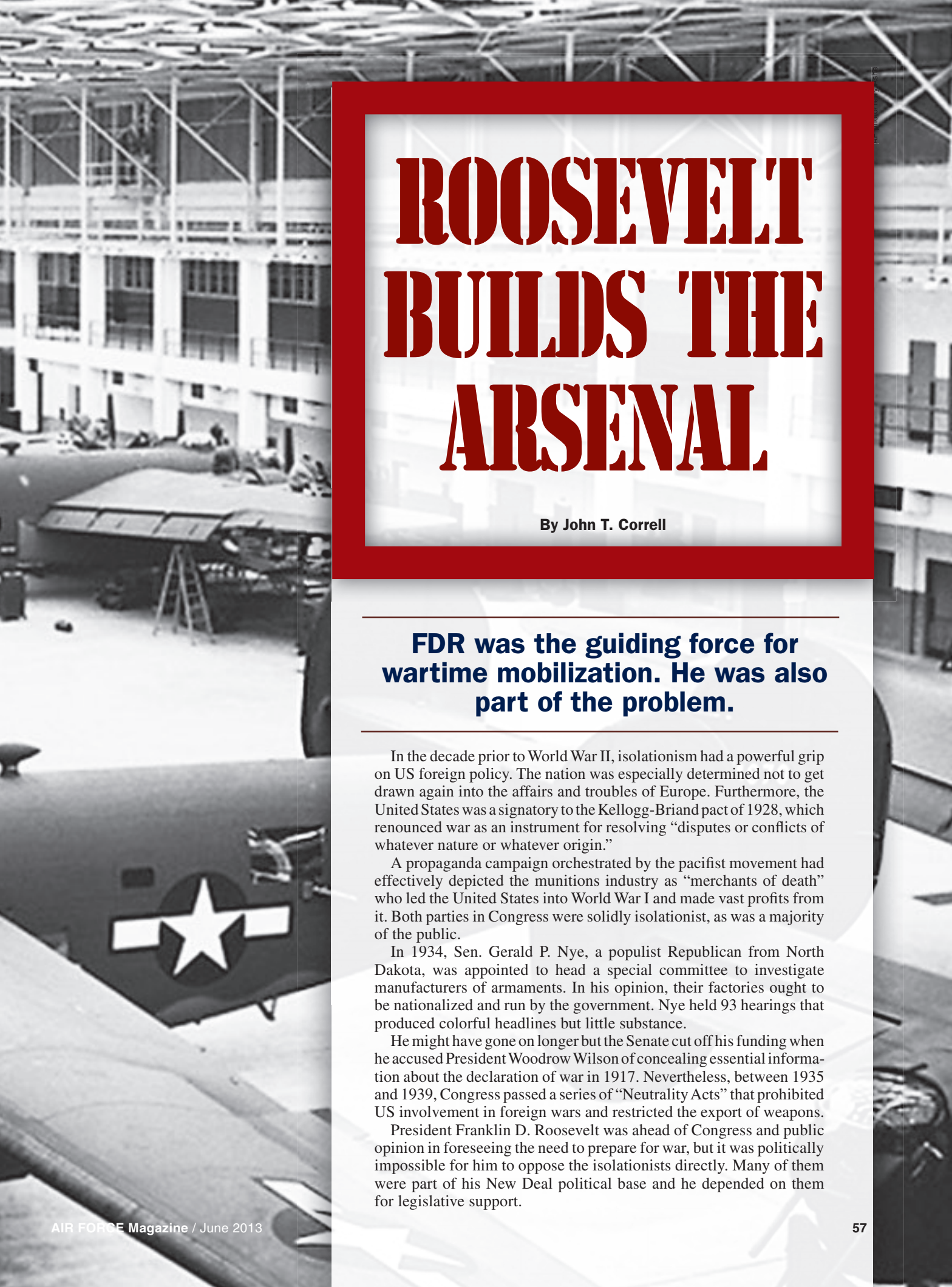




B-24s under assembly at Willow Run. At one point during the war, 500 B-24s a month rolled off the plant's mile-long, L-shaped assembly line.



ROOSEVELT BUILDS THE ARSENAL

By John T. Correll

FDR was the guiding force for wartime mobilization. He was also part of the problem.

In the decade prior to World War II, isolationism had a powerful grip on US foreign policy. The nation was especially determined not to get drawn again into the affairs and troubles of Europe. Furthermore, the United States was a signatory to the Kellogg-Briand pact of 1928, which renounced war as an instrument for resolving “disputes or conflicts of whatever nature or whatever origin.”

A propaganda campaign orchestrated by the pacifist movement had effectively depicted the munitions industry as “merchants of death” who led the United States into World War I and made vast profits from it. Both parties in Congress were solidly isolationist, as was a majority of the public.

In 1934, Sen. Gerald P. Nye, a populist Republican from North Dakota, was appointed to head a special committee to investigate manufacturers of armaments. In his opinion, their factories ought to be nationalized and run by the government. Nye held 93 hearings that produced colorful headlines but little substance.

He might have gone on longer but the Senate cut off his funding when he accused President Woodrow Wilson of concealing essential information about the declaration of war in 1917. Nevertheless, between 1935 and 1939, Congress passed a series of “Neutrality Acts” that prohibited US involvement in foreign wars and restricted the export of weapons.

President Franklin D. Roosevelt was ahead of Congress and public opinion in foreseeing the need to prepare for war, but it was politically impossible for him to oppose the isolationists directly. Many of them were part of his New Deal political base and he depended on them for legislative support.



Roosevelt (in passenger seat) tours the Boeing plant in Seattle. By 1942, the US was the world's foremost producer of military aircraft. By the war's end, the nation would manufacture almost 100,000 fighter aircraft alone.

Photo by the Bonneville Power Administration for the War Production Board

Roosevelt gave the Nye committee his general endorsement and declared the arms embargo to be "entirely satisfactory." He was still expressing isolationist sentiments in a campaign speech in 1940, promising, "Your boys are not going to be sent into any foreign wars."

He could (and often did) espouse both sides of an issue. He was not one to let consistency hold him back. Long before Pearl Harbor, Roosevelt was working behind the scenes to prepare the nation for the coming war.

The Arsenal of Democracy is the great American success story. US munitions production in World War II was almost equal to the total output of allies and adversaries combined. At the Big Three conference in Tehran, Stalin raised a toast to "American production, without which the war would have been lost."

A politician with lesser skills than Roosevelt could never have pulled it off, but at times, he was part of the problem. He created one special organization after another with overlapping authority to direct the mobilization effort but he did not back his own appointees or intervene to resolve the inevitable conflicts. The clash of government organizations, control boards, and special interests did not stop until the end of the war.

"Roosevelt never moved in only one direction at a time," said historian Doris Kearns Goodwin.

Roosevelt's preparations were without precedent. In the past, US foreign wars were mostly against relatively weak adversaries like Mexico and Spain. The approach always was to first declare war, then mobilize and prepare to fight. World War I was almost over before the United

States got into it and there was no mobilization in advance.

FDR's "Quarantine" speech of October 1937 was a trial balloon to test whether public opinion had shifted. He warned of growing aggression abroad but did not mention Germany or Japan. He said peace and trust must be restored but did not say

how. He used the word "quarantine" as an analogy only, comparing the situation to containment of a medical epidemic.

Head Start

Finding isolationist sentiment still strong, Roosevelt backed off and continued his effort in less conspicuous ways. He saw that the shortfall in ships and airplanes had to be addressed first. He told his special confidant Harry L. Hopkins that he was sure the United States would get into the war and that airpower would win it.

In November 1938, Roosevelt called his principal military and civilian advisors to the White House and said he wanted a major buildup of the Army Air Corps. According to historian Eric Larabee, he told them "he did not want to hear about ground forces, that a new barracks at some post in Wyoming would not scare Hitler one god-damned bit."

Newspaper reports in 1939 quoted Roosevelt as saying, "Our American frontier is on the Rhine." That set off angry protests from the isolationists. He denied that he had said it, attributing the mistake to "some boob."

When Germany invaded Western Europe and France in 1940,

Roosevelt called for the production of 50,000 airplanes a year. Critics ridiculed it as a wild fantasy. Indeed, it was not possible at the time, but the goal was not as far-fetched as it sounded. By 1944, annual US aircraft production would reach almost twice that number.

As the situation deteriorated in Europe and the Far East, Roosevelt spoke with less restraint. In May 1941, he declared an unlimited national emergency and said, "Our Bunker Hill of tomorrow may be several thousand miles from Boston."

He was careful to add assurance that the United States was not about to enter the war and said there would be "no new group of war millionaires" as a result of "the struggles abroad." In the same speech, he said "the policy and the laws for collective bargaining are still in force" and that labor would be "adequately represented" in the deliberations to come.

When rearmament began in 1939, the Air Corps had almost no modern airplanes except for the B-17 bomber. Its best fighter, the P-40, was no match for the German Bf 109, the Japanese Zero, or the British Spitfire. However, the fundamentals were in place. By the time of the attack on Pearl Harbor in 1941, production had begun on most



John Lewis, head of the United Mine Workers, was a thorn in Roosevelt's side. A strike by 400,000 members of his union prompted Congress to pass the Smith-Connally Act, which required 60 days' notice for any labor strike. At right, Lewis testifies before a Senate subcommittee.

Photo via Library of Congress



of the types of aircraft with which the Air Corps fought the war, such as the P-47 Thunderbolt, P-38 Lightning, P-39 Airacobra, and P-51 Mustang.

Arming the Allies

The Neutrality Act of 1935, which imposed the arms embargo, did not distinguish between aggressors and victims, forbidding shipment of weapons to all “belligerents” without regard to where US interests might lie.

Roosevelt had to work the seams and loopholes. The first of these was “Cash and Carry,” thought up by financier Bernard M. Baruch, who had managed US mobilization in World War I. Baruch pointed out the risk was in the shipment of weapons, not in the sale, and that the strict requirements of not arming belligerents could be met if a purchaser took direct possession and did not use US vessels for transport. Such sales began with the approval of Congress in November 1937.

When Germany invaded Czechoslovakia in 1939, Congress repealed the arms embargo despite the bitter opposition of isolationists, including aviation hero Charles A. Lindbergh and Nye, who was still in the Senate. The repeal vote also renewed Cash and Carry.

FDR's next venture was “Surplus Sales” in 1940. A loophole in the Neutrality Acts allowed the sale of surplus war materiel to a private corporation, which could then resell the goods abroad. US Steel was recruited as the middleman and armaments conveniently declared to be surplus soon found their way to Britain and France.

In December 1940, following the forma-

tion of the Rome-Tokyo-Berlin Axis, Roosevelt declared in a famous radio address, “We must be the great arsenal of democracy. For us, this is an emergency as serious as war itself.” Even at that dire moment, though, he felt compelled to stipulate that any talk of US forces being sent to Europe was “deliberate mistruth.”

The masterpiece of Roosevelt's improvising was “Lend-Lease.” In a major break from isolationism, the United States announced that it would lend or lease weapons and war materiel to the Allies but would not expect to be paid immediately. Nor would hard cash be demanded later. When the war was over, Britain and the USSR could return the equipment or some substitute for it. Congress went along with Lend-Lease in a split vote in March 1941, effectively putting an end to neutrality.

Initiatives to arm the Allies were so successful that equipping the US Army Air Corps fell behind as new aircraft coming off the production line were diverted to the British.

Uneasy Partners

The New Dealers and big business had a mutual disdain for each other, which made it difficult for Roosevelt to establish a cooperative working relationship with industry. In the new distribution of power, wealthy corporations were to be taken down a peg and, as Secretary of the Interior Harold L. Ickes put it, “be satisfied with much less than they have.” Roosevelt denounced “war profiteers” as part of his standard political pitch. In the 1936 election campaign, he said that “the forces of organized money are unanimous in their hate for me—and I welcome their hatred.”

Industry had taken a beating in the Nye investigations and did not regard defense work as all that desirable. DuPont, which had supplied gunpowder to the Army for 150 years, cut its production of munitions to less than two percent of the operation. The excess profits tax kept a tight lid on earnings from military contracts and the amortization period for fully deducting the costs as a business expense was 16 years. There was no assurance that investment in new plant facilities or prototypes would lead to an actual contract.

Roosevelt understood, even if the more doctrinaire New Dealers did not, that concessions had to be made. Legislation in 1940 relaxed the profit ceiling somewhat, reduced the amortization period to five years, and reduced the risks of capital investment.

Ickes was outraged. “This is abandoning advanced New Deal ground with a vengeance,” he wrote in his diary. “If private citizens won't supply munitions of war at a reasonable rate and take potluck with the rest of the citizens in the matter of taxation, then the government ought to build its own plants and conscript the necessary managers to run them.” He was even more outraged when it became the norm to issue contracts on the basis of the contractor's cost plus a fixed fee.

Roosevelt appointed a seemingly endless succession of boards and advisors in hopes of making industrial mobilization run smoothly. The first of these was the War Resources Board in 1939. It had no powers and was disbanded after three months.



Harry Hopkins (l) and Roosevelt confer in 1945. The President told Hopkins, his special confidant, early on that he was sure the US would enter the war and airpower would win it.

Photo via Wikipedia

Next was the National Defense Advisory Counsel in 1940. It had no formal leader and no authority but one member, William S. Knudsen, managed to be effective despite the bureaucratic hobbles.

Knudsen, the former president of General Motors, had played a leading part in the invention of the automobile mass production process. He persuaded all of the big automakers, including Henry Ford, who despised Roosevelt, to convert 20 percent of their facilities to defense production. In January 1941, Roosevelt created the Office of Production Management and named Knudsen as director general. *The New Republic* complained that it was “a business dictatorship.”

In January 1942, Roosevelt gave in to Knudsen’s critics and replaced him in the usual roundabout fashion, creating the War Production Board to take over the functions of OPM and naming Donald M. Nelson, a former executive of Sears Roebuck, to head it. Nelson had extensive knowledge about the nation’s producers and suppliers and he continued Knudsen’s implementation of mass production.

FDR gave Knudsen a direct commission as a lieutenant general—the only such appointment ever to that grade—and assigned him as director of production for the War Department, where his authority overlapped to some extent with Nelson’s.

Roosevelt did not back Nelson either and supplanted the WPB with the Office of War Mobilization in May 1943. This time the President found a mobilization czar he would support. The OWM director was James F. Byrnes, a well-connected former US Senator and

Supreme Court Justice who had resigned from the Supreme Court in 1942 to head the Office of Economic Stabilization, which oversaw wage and price controls.

Roosevelt did not allow anyone to undercut Byrnes or get around him. The industrial approaches introduced by Knudsen were firmly established and Byrnes ran the system with a sure hand.

Air Detroit

American businesses, large and small, converted to war production. As recounted by Arthur Herman in his book, *Freedom’s Forge*, Frigidaire turned to making machine guns instead of refrigerators and Rock-Ola, a Chicago manufacturer of juke boxes, made M1 carbines. The biggest change was in the huge automobile industry.

After Pearl Harbor, Roosevelt gave Leon Henderson, head of the Office of Price Administration and Civilian Supply, authority to shut down nonessential manufacturing. In January 1942, Henderson ordered a halt to passenger car production for the duration of the war. The automakers turned to output of war materiel, including trucks and tanks for the armed forces and more than half of all the aircraft engines made between 1940 and 1945.

All of the big automakers produced aircraft parts, but at its massive new plant at Willow Run west of Detroit, Ford manufactured entire B-24 bombers. Five hundred airplanes a month rolled off the L-shaped assembly line, a mile long and the largest in the world. Pilots and crews slept on cots at Willow Run, waiting to fly the bombers away as soon as they were ready.

Willow Run had barely opened in 1942 before production there slowed to a crawl when the Army directed one major design change after another, 575 of them in the first year. If the production line stopped to retool for all these changes,

few finished airplanes would be delivered. The solution was for the main production lines to keep on rolling, turn out basic models, and send them to 10 field modification centers that made the necessary changes.

Ford built half of all the B-24s produced during the war, 6,791 complete aircraft and 1,893 “knock-down” units assembled by other contractors. The Eastern Aircraft Division of General Motors made airplanes for the Navy. In addition to aircraft and engines, the auto industry produced a third of the machine guns and 80 percent of the tanks and tank parts.

The Home Front

All sorts of things were rationed, but not always for the obvious reason. Canned goods were on the list because of the tin that went into the cans. Gasoline was rationed primarily to conserve the rubber used in car tires. The Dutch East Indies, the source of 90 percent of the prewar rubber supply, was in Japanese hands and the shortage was made more acute by wartime demands. A single B-17 bomber required half a ton of rubber. Manufacture of synthetic rubber helped the problem but did not solve it.

The government regulated the allocation of numerous materials and commodities, the most critical of them being steel, copper, and aluminum. Inevitably there were conflicts between priority ratings set by agencies with differing requirements.

There were also elaborate programs to regulate the labor supply. During the war, 10.1 million men were drafted into the armed forces but farm workers, employees in defense plants, and others got deferments.

In December 1941, representatives of organized labor and their counterparts in industry made a “no strikes or lockouts” pledge for the duration of the war. However, to the embarrassment of the Administration, which counted labor as a pillar of its political base, the big unions could not always control their locals and there were thousands of wildcat strikes every year.

Tempers reached the boiling point in 1943 when John L. Lewis, head of the United Mine Workers, pulled 400,000



Millions of “Rosie the Riveters” entered the defense manufacturing industry. Here, women install fixtures and assemblies to a tail fuselage section of a B-17 at the Douglas Aircraft plant in Long Beach, Calif.

Library of Congress photo



P-40s lined up for scrapping at Walnut Ridge Marine Air Facility in Arkansas. Many surplus airplanes were sent there after the war for short-term storage and subsequent disposal—stripped of useful parts and melted down for their aluminum content.

National Archives photo

coal miners out on strike seeking a wage increase of \$2 a day. Roosevelt threatened to cancel the miners' draft deferments and they went back to work but Congress was not satisfied. The Smith-Connally Act, passed in June, requiring 60 days' notice of a strike and set stiff penalties for the encouragement of strikes in war production plants. Roosevelt vetoed it, arguing that it would produce labor unrest, but it took the Senate only 11 minutes to override his veto.

The number of women in the labor force surged and by 1944, women accounted for 37 percent of the workers in prime defense plants.

"Rosie the Riveter" became a cherished wartime symbol, but the reality was often more interesting.

One of the riveters at the Bell Aircraft B-29 plant at Marietta, Ga., was Helen Dortch Longstreet, 80, widow of Confederate Gen. James Longstreet. She worked the day shift, commuting from her home in Atlanta in her Nash coupe. She wore a visored cap, usually had a cigarette hanging off her lip, and was not bothered by the noise and kick of the rivet gun. She worked until the war ended. Her foreman said she never missed a day and was never late.

The labor force was even extended to include San Quentin prison in California where inmates made antisubmarine nets and night sticks for the National Guard.

Despite the fame of Willow Run, the regular aircraft companies produced more than 70 percent of the wartime production of 300,000 military air-

planes. To get it done, they had to expand their plants, open new ones, and make fundamental changes in their operations.

In the 1930s, the aircraft industry subsisted on small orders, several thousand a year, from the armed forces and the airlines. Each airplane was hand-built. The plants worked one shift a

day and did not use their full capacity. However, when war came the requirements rose so rapidly that they could not be met by expansion of existing floor space.

The most challenging task was manufacturing the big bombers. For B-24s, Consolidated tripled the size of its San Diego plant, built a new one in Fort Worth, Tex., and licensed production to Douglas and North American.

Reconversion

Half of the B-24s were built by Ford at Willow Run. Boeing enlarged its B-17 plant near Seattle and licensed further production to Douglas and Vega. B-29s were built by Boeing in Seattle and Wichita, Kan., by Bell in Marietta, Ga., and by Martin in Omaha, Neb.

Like the automobile industry, the aircraft companies had to adopt mass production techniques. By 1942, the United States was already the foremost producer of military aircraft in the world. Its wartime totals included 98,000 bombers, almost 100,000 fighters, 24,000 transports, and 58,000 trainers, plus other aircraft for reconnaissance, communications, and special purposes.

Production of warships increased, too, but the amazing story on the maritime front was the "Liberty Ships," the simple, stripped down, and undeniably homely

merchant vessels that carried most of the war materiel to foreign theaters. They were produced by Henry J. Kaiser, an industrial entrepreneur so unfamiliar with naval matters that he continued to call a ship's bow "the front end."

In 1942, in what was called variously a demonstration and a publicity stunt, he built a Liberty Ship in four days, 15 hours, and 26 minutes. In all, more than 2,700 Liberty Ships were launched and many of them continued in service for years.

When the Arsenal of Democracy was running at full tilt, it incorporated just over 47 percent of US economic output. War production peaked in 1943 and declined sharply in 1944. The time was at hand to begin reconverting industry to civilian and consumer goods, but the Army resisted, fearing it might lead to a slackening of the war effort.

Business leaders also opposed early reconversion. Large companies were more committed than smaller ones to defense production and did not want their competitors to gain an advantage.

Thus, reconversion was a slow process. Automobile production resumed in July 1945 and gasoline rationing ended in August. The automakers put 500,000 cars on the market before the end of the year and small appliances such as toasters and electric irons became available. Great numbers of military airplanes were suddenly surplus. Some were sold to the airlines or transferred to civilian government agencies or allied countries. A few were saved for historic purposes but most were cut apart and melted down for the metal in them.

Ford sold the Willow Run plant in 1947 to Henry Kaiser, who made Kaiser-Frazier automobiles there before reselling the facility to General Motors in 1953. Among its diversified output was 20 mm cannons during the Vietnam War.

The big plant hung on with the manufacture of automatic transmissions until 2010 when it was closed as part of the General Motors bankruptcy proceedings. ■

John T. Correll was editor in chief of Air Force Magazine for 18 years and is now a contributor. His most recent article, "Up in the Air With Milton Caniff," appeared in the April issue.