Cover: "Arsenal For Democracy" photo. The development and production of the Army tank occurred at the Rock Island Arsenal during the interwar years of the 1920s and 1930s. Prior to U.S. entry into World War II, the U.S. provided weapons to nations at war with Nazi Germany under the Lend-Lease Agreement. This interior view of the Shop M, building 220's craneway shows M2 tank series production in the days just before 1941. Note the small 37mm barrels used to arm the tank.
FOREWORD

Much has been written about the American Military-Industrial complex which had a most significant role in the winning of World War II by the United States and its allies. However, there has not been enough written about the role of the Rock Island Arsenal in providing the ordnance-manufacturing expertise, the materiel and weapons so vitally needed by American and allied fighting men during the Second World War in order to defeat the Axis powers.

Mr. Thomas J. Slattery, a command historian for the United States Armament, Munitions and Chemical Command at Rock Island Arsenal has woven an interesting narrative about the significance of Rock Island Arsenal in providing the products of war which served so importantly in the defeat of Nazi Germany, Italy and Japan. In his narrative, Mr. Slattery combines a chronology of what took place diplomatically, politically, and militarily throughout the world during the period between World War I and the beginning of World War II, and their effect upon the mission and the workforce at Rock Island Arsenal. Mr. Slattery reveals that the Arsenal's mission became greatly expanded as the United States moved inextricably towards involvement in the Second World War, and by 7 December 1941, the day that Pearl Harbor was bombed, Rock Island Arsenal was already busy producing products of war for its allies and the United States.

The rest of the narrative describes how the diversified workforce marshalled its resources during the period from 1941 to the end of the war to become an impressive arsenal in regards to its workforce, diversity of products, and its output. Thanks in large measure to Mr. Slattery's well-written and well-documented article, the reader will obtain a look at what some called, "the arsenal of democracy."

A special thanks is extended to Ms. Marguerite Brown for providing editorial and administrative support for this brief history. In addition, gratitude is extended to the Field Printing Office for its professional assistance.

HERBERT P. LEPORE
Chief, Historical Office
Below: Brigadier General (BG) Norman R. Ramsey, Commanding Officer of Rock Island Arsenal (RIA) 1937-1944. Two months before his 16th birthday, he enlisted as a private with the 20th Kansas Volunteer Infantry in 1898. A veteran of the Spanish-American War, Philippine Insurrection, and World War I, BG Ramsey used his experienced and calm leadership to command Rock Island Arsenal from July 1937 through July 1944, and Springfield Armory, Massachusetts, from October 1944 to November 1945. He was awarded the Soldier's Medal for heroic conduct at Picatinny Arsenal on 28 May 1925, when he personally participated in the rescue of an injured civilian employee from a burning ammunition bunker. Under his leadership RIA produced great quantities of war materials, and served as a laboratory and instruction center for commercial firms having contracts to produce similar materials.
Below: In 1940 RIA reopened buildings 109 and 110, repaired old machinery, and installed new ones for the production of 105mm recoil mechanisms and gun carriages. This photo depicts a dozen completed 105mm, M2 howitzers awaiting shipment to our allies eight months before the Japanese attack on Pearl Harbor.

ROCK ISLAND ARSENAL, AN ARSENAL FOR DEMOCRACY  
World War II's 50th Anniversary  
Commemorative Edition

Soldiers of Production

Wars are not won solely by the courage of soldiers in battle. The bravery of American and Allied troops alone could not have defeated the Axis powers of Fascist Germany, Italy, and Japan during World War II (WWII).

On the American homefront dedicated and skilled "soldiers of production" labored around-the-clock to produce and supply quality weapons and equipment, not only for American servicemen; but for soldiers of any nation threatened or under attack by the Axis powers. Army Arsenals, such as Rock Island Arsenal (RIA), spearheaded production of arms and equipment for the defense of its allies several years before the United States officially entered the war against the Axis powers.

Quad Cities - A Defense Production Community

Rock Island Arsenal is situated on a 946 acre island in the upper Mississippi River between the cities of Rock Island and Moline, Illinois, and Davenport and Bettendorf, Iowa. Today the island is commonly known as Arsenal Island, and the surrounding bi-state communities form the Quad Cities with a population of approximately 375,000.
Above: In 1936 General Franco began the revolt which ignited the Spanish Civil War and provided Nazi Germany with a "proving ground" to test their new weapons and troops. During the same year, RIA received increased orders for automotive vehicles, artillery, and small arms weapons. This 1936 circa photo shows 56 75mm howitzers lined up on the loading dock of building 350, then a storehouse known as W1.

Below: Nazi Germany's invasion of Poland in 1939 resulted in Great Britain and France declaring war against Germany. The RIA had gradually increased production of weapons and equipment to provide for the U.S. Army's own training needs and to provide arms for our allies. RIA's Small Arms Division manufactured nearly 85,000 machine guns during WWII.
The Quad Cities has been a defense production community since the initial construction of the Rock Island Arsenal in 1862. The Arsenal's employment and production is traditionally cyclical in nature. The Arsenal's workforce and workload has historically increased during national emergencies and declined during peacetimes.

**The Years Between the World Wars**

After RIA employment reached a World War I peak of 13,263 in November 1918, the Arsenal's workforce plunged to the installation's lowest ebb of 618 in 1924.\(^1\) Rock Island Arsenal scaled down its operations during peacetime, closed shop buildings, and consolidated manufacturing operations in building 220 (Shop M).

Stimulated by world events and the Presidential election of Franklin Delano Roosevelt, RIA workforce and production orders began to slowly rise again in 1932. In that same year Japan invaded Manchuria, and in the Quad Cities, a small RIA workforce performed research and development work on Army tanks as well as other armored vehicles. During the 1930s RIA remained active by equipping WWI era gun carriages with modern high-speed rubber tires and air-brakes, manufacturing prototype gun carriages, and various items for the U.S. Army Air Corps and U.S. Navy.

The Arsenal received increased orders for automotive and artillery vehicles, .30 caliber machine guns, gun mounts, recoil mechanisms, and gun carriages beginning in 1936.\(^2\) During that same year war erupted in Europe. General Franco began the revolt which ignited the Spanish Civil War and provided Hitler with a proving ground to test his new weapons and troops.

In 1937 Japan and China began their undeclared war, and Japanese planes bombed a U.S. river gunboat, the Panay, sinking the vessel and killing 2 sailors and wounding 30 others. During the same period RIA manufacturing activities increased in building 220 (Shop M).

Building 350 (Shop L) reopened in 1938 to provide additional manufacturing facilities for artillery, tank parts, and work projects for the U.S. Navy. Also, in 1938 building 66 (Shop H) reopened for manufacturing of .30 caliber Browning Machine Guns. The initial production rate of 25 per day, later climbed to 100.\(^3\) In 1938 Germany annexed Austria and forced the end of Czechoslovakia as a nation.

In 1939 RIA purchased and installed new machines and equipment for the manufacturing and assembly of heavy artillery, gun carriages, and Navy gun mounts.\(^4\) In 1939 Nazi Germany crushed Poland which resulted in Great Britain and France declaring war against Germany.
Above: A view of a M2A1 medium tank being assembled in building 220, Shop M, during 1940. The RIA tank mission remained at the Arsenal until early 1942 when the mission was basically sent elsewhere so that RIA could expand its artillery and automotive production.

Below: In 1939 RIA developed a pilot medium tank, M2, and produced a limited quantity. By the end of 1939 the Arsenal had established the M2A1 tank, an improved version of the M2, as the Army's production model. Shortly thereafter the M2A1 was replaced by the M3 medium tank, also developed by RIA.
Rock Island Arsenal's Role in Mobilizing American Industry

Rock Island Arsenal played a major role in the mobilization of American industry. In 1939 the War Department developed a plan whereby certain responsible private manufacturers with qualified engineering staff and plant facilities were selected to produce limited quantities of Army ordnance.

The Arsenal was given the responsibility for providing the technical supervision of such items as tanks, artillery, and machine guns. Private contractors visited RIA to study the arsenal’s manufacturing operation. Rock Island Arsenal did everything short of setting these contractors up in business. The Arsenal provided descriptions of manufacture route sheets; copies of tool, die, jig, gage and fixture drawings; machine-tool requirement; and updated component and assembly drawings.

When available the Arsenal loaned inspection gages, surplus machines, and tool equipment to the private manufacturers. RIA's role as educator and technical advisor to midwest plants converting to war production sharply increased following the Japanese attack on Pearl Harbor, 7 December 1941.5

RIA provided supervision for the overhaul of 133 Medium M3 Tanks at the Quad Cities Tank Arsenal in Bettendorf, Iowa, later in the war. The Arsenal provided technical advice, and drawings for the tank assembly plant.6

FDR's "Great Arsenal of Democracy" Speech

In 1940 German forces blitzkrieged across western Europe and began an air attack on Great Britain, while in the United States Franklin Delano Roosevelt was re-elected President. FDR made it clear during his re-election campaign that Great Britain needed drastically increased aid from the U.S.

In response to British Prime Minister Winston Churchill's call for aid, FDR released to Britain more than $43 million worth of surplus stocks of arms, munitions, and planes in June 1940.7 He established the Office of Production Management on 20 December 1940 to coordinate defense production and speed all material aid "short of war" to Great Britain and other anti-Axis nations.

On 29 December 1940, during a fireside chat on national security President Roosevelt stressed the Axis threat to the U.S. and called for an immense production effort that would make the U.S. "the great arsenal of democracy". Roosevelt in his famous "four freedoms speech" stated that the United States must help make secure a world where "four essential freedoms" of speech, of worship, from want, and from fear would prevail.8
Above: 105mm howitzers ready for shipment from RIA. The Arsenal produced the M2 carriages, recoil mechanisms, and completed final assembly of these howitzers. Note: Building 154 in the background.

Below: In addition to producing 105mm howitzer carriages, RIA designed and produced tool sets specialized for field repair of the 105mm howitzer. The wooden chest for field maintenance was also produced by RIA. Note: The list of contents attached to inside lid of the chest.
1940, RIA Reopened Buildings 109 and 110

In 1940 RIA reopened buildings 109 and 110 (Shops G and I), repaired old machinery, and installed new ones for the production of 105 mm recoil mechanisms and gun carriages. Rock Island Arsenal Artillery Vehicle Department began the largest manufacturing program ever assigned to the Arsenal during that same period.

Months prior to the Japanese attack on Pearl Harbor, RIA reorganized and rearranged its manufacturing departments, and installed 230 new machine tools in those departments. Experimental projects developed by RIA manufacturing departments were placed in quantity production. Just two months prior to the bombing of Pearl Harbor, RIA began manufacturing the Army's new aircooled Browning Machine Gun cal. 30, M1919A4.⁹

The U.S.' commitment to aid nations at war with the Axis Powers and the need to replace and build-up its own ordnance stores resulted in an explosion of war production activities in the United States. Of course, government munitions plants like the Rock Island Arsenal experienced the "boom" in production before most private industries.

11 March 1941, FDR Signs Lend-Lease Act

On 11 March 1941 President Roosevelt signed the Lend-Lease Act into law, which opened mutual aid to all nations struggling against the Axis powers of Germany, Italy, and Japan. Lend-Lease authorized the President to sell, lease, or lend arms, munitions, food, and other defense articles to any country whose defense was vital to that of the United States. The lend lease announcement clearly committed the U.S. to unlimited aid to Great Britain.

Depot Activities Increase at RIA

Depot activities steadily increased at RIA during the period of 1940-1941. Approximately 1,500 orders were handled weekly with shipments directed to all corners of the world.¹⁰ The World War I era storehouse W1 building 350 was no longer adequate.

In April 1941, eight months before the attack on Pearl Harbor, construction began at RIA on what would become the world's largest ordnance storehouse, building 299.¹¹ Eighteen acres under one roof, with space enough for 17 football fields inside. This structure was equipped with rail tracks and could load and unload a complete train at its interior docks. Building 299 was built to accommodate the business generated by America's new role as an arsenal of democracy for those nations under attack by Axis Powers.

President Roosevelt's Lend-Lease outpouring of American munitions to foreign allies hindered the Army's own development. Before American Industry mobilized for war, the strain on arms production from Britain and France encroached on the production
Above: RIA's World War I circa storehouse W1, building 350, could not adequately handle the Arsenal’s steadily increasing depot activities during the period of 1940-1941. The Arsenal processed approximately 1,500 orders weekly with shipments directed to all corners of the world.

Below: In April 1941, eight months before the Japanese attack on Pearl Harbor, construction began at RIA on what would become the world's largest ordnance storehouse, building 299. Eighteen acres under one roof, with space enough for 17 football fields inside.
Above: An interior view of building 299 two months after its completion in June 1942. This structure was equipped with rail tracks and an overhead crane used to load or unload trains. During WW II approximately 650 employees worked in building 299 of which nearly 65 percent were women.

Below: After the war RIA became a central storage point for ordnance parts, equipment, machinery and weapons. Note: The ceiling high stack of combat vehicle parts depicted in this photo represented only a small portion of the items placed in bulk storage in building 299 in 1947.
Members of the 225th Military Police Company standing for inspection in front of the old stone barracks.

Above: The first detachment of the 225th Military Police (MP) Company arrived at RIA to guard the water power plant and other key Arsenal sites in July 1941, five months before the attack on Pearl Harbor. The 224th MP company was quartered in barracks building 80 until the company departed in April 1944.

Below: RIA Commander BG Norman F. Ramsey had tightened security on Arsenal Island months prior to the bombing of Pearl Harbor on 7 December 1941. This June 1941 photo shows security measures taken months before the Japanese attack. (Looking west at the intersection of Rodman and East Avenue.)
of items needed for U.S.' own training operations. Rock Island Arsenal increased production to keep pace with the growing demands for U.S. Army training equipment and to fill lend-lease orders.

Pleas for armaments and munitions continued to mount from nations struggling against Axis aggression. Their requests were draining American forces' own supply of weapons and ammunition. Great Britain's request for nine million rounds of American-made ammunition in early 1941 reduced U.S. ammunition for training by approximately 40 percent.¹²

**On Eve of the Attack on Pearl Harbor**

In 1946 William Baumbeck, RIA Superintendent of Manufacturing, recorded a chronological WWII history of the RIA Artillery Vehicle Department. He stated that, "it seemed [on the eve of the Pearl Harbor attack] very probable the U.S. would become involved in World War II".¹³ In the eleven months prior to December 1941 the United States had boosted its tank production to many hundreds a month, and at the same time manufactured 3,700,000 refrigerators, 1,500,000 typewriters, and millions of other small appliances and office equipment. In the same year plane production rose to 2,000 a month while the American automobile industry produced an all-time high of 5,000,000 motor vehicles.¹⁴

**Quad Cities Takes War In Stride Without Hysteria**

Details of the bombing of Pearl Harbor were censored, but the gravity of the situation was understood by most Americans. The adjustment to converting to wartime production was probably less in defense production communities such as the Quad Cities.

Where many Americans were alarmed by the news of the attack, Rock Island Arsenal commander Brigadier General Norman F. Ramsey was not one of them. A veteran of the Spanish-American War, Philippines Insurrection, and World War I, the Arsenal commander provided calm leadership during the crisis. As RIA commander, Brigadier General Ramsey had taken steps months earlier to secure the arsenal in case of a national emergency. The first detachment of the 225th Military Police Company arrived at Rock Island Arsenal to guard the water power plant and other key Arsenal sites in July 1941.

On 8 December 1941 a local area newspaper's headlines read "Quad-Cities Takes War in Stride Without Hysteria; Arsenal, Plants Guarded". Brigadier General Norman F. Ramsey, commanding general of Rock Island Arsenal said that all possible precautions had already been taken. "We can't do anything to guard the arsenal which we are not already doing. A large force of soldiers and civilian police are guarding the arsenal and for many months no one but employees have been permitted within the seven fenced areas of the reservation."¹⁵
Above: Men and women of all ages, races, and ethnic background answered the call for additional employees at RIA after 7 December 1941. Mrs. Seiberling, whose husband was in the armed forces was among the first to fill out an application at the Arsenal's Main Gate Employment Office.

Below: Mrs. Florence Seiberling as "A WOW", a woman ordnance worker. She modeled for the Arsenal Record's employment story in the March 1943 issue of this outstanding RIA employee magazine of the WW II era. The Rock Island Arsenal Record published originally as an employee news magazine is today a valuable source for historical information regarding the RIA during WW II.
Brigadier General Ramsey announced on 9 December that members of the 225th MP Co. would assist the civilian guards recently placed on the government bridge. The guarding of Illinois approaches to Mississippi River bridges was assumed by Rock Island and Moline units of the Illinois Reserve Militia. Twenty-five men from Company A, Rock Island, and eight from Company B, Moline, formed the guard unit.16

On 10 December 1941 military police from the RIA, headed by the commanding officer of the 225th Military Police (MP) Company and the Arsenal Chief of Police, raided the "hobo jungles" on Sylvan Island. The MPs rounded up the vagrants and burned their shacks. A second raid was made on a group of shacks at the Illinois end of the Rock Island Lines Railroad bridge. The raid was conducted at the request of Henry Arp, Mayor of Moline. He considered the jungle dwellers a menace to the arsenal and to the community in general.17

RIA Send out Call for Laborers

On 19 December 1941 RIA sent out a call for classified laborers to update and build-up the arsenal's civil service register. Applicants were required to show that they had completed at least six months experience above common laborer. Another requirement stipulated that applicants must be between 18 and 50 years of age, and capable of performing physical labor.18

Arsenal Machines Never Stopped

Early in the war the RIA workforce worked 10 hour-two shift days, some operations around-the-clock with three 8 hour shifts six and seven days a week. Arsenal machines never stopped running during these initial periods of emergency production. Arsenal shop employees worked without a normal lunch break. They often ate a sandwich while at their machines when the pace slowed.

"Remember Pearl Harbor"

American industries' production of war materials was an immense factor in the ultimate victory over the Axis powers. "Remember Pearl Harbor" became the rallying cry of the American people as they began to prepare for war. Only a united homefront could produce the all-out-effort required to convert the United States into an arsenal of democracy.

The task of converting American private industry to war production was given top priority. Rock Island Arsenal and other Government ordnance plants rushed to assist the retooling of private plants. In early February 1942 the War Production Board announced the halt of all auto and truck production in the United States which freed the automobile industry's manpower and facilities to retool for war production.19
Above: On 30 September 1942 RIA received the coveted Army-Navy “E” pennant for excellence of war production. During the ceremony, attended by some 25,000 people, Major General Levin H. Campbell, Chief of Army Ordnance, presented the “E” pennant, awarding the highest official recognition of RIA’s contribution to the war effort, to RIA Commander Brigadier General Norman F. Ramsey. During the ceremony, Illinois Governor Dwight Green summed up the situation in his address to RIA employees. He said, “Today, the only business in America -- is the business of winning the war.” Note: The newly formed RIA Band in the foreground below the speaker’s platform.

Below: Just as in World War I, women replaced men in the arsenal shops, offices, and storehouses who had left to fight in the war. In 1944 RIA’s work force was comprised of 32.2 percent women.
Victory or Defeat was in the Balance

The United States Government restricted the production of other commercial goods to reserve materials such as steel, copper, and aluminum for war production. Rock Island Arsenal auctioned off old obsolete artillery relics to scrap metal dealers. Victory or defeat was in the balance. American soldiers were fighting, dying, and falling back at Wake Island, Bataan, and Corregidor. Manufacturers of railroad locomotives, office equipment, home appliances, women's and men's garments, recreational goods, and children's toys converted their facilities to the manufacturing of armaments and munitions.

The Army-Navy Coveted E-Flag

On 30 September 1942 RIA received the coveted Army-Navy “E” pennant for excellence of war production. During the ceremony Illinois Governor Dwight Green summed up the situation in his address to RIA employees. He said, “Today, the only business in America - is the business of winning the war.”

During World War II the RIA Artillery Vehicle Department consisted of 27 divisions which in turn were divided into 98 sections for the manufacture, overhaul, and modification of all types of ordnance equipment. By 1942 the Artillery Vehicle Department alone had 10,200 employees.

7 July 1943, Peak RIA Employment of 18,675

Employment at RIA showed a steady rise until peak employment was reached at 18,675 on 7 July 1943. From that date until the end of the war arsenal employment gradually declined. Just as in World War I, women replaced the men in the arsenal shops, offices, and storehouses. In 1944 the RIA workforce was comprised of 32.2 percent women. The warehouse staff in building 299 employed 650 workers of which 65 percent were female employees. Italian prisoners-of-war formed another source of labor for the Rock Island Arsenal.

Italian Quartermaster Service Companies

On 16 July 1944 the 39th and 40th Italian Quartermaster Services Companies arrived at Rock Island Arsenal by train from Pine Camp, New York. Technically they were no longer prisoners since Italy had earlier surrender and joined the Allied Forces against Nazi Germany. The Italians were permitted to volunteer for non combat duty in special service units of the U.S. Army. Each volunteer signed a pledge to perform any assigned duty except combat on behalf of the U.S. against the common enemy, Nazi Germany.

Upon their arrival the Italian Service Units were assigned to the stone barracks, building 90 and two other quarters. The 225th Military Police Detachment was previously housed in the old barracks. Local newspaper reporters recorded the event in pictures.
Above: On 16 July 1944 the 39th and 40th Italian Quartermaster Services Companies arrived at RIA by train from Pine Camp, New York. Technically they were no longer prisoners-of-war since Italy had earlier surrendered and joined the Allied Forces against Nazi Germany. The two companies totaled 426 Italians who pledged to perform non combat duty in special units of the U.S. Army. All the Italian signees were sent to Italy at the end of the war, however, several returned and later worked for the U.S. Government.

Below: Many of the Italians worked in the RIA's reclamation department, salvaging lumber, operating buffing machines, and nail pulling machines. Other Italians worked as mechanics in the Arsenal's motor pool and some with scientific and technical backgrounds joined in the RIA Laboratory staff. The photo depicts Private Giovanni Geminiani and Sergeant Angelo Galli operating buffing machines in the Arsenal's reclamation department.
and print for their readers. The 426 Italian signees performed general depot and warehouse work, and grounds and equipment maintenance. Italians with special talents were assigned duty as mechanics, chemists, or carpenters.

The RIA Commander restricted the Italians to the immediate area surrounding the barracks and a small field directly across from the barracks. Eventually their designated area was expanded to include the Southeast quadrant of the island. The Arsenal Commander allowed the two Service Companies to form soccer teams and set up a playing field. Other off-duty recreational activities for the Italians included showing films and playing cards. They were permitted to receive visitors on Sunday and attend Mass at Catholic Churches in Davenport, Iowa, and Rock Island, Illinois.

In September 1944 the Arsenal commander established a limited pass policy for Italian signees. The Italians had to stay in groups of five and under escort of an American cadre soldier while off the island. Two groups of five each were granted passes each Sunday to visit the Quad Cities.

Of the 426 Italian signees assigned to Rock Island Arsenal only 15 were returned to prisoner-of-war status for disciplinary reasons. Several Quad Cities veteran organizations protested against the Italians being assigned to Rock Island Arsenal. They expressed concern for the safety of the community and in their opinion the excessive liberties permitted the Italians.26

The Arsenal commander explained to the public through the local news media the War Department’s regulations and cited the good work record of the two Italian Service Units. The local criticism against the Italians diminished with time. On 22 September 1945 the Italian signees departed Rock Island on a special troop train to begin their journey back to Italy.26

RIA Apprenticeship School

One problem RIA had to cope with during the war was the scarcity of skilled laborers. With men being called into uniform and private industry converting to war production skilled craftsmen were difficult to find. Rock Island Arsenal sent announcements to 100 midwest radio stations to broadcast their appeal for workers.

The RIA Apprenticeship School provided the answer for some of the Arsenal’s manpower needs. Not able to hire experienced skilled craftsman RIA expanded its program to train new ones. On 5 January 1942 the Apprenticeship School enrolled 25 additional students, making a school membership of 84.27 Also hundreds of workers were completing in-service training which would lead to machine operator jobs and other positions in the factory.
Above: RIA's major role as an education/training center during WWII is often overlooked but numerous Arsenal programs provided civilian and military personnel with valuable training. The RIA's fine Machinist Apprenticeship School, Armament Maintenance School, and various in-service training programs graduated skilled craftsmen for RIA, as well as for other government plants which relieved some of the nation's demands for skilled manpower. A 1943 circa view of Classroom A, Armament Maintenance School's Small Arms and Aircraft Armament Course.

Below: A 1943 view of the Arsenal's Armament Maintenance School's Instrument Maintenance Class. Note: The Arsenal conducted the course in the attic of the stone shops. All other shop space was used for war production.
RIA Wartime Construction

In 1942 construction continued on building 299, the construction of buildings 208 and 390 began, and the new forge shop, building 222, was completed. Building 208 was designed as a new assembly and repair shop for heavy artillery, tanks, and combat vehicles. Building 390 was built as the new post headquarters.

New Machine Tools Installed

The old post headquarters was moved from building 360 in 1922 to the manufacturing area as part of the peacetime consolidation of operations and facilities following World War I. During the 1930's building 360, the old post headquarters, was converted to officer's family quarters.

The war brought great quantities of new machine tools which replaced old worn out and obsolete machines in shops. A total of 946 new machines was installed in the various shops during 1942. All the RIA departments were geared up for high production. Many representatives of private industry visited RIA in 1942 to receive instructions on how to manufacture machine guns, recoil mechanisms, gun carriages, and tanks.

American and British Joint Ventures

American Industry made an all-out effort to provide the troops on the front line with quality weapons and equipment. The U.S. Army's search for new technology included joint ventures with the British which solicited cooperative efforts from U.S. Army Arsenals, such as Rock Island Arsenal and American private industry. Cloaked in secrecy, these special projects explored a wide gamut of possibilities, some practical and some not.

The Canal Defense Lights project was one such venture that was developed and produced in large quantities in the United States but was not used overseas. However the project is an example of America's "shotgun" approach to providing every possible weapon for defense against the Axis powers.

Rock Island Arsenal performed final assembly on hundreds of Canal Defense Lights (CDLs) a high intensity searchlight for night use on the battlefield. Initially developed by the British, the United States produced nearly 500 CDL tanks in 1943-1944. The search light turret fit best on the U.S. medium tank M3. To maintain secrecy about the project, the tanks were designated as Leaflets and the training program was referred to by code name Cassock.

The light was exposed through a vertical slot and could be opened and closed by an electric motor which produced a dazzling flicker. Color filters were inserted into the 13,000,000 candlepower beam which when flickered caused confusion among the enemy during night assaults.
Scenes of wartime construction: Reinforced concrete used in the construction of buildings 390, 208, 222, etc., saved more valuable building material such as iron and steel for manufacturing of ordnance items.
Above: Post Headquarters.

Below: Interior of Administration Building, 4th floor drafting room. Note: The large staff provided blue prints and plans for ordnance items being produced by private contractors, such as the Quad City Tank Plant, Bettendorf, IA, as well as for RIA and other government plants. The RIA Engineering Department's Drafting Division designed tools of war. Originally organized in 1922, the Drafting Division's oldest section, the Artillery Design Section, predates the division and was initially organized during the RIA's post Civil War days. This photo depicts the Experimental Design Group of this section which designed mounts for cannons, rocket launchers, and tanks was located on the 4th floor, north wing of building 390.
Above: Building 208, RIA's largest assembly shop near completion on 22 April 1943.

Below: A view of building 208's sub-structure.

Bottom: An interior view of building 208 on 10 July 1943. Arsenal employees busy converting M1 howitzer carriages of 4.5" guns and 155mm howitzers to M1A1 carriages. The carriage modifications included replacing the old electric brakes with air brakes, installing grease seals, reinforcing the carriage trails and some minor alteration to the firing jacks, top carriages, and recoil mechanisms.
Below: On 1 March 1943 RIA work crew installed a seven-inch Gidnings and Lewis floor type boring mill at the west end of building 220's Shop M, craneway. Large steel castings, weighing a total of 22 tons were finished, milled and bored on this machine.
American Locomotive Company received the contract to remanufacture the M3 tank chassises to the CDL configuration. For security reasons they were labeled Shop Tractor T10. Press Steel Car Company built the turrets, the Army Corps of Engineers procured the arc lamps from Mole-Richardson Company. Rock Island Arsenal conducted the final assembly under tight security in 1943-1944.\(^{30}\)

**RIA Small Arms Manufacturing - Machine Guns, Belt Links, Etc.**

RIA manufactured both the water and air cooled .30 caliber Browning Machine Guns, metallic belt links and parts for .30 caliber machine guns, and overhauled and modified .50 caliber machine guns, machine gun tripod, mounts, and parts. The RIA Manufacturing Department's Small Arms Division produced 84,945 machine guns and manufactured 715,000 machine gun barrels of various models during World War II.\(^{31}\)

The Small Arms Division produced nearly two million metallic belt links for .30 and .50 caliber machine guns during the war. The belt links replaced the cloth webbed belt used to feed ammunition into machine guns during World War I. Rock Island Arsenal manufactured approximately 5,000,000 metallic belt links since 1932.\(^{32}\)

**Manufacture of Breech Mechanisms for the 155mm M2 Gun**

Rock Island Arsenal began development work on the .60 caliber machine gun, T117E3, in 1944. Also in February 1944 the overhaul of various types of tank transmission was transferred from building 60 to building 208. In April 1944 preparations began in building 250 for the manufacture of breech mechanisms for the 155mm M2 gun. The project required the complete remodeling of the machine court in building 250 and the installation of approximately 116 new machine tools.\(^{33}\)

On 1 October 1944 Colonel Carl A. Waldmann succeeded Brigadier General Norman F. Ramsey as RIA commander. Brigadier General Ramsey assumed command of Springfield Armory following his tour of duty at Rock Island Arsenal.

**More RIA Production During WWII**

Other major items of RIA production during WWII included 6,889 artillery carriages of various types, 24,539 recoil mechanisms for various artillery pieces, and 22,520 gun mounts for various models. In addition RIA manufactured thousands of paracrates, parachests, and paracaissons used for air transport of weapons and equipment.\(^{34}\)

Furthermore, RIA overhauled or modified approximately a 1,000 artillery carriages, 109,073 machine guns, 133,435 .30 caliber rifles of various types, 9,281 .30 caliber carbines, 29,210 .45 caliber automatic pistols, 32,741 bayonets, 5,441 recoil mechanisms, 1,146 tanks and other motor vehicles, 5,297 tank engines, nearly 3,000 transmissions and differentials, 170,000 sighting and fire control instruments, and 60,000 miscellaneous leather items. Howitzers, mortars, ammunition trailers, equilibrators,
Above: RIA Small Arms Division produced 84,945 machine guns and manufactured 715,000 machine gun barrels of various models during WW II. Top photo shows interior view of Shop H, building 66, Arsenal men and women manufactured parts for the air-cooled Browning Machine Guns, M1919A4 and M1919A5. Note: The patriotic display of the American flag is a typical scene at the Arsenal during wartime.

Above: In April 1944, building 250, Shop L, was readied for the manufacture of breech mechanism for the 155mm M2 gun. The shop's machine court was completely reorganized and 116 new machine tools installed for the project.

Below: A view of a 155mm, M1 Gun, known as the "Long Tom", in building 208 for conversion of carriage to M1A1. In September 1944 all M1A1 guns were in turn modified and reclassified M2s. The breech ring to the M1A1 gun tube was redesigned, forming a thicker, wider band of steel around the breech.
Below: Colonel C. A. Waldmann, Officer-in-charge of Manufacturing, during most of World War II. He succeeded Brigadier General Norman F. Ramsey as RIA Commander in July 1944. As the result of Colonel Waldmann's efforts RIA received necessary funding to develop a new broaching method and machinery for cutting the rifling grooves for machine gun barrels.
tripod mounts, telescope mounts, rocket launchers, revolvers, rifles, and trench tools were among the items overhauled, repaired, or modified at RIA during the second World War.\textsuperscript{35}

In addition, RIA conducted research and development projects on artillery carriages, self-propelled carriages, 105mm recoilless gun carriages, halftracks, transport wagons, light tanks, medium tanks, flame throwing tanks, armored car turrets, hydro-pneumatic recoil mechanisms, gun mounts for airplane armaments, mortar mounts, rocket launchers, .60 caliber machine gun, and parachutes. Also, the RIA Laboratory made discoveries and improvements on lubricants, greases, and rubberized products during the war which aided in the shipment, preservation, and storage of ordnance weapon and equipment.\textsuperscript{36}

**RIA Rifle Broaching Method for Machine Guns**

One of RIA's contributions to the WWII war effort was a new method of broaching barrels for machine guns. During World War II Mr. Baumbeck wrote an account of the RIA broaching [rifling] operation for machine gun barrels.\textsuperscript{37} The term rifling pertains to the machining of grooves in a gun barrel which enhanced the rotation, and stability of the fired round.

In 1936 RIA Superintendent of Manufacturing William Baumbeck started experimenting with a broaching method for rifling barrels. His trial tests showed that the process could be developed. In 1938 RIA sought funds to develop a broaching machine. Colonel Waldmann, officer in-charge of RIA Shops eventually obtained the sought after funds.

Under the old method the best production rate was approximately three barrels an hour per machine. Using the broaching method RIA broached 35 barrels an hour per machine, each of which passed inspection. Rock Island Arsenal test fired 8,000 rounds through the broached barrels and Springfield Armory conducted the same test on 20 September 1940. Rock Island Arsenal manufactured 1,000 barrels and conducted additional testing on the barrels which resulted in favorable comments.

In November 1940 the Ordnance Department accepted and authorized the broaching method to accelerate the machine gun production of private contractors and Arsenals. In April 1941 RIA received 12 sets of broaches and a broaching machine from Illinois Tool Works. The production was initially 35 per hour, with virtually no rejects. The new broaching method enabled RIA to increase its machine gun production. By 1 Feb 1943 the Arsenal had 172,000 broach barrels.

The broaching method was not only successful but economical to use. Only women operators were used on the broaching machine. The accuracy of broach rifle barrels was superior to the old hook tool method practiced by other manufacturers. The Arsenal shared this expertise with private manufacturers who soon adopted the Rock Island Arsenal broaching method.\textsuperscript{38}
Below: RIA's rifle broaching operation for Browning Machine Guns, models M1917A1, M1919A4, and M1919A5, building 66, Shop H. Note: The RIA's new broaching method was adopted by other government plants and private contractors. The entire RIA broaching operation was performed by women employees.
Below: William Baumbeck became RIA's top civilian executive on 6 May 1926 and continued as Chief Superintendent of Production until his retirement in 1948. On 8 December 1943 Mr. Baumbeck was awarded the War Department's Emblem for Excellence Service from Secretary of War Stimson in Washington, D.C. He was one of only two recipients to receive the highest civilian award annually presented for extraordinary service to the War Department. His chronological history of the RIA Artillery Vehicle Department during World War II continues to be a valuable resource for Army historians.
William Baumbeck, RIA Chief Superintendent of Production

William Baumbeck, RIA’s top civilian employee, was placed in charge of all RIA manufacturing activities on 6 May 1926. On 8 December 1943 Mr. Baumbeck received the War Department’s Emblem for Excellence Service from Secretary of War Stimson in Washington, D.C. He was one of only two recipients to receive the highest civilian award annually presented for extraordinary service to the War Department. He served as chief superintendent of production at RIA until 1948, and retired with 44 years of government service. Lieutenant General L.H. Campbell, Jr., Chief of Army Ordnance during WW II, paid tribute to William Baumbeck in the book the Industry - Ordnance Team. He commented that:

Every Regular Ordnance officer has a deep personal affection for our six old-line arsenals (today only two remain: Rock Island Arsenal and Watervliet Arsenal, NY) and their civilian personnel. Those of us who have known and served with such fine men as Mr. William Baumbeck, superintendent of RIA, cannot help feeling admiration and respect for these great craftsmen. We have studied in these arsenals, worked in their shops, and learned from master craftsmen the secrets of one of the most highly specialized professions in the world.

RIA Employees “We Can Do It!” Spirit

William Baumbeck exemplified the “We Can Do It!” spirit of the Rock Island Arsenal workforce during World War II. This positive attitude was also displayed by Arsenal employees during their off-duty hours. Arsenal volunteers formed a 70-piece RIA Band that performed at RIA functions and other events which supported the war effort. Volunteers also formed a 50 member RIA Ladies Chorus and a 30 member RIA Mens Chorus. Rock Island Arsenal employees also organized a variety stage show for a benefit performance at the Capitol Theatre in Davenport, Iowa. Later they performed the same show before wounded veterans in hospitals in Clinton, Iowa, and Galesburg, Illinois. The spirit of Rock Island Arsenal employees during World War II set a standard for future generations of Arsenal personnel.

RIA Returns to Peacetime Status

Before his retirement in 1948 William Baumbeck supervised the return of RIA to peacetime status. By January 1946 RIA employment had declined to 4,458 and by July 1947 still further to 2,469. Rock Island Arsenal along with the rest of American Industry recorded war production unsurpassed in the history of the arsenal and the nation. Private industry converted back to producing automobiles, small appliances, office equipment, men’s and women’s garments, recreational equipment, and toys. The
Below: Rock Island Arsenal Band, an all-RIA employee volunteer band, organized initially to participate in the Army-Navy "E" pennant celebration held on 30 September 1942 on the front lawn of building 60. The RIA Band performed at numerous RIA functions and on behalf of Veteran organizations and other worthy causes in the Quad Cities. The band continues to perform at RIA functions.

Arsenal received a variety of machine tools from many midwest manufacturers upon the completion of their war contracts at the end of WW II.

The Arsenal carried out an extensive rehabilitation program throughout its manufacturing shops during the final days of the war. Modern machines replaced belt driven and obsolete types as the RIA upgraded its manufacturing center. The Arsenal began downsizing its workforce and consolidating its operations as the installation returned to peacetime status. Many sections were placed on standby yet were ready for any future emergency production. Rock Island Arsenal consolidated a majority of production activities into Shop M, building 220, since the end of the war. All production activities in Shops G and I (buildings 108 and 110) ceased on 5 November 1945. Shop L, building 250, the principal parts manufacturing shop for artillery vehicles was closed on 3 December 1945. However, a small but skilled workforce was maintained to continue research and development activities and the Rock Island Arsenal's smoke stack continued to burn, only not as brightly as before. A "hot smoke stack" ready to answer the call for emergency production, Rock Island Arsenal continued its role in peace as in war - that of being an arsenal for democracy.
Below: This photo of Arsenal employees gathered in the craneway area of Shop M, building 220 on V-E Day (8 May 1945) pause to hear President Harry S. Truman broadcast his announcement of Germany’s surrender. This photo graced the cover of the Arsenal Record, RIA employee magazine, June 1945 issue.
Below: Under President Roosevelt's leadership, the U.S. became an "arsenal of democracy" providing increasing quantities of weapons and equipment to countries under threat or attack from fascist powers. A view of Rodman Avenue of an end of day rush hour during the 1938-1940 timeframe.
Just as England and the freedom-loving peoples of the world owe a
great debt of gratitude to Britain's RAF, so also are America and the United
Nations tremendously indebted to our arsenal military and civilian person-
nel who kept alive the science of munitions manufacture and who passed
on to American Industry the techniques required initially to produce, in
gigantic quantities, the armament that has given all of us another and
perhaps a final opportunity to build a better world.

The Industrial-Ordnance Team

Levin H. Campbell, Jr., Lieutenant General
Chief of Ordnance, U.S. Army, 1942-46
NOTES


3 Ibid, p. 17.


9 Baumbeck, Chronological History, p. 20.


12 Watson, Chief of Staff: Prewar Plans and Preparations, pp. 315-316.
13 Baumbeck, Chronological History, p. 19.


19 No author, "Soldiers of Production," The Rock Island Arsenal Record, Vol. 1, No. 11, (February 1943), pp. 16.


22 No author, Employee's Handbook, p. 4-5.


26 No author, History of 39th and 40th Italian Quartermaster Service Companies, p. 3.

27 Baumbeck, Chronological History, p. 21.
28 Ibid., p. 22.


30 Ibid., p. 397.

31 Bawden, ed., *Achievement of RIA*, p. 95.


33 Ibid.

34 Bawden, ed., *Achievement of RIA*, p. 95.

35 Ibid.

36 Ibid.


38 Ibid.


41 "Civilian Employment - Rock Island Arsenal" chart, dated October 1955.
Above: Organizational chart of the Artillery Vehicle Department dated 6 August 1942.