, the number of strikes increased (but fewer workers went out). By mid-August 1945, 9.6 million man-days had been lost in that year, which, had the war gone on, would have been the worst year of the war. Germany and the Soviet Union had no similar problems, although Britain did abide strikes.[1]

Another useful comparison with the mobilization efforts of other belligerents is in the employment of women in industry. Rosie the Riveter is a well known icon in the United States, and many millions of women were indeed employed in the munitions industry. In early 1942, industry employed 19,000,000 American women between the ages of 20 and 60, and by the next year women made up a third of the aircraft production work force—almost a half million women. [2] By July 1944, 36.9 percent of the workers in industries handling prime contracts were women.[3] One author wrote, the "margin of victory in terms of the nation's

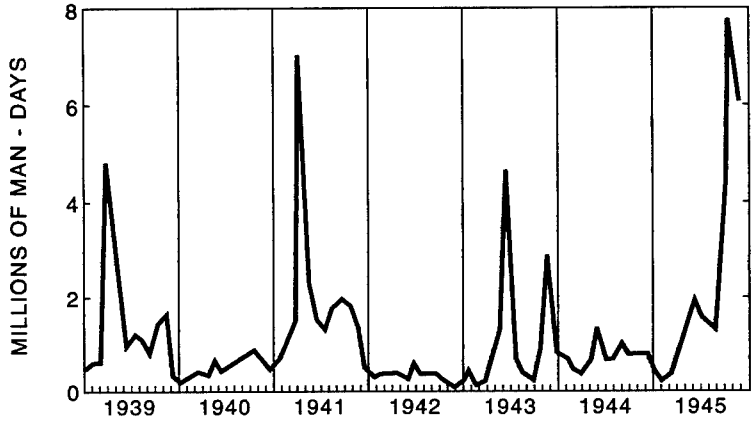
# Population and Peak Armed Forces Strength of the Major Belligerents in World War II



labor force proved to be completely feminine." By October 1943 there were 164,700 women at work in the shipyards with comparable figures in other industries. In 1943, at Willow Run, the world's largest aircraft manufacturing factory, 38 percent of the work force were women.[4] These percentages were not extraordinary by comparison to other nations at war, however. In the Soviet Union and Britain only 30 percent of the women aged 14 and over were "at home;" in the United States, it was twice that percentage.[5] In the Soviet Union females accounted for 38 percent of the labor force in 1940, and 53 percent in 1942. In that country, 33 percent of the welders, 33 percent of the lathe operators, 40 percent of the stevedores and 50 percent of the tractor drivers were women. In the United Kingdom, 80 percent of the total increase in the labor force between 1939 and 1943 were women who had not previously been employed outside the home; about 2.5 million women workers came into the United Kingdom labor force during the war.[6] Germany also employed women in industry at a high rate. German women made up 51.1 percent of the civilian labor workforce in 1944. The female German percentage was higher than in the United States throughout the war. But it also began at a much higher level—German women made up 37.4 percent of the civilian labor force before the war. At the peak women in the United States comprised 35.4 percent of the labor force (up from 25.8 percent before the war).[7]

At least three of the belligerents in the war outmobilized the United States. The United States had greater technological capabilities, was more industrialized to begin with, and was not bombed or invaded. But a higher, and in some cases a much greater, percentage of the belligerents' population was either in the armed services or producing munitions. Germany for example had a population of 78 million and during the war years had 17.9 million in their military, of whom 3,250,000 were either killed in action or missing. The United States with a population of 129,200,000 had 16.4 million in its military services, losing 405,000. Germany also had another 2 million civilians killed

## WORKER IDLENESS DUE TO STRIKES




Source: Bureau of the Budget,190

## VOLUME OF COMBAT MUNITIONS PRODUCTION OF THE MAJOR BELLIGERENTS, 1935-44

(Annual Expenditure in $ Billion, U.S. 1944 Munitions Prices)

| | 1935-9[a] | 1940 | 1941 | 1942 | 1943 | 1944 |
|---|---|---|---|---|---|---|
| U.S.A. | 0.3 | 1.5 | 4.5 | 20 | 38 | 42 |
| CANADA | 0 | 0 | 0.5 | 1 | 1.5 | 1.5 |
| U.K. | 0.5 | 3.5 | 6.5 | 9 | 11 | 11 |
| U.S.S.R. | 1.6 | 5 | 8.5 | 11.5 | 14 | 16 |
| GERMANY | 2.4 | 6 | 6 | 8.5 | 13.5 | 17 |
| JAPAN | 0.4 | 1 | 2 | 3 | 4.5 | 6 |

NOTE: a Figures for 1935-9 are given as cumulative expenditure in the source, annual average expenditure in this table.

Source: Harrison, *Resource Mobilization for World War II: The U.S.A., U.K., U.S.S.R., and Germany, 1938-1945*, 184

## RESOURCE MOBILIZATION FOR WORLD WAR II

Munitions and Men: the U.S.A., U.K., U.S.S.R., and Germany

(A) The ratio of spending on munitions to spending on military pay, 1939-45

| | U.S.A. | U.K. | U.S.S.R. | GERMANY |
|---|---|---|---|---|
| 1939 | — | 3.6 | — | 1.9 |
| 1940 | 4.2 | 4.1 | 3.3 | 1.0 |
| 1941 | 3.7 | 3.4 | — | 0.8 |
| 1942 | 3.9 | 2.7 | 2.6 | 0.9 |
| 1943 | 3.0 | 2.3 | 3.3 | — |
| 1944 | 2.4 | 1.9 | 3.6 | — |
| 1945 | 1.8 | 1.4 | — | — |

(B) Volume of combat munitions production compared to numbers of military personnel (U.S. 1944 dollars per man), 1940-44

| | U.S.A. | U.K. | U.S.S.R. | GERMANY |
|---|---|---|---|---|
| 1940 | 2,800 | 1,500 | 1,200 | 1,100 |
| 1941 | 2,800 | 1,900 | | 800 |
| 1942 | 5,400 | 2,200 | 1,100 | 900 |
| 1943 | 4,200 | 2,300 | 1,300 | 1,200 |
| 1944 | 3,700 | 2,200 | 1,400 | 1,400 |

Source: Harrison, *Resource Mobilization for World War II: The U.S.A., U.K., U.S.S.R., and Germany, 1938-1945*, 175

## THE SUPPLY OF EXTERNAL RESOURCES: NET IMPORTS OF THE U.S.A., U.K., U.S.S.R., AND GERMANY, 1938-45

(Percent of National Income)

| | U.S.A. | U.K. | U.S.S.R. | GERMANY |
|---|---|---|---|---|
| 1938 | −2 | 5 | | −1 |
| 1939 | −1 | 8 | | 1 |
| 1940 | −2 | 17 | | 7 |
| 1941 | −2 | 14 | | 12 |
| 1942 | −4 | 11 | 9 | 17 |
| 1943 | −6 | 10 | 18 | 16 |
| 1944 | −6 | 9 | 17 | |
| 1945 | | 11 | | |

Source: Harrison, *Resource Mobilization for World War II: The U.S.A., U.K., U.S.S.R., and Germany, 1938-1945*, 189

## THE MOBILIZATION OF NET NATIONAL PRODUCT FOR WAR: THE U.S.A., U.K., U.S.S.R., AND GERMANY, 1938-45

(Percent of National Income)

| | U.S.A. | | U.K. | | U.S.S.R. | | GERMANY | |
|---|---|---|---|---|---|---|---|---|
| | (I) | (II) | (I) | (II) | (I) | (II) | (I) | (II) |
| 1938 | — | — | 7 | 2 | — | — | 17 | 18 |
| 1939 | 1 | 2 | 16 | 8 | — | — | 25 | 24 |
| 1940 | 1 | 3 | 48 | 31 | 20 | 20 | 44 | 36 |
| 1941 | 13 | 14 | 55 | 41 | — | — | 56 | 44 |
| 1942 | 36 | 40 | 54 | 43 | 75 | 66 | 69 | 52 |
| 1943 | 47 | 53 | 57 | 47 | 76 | 58 | 76 | 60 |
| 1944 | 47 | 54 | 56 | 47 | 69 | 52 | — | — |
| 1945 | — | 44 | 47 | 36 | — | — | — | — |

KEY:
(I) National utilization of resources supplied to the war effort, regardless of origin: military spending (for the United States, less net exports) as share of national product.
(II) Domestic finance of resources supplied to the war effort, irrespective of utilization: military spending (for the U.K., U.S.S.R., and Germany, less net imports) as share of national product.

Source: Harrison, *Resource Mobilization for World War II: The U.S.A., U.K., U.S.S.R., and Germany, 1938-1945,* 184

## REAL NATIONAL PRODUCT OF THE U.S.A., U.K., U.S.S.R., AND GERMANY, 1937-45

| | U.S.A. | U.K. | U.S.S.R. | GERMANY |
|---|---|---|---|---|
| | GNP (1939 = 100) | NDP (1938 = 100) | NNP (1937 = 100) | GNP (1939 = 100) |
| 1937 | — | — | 100 | — |
| 1938 | — | 100 | 101 | — |
| 1939 | 100 | 103 | 107 | 100 |
| 1940 | 108 | 120 | 117 | 100 |
| 1941 | 125 | 127 | 94 | 102 |
| 1942 | 137 | 128 | 66 | 105 |
| 1943 | 149 | 131 | 77 | 116 |
| 1944 | 152 | 124 | 93 | — |
| 1945 | — | 115 | 92 | — |

Source: Harrison, *Resource Mobilization for World War II: The U.S.A., U.K., U.S.S.R., and Germany, 1938-1945,* 185

in the war, not counting those 300,000 murdered by the government. The direction of the grand strategies is apparent in these number. While the German military was about the size of that of the United States, the United States outproduced the Germans in trucks seven to one (2.4 million to 350,000). Germany often lugged its supplies around on horse drawn wagons. The United States, because it fought as much of an air war as an infantry war, outproduced the Germans five to one in bombers, 97,810 to 18,225. Moreover, American bombers had much greater range, much more carrying capacity, and were better armed and better armored. Even in fighter aircraft, the Germans were outproduced two to one, and in transport aircraft almost seven to one.[8] The United States spent six times as much as did the Germans on munitions per man in 1942, 3.5 times in 1943, and 2.5 times in 1944, again reflecting the different grand strategies.[9]

What did the tidal wave of munitions mean in the end? At Leningrad in January 1944, the Soviet Union, which had received thousands of trucks, thousands of tank-killer aircraft, hundreds of thousands of tanks, and millions of tons of essential raw materials from the United States in Lend-Lease aid, outnumbered Germany in tanks and self propelled guns by six to one. In the Crimea in March 1944, the ratio was 12.5 to 1. In April 1945, on the Oder/Neisse line, far from the Soviet logistic base and inside Germany's it was 5.5 to 1. At the time of Operation *Overlord,* the Western Allies, on their front, outnumbered Germany 8.5 to 1 in aircraft (the United States by itself 4.5 to one), and within days after 6 June 1944 the Allies outnumbered the Germans in tanks 4.5 to 1. In April 1945 the allied superiority in aircraft was greater than 20 to 1.[10] As Clausewitz wrote, superiority in numbers is the first principle of war, and in every dimension that mattered the United States and its allies swamped their enemies logistically. The war production machine had become so powerful that the United States could launch two massive amphibious assaults both involving thousands of ships in June 1944: the assault on Normandy and later in the month the attack on Saipan.

By 1943, however, Germany was still the most highly mobilized of the powers in terms of its ratio of armed services to

total population. However, it had a smaller percentage of its population in industry (Germany, however, did use 7.5 million slave laborers and prisoners of war, but the Soviet Union also employed prisoners—some 4.5 million of them). The Soviet Union was more fully mobilized than the United States or the United Kingdom, with 76 percent of its net national product going to the war. The United States topped out at about 40 percent, but the United States had a vastly greater national product, and it grew by 50 percent during the war, whereas the Soviet Union's gross national product fell to 66 percent of its high in 1940 and never reached its 1940 level by the end of the war. In Germany the gross national product grew by 16 percent between 1939 and 1943, but it had been stagnant in 1940 and grew only 2 percent in 1941 and another 3 percent in 1942. No state on either side pushed a greater percentage of its people into war work or the armed forces than did the Soviet Union.[11] The result of Soviet economic mobilization *and* Lend-Lease is that the Soviets expended about $60 billion worth of munitions against Germany on the eastern front, whereas Germany expended $50 billion. On the western front, however, the United Kingdom and United States expended $100 billion versus the German and Italian $40 billion.[12]

There should be no doubt, therefore, that United States industrial production in World War II was no miracle. United States production in World War II was about what one should have expected given the size of the prewar technological-industrial base, the population size (three times that of Britain, nearly twice that of Germany, and greater than that of the Soviet Union after Hitler's conquests in 1941). In the face of allied bombing and sea blockade, and with her troops scattered from the north of Norway to the Pyrenees, and from the North Sea and Atlantic Ocean to the Caucasus, Germany increased its productivity by 25 percent between 1943 and 1944—a percentage that exceeded that in the United States. The Soviet Union lost 40 percent of its most productive territory and tens of millions of its people but still produced at a furious pace. Great Britain, while suffering bombing and rocket attacks, produced more tanks, ships (but not submarines), and airplanes than Germany, with about 60 percent of Germany's population. Paul Koistinen argues that

when viewed in terms of "prewar potential and when compared with other belligerents, America's World War II munitions production effort was not outstanding."[13]

Koistinen assembles productivity statistics to make his case. The United States, even mired in the depression in the period 1936 to 1938, manufactured almost one-third of the world's products (32.2 percent). The United States outproduced Germany about three times (10.7 percent) and Japan almost ten times (3.5 percent). Taking the United States prewar productivity in terms of production per man-hour as the standard and giving it a value of 100, the following chart indicates the relative productivity ranking of World War II foes.

| Country | Pre War ('35-'38) All Manufacturing Industries | War (1944) Munitions Industries |
|---|---|---|
| United States | 100 | 100 |
| Canada | 71 | 57 |
| United Kingdom | 36 | 41 |
| Soviet Union | 36 | 39 |
| Germany | 41 | 48 |
| Japan | 25 | 17 |

One must not forget, however, that the United States was "almost alone in increasing rather than diminishing consumer output during the war."[14] To reiterate the point, all belligerents fiercely produced munitions during the war, not just the United States. America possessed advantages that none of the other warring states had. Its output, while noteworthy, was what a prewar analyst might have expected given the size of the country, its educated population, the status of its technology, the abundance of its raw materials, the quality of its transportation network. In short:, America's munitions production in World War II was no "miracle."

Could the United States have been more productive? Could it have produced more munitions more rapidly at a lower cost?

Almost certainly, although it is difficult to determine what difference it might have made by August 1945. Robert Cuff, a generally friendly critic of the U.S. World War II mobilization effort, argues that U.S. Federal Government administrative machinery was not up to the task of managing the economy for war from a central position: "administrative personnel and control coordinating machinery was rudimentary at best." More critically, "A cadre of political appointments loyal to the President is not the same as a higher civil service" and "Wartime Washington was awash with competing centers of administrative decision-making." Where were the weaknesses? "Those with governmental authority did not possess relevant knowledge and control in technical matters, while those with technical knowledge and industrial control did not possess governmental authority." In a war the objective was to "bind them together, not drive them apart" and to create cohesion when the country, before Pearl Harbor was attacked, "divided on the very issue of war itself." The uneasy alliance between business executives and bureaucrats was patched together by Roosevelt and senior government officials (often from the worlds of business or finance) much as Bernard Baruch had pieced together a government/business coalition in World War I. In World War II, as in World War I, the "alliance" was not designed to be permanent, and it did not last beyond the emergency. Given the structure of United States policy, it could not have lasted, and it was never cohesive.[15]

That it worked as well as it did is perhaps the marvel. Paul Koistinen attributes this to the president's "genius for mastering the intricacies of power in American society." He argues further: "Political success depended upon handling an elitist reality within a context of populist ideology." Roosevelt "constantly finessed that blatant contradiction with great skill. His penchant for decisionmaking through conflict and competition stemmed less from an animus toward clear lines of authority and planning, and more from an instinctive and/or calculated tactics of obfusticating the elitist contours of power in America which he both accepted and supported."[16] Certainly, if one blames Roosevelt for the industrial mobilization apparatus failures, one needs to give the president at least some credit for the prodigious (and sufficient) output. Perhaps Koistinen's praise is excessively fulsome, but

nobody doubts that Roosevelt was the political master of his era, and the more one studies the subject of industrial mobilization, the more one becomes convinced that domestic politics drove this arena.

## NOTES

1. Alan Milward, *War, Economy and Society: 1939-1945* (Los Angeles: University of California Press, 1979), 216-244

2. Jerome G. Peppers Jr., *History of United States Military Logistics 1935-1985* (Huntsville: Logistics Education Foundation Publishing, 1988), 58-61. In one parachute company, women made up 85 percent of the work force.

3. Donald M. Nelson, *Arsenal of Democracy* (New York: Harcourt, Brace and Co., 1946), 237. Nelson also mentions the accommodations factories made in order to get women to accept employment: day care providers, housing agents, social work, etc.

4. Francis Walton, *Miracle of World War II: How American Industry Made Victory Possible* (New York: Macmillan, 1956), 372, 382-383. Here are the census figures: In 1940 there were 100,230,000 people 14 years of age and older in the United States. Of whom 56,030,000 were in the labor force counting the military, of whom 47,520,000 were employed and 8,120,000 unemployed and 44,200,000 were not in the labor force either keeping house, or in school, or otherwise occupied. Of the 56 million in the workforce, 41,870,000 were working males and 14,160,000 females. In 1944 there were 104,450,000 people over 14. Of that total 65,140,000 were in the labor force either as workers or in the military and 38,590,000 were not in the labor force (down less than 4 million from 1940). There were 46,520,000 males in the labor force including the military, of whom 35,460,000 were in the civilian workforce and 19,170,000 women in the civilian workforce. Male workers declined by 4.5 million (the services absorbed about 12 million men at the peak), and females increased by 5 million.

5. Harold G. Vatter, *The United States Economy in World War II* (New York: Columbia University Press, 1985), 20.

6. Milward, 216-244.

7. Leila J. Rupp, *Mobilizing Women for War: German and American Propaganda 1939 to 1945* (Princeton: Princeton University Press, 185). See also Penny Summerfield, *Women Workers in the Second World War: Production and Patriarchy in Conflict* (London, Croom Helm, 1984), p 29. Summerfield sets the United Kingdom female civilian work force percentage at 38 percent. James

Abrahamson notes that American women earned only 65 percent of men's wages and were fired at the end of the war at twice the rate of men. The increase of women in the work force was greater in the war years than the increase in the previous four decades (James L. Abrahamson, *The American Home Front* (National Defense University Press, 1983), 164-165).

8. John Ellis, *World War II, A Statistical Summary The Essential Facts and Figures for All the Combatants* (New York: Facts on File, 1993), 253-254, 278-279.

9. Mark Harrison, "Resource Mobilization for World War II: The U.S.A., U.K., U.S.S.R., and Germany, 1938-1945," *Economic History Review* XLI, no. 2 (1988): 175-177.

10. Ellis, 230-231.

11. Harrison, 183-186, 189, 190. Harrison wrote: "American shipments of trucks, tractors, and tinned food provided the Red army with decisive mobility in its westward pursuit of the retreating *Wehrmacht*." His analysis indicates that the United Kingdom and the Soviet Union received more, in economic terms, from the United States in Lend-Lease than Germany gained from her allies and conquests.

12. Harrison, 190-191.

13. Paul A. C. Koistinen, "Warfare and Power Relations in America: Mobilizing the World War II Economy," in James Titus, ed., *The Home Front and War in the Twentieth Century: The American Experience in Comparative Perspective: Proceedings of the Tenth Air Force Academy Military History Symposium* (Washington, DC: Office of Air Force History, 1984), 102-103.

14. Koistinen, 236-237.

15. Robert D. Cuff, commentary in James Titus, ed., *The Home Front and War in the Twentieth Century: The American Experience in Comparative Perspective: Proceedings of the Tenth Air Force Academy Military History Symposium* (Washington, DC: Office of Air Force Hsitory, 1984), 115-116.

16. Koistinen, 108-109.

# 14. CONCLUSIONS

What mobilization lessons can be learned from the United States during the World War II period? First, personalities matter. Roosevelt did not invest sufficient authority in any of the people in charge of war mobilization until he appointed true confidant and New Deal acolyte Byrnes to the position. No one prior to that time—Stettinius, Knudsen, or Nelson—had the president's full confidence. Byrnes was not steeped in knowledge of industry, but he knew how Washington worked and how the legislature operated. Roosevelt could give Byrnes decision authority and then move on to other tasks, confident that Byrnes would do the correct (and politically astute) thing.

Second, the military and civilians in the Defense Department should be eager to let civilians run the economy and industry. Throughout the interwar period people in the War Department wanted that role and designed plans to seize it when a national emergency occurred. Roosevelt would not permit this, and it is hard to conceive of any president turning to the military or its civilian overlords to operate the largest economy in the world. The Defense Department does not have the knowledge to make it work and its priority—defeating the enemy to secure the country's political objectives—would almost assuredly conflict with proper management of the economy.

Third, planners must acknowledge the needs of allies in materiel planning. In World Wars I and II, the United States played the major allied logistics role. America's allies needed enormous support, but this was not planned for in either World War.

Fourth, domestic and partisan politics will intrude on mobilization (and demobilization) decisions at every pass. In World War II the stakes were enormous, and Roosevelt had to watch his political adversaries and even his allies. Byrnes and Nelson before him were fully aware that mobilization decisions

were scrutinized by Congress, and not only by the loyal opposition. Presidential and congressional politics were never even below the surface in this most major of wars, and planners can assume with utter confidence that it will not be in any conflict in the future.

Finally, planning to mobilize the tools of war is essential. It may be costly, but the expense will be minuscule compated to fighting without a plan. There is no need today to have at the ready plans to reconstruct Willow Run; this analysis certainly does not call for resurrecting smoke stacks. If the next war is to be a "third wave" war, however, then attention must be paid to ensuring that "third wave" industries can be mobilized to support the combat effort.

In World War II our enemies were separated from the United States by huge oceans, and both major adversaries were well tied down with the bulk of their forces fighting determined and large foes. Germany was bogged down in the Soviet Union and Japan was similarly mired in China. The United States had time and space. In the future, American interests could be attacked at a moment when the United States might not be as fortunate.

# APPENDIX A: Production of Selected Munitions Items

## PRODUCTION OF SELECTED MUNITIONS ITEMS
## July 1, 1940 - July 31, 1945 (1945 preliminary)

| Item | Unit | July 1 1940 through Dec 1941 | 1942 | 1943 | 1944 | Jan 1 1945 through July 31 1945 | Cumulative July 1, 1940 through July 31, 1945 |
|---|---|---|---|---|---|---|---|
| Aircraft: | | | | | | | |
| All military airplanes and special purpose aircraft... | Number | 23,240 | 47,836 | 85,898 | 96,318 | 43,137 | 296,429 |
| | Airframe wgt(1000 lbs.) | 94,966 | 275,949 | 654,616 | 962,441 | 486,304 | 2,474,276 |
| Total Combat | Number | 11,106 | 24,864 | 54,077 | 74,135 | 35,157 | 199,339 |
| | Airframe wgt(1000 lbs.) | 68,151 | 216,419 | 548,674 | 825,794 | 413,827 | 2,072,865 |
| Bomber | Number | 4,738 | 12,627 | 29,335 | 35,003 | 15,042 | 96,765 |
| | Airframe wgt(1000 lbs.) | 45,958 | 162,492 | 422,942 | 609,229 | 298,131 | 1,538,752 |
| Heavy, long range | Number | 0 | 0 | 92 | 1,161 | 2,188 | 3,441 |
| | Airframe wgt(1000 lbs.) | 0 | 0 | 4,426 | 55,835 | 105,696 | 165,957 |
| Heavy, 4 - engine, medium range | Number | 357 | 2,576 | 9,393 | 14,884 | 3,767 | 30,977 |
| | Airframe wgt(1000 lbs.) | 7,541 | 60,916 | 224,189 | 353,522 | 89,788 | 7,359,576 |
| Patrol | Number | 441 | 890 | 2,340 | 1,840 | 1,288 | 6,799 |
| | Airframe wgt(1000 lbs.) | 6,100 | 14,186 | 35,639 | 31,943 | 24,768 | 112,636 |
| Medium | Number | 483 | 3,270 | 5,411 | 5,228 | 1,586 | 15,978 |
| | Airframe wgt(1000 lbs.) | 6,251 | 42,803 | 75,519 | 72,648 | 21,252 | 218,473 |
| Light | Number | 3,457 | 5,891 | 12,119 | 11,890 | 6,213 | 39,570 |
| | Airframe wgt(1000 lbs.) | 26,083 | 44,589 | 83,187 | 95,288 | 56,627 | 305,774 |
| Fighter | Number | 5,578 | 10,769 | 23,988 | 38,873 | 19,478 | 98,686 |
| | Airframe wgt(1000 lbs.) | 20,183 | 48,808 | 121,850 | 215,536 | 113,079 | 519,456 |
| 2 - engine | Number | 211 | 1,312 | 2,246 | 4,733 | 2,010 | 10,523 |
| | Airframe wgt(1000 lbs.) | 1,587 | 10,462 | 18,349 | 42,902 | 19,085 | 92,385 |
| 1 - engine | Number | 5,367 | 9,446 | 21,742 | 34,140 | 17,468 | 88,163 |
| | Airframe wgt(1000 lbs.) | 18,596 | 38,346 | 103,501 | 172,635 | 93,994 | 427,072 |
| Reconnaissance | Number | 790 | 1,468 | 734 | 259 | 637 | 3,888 |
| | Airframe wgt(1000 lbs.) | 2,010 | 5,119 | 3,882 | 1,029 | 2,617 | 14,657 |
| Total transport | Number | 696 | 1,984 | 7,012 | 9,834 | 4,135 | 23,661 |
| | Airframe wgt(1000 lbs.) | 4,967 | 18,248 | 55,496 | 113,618 | 66,997 | 259,326 |
| Heavy | Number | 8 | 116 | 536 | 1,865 | 1,959 | 4,484 |
| | Airframe wgt(1000 lbs.) | 295 | 2,667 | 12,605 | 45,080 | 46,806 | 107,458 |
| Medium | Number | 365 | 1,236 | 2,906 | 4,927 | 1,431 | 10,865 |
| | Airframe wgt(1000 lbs.) | 3,730 | 14,051 | 33,978 | 59,715 | 17,586 | 129,060 |
| Light | Number | 323 | 632 | 3,570 | 3,042 | 745 | 8,312 |
| | Airframe wgt(1000 lbs.) | 945 | 1,531 | 8,919 | 8,826 | 2,605 | 22,826 |
| Total trainer | Number | 11,167 | 17,631 | 19,936 | 7,577 | 1,247 | 57,561 |
| | Airframe wgt(1000 lbs.) | 21,486 | 39,293 | 47,061 | 19,060 | 3,267 | 130,167 |
| Total communication | Number | 271 | 3,174 | 4,377 | 3,691 | 1,983 | 13,496 |
| | Airframe wgt(1000 lbs.) | 362 | 1,870 | 2,957 | 2,649 | 1,671 | 9,509 |
| Total special purpose aircraft | Number | 0 | 183 | 493 | 1,081 | 615 | 2,372 |
| | Airframe wgt(1000 lbs.) | 0 | 119 | 428 | 1,320 | 542 | 2,409 |

Source: *Wartime Production Achievements*, 106

## PRODUCTION OF SELECTED MUNITIONS ITEMS
## July 1, 1940 - July 31, 1945 (1945 preliminary)

| Item | Unit | July 1 1940 through Dec 1941 | 1942 | 1943 | 1944 | Jan 1 1945 through July 31 1945 | Cumulative July 1, 1940 through July 31, 1945 |
|---|---|---|---|---|---|---|---|
| Naval ships (new constructions). [1] | Number | 1,334 | 8,035 | 18,434 | 29,150 | 14,099 | 71,062 |
| | Thousand displ. tons | 270 | 847 | 2,562 | 3,223 | 1,341 | 8,243 |
| Combatants | Number | 47 | 128 | 537 | 379 | 110 | 1,201 |
| | Thousand displ. tons | 162 | 431 | 1,402 | 1,047 | 518 | 3,560 |
| Landing vessels | Number | 995 | [2]6,902 | [2]16,005 | 27,338 | 13,256 | 64,546 |
| | Thousand displ. tons | 8 | [2]211 | [2]706 | 1,513 | 467 | 2,905 |
| Patrol and mine craft | Number | 111 | 715 | 1,156 | 590 | 189 | 2,761 |
| | Thousand displ. tons | 12 | 117 | 199 | 160 | 44 | 532 |
| District craft | Number | 182 | 235 | 543 | 521 | 395 | 1,876 |
| | Thousand displ. tons | 39 | 43 | 94 | 128 | 122 | 426 |
| Auxiliaries and other | Number | 9 | 55 | [3]193 | 272 | 149 | 678 |
| | Thousand displ. tons | 49 | 45 | [3]161 | 375 | 190 | 820 |
| Total Maritime Commision ships | Number | 136 | 760 | 1,949 | 1,786 | 794 | 5,425 |
| | Thousand DWT | 1,551 | 8,090 | 19,296 | 16,447 | 7,855 | 53,239 |
| Standard cargo | Number | 77 | 49 | 156 | 124 | 73 | 479 |
| | Thousand DWT | 757 | 444 | 1,519 | 1,209 | 772 | 4,701 |
| Emergency cargo | Number | 7 | 597 | 1,238 | 826 | 369 | 3,037 |
| | Thousand DWT | 72 | 6,402 | 13,361 | 8,927 | 3,994 | 32,756 |
| Liberty | Number | 7 | 597 | 1,238 | 722 | 122 | 2,686 |
| | Thousand DWT | 72 | 6,402 | 13,361 | 7,798 | 1,314 | 28,947 |
| Victory | Number | 0 | 0 | 0 | 104 | 247 | 351 |
| | Thousand DWT | 0 | 0 | 0 | 1,129 | 2,680 | 3,805 |
| Other dry cargo (excluding AKA). | Number | 15 | 14 | 36 | 94 | 138 | 297 |
| | Thousand DWT | 148 | 89 | 124 | 392 | 642 | 1,395 |
| Standard tankers | Number | 37 | 62 | 252 | 229 | 120 | 700 |
| | Thousand DWT | 547 | 999 | 3,481 | 3,739 | 1,954 | 10,747 |
| Military types | Number | 0 | 19 | 125 | 375 | 90 | 609 |
| | Thousand DWT | 0 | 63 | 330 | 1,928 | 492 | 2,813 |
| Transport attack, APA.. | Number | 0 | 0 | 7 | 141 | 26 | 174 |
| | Thousand DWT | 0 | 0 | 44 | 775 | 122 | 941 |
| Cargo attack, AKA | Number | 0 | 0 | 0 | 52 | 32 | 84 |
| | Thousand DWT | 0 | 0 | 0 | 355 | 140 | 495 |
| Other military | Number | 0 | 19 | 118 | 182 | 32 | 351 |
| | Thousand DWT | 0 | 63 | 286 | 798 | 230 | 1,377 |
| Other types | Number | 0 | 19 | 142 | 138 | 4 | 303 |
| | Thousand DWT | 0 | 93 | 481 | 252 | 1 | 827 |

[1] Excluding small, rubber, and plastic boats.
[2] Excluding Maritime - constructed LST's - 15 in 1942 and 60 in 1943
[3] Excluding 2 Maritime - constructed APA's.

Source: *Wartime Production Achievements*, 107

## PRODUCTION OF SELECTED MUNITIONS ITEMS
## July 1, 1940 - July 31, 1945 (1945 preliminary)

| Item | Unit | July 1 1940 through Dec 1941 | 1942 | 1943 | 1944 | Jan 1 1945 through July 31 1945 | Cumulative July 1, 1940 through July 31, 1945 |
|---|---|---|---|---|---|---|---|
| Army guns and equipment: | | | | | | | |
| Heavy field artilery (complete equipment) | Number | 65 | 647 | 2,660 | 3,284 | 1,147 | 7,803 |
| Spare cannon for heavy field artilery | | 0 | 0 | 323 | 3,601 | 4,321 | 8,245 |
| Spare recoil mechanisms for heavy field artilery | | 0 | 0 | 120 | 2,035 | 1,882 | 4,037 |
| Light field and antitank guns. | | 4,705 | 20,536 | 19,096 | 7,685 | 4,345 | 56,367 |
| Tank guns and howitzers | | 6,787 | 43,368 | 34,711 | 19,991 | 11,735 | 116,592 |
| Guns for self-propelled carriages. | | 0 | 8,811 | 13,155 | 2,981 | 2,113 | 27,060 |
| Bazooka rocket launchers | | 0 | 67,428 | 98,284 | 215,177 | 95,739 | 476,628 |
| Mortars | | 9,518 | 10,983 | 25,781 | 24,842 | 39,224 | 110,348 |
| Heavy | | 2,508 | 6,242 | 10,176 | 10,722 | 7,790 | 37,438 |
| Light | | 7,010 | 4,741 | 15,605 | 14,120 | 31,434 | 72,910 |
| Machine guns | | 87,172 | 662,331 | 829,969 | 798,782 | 302,798 | 2,681,052 |
| Heavy | | 57,563 | 347,492 | 641,638 | 677,011 | 239,821 | 1,963,525 |
| Light | | 29,609 | 314,839 | 188,331 | 121,771 | 62,977 | 715,527 |
| Submachine guns | | 216,811 | 651,063 | 686,410 | 347,463 | 186,192 | 2,087,939 |
| Rifles (excluding carbine) | | 357,496 | 1,425,926 | 2,723,696 | 1,400,608 | 616,898 | 6,522,624 |
| Carbines | | 5 | 115,813 | 2,959,336 | 2,088,697 | 886,000 | 6,049,851 |
| Pistols and revolvers | | 71,854 | 322,830 | 843,236 | 1,016,931 | 489,744 | 2,744,595 |
| Portable flame throwers | | 23 | 2,799 | 5,676 | 21,059 | 10,660 | 40,217 |
| Gas masks | | 761,730 | 4,286,525 | 9,002,634 | 6,813,754 | 2,712,654 | 26,577,297 |
| Helmets (ground) | | 324,000 | 5,001,000 | 7,649,000 | 5,704,000 | 3,940,000 | 22,618,000 |
| Naval guns: | | | | | | | |
| 5 - inch and over | Complete assemblies | 213 | 966 | 1,912 | 3,363 | 1,239 | 7,698 |
| 3- and 4- inch | | 317 | 2,505 | 6,593 | 4,652 | 218 | 14,285 |
| 20-mm, 40-mm, and 1.1-inch. | | 915 | 31,833 | 51,626 | 45,710 | 12,547 | 142,631 |
| Army ammunition and bombs: | | | | | | | |
| Ground artillery ammunition. | Short tons | 57,476 | 678,203 | 799,850 | 1,447,016 | 1,262,140 | 4,244,685 |
| Heavy field, weight | | 42,949 | 303,895 | 274,529 | 507,584 | 637,155 | 1,766,112 |
| Light field, tank, and antitank, weight. | | 14,527 | 374,308 | 525,321 | 939,432 | 624,985 | 2,487,573 |
| Heavy field, rounds. | Thousand rounds | 873 | 6,209 | 5,537 | 9,668 | 11,285 | 33,572 |
| Light field, tank, and antitank, rounds. | | 2,165 | 70,881 | 86,025 | 85,639 | 48,985 | 293,695 |
| Mortar shells | Short ton | 1,974 | 35,002 | 70,928 | 141,729 | 125,876 | 375,509 |
| Bazooka rockets | Thousands | 0 | 155 | 1,945 | 7,422 | 5,700 | 15,222 |
| Small arms ammunition | Million rounds | 1,177 | 9,798 | 19,800 | 6,578 | 4,232 | 41,585 |

Source: *Wartime Production Achievements*, 106

## PRODUCTION OF SELECTED MUNITIONS ITEMS
## July 1, 1940 - July 31, 1945 (1945 preliminary)

| Item | Unit | July 1 1940 through Dec 1941 | 1942 | 1943 | 1944 | Jan 1 1945 through July 31 1945 | Cumulative July 1, 1940 through July 31, 1945 |
|---|---|---|---|---|---|---|---|
| Army Ammunition and bombs - Continued | | | | | | | |
| Land mines | Thousands | 0 | 1,332 | 11,420 | 9,155 | 2,347 | 24,254 |
| Gernades, all types | | 1,222 | 15,977 | 24,981 | 40,654 | 27,136 | 109,970 |
| Aircraft bombs (Army and Navy). | Short tons | 45,000 | 630,000 | 1,548,000 | 1,953,000 | 1,646,000 | 5,822,000 |
| General purpose and demolition. | | 42,000 | 493,000 | 1,005,000 | 956,000 | 1,068,000 | 3,564,000 |
| Incendiary | | 0 | 38,000 | 176,000 | 407,000 | 235,000 | 856,000 |
| Fragmentation | | 0 | 10,000 | 67,000 | 453,000 | 289,000 | 819,000 |
| Armor piercing and other. | | 3,000 | 89,000 | 300,000 | 137,000 | 54,000 | 583,000 |
| Naval ammunition: gun ammunition and rockets. | | 35,192 | 100,589 | 277,300 | 524,058 | 408,932 | 1,346,071 |
| Surface fire | | 15,659 | 38,082 | 65,724 | 168,056 | 126,927 | 414,488 |
| High capacity | | 0 | 2,286 | 32,897 | 105,421 | 101,973 | 242,577 |
| Armor piercing | | 15,049 | 23,185 | 21,055 | 39,229 | 13,022 | 111,540 |
| Common and special common. | | 245 | 9,922 | 6,128 | 12,746 | 2,362 | 31,403 |
| Antiaircraft | | 365 | 2,689 | 5,644 | 10,660 | 9,601 | 28,968 |
| Rockets | | 19,533 | 62,090 | 202,951 | 292,213 | 147,751 | 724,538 |
| Torpedoes, all types | Number | 0 | 417 | 8,625 | 63,789 | 134,214 | 207,045 |
| Depth charges | | 2,319 | 4,524 | 15,599 | 24,015 | 6,804 | 53,261 |
| Marine mines | | 17,152 | 140,886 | 147,340 | 169,652 | 53,915 | 528,945 |
| Combat and motor vehicles | | 41,380 | 41,380 | 45,054 | 24,516 | 5,507 | 116,457 |
| Tanks | | 4,203 | 23,884 | 29,497 | 17,565 | 11,184 | 86,333 |
| Armored cars | | 0 | 191 | 9,067 | 5,509 | 1,671 | 16,438 |
| Scout cars and carriers | | | | | | | |
| Tank chassis for self-propelled guns. | | 7,883 | 16,892 | 37,977 | 18,874 | 6,817 | 88,443 |
| Trucks | | 0 | 3,100 | 9,035 | 2,934 | 949 | 16,018 |
| Heavy-heavy (over 2 1/2 tons) | | 208,034 | 647,342 | 648,404 | 620,532 | 331,652 | 2,455,964 |
| Light-heavy (2 1/2 ton) | | 9,108 | 24,593 | 39,872 | 55,306 | 31,857 | 160,736 |
| Medium (1 1/2 and under 2 1/2) | | 64,975 | 190,779 | 202,994 | 230,645 | 149,485 | 838,878 |
| Light (under 1 1/2 tons) | | 50,136 | 148,753 | 141,912 | 87,468 | 22,143 | 450,412 |
| Tractors | | 83,815 | 283,217 | 263,626 | 247,113 | 128,167 | 1,005,938 |
| Communication and electronic equipment. | Million dollars | 111 | 14,886 | 34,250 | 47,356 | 23,184 | 119,787 |
| Radio | | 253 | 1,512 | 3,043 | 3,739 | 2,119 | 10,666 |
| Radar | | 122 | 823 | 1,471 | 1,393 | 608 | 4,417 |
| Other | | 49 | 365 | 913 | 1,430 | 974 | 3,731 |
| Field and assault Wire (included in "Other") | Thousand miles | 82 | 324 | 659 | 916 | 537 | 2,518 |
| | | 226 | 906 | 968 | 1,608 | 1,555 | 5,263 |

Source: *Wartime Production Achievements*. 109

## PRODUCTION OF SELECTED MUNITIONS ITEMS
## July 1, 1940 - July 31, 1945 (1945 preliminary)

| Item | Unit | July 1 1940 through Dec 1941 | 1942 | 1943 | 1944 | Jan 1 1945 through July 31 1945 | Cumulative July 1, 1940 through July 31, 1945 |
|---|---|---|---|---|---|---|---|
| Other equipment and supplies: | | | | | | | |
| Clothing (Army): | | | | | | | |
| Boots, service combat | Thousand pairs | 0 | 147 | 605 | 12,653 | 12,940 | 26,343 |
| Drawers, cotton shorts | Thousands | 27,041 | 36,121 | 32,940 | 46,658 | 34,660 | 177,420 |
| Jackets, field M-1943 | | 0 | 0 | 275 | 7,470 | 5,263 | 13,008 |
| Trousers, wool serge, olive drab | | 9,351 | 10,487 | 13,669 | 8,673 | 10,277 | 52,407 |
| Overcoat, wool melton, olive drab | | 2,705 | 5,867 | 5,025 | 538 | 1,786 | 15,191 |
| Socks, wool, light and heavy | Thousand pairs | 38,368 | 29,651 | 60,606 | 73,212 | 57,993 | 259,770 |
| Equipage (Army) | | | | | | | |
| Bag, wool sleeping | Thousands | 0 | 0 | 253 | 5,749 | 2,819 | 8,821 |
| Blanket, wool M-1943 | | 8,528 | 13,706 | 15,265 | 5,983 | 8,512 | 51,994 |
| Tent, squad M-1942 | | 0 | 0 | 18 | 229 | 506 | 753 |
| Tent, shelter half | | 203 | 11,299 | 3,621 | 3,803 | 5,746 | 24,627 |
| Medical supplies (Army) | | | | | | | |
| Atabrine tablets | | (1) | [2]97,900 | 1,317,500 | 1,171,752 | 834,000 | 4,421,152 |
| Sulfadiazine tablets | | (1) | [1]35,994 | 675,697 | 463,306 | 306,565 | 1,581,562 |
| Sodium penicillin (100,000 oxford units) | Thousand ampules | (1) | (1) | [2]72 | 10,276 | 12,621 | 22,968 |
| Navy clothing: | | | | | | | |
| Shoes, leather, black, low | Thousand pairs | 845 | 3,229 | 6,351 | 10,206 | 4,825 | 25,465 |
| Overcoat, kersey | Thousands | 297 | 1,017 | 1,601 | 1,331 | 475 | 4,721 |
| Drawers, nainsook, shorts | | 3,728 | 11,085 | 28,664 | 23,231 | 26,732 | 93,440 |
| Trousers, blue | | 761 | 2,237 | 5,017 | 3,232 | 828 | 12,075 |
| Jumper, blue dress | | 401 | 850 | 2,264 | 2,163 | 530 | 6,208 |
| Shirts, chambray | | 857 | 5,203 | 12,757 | 19,063 | 15,236 | 53,126 |

[1] Not available [2] Fourth quarter

Source: *Wartime Production Achievements*, 110

# APPENDIX B: The War Agencies of the Executive Branch of the Federal Government

(Status as of December 31, 1945)

ADVISORY BOARD ON JUST COMPENSATION
Established by Executive Order No. 9387 of October 15, 1943. Reestablished for 60 days by Executive Order No. 9611 of September 10, 1945, and extended by Executive Order No. 9627 of September 24, 1945, to run for 60 days.

ALASKA WAR COUNCIL
Established by Executive Order No. 9181 of June 11, 1942. The Executive Order provides for its continuance as long as Title I of the First War Powers Act remains in force.

AMERICAN COMMISSION FOR THE PROTECTION AND SALVAGE OF ARTISTIC AND HISTORIC MONUMENTS IN WAR AREAS
Established June 23, 1943, by the Secretary of State with the President's approval. The 1946 appropriation for this agency requires the completion of its work by the close of the fiscal year 1946.

ANGLO-AMERICAN CARIBBEAN COMMISSION
Established March 2, 1942, by joint action of the United States and Great Britain and supported from State Department funds.

ARMY SPECIALIST CORPS
Established by Executive Order No. 9078 of February 26, 1942. Abolished as separate organization on October 31, 1942, and merged into a central Officer Procurement Service.

BOARD OF ECONOMIC WARFARE
Established as Economic Defense Board by Executive Order No. 8839 of July 30, 1941. Name changed to Board of Economic Warfare by Executive Order No. 8982 of December 17, 1941. Terminated by Executive Order No. 9361 of July 15, 1943, and functions transferred to Office of Economic Warfare.

BOARD OF WAR COMMUNICATIONS
Established as the Defense Communications Board by Executive Order No. 8546 of September 24, 1940. Name changed to Board of War Communications by Executive Order No. 9183 of June 15, 1942.

BRITISH-AMERICAN JOINT PATENT INTERCHANGE COMMITTEE
Established pursuant to article XIII of the Executive Agreement Series 268 (British-American Patent Interchange Agreement) as a result of an interchange of notes between the two governments. The agreement was effective as of January 1, 1942.

CARGOES, INC.
Organized October 30, 1941, under Stock Corporation Law of the State of New York, originally named Ships, Inc. Placed under jurisdiction of Office of Lend-Lease Administration, June 17, 1942, and later placed under jurisdiction of Foreign Economic Administration by Executive Order 9380 of September 25, 1943.

CENSORSHIP POLICY BOARD
Established by Executive Order No. 8985, of December 19, 1941. Terminated by Executive Order No. 9631 of September 28, 1945.

CENTRAL ADMINISTRATIVE SERVICES
Established in Offices for Emergency Management pursuant to a letter of the President dated February 28, 1941. Terminated by Executive Order No. 9471 of August 25, 1944. Functions transferred to various agencies; the residual fiscal functions transferred to Treasury Department for liquidation.

CIVIL AIR PATROL
Established in Office of Civilian Defense under authority of Executive Order No. 8757, May 20, 1941, as amended by Executive Order No. 9134, April 15, 1942. Transferred to War Department to be administered under direction of the Secretary by Executive Order No. 9339, April 29, 1943.

CIVILIAN PRODUCTION ADMINISTRATION
Established by Executive Order No. 9638 of October 4, 1945, to succeed the War Production Board.

COAL MINES ADMINISTRATION (INTERIOR)
Established July 27, 1943, by Administrative Order No. 1847 issued by the Secretary of the Interior under authority of Executive Order No. 9340 of May 1, 1943. Terminated by Administrative Orders Nos. 1977 and 1982 of the Secretary of the Interior which transferred functions to the Solid Fuels Administration for War, effective September 15, 1944.

COLONIAL MICA CORPORATION
Incorporated April 17, 1942, acting as an agent of the Reconstruction Finance Corporation.

COMBINED CHIEFS OF STAFF-UNITED STATES AND GREAT BRITAIN
Established as a result of discussions starting on December 23, 1941, between the Prime Minister of Great Britain and the President of the United States. Organization announced by the War Department on February 6, 1942.

COMBINED FOOD BOARD
Established June 9, 1942, by authority of the President and the Prime Minister of Great Britain. Termination effective June 30, 1946, by joint statement of December 10, 1945, of the President and Prime Minister.

COMBINED PRODUCTION AND RESOURCES BOARD
Established June 9, 1942, by the President and the Prime Minister of Great Britain. Terminated effective December 31, 1945, by a joint statement of December 10, 1945, by the President and the Prime Minister.

COMBINED RAW MATERIALS BOARD
Established January 26, 1942, by the President and the Prime Minister of Great Britain. Terminated effective December 31, 1945, by a joint statement of December 10, 1945, by the President and the Prime Minister.

COMBINED SHIPPING ADJUSTMENT BOARD
Established January 26, 1942, by the President and the Prime Minister of Great Britain. This agency became the United Maritime Authority in August 1944, and extended membership to other maritime countries.

COMMITTEE FOR CONGESTED PRODUCTION AREAS
Established by Executive Order No. 9327 of April 7, 1943. Liquidation provided for by Congress under Act of June 28, 1944 (58 Stat. 535). Termination effective December 31, 1944.

COMMITTEE ON FAIR EMPLOYMENT PRACTICE
Established by Executive Order No. 8802 of June 25, 1941, as amended by Executive Order No. 9346, May 27, 1943.

COMMITTEE ON PHYSICAL FITNESS
Established in the Office of Civilian Defense early in 1942 and later transferred to the Office of Defense Health and Welfare

Services on April 15, 1942, as authorized by the President on February 26, 1944. This agency was terminated on June 30, 1945, because of failure to receive appropriations beyond that date.

COMMITTEE ON RECORDS OF WAR ADMINISTRATION
Established by the Director of the Bureau of the Budget in March 1942, at the suggestion of the President.

COORDINATOR OF GOVERNMENT FILMS
Established December 18, 1941, by Presidential letter of that date which ordered Director of Office of Government Reports to act as Coordinator of Government Films. Transferred to Office of War Information by Executive Order No. 9182, June 13, 1942.

COORDINATOR OF INFORMATION
Established by Presidential Order of July 11, 1941. Functions divided between the Office of Strategic Services and Office of War Information on June 13, 1942, by Military Order and Executive Order No. 9182 of same date.

COPPER RECOVERY CORPORATION
Incorporated at the request of Metals Reserve Company April 21, 1942, under the laws of the State of Delaware to agent of Metals Reserve Company. This corporation has been liquidated.

DEFENSE COMMUNICATIONS BOARD
Established by Executive Order No. 8546 of September 24, 1940. Name changed to Board of War Communications by Executive Order No. 9183 of June 15, 1942.

DEFENSE HOMES CORPORATION
Incorporated pursuant to letter of the President to the Secretary of the Treasury on October 18, 1940. Transferred to the Federal Public Housing Authority by Executive Order No. 9070 of February 24, 1942. This corporation was in liquidation as of the end of 1945.

DEFENSE HOUSING COORDINATOR
Established by the National Defense Advisory Commission July 21, 1940. Transferred to Division of Defense Housing Coordination by Executive Order No. 8632 of January 11, 1941.

DEFENSE PLANT CORPORATION
Incorporated August 22, 1940. Dissolved July 1, 1945, by Public Law 109, Seventy-ninth Congress.

DEFENSE RESOURCES COMMITTEE
Established June 15, 1940, by the Secretary of Interior, Administrative Order No. 1497. Replaced by the War Resources Council by Administrative Order No.1636, January 14, 1942.

DEFENSE SUPPLIES CORPORATION
Incorporated August 29, 1940. Dissolved July 1, 1945, by Public Law 109, Seventy-ninth Congress.

DIVISION OF DEFENSE AID REPORTS (OEM)
Established by Executive Order No. 8751 of May 2, 1941. Abolished by Executive Order No. 8926 of October 28, 1941, which created the Office of Lend-Lease Administration.

DIVISION OF DEFENSE HOUSING COORDINATION
Established by Executive Order No. 8632 of January 11, 1941. Functions transferred to National Housing Agency by Executive Order No. 9070 of February 24, 1942.

DIVISION OF INFORMATION
Established by Presidential letter February 28, 1941. Abolished by Executive Order No. 9182, June 13, 1942, and functions transferred to OWI.

ECONOMIC DEFENSE BOARD
See Board of Economic Warfare

FOOD PRODUCTION ADMINISTRATION (AGRICULTURE)
Established by Executive Order No. 9280 of December 5, 1942. Consolidated with other agencies into Administration of Food Production and Distribution by Executive Order No. 9322 of March 26, 1943. Consolidated into War Food Administration by Executive Order No. 9334 of April 19, 1943.

FOREIGN BROADCAST INTELLIGENCE SERVICE
Established February 19, 1941, in the Federal Communications Commission. Public Law 49, Seventy-ninth Congress terminated this activity in the FCC 60 days after the Japanese surrender.

FOREIGN ECONOMIC ADMINISTRATION
Established by Executive Order No. 9380 of September 25, 1943. Executive Order No. 9630 of September 27, 1945, terminated the agency and transferred its functions as follows:
(a) To State Department-the activities relating to Lend-Lease, United Nations relief and rehabilitation, liberated areas supply and procurement, planning for control of occupied territories, and foreign economic and commercial reporting.

(b) To RFC-United States Commercial Company, Rubber Development Corporation, and Petroleum Reserves Corporation.
(c) To Agriculture-the Office of Foreign Food Programs and all other food activities.
(d) To Commerce- all other activities of the agency.

FOREIGN FUNDS CONTROL (TREASURY)
Established by the Treasury Department, September 22, 1942, to carry out the provisions of Executive Orders Nos. 8389 and 9095.

GOVERNMENT INFORMATION SERVICE (BUDGET)
Established as the Office of Government Reports on July 1, 1939, to perform functions formerly exercised by the National Emergency Council. Its functions were transferred and consolidated into the Office of War Information by Executive Order No. 9182 of June 13, 1942. Subsequently they were transferred under the name, Government Information Service, to the Bureau of the Budget by Executive Order No. 9608, effective August 31, 1945.

INSTITUTE OF INTER-AMERICAN AFFAIRS
See OIAA page 160.

INSTITUTE OF INTER-AMERICAN TRANSPORTATION (OIAA)
See OIAA page 160.

INTER-AMERICAN DEFENSE BOARD
Established in accordance with Resolution XXXXIX of the meeting of the Foreign Ministers at Rio de Janeiro in January 1942. Resolution IV adopted by all American Republics at the Inter-American Conference on Problems of War and Peace, Mexico City, February 1945, states that the Inter-American Defense Board would be continued until the establishment of a permanent body created for the study and solution of problems affecting the western hemisphere.

AMERICAN EDUCATIONAL FOUNDATION, INC.
See OIAA page 160.

INTER-AMERICAN FINANCIAL AND ECONOMIC ADVISORY COMMITTEE
Established on November 15, 1939.

INTER-AMERICAN NAVIGATION CORPORATION (OIAA)
See OIAA page 160

INTERDEPARTMENTAL COMMITTEE FOR COORDINATION OF FOREIGN AND DOMESTIC MILITARY PURCHASES

Established by Presidential letter of December 6, 1939. Dissolved by Presidential letter of April 14, 1941, upon establishment of Division of Defense Aid Reports.

INTERDEPARTMENTAL COMMITTEE TO CONSIDER CASES OF SUBVERSIVE ACTIVITIES ON THE PART OF FEDERAL EMPLOYEES

Established February 5, 1943, by Executive Order No. 9300.

INTERDEPARTMENTAL COMMITTEE FOR THE VOLUNTARY PAYROLL SAVINGS PLAN FOR THE PURCHASE OF WAR BONDS

Established by Executive Order No. 9135, April 16, 1942.

INTERIM INTERNATIONAL INFORMATION SERVICE (STATE)

Established by Executive Order No. 9608 of August 31, 1945. Abolished December 31, 1945, under section 3(a) of Executive Order No. 9608.

INTERIM RESEARCH AND INTELLIGENCE SERVICE (STATE)

Established by Executive Order No. 9621 of September 20,1945. Abolished December 31, 1945, under section 2 of Executive Order No. 9621.

JOINT AIRCRAFT COMMITTEE

Established September 13, 1940, for the purpose of scheduling the delivery of and allocating the capacity for aircraft and aircraft components of all customers: Army, Navy, British, etc. It was dissolved October 1, 1945.

JOINT BRAZIL-UNITED STATES DEFENSE COMMISSION

Established in August 1942.

JOINT CHIEFS OF STAFF

Established December 1941 by instructions from the President.

JOINT CONTRACT TERMINATION BOARD

OWMR established this Board by memorandum on November 12, 1943. It was dissolved and superseded by the Contract Settlement Advisory Board which was established by the Contract Settlement Act of 1944.

JOINT ECONOMIC COMMITTEES-UNITED STATES AND CANADA

Established by the United States and Canada on June 17, 1941, to assist in the collaboration of the two countries in the utilization of their combined resources for the requirements of the war. Dissolved by agreement of the two governments as announced by the State Department on March 14,1944.

JOINT MEXICAN-UNITED STATES DEFENSE COMMISSION

Established February 27, 1942, by authority of Executive Order No. 9080.

JOINT WAR PRODUCTION COMMITTEE-UNITED STATES AND CANADA

Established on November 6,1941, as the Joint Defense Production Committee, and the name was later changed to the Joint War Production Committee.

MANAGEMENT LABOR POLICY COMMITTEE (LABOR) .

Established by Executive Order No. 9279, December 5, 1942.

MATERIAL COORDINATING COMMITTEE-UNITED STATES AND CANADA

Established on May 14,1941. Terminated early in 1946.

MEDAL FOR MERIT BOARD

Established by Executive Order No. 9331, April 19, 1943, and reconstituted by Executive Order No. 9637, October 3, 1945.

METALS RESERVE COMPANY

Incorporated June 28, 1940. Dissolved July 1, 1945, by Public Law 109, Seventy-ninth Congress.

MUNITIONS ASSIGNMENT BOARD

Established January 26, 1942, by the President and Prime Minister of Great Britain. Terminated by the Combined Chiefs of Staff (CCS 19/3), November 8, 1945, with the approval of the President and the Prime Minister.

NATIONAL DEFENSE ADVISORY COMMISSION (NDAC)

Established on May 29, 1940, by Presidential approval of a regulation of the Council of National Defense pursuant to Section 2 of the Act of August 29,1916 (39 Stat. 649). The following divisions were established in NDAC. Each division under the cognizance of an Adviser.

(a) Industrial Production Division-transferred to OPM and subsequently to WPB.

(b) Industrial Materials Division-transferred to OPM and subsequently to WPB.
(c) Employment Division-transferred to OPM, then to WPB, and finally to WMC.
(d) Farm Products Division-transferred to Office of Agricultural Defense Relations, later to Office for Agricultural War Relations.
(e) Price Stabilization Division-transferred to Office of Price Administration and Civilian Supply, later OPA.
(f) Transportation Division-transferred to ODT.
(g) Consumer Division-transferred to OPACS, later WPB.
(h) Division of State and Local Cooperation transferred to Office of Civilian Defense when that agency was established.

NATIONAL DEFENSE MEDIATION BOARD
Established by Executive Order No. 8716 of March 19, 1941. Ceased to exist upon creation of National War Labor Board created by Executive Order No. 9017, of January 12,1942.

NATIONAL HOUSING AGENCY
Established by Executive Order No. 9070, February 24, 1942.

NATIONAL INVENTOR'S COUNCIL
Established in August 1940, by the Secretary of Commerce with the concurrence of the President.

NATIONAL MUNITIONS CONTROL BOARD
Established pursuant to the Neutrality Acts of 1935 and 1939 (54 Stat. 10, 11, 12; 22 USC 452).

NATIONAL PATENT PLANNING COMMISSION (COMMERCE) 1941.
Established by Executive Order No. 8917, of December 12, 1941.

NATIONAL RAILWAY LABOR PANEL (NATIONAL MEDIATION BOARD)
Established by Executive Order No. 9172, of May 22, 1942.

NATIONAL ROSTER OF SCIENTIFIC AND SPECIALIZED PERSONNEL (LABOR)
Established on June 28, 1940, by a letter of authorization from the President to the National Resources Planning Board. Organizationally and administratively the Roster was at that time made a part of the United States Civil Service Commission by cooperative agreement between the Commission and the National Resources Planning Board. By Executive Order No. 9139, dated April 18, 1942, the Roster and its functions were transferred to the War Manpower Commission and by Executive Order No. 9617,

September 19, 1945, transferred to the Department of Labor where it now operates as a Division of the United States Employment Service.

NATIONAL WAGE STABILIZATION BOARD (LABOR)
Established by Executive Order No. 9672, of December 31, 1945, to continue wage stabilization functions of the National War Labor Board.

NATIONAL WAR LABOR BOARD
Established by Executive Order No. 9017, of January 12, 1942. Abolished by Executive Order No. 9672, December 31, 1945, which established the National Wage Stabilization Board.

OFFICE FOR AGRICULTURAL WAR RELATIONS
See Office of Agricultural Defense Relations below.

OFFICE FOR COORDINATION OF NATIONAL DEFENSE PURCHASES
Established by order of Council of National Defense, June 27, 1940. Terminated January 7, 1941.

OFFICE FOR EMERGENCY MANAGEMENT (OEM)
Established on May 25, 1940, by administrative order of the President pursuant to Executive Order No. 8248, dated September 8, 1939.

OFFICE OF AGRICULTURAL DEFENSE RELATIONS
Established May 17, 1941, by Secretary of Agriculture Memorandum No. 905, issued pursuant to a letter from the President to the Secretary of Agriculture dated May 5, 1941. The name was changed to Office of Agriculture War Relations, it being thus referred to in the First Supplemental National Defense Act, 1943, approved July 25, 1942. The OAWR was abolished by consolidation into the Food Distribution Administration pursuant to Executive Order No. 9280, dated December 5, 1942.

OFFICE OF ALIEN PROPERTY CUSTODIAN
Established by Executive Order No. 9095 of March 11, 1942. Office.

OFFICE OF ARMY-NAVY LIQUIDATION COMMISSIONER
Established pursuant to War Department Memorandum No. 850-45 dated January 27, 1945, and the letter of the Secretary of the Navy, dated February 1, 1945. It was abolished by Executive Order No. 9630, September 27, 1945, and its remaining functions were transferred to the Department of State.

OFFICE OF CENSORSHIP
Established by Executive Order No. 8985, of December 19, 1941. Terminated by Executive Order No. 9631, of September 28, 1945, effective November 15, 1945.

OFFICE OF CIVILIAN DEFENSE
Established by Executive Order No. 8757, of May 20, 1941. Terminated by Executive Order No. 9562, of June 4, 1945.

OFFICE OF COMMUNITY WAR SERVICES
Established by Executive Order No. 9338, of April 29, 1943.

OFFICE OF CONTRACT SETTLEMENT
Established by the Contract Settlement Act of 1944.

OFFICE OF COORDINATOR OF INTER-AMERICAN AFFAIRS
Originally established on August 16, 1940, by NDAC as the Office of Coordination of Commercial and Cultural Relations between the American Republics. This Office was transferred to the Office of the Coordinator of Inter-American Affairs when it was established by Executive Order No. 8840 of July 30, 1941. Name changed to Office of Inter-American Affairs by Executive Order No. 9532, March 23, 1945.

OFFICE OF DEFENSE HEALTH AND WELFARE SERVICE
Established by Executive Order No. 8890, of September 3, 1941. Abolished by Executive Order No. 9338 of April 23, 1943. Functions transferred to Office of Community War Services.

OFFICE OF DEFENSE TRANSPORTATION (ODT)
Established by Executive Order No. 8989, of December 18, 1941.

OFFICE OF ECONOMIC STABILIZATION
Established by Executive Order No. 9250, of October 3, 1942. Abolished by Executive Order No. 9620, of September 20, 1945. The functions were transferred to the Office of Stabilization Administration of the Office of War Mobilization and Reconversion.

OFFICE OF ECONOMIC WARFARE
Established by Executive Order No. 9361, of July 15, 1943. Consolidated with Foreign Economic Administration by Executive Order No. 9380, of September 25, 1943.

OFFICE OF EXPORT CONTROL
Established July 2, 1940, by Presidential Proclamation No. 2413 pursuant to Public Law 703, Seventy-sixth Congress. Executive

Order No. 8900, September 15, 1941, transferred functions to the Economic Defense Board.

OFFICE OF FACTS AND FIGURES
Established by Executive Order No. 8922, of October 24, 1941. Transferred and consolidated into Office of War Information by Executive Order No. 9182, of June 13, 1942.

OFFICE OF FISHERY COORDINATION (INTERIOR)
Established by Executive Order No. 9204, of July 21, 1942. Terminated by Executive Order No. 9649, of October 29, 1945.

OFFICE OF GOVERNMENT REPORTS
See Government Information Service

OFFICE OF INTER-AMERICAN AFFAIRS
Established by Executive Order No. 9532, of March 23, 1945. Some functions were transferred to State by Executive Order No. 9608, August 31, 1945.

OFFICE OF LEND-LEASE ADMINISTRATION
Established by Executive Order No. 8926 of October 28, 1941. Consolidated into Foreign Economic Administration by Executive Order No. 9380, of September 25, 1943.

OFFICE OF MERCHANT SHIP CONTROL (COAST GUARD)
Established on June 28, 1940, by regulations issued by the Secretary of the Treasury to carry out the provisions of a Presidential proclamation, dated June 27, 1940. The Office was abolished on January 20, 1942, by order of the Commandant of the Coast Guard.

OFFICE OF PETROLEUM COORDINATOR FOR NATIONAL DEFENSE
Established by Presidential letter of May 28, 1941. Terminated on the establishment of the Petroleum Administration for War.

OFFICE OF PRICE ADMINISTRATION (OPA)
Established as Office of Price Administration and Civilian Supply by Executive Order No. 8734, April 11, 1941. Name and functions changed to Office of Emergency Administration by Executive Order No. 8875, August 28, 1941. The Emergency Price Control Act of 1942, January 30, 1942, established OPA as an independent agency.

OFFICE OF PRICE ADMINISTRATION AND CIVILIAN SUPPLY (OPACS)

Established by Executive Order No. 8734, of April 11, 1941. Name changed to Office of Price Administration by Executive Order No. 8875, August 28, 1941. Civilian Supply functions were transferred to OPM.

OFFICE OF PRODUCTION MANAGEMENT (OPM)

Established by Executive Order No. 8629 of January 7, 1941. Abolished by Executive Order No. 9040 of January 24, 1942. Functions, personnel, etc. transferred to War Production Board.

OFFICE OF PRODUCTION RESEARCH AND DEVELOPMENT

Established as a constituent agency of WPB by its General Administrative Order, 2-66, effective November 23, 1942.

OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT

Established by Executive Order No. 8807, of June 28, 1941.

OFFICE OF SOLID FUELS COORDINATOR FOR NATIONAL DEFENSE

Established by Presidential letter November 5, 1941. Terminated on establishment of SFAW.

OFFICE OF STABILIZATION ADMINISTRATION

Established pursuant to Executive Order No. 9620, dated September 20, 1945, which terminated the Office of Economic Stabilization created by Executive Order No. 9250, October 3, 1942.

OFFICE OF STRATEGIC SERVICES

Established by Military Order of June 13, 1942. Terminated by Executive Order No. 9621, effective October 1, 1945. Functions divided between State and War Departments. State created the position of Special Assistant to the Secretary of State, the Office of Research and Intelligence, and the Office of Intelligence Collection and Dissemination which on December 31 took over those parts of the former OSS program that are to be included in the permanent intelligence program. Similarly, War created the Strategic Services Unit in the Office of the Assistant Secretary of War.

OFFICE OF SURPLUS PROPERTY (COMMERCE)

Established on October 16, 1942, in the Procurement Division of the Treasury Department as the Federal Property Utilization Branch. On August 11, 1944, name changed to Office of Surplus Property. Transferred to Department of Commerce effective May 1, 1945, by Executive Order No. 9541, of April 19, 1945. Transferred

to Reconstruction Finance Corporation by Executive Order No. 9643, effective November 5, 1945.

OFFICE OF WAR INFORMATION

Established by Executive Order No. 9182, of June 13, 1942. Its liquidation was provided for by Executive Order No. 9608, August 31, 1945, which transferred the foreign information functions to State Department and certain domestic functions to the Bureau of the Budget. The State Department created the Office of International Information and Cultural Affairs, which on December 31 took over those OWI and OIAA informational activities that were to be included in the permanent foreign informational program.

OFFICE OF WAR MOBILIZATION (OWM)

Established by Executive Order No. 9347, of May 27, 1943. Functions, personnel, funds, and property transferred to Office of War Mobilization and Reconversion (which was established by Congress under Act of October 3, 1944, 58 Stat. 785) by Executive Order No. 9488, of October 3, 1944.

OFFICE OF WAR MOBILIZATION AND RECONVERSION (OWMR)

Established by the War Mobilization Act of 1944 (50 USC 1651).

PACIFIC WAR COUNCIL

Established March 30, 1942, by Presidential action. The records of this Council were disposed of in September 1945.

PETROLEUM ADMINISTRATION FOR WAR

Established by Executive Order No. 9276, of December 2, 1942.

PETROLEUM RESERVES CORPORATION

Established on June 30, 1943, by RFC. Successively transferred to Office of Economic Warfare, Foreign Economic Administration, and finally to RFC again. Renamed War Assets Corporation effective November 15, 1945.

PRESIDENT'S COMMITTEE ON DEFERMENT OF FEDERAL EMPLOYEES

Established by Executive Order No. 9309, of March 6, 1943. Public Law 23, 78th Congress, provided that no deferment should be granted employees of the Executive Branch of the Federal Government unless they were in accordance with this Executive Order.

PRESIDENT'S COMMITTEE ON WAR RELIEF AGENCIES

See President's War Relief Control Board.

PRESIDENT'S SOVIET PROTOCOL COMMITTEE
Established by the President on October 30, 1942, by a memorandum to the heads of agencies concerned. Terminated on October 1, 1945.

PRESIDENT'S WAR RELIEF CONTROL BOARD
Established by Executive Order No. 9205, of July 25, 1942, taking over the functions of the President's Committee on War Relief Agencies.

PRIORITIES BOARD
Established by order of the Council of National Defense, October 18, 1940. Terminated January 7, 1941.

PUBLICATIONS BOARD
Established in OWMR by Executive Order No. 9568, of June 8, 1945.

RECONSTRUCTION FINANCE CORPORATION (RFC)
Defense Plant Corporation.
Defense Supplies Corporation.
Metals Reserve Company.
Rubber Reserve Company.
Public Law 109, Seventy-ninth Congress dissolved these four subsidiary corporations of RFC on July 1, 1945. The liquidation of the affairs of these corporations will be continued by the RFC through the agency of the Offices of Defense Plants, Defense Supplies, Metals Reserve, and Rubber Reserve.

RETRAINING AND REEMPLOYMENT ADMINISTRATION (LABOR)
An agency known as the Retraining and Reemployment Administration was established by Executive Order No. 9427, dated February 24, 1944, in the Office of War Mobilization. All records, property, funds, and personnel of this agency were transferred to the Retraining and Reemployment Administration established by the War Mobilization and Reconversion Act of 1944 by Executive Order No. 9488, October 3, 1944. The agency was transferred to the Department of Labor by Executive Order No. 9617 September 19, 1945.

RUBBER DEVELOPMENT CORPORATION
Chartered November 1940, and commenced operations February 23, 1943.

RUBBER RESERVE COMPANY
Incorporated June 28, 1940. Dissolved July 1, 1945, by Public Law 109 Seventy-ninth Congress.

SALARY STABILIZATION UNIT (TREASURY)
Established in the Bureau of Internal Revenue by Treasury Decision 5167, October 29, 1942, to administer the provisions of regulations prescribed by the Economic Stabilization Director.

SELECTIVE SERVICE SYSTEM .
Established pursuant to the Selective Training and Service Act of 1940. Originally a separate agency, it was placed under the War Manpower Commission by Executive Order No. 9279, of December 5, 1942, as the Bureau of Selective Service. Reestablished as a separate agency by Executive Order No. 9410, December 23, 1942.

SHIPS, INC.
See Cargoes, Inc.

SHIPBUILDING STABILIZATION COMMITTEE (LABOR)
A constituent agency of the War Production Board which was transferred from its successor agency, Civilian Production Administration to the Department of Labor by Executive Order No. 9656 of November 15, 1945.

SMALLER WAR PLANTS CORPORATION
Established by Act of Congress June 11, 1942 (56 Stat. 353; 50 USC 1104). The functions of the Smaller War Plants Corporation were divided between the Department of Commerce and the Reconstruction Finance Corporation by Executive Order No. 9665, December 27, 1945. The legislation authorizing this corporation provides that the corporation shall not have succession beyond December 31, 1946.

SOLID FUELS ADMINISTRATION FOR WAR (INTERIOR)
Established by Executive Order No. 9332 of April 19, 1943.

SOUTHWESTERN POWER ADMINISTRATION (INTERIOR)
Established by order of the Secretary of the Interior on September 1, 1943, to implement Executive Order No. 9366, July 30, 1943, and Executive Order No. 9373, August 30, 1943.

STEEL RECOVERY CORPORATION
Incorporated at the request of Metals Reserve Company on July 18, 1942, under the laws of the State of Delaware for the purpose of acting as agent of Metals Reserve Company.

SUPPLY PRIORITIES AND ALLOCATIONS BOARD
Established by Executive Order No. 8875 of August 28, 1941. Abolished by Executive Order No. 9024 of January 16, 1942, functions transferred to the WPB.

SURPLUS PROPERTY ADMINISTRATION
Established by Public Law 181, Seventy-ninth Congress, September 18, 1945, which abolished the Surplus Property Board.

SURPLUS PROPERTY BOARD
Established by Surplus Property Act of 1944, approved October 3, 1944 (58 Stat. 768). Terminated by Public Law 181, Seventy-ninth Congress, September 18, 1945 (59 Stat. 533) and all functions transferred to Surplus Property Administration.

SURPLUS WAR PROPERTY ADMINISTRATION
Established by Executive Order No. 9425 of February 19, 1944. Functions, property, and personnel transferred to Surplus Property Board by Executive Order No. 9488 of October 3, 1944.

UNITED STATES COMMERCIAL COMPANY
Incorporated March 26, 1942, by the RFC. Transferred to OEW by Executive Order No. 9361, July 15, 1943, and subsequently to FEA by Executive Order No. 9380, September 25, 1943. Returned to RFC by Executive Order No. 9630, September 27, 1945.

UNITED STATES EMERGENCY COURT OF APPEALS
Established by the Emergency Price Control Act of 1944, with jurisdiction over actions arising as the results of the administration of the Price Control Act of 1942, as amended.

UNITED STATES OF AMERICA TYPHUS COMMISSION
Established by Executive Order No. 9285 of December 24, 1942.

WAGE ADJUSTMENT BOARD FOR THE CONSTRUCTION INDUSTRY (LABOR)
Established by the Labor Department on May 29, 1942, by direction of the President.

WAR ASSETS CORPORATION
Incorporated originally as the Petroleum Reserves Corporation by RFC on June 30, 1943. The name of the corporation was changed

to War Assets Corporation on November 9, 1945, effective November 15, 1945.

WAR BALLOTS COMMISSION
Established by Public Law 277, Seventy-eighth Congress (58 Stat. 140) on April 1, 1944, to serve for the duration of the war and six months thereafter.

WAR CONTRACTS PRICE ADJUSTMENT BOARD
Established by the Renegotiation Act of 1943 (58 Stat. 85; 50 USC 1191).

WAR DAMAGE CORPORATION
Established December 13, 1941, by RFC Charter.

WAR EMERGENCY PIPE LINES, INC.
Incorporated September 8, 1941, to act as the agency of the Defense Plant Corporation in the construction industry and as agent of the Defense Supplies Corporation in the operation of pipe lines.

WAR FOOD ADMINISTRATION (AGRICULTURE)
Established by Executive Order No. 9334 of April 19, 1943. Terminated by Executive Order No. 9577 of June 29, 1945, and function transferred to Department of Agriculture.

WAR FORWARDING CORPORATION
Incorporated by War Shipping Administration to assist in forwarding and classifying Lend-Lease shipments.

WAR HEMP INDUSTRIES, INC. (AGRICULTURE)
Chartered on February 1, 1943.

WAR INSURANCE CORPORATION
Name later changed to War Damage Corporation, q. v.

WAR MANPOWER COMMISSION (WMC)
Established by Executive Order No. 9139 of April 18, 1942. Terminated by Executive Order No. 9617 of September 19, 1945, and functions transferred to Department of Labor.

WAR MATERIALS, INC.
Incorporated at the request of Metals Reserve Company on August 24, 1942, under the laws of the State of Delaware, for the purpose of acting as agent of Metals Reserve Company.

WAR PRODUCTION BOARD
Established by Executive Order No. 9024 of January 16, 1942. Terminated by Executive Order No. 9638, October 4, 1945, and functions transferred to Civilian Production Administration. Important constituent agencies included:
Aircraft Production Board
Aircraft Resources Control Office
Office of Civilian Supply
Office of Production Research and Development
Office of Rubber Director
Office of War Utilities
Procurement Policy Board
Production Executive Committee
Requirements Committee
Resources Protection Board

WAR REFUGEE BOARD
Established by Executive Order No. 9417 of January 22, 1944. Terminated by Executive Order No. 9614 of September 14, 1945.

WAR RELOCATION AUTHORITY (INTERIOR)
Established by Executive Order No. 9102 of March 18, 1942. Transferred to the Department of Interior by Executive Order No. 9423 of February 16, 1944.

WAR RESOURCES BOARD
Established August 1939, as a Civilian Advisory Board to Army and Navy Munitions Board. Dissolved by the President, November 24,1939.

WAR RESOURCES COUNCIL (INTERIOR)
Established by Interior Departmental Order No. 1636, January 14, 1942, supplemented by Departmental Order No. 1652, February 23, 1942, and No. 1687, May 1, 1942. Abolished by Departmental Order No. 2148, December 20, 1945.

WAR SHIPPING ADMINISTRATION (OEM)
Established by Executive Order No. 9054 of February 7,1942.

# About the Author

Dr. Alan L. Gropman was appointed Chairman of the Department of Grand Strategy at the Industrial College of the Armed Forces, National Defense University in July 1996. From 1991 to 1996 he was a professor of history at the Industrial College.

In 1986, Dr. Gropman retired from the U.S. Air Force as a Colonel after 27 years commissioned service. During his career he earned, among other awards, the Defense Superior Service Medal, Legion of Merit, Distinguished Flying Cross, Air Medal with five oak leaf clusters, and Vietnam Cross of Gallantry with Palm.

From 1986 to 1991 he was a Senior Principal Analyst and Program Manager for the SYSCON Corporation in Washington, DC, directing projects for the Joint Staff and the Air Staff. He was also an adjunct professor at the National War College.

Dr. Gropman earned a B.A. from Boston University and an M.A. and Ph.D. from Tufts University. He is the author of two books, five anthology chapters, and more than 200 book reviews, articles, and op-ed essays. Dr. Gropman is also the book review editor for *Air Power History* and is a member of the editorial board for *Joint Force Quarterly*.

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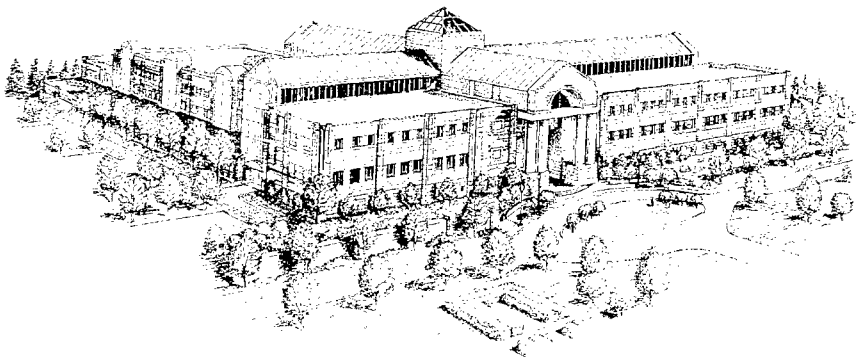

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