An Illustrated History of the Rock Island Arsenal and Arsenal Island

Parts One—Three

United States Army Sustainment Command History Office

Foreword to "An Illustrated History of the Rock Island Arsenal and Arsenal Island, Parts One—Three"

Since Lieutenant Zebulon Pike first reported this place in 1805, Arsenal Island has been central to the American development of the Quad Cities area as a place for settlers, farmers, transporters, and industrialists. Long before Pike arrived, the local Native American tribes, primarily Sauk and Fox, centered their tribal areas on Rock Island. In fact, as noted in Part One of this history, by the time Pike arrived the Sauk and Fox were already hostile to the American due to actions in the Revolutionary War and the 1804 treaty that ceded some 50 million acres, including Rock Island, to the United States. These already negative relations drove the history of the area until the mid 1830s. After 1835 relations between the United States and the Native Americans became a memory while the role of the mighty Mississippi regained center place. It was the use of the river for transportation that attracted settlers and farmers and soldiers; it was the power potential of the river that attracted industry and mills; and it was the need to span the river that led to the first bridge over the Mississippi in 1856. The river drew Americans to Rock Island and then, in the late 1850s, encouraged the Army to create an armory and later an arsenal that could exploit the river and the island.

Parts One and Two of this history tell the tale of Rock Island Arsenal and Arsenal Island from pre-history through the establishment and construction of the Arsenal, as well as the role the Arsenal played in the Spanish American War. The first two parts, written in 1988 and 1990, end in 1908 when the Arsenal had weathered its first wartime test. While a third volume was planned, for a variety of reasons it was never completed. For the past several years I have been chagrined whenever presentation copies of Parts One and Two were given to visiting dignitaries as a souvenir of their visit. I knew that the real contributions of Rock Island Arsenal to the Army and Soldiers were made in World War I, World War II, Korea, and beyond. I knew that the character of Arsenal Island changed forever when in 1955 the first general officer led higher command arrived on Arsenal Island to take up residence as a tenant and presaged the shift from pure manufacturing to the modern Federal office complex and manufacturing site. Just as circumstances precluded Tom Slattery from adding a third volume, efforts to bring this history forward founded on resource availability. Finally, this summer I determined to let some other projects rest and put the efforts of the entire staff, led by Lisa Wallace, to bring this history forward to the point in time when the Ordnance Weapons Command arrive in 1955 and complete the history of an independent Rock Island Arsenal.

One of the first difficulties encountered once we started Part 3 was realizing that we had no electronic editable copy of the Parts One and Two. The type had grown faded and many pictures had lost their detail from multiple copying passes. This "Illustrated History of the Rock Island Arsenal and Arsenal Island, Parts One—Three" has been completely reproduced. The text was reentered, original pictures found and scanned, and content edited to correct errors and bring it in line with current usage and interpretation. The vast majority of the pictures are the same as in the original Parts One and Two, although in some cases we substituted when we could not find the original or found a better picture. In Part Three we worked to maintain much of the style of the first two parts and were helped when we found Tom Slattery's contribution to the 50th anniversary of World War II. The rest is the original research and writing of a talented group of interns, old timers, museum curators, and archivists.

I want to thank Lisa Wallace, Alex Cahill, and the rest of the ASC History Office for their efforts in writing this volume. I also want to thank the Rock Island Arsenal Museum staff for supporting the effort by finding pictures and research materials as well as their review and encouragement. Finally, I want to thank the Army Sustainment Command leadership for supporting the effort as well as prodding for a completed product. I will feel much better when this updated history is presented knowing that the core of the Arsenal story has been told.

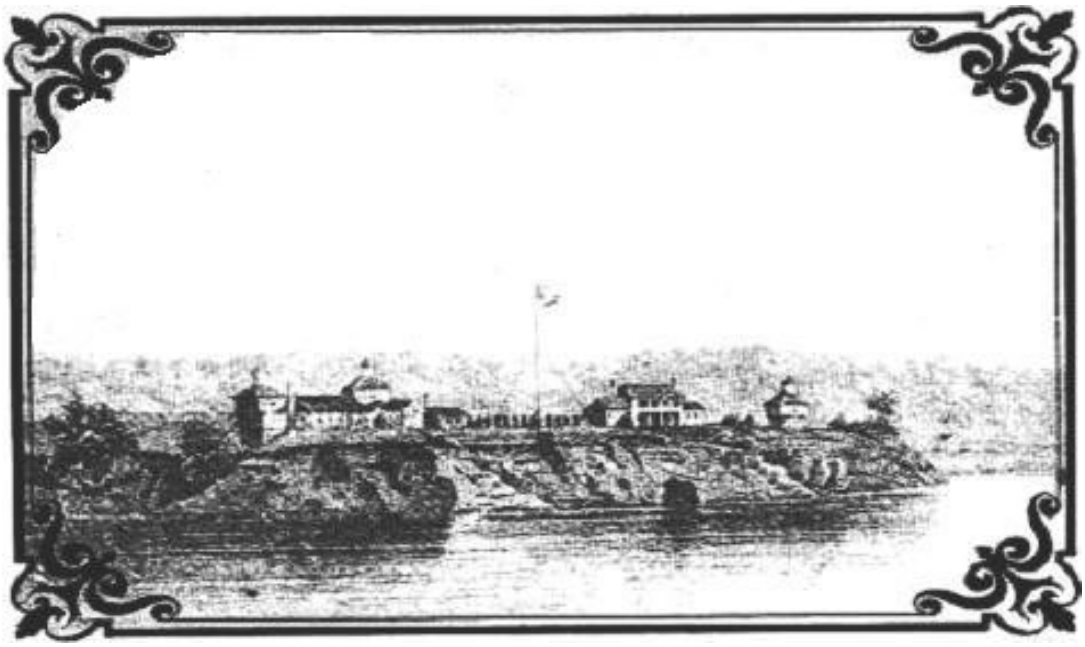
As you read this history I hope you will reflect on the critical contributions of Arsenal Island and the people who worked here to not only the local area, but also to the Army in peace and war. I also hope this leaves you wanting more as we fully intend to complete the story through 2006 in the near future.

George Eaton
Command Historian
US Army Sustainment Command
December 2010

AN ILLUSTRATED HISTORY
OF THE
ROCK ISLAND ARSENAL AND ARSENAL ISLAND

Table of Contents

AN ILLUSTRATED HISTORY
OF THE
ROCK ISLAND ARSENAL AND ARSENAL ISLAND
PART ONE



By

Thomas J. Slattery
Historical Office
U.S. Army Armament, Munitions and Chemical Command
1988

Army Sustainment Command
Historical Office
Rock Island, Illinois 61299
2010

PREFACE

The year 1988 marked a milestone in Arsenal Island history, for in that year, the Rock Island Arsenal (RIA) celebrated designation of the arsenal's old stone buildings as National Historic Landmarks by the United States Secretary of the Interior. To commemorate such an occasion, the Rock island Arsenal Commander, Colonel David T. Morgan, Jr., has requested that this illustrated historic series be completed.

An Illustrated History of the Rock Island Arsenal and Arsenal Island Part One (Revised Edition) covers nearly two hundred years of island history prior to the establishment of the Rock Island Arsenal. This historical overview explains, through the use of photographs and words, the rich historic past of Arsenal Island.

The United States Government's presence on Rock Island makes it the oldest institution in the Quad Cities area. The government's historic ties with Arsenal Island date back to the signing of the Treaty of 1804 and the establishment of Fort Armstrong on the island in 1816. The United States flag flew above Rock Island long before any of the communities of the surrounding area were founded. Even before Illinois and Iowa had achieved statehood, the U.S. Army had established a significant military presence on Rock Island with the building of Fort Armstrong. The fort served as a sanctuary to early pioneers who sought refuge behind its walls during the threatening days of Indian uprisings. Part One also examines the historic ties and conflicts between the government and local interests concerning the economic development of Rock Island. This illustrated history is intended for the enjoyment and education of its readers.

The author would like to thank Colonel David T. Morgan Jr., for requesting such a project; Dr. Herbert P. LePore, Chief of the AMCCOM Historical Office, to whom I owe a special thanks for guiding my work through this revised edition and taking time from his busy schedule to personally edit the text of this work. Also, I would like to express my appreciation of the support of people and organizations both within and outside of government service. Key individuals within the Rock Island Arsenal community, such as Mr. Ronald E. Sikorski, Mr. Patrick J. Broderick, and past RIA Commander, Colonel John S. Cowings, sustained my efforts during the completion of the first edition. Likewise, the Rock Island Arsenal Historical Society supported the publication of the first edition. I would like to acknowledge the encouragement I received from my colleagues, Dr. Robert H. Bouilly and Mr. Ralph C. Krippner. Thanks is also due Ms. Allie Callear for assisting in developing the format and putting the narrative of the first edition into the computer and to Mrs. Carol Secoy and Ms. Nancy Newton, AMCCOM Historical Office, for respectively providing the necessary editorial support and administrative support for the revised edition. In addition, thanks are extended to the Field Printing Plant for their professional assistance.

THOMAS J. SLATTERY
October 1988

Below Left: *Replica of Fort Armstrong Blockhouse dedicated during the Fort Armstrong Centennial Celebration held 18-26 June 1916.*
Below Right: *North of Old Stone Shops, on Rodman Ave., built over a twenty-five year period beginning in 1867.*
(AMSAS-HI)

CHAPTER ONE
HISTORIC ROCK ISLAND

The history presently being preserved at the Rock Island Arsenal encompasses more than the history of the Arsenal itself. It also includes the frontier history of Fort Armstrong, the regional history of Colonel Davenport, the regional history of Black Hawk, the history of the first bridge to span the Mississippi River, and the Civil War history of the Rock Island Prison Barracks. The entire island is listed on the National Register of Historic Places and is known as Arsenal Island. In June 1988, the Secretary of the Interior designated the old stone buildings, which formed the 19th Century Rock Island Arsenal, National Historic Landmarks.

The history of Rock Island is divided into three successive eras: the regional history and two period of "permanent" U.S. Government occupancy on the island. The regional history includes those events prior to 1816 which led to the government establishing a military post on the island. The military post and the depot era of Fort Armstrong constituted the first "permanent" presence of the U.S. Government on Rock Island; The establishment of Rock Island Arsenal was the second government presence. Rock Island has made an indelible contribution to local and national history.

Below: *Pere Marquette, a Jesuit Missionary, and Louis Joliet, trader and explorer, were the first Europeans to travel the upper Mississippi River. They entered the river from Green Bay by way of the Fox River—Wisconsin River portage route in 1673. ("Pere Marquette and the Indians" by Wilhelm Lamprecht public domain image)*

CHAPTER TWO
ISLAND HISTORY PRIOR TO 1816

In the days of the Old Northwest, where the Mississippi River formed the western boundary of the United States, Rock Island was in the "backwaters" of American history. Throughout the 18th and early 19th centuries, history seldom had an impact on Rock Island.

On the occasions when it did, it was in support of historical developments which were taking place up river at such places as Prairie du Chien, Dubuque, and Galena. The prospect of acquiring wealth initially attracted Europeans and white Americans to the fur trading area of Prairie du Chien and the lead region of Dubuque. French traders seeking to expand their Indian trade discovered that the most convenient route, from the Great Lakes to the Mississippi River, was by the Fox River—Wisconsin River waterway. At each end of the route important French fur trading communities developed. Prairie du Chien, at the mouth of the Wisconsin River on the Mississippi, and Green Bay on Lake Michigan anchored both ends of the Fox River—Wisconsin River portage route.

Prairie du Chien, not Rock Island, was originally the leading fur trading post on the upper Mississippi River. However, it was not long before French-Canadian *voyageurs* and *coureur de bois* from Prairie du Chien began extending trading operations down river. These French-Canadians established trade with various Indian tribes along the Mississippi River and its main tributaries.

Voyageurs were French-Canadians employed by fur traders to transport "made goods" and canoes from the remote regions of the Old Northwest. A *coureur de bois* differed from a *voyageur* in that he operated without a French fur license, and he often illegally traded with the British. Often the *coureur de bois* was a French-Indian woodsman.

Early fur traders in the Rock Island area paddled a canoe called the *Canot du Nord* or North Canoe. The North Canoes were 20 feet in length and could carry as much as a ton of cargo besides its crew of eight *voyageurs*. The cargo primarily consisted of trade goods which were packed into 90 pound bundles for easier handling. The bundles contained the material originally needed for bartering such as cloth, kettles, traps, blankets, guns ammunition, and whiskey.

Right: *The Fox River-Wisconsin River Portage Route was a convenient fur trading route that linked the Great Lakes with the Mississippi River. (Jo Davies County Historical Society, Galena, Illinois)*

Several French traders, and later British agents, referred briefly in their journals to the "big island" (Rock Island) at the bend of the Mississippi River near the "upper rapids". These early journals mentioned in greater detail the Sauk camp near the mouth of the Rock River and also Credit Island, an island which was situated a mile or so downstream from Rock Island.

French-Canadian traders seemed to prefer Credit Island to Rock Island as the site of their trading and established a small trading post on Credit Island. These traders extended credit to Indians in exchange for their promise of pelts. The island, so associated with this practice, became known as Credit Island. Later, British traders often set up their trading camp on Rock Island instead of Credit Island when trading in the vicinity.

Occasionally, after trading, a French-Canadian *coureur de bois,* or a woodsman known as a *hiverqant,* would spend the winter at the Sauk village on the Rock River. By living among the Indians, the trader not only established good relations with the Sauk, but he also protected his investment by serving as a reminder to the tribe of their debt. In 1763, France lost its colonial possessions in North America to Great Britain as a result of the French and Indian War. However, many of the French-Canadian traders and *voyageurs* continued to work in the fur trade, first for the British and then later for the Americans.

After the French and Indian War, the British Government in Canada continued the French practice of providing gifts to Indians. The tribes made pilgrimages each spring to the Canadian communities of Montreal and later Malden to council with their "great father" where they would also receive presents. British medals and flags were presented to Indians who agreed to trade with British agents. Malden is situated near Windsor, Canada.

Foreign intrigues planned by British agents successfully brought most of the Indian nations of the Old Northwest, including those of the upper Mississippi River Valley under the influence of the British. During the American Revolutionary War, almost every tribe of the Old Northwest fought as auxiliaries for the British.

In 1778, Sauk and Fox warriors were among the Indians who gathered at Montreal to receive British presents and medals.[1] Later in 1780, Sauk and Fox braves participated in an unsuccessful attack on the town of Pencour, which eventually became St. Louis, Missouri. These Indians had joined a British force of soldiers, traders, and other Indians from Prairie du Chien in attacking Pencour. Lieutenant Colonel John Montgomery, under orders from Colonel George Rogers Clark, led a combined force of American Rangers, as well as French, Spanish, and American settlers from St. Louis in a retaliatory strike against the Sauk village located at the mouth of the Rock River. Colonel Montgomery and his 300 men supposedly burned the Sauk village, making this action the westernmost conflict of the American Revolution.[2]

Later, under the provisions of the 1783 Treaty of Paris which ended the American Revolutionary War, the British ceded to the United States a huge western tract of land known as the

Below: *Voyageurs "Shooting the Rapids." Early fur traders used similar canoes in the Rock Island area. ("Shooting the Rapids" by Frances Anne Hopkins, public domain image.)*

the Northwest Territory. The territory included the present states of Illinois, Indiana, Michigan, Ohio, Wisconsin, and part of Minnesota.

Britain, unwilling to give up its valuable trade with Indians of the territory, continued to operate its trading companies on North American soil, from Canada. Long after the treaty was signed, British agents continued to trade along the upper Mississippi River Valley, including the Rock Island vicinity. British traders used their influence among the Indians to discredit their competitors: the American traders. The British government in Canada acting in its own interest agreed to supply arms and ammunition to Indian confederacy to counter the encroachments of American traders and settlers into the Northwest. The noted Sauk warrior Black Hawk was among the braves that joined the confederacy. As American settlers advanced through the frontier of the Northwest, they defeated the confederacy at Fallen Timbers, Ohio, in 1794 and at Tippecanoe Creek in 1811.

In dealing with the Indians of the Northwest Territory, the United States Government established the precedence of negotiating for treaties with the Indians to gain possession of land they occupied. These treaties defined and redefined boundary lines between advancing white settlements and retreating Indian Tribes. In many of the treaties, provisions were added to establish forts at strategic locations within the newly drawn boundaries of the Indian territory. This chain of events formed a scenario which was repeated as the American frontier advanced through the Northwest territory.

Lead Mining and Other Trade with the Indians

In the 18th and early 19th centuries, European trade with the Sauk and Fox Indians involved more than fur pelts. Although pelts were profitable, Europeans also traded for lead, corn, beeswax, feathers, and tallow.[3] Lead was of particular importance to European and American traders. In fact, Sauk and Fox women were taught by Frenchmen to mine for lead and to operate crude furnaces near the Fox villages, which were close to the present city of Dubuque, Iowa. The Sauk of the Rock River region and the Fox Indians of both the Rock Island and Dubuque vicinities

Below: *The 1840s lead mining community of Galena, Illinois. Note the smoke from the lead furnaces operating in the hills. (Alfred W. Mueller, Galena Historical Collection)*

developed a brisk trade in lead with Europeans.

The French initially attempted to develop the lead region of Northeast Iowa, Northern Illinois, and Southern Wisconsin. However, a series of Indian wars with the Fox Indian tribe severely hindered French mining efforts. Fox warriors periodically raided the fur and mining expeditions that traveled the portage route between Prairie du Chien and Green Bay. When not actually raiding the expeditions, they extracted a tribute from those that traveled the route. The Fox tribe, in order to survive a war of annihilation waged on them by the French, allied themselves with the Sauk Tribe from the Saginaw Bay area of Michigan. Eventually, the two tribes migrated to the mouth of the Rock River near Rock Island.[4]

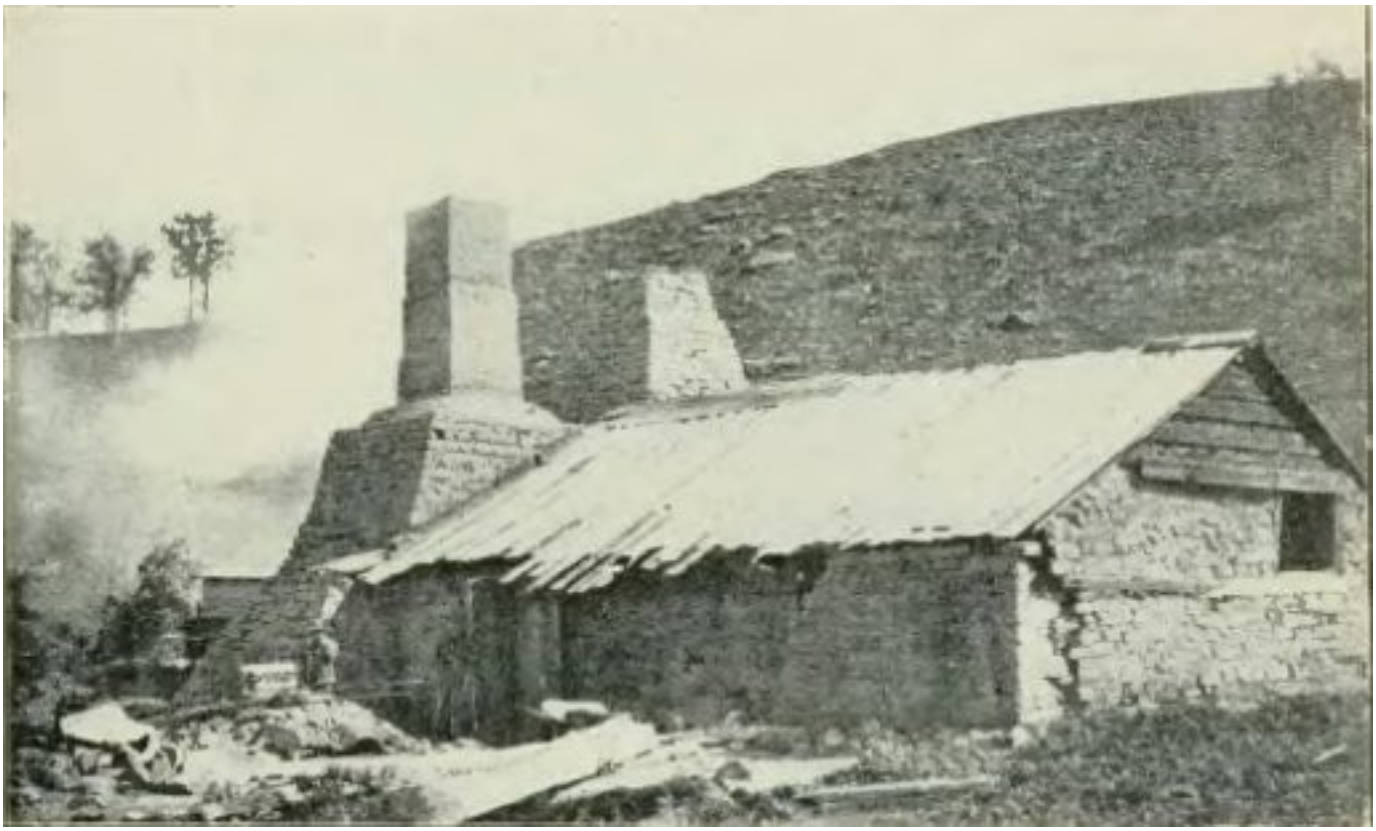
In 1788, the Fox Indians granted lead diggings near the present city of Dubuque to Julien Dubuque, a French trader. Miners such as Dubuque shipped lead down river to St. Louis instead of by portage to the Great Lakes.[5]

By purchasing the Louisiana Territory from France in 1803 the United States doubled its size and opened the mouth of the Mississippi River to American commerce. The Mississippi River no longer formed the western boundary of the U.S., and by the early 1820s, speculators began leasing land in the lead region of the upper Mississippi Valley from the United States Government. Out of the mining area along the Fever River in Illinois grew the mining community of Galena. Numbering less than 50 persons in 1822, Galena's population rose to over 10,000 people a decade later. The sudden influx of miners resulted in clashes between the mining communities and Indians of the area. This led to the "Winnebago War" of 1827. The short-lived uprising led by Red Bird, a Winnebago chief, was easily put down by a show of U.S. Army Regulars.

Federal Government Acquires Rock Island

In 1804, Rock Island came under Federal control. President Thomas Jefferson instructed the

Below: *Water's Lead Furnace near Dubuque. Note the 75lb. lead "pigs" stacked behind the scale. (From Benjamin F. Gue, "History of Iowa from the Earliest Times to the Beginning of the Twentieth Century." 1903, now public domain.)*



governor of the Indiana Territory, William Henry Harrison, to acquire Indian lands which adjoined the Mississippi River and its tributaries. Harrison, later the ninth President of the United States, made an effort to obtain Indian land cessions. Through bribery, liquor, and threats, he seized every opportunity to "negotiate" land away.[6] Through negotiations Harrison succeeded.

In November 1804, four Sauk and two Fox chiefs arrived in St. Louis to meet with Harrison regarding the release of a Sauk brave being held for killing a while man. Harrison, during negotiations for the release of this brave, persuaded the chiefs to sign a treaty which ceded to the U.S. a vast tract of land controlled by the respective tribes. The ceded land included territory on both sides of the Mississippi River, roughly between the Wisconsin River to the north and the Missouri River to the south; and extending east to the middle of the present Illinois River and west as far as the watershed region between Des Moines and the Missouri River. Both the Sauk villages on the Rock River and in Rock Island were included in the land purchase.

In return, the Indians were to receive the official protection and friendship of the United States and were to be paid $2,234.50 in goods, plus an additional guaranteed annuity of $1,000 in goods to be received annually thereafter.[7]

A story regarding the unethical practices used by William Henry Harrison during negotiations with the Sauk and Fox chiefs has been included in several historical works of the Rock Island area.[8] The minor chiefs supposedly told members of their tribes that they were inebriated during the majority of their stay in St. Louis. The chiefs explained that the $2,234.50 of trade goods they were to receive form the Federal Government was instead given to Pierre Chouteau, a wealthy French fur trader, for payment of the chiefs' expenses. Chouteau witnessed the signing of the treaty and also served as host for William Henry Harrison during his visit to St. Louis. As for the brave being held by army authorities, he allegedly was shot while running from his guards.[9]

Later, a dispute over the meaning of Article Seven of the 1804 Treaty was of great concern. Article Seven stated:

Below: *An 1829 map of the U.S. lead mines in the upper Mississippi River region. At that time, the mines were worked by private individuals who paid the U.S. Government a tenth of all the lead manufactured for the privilege. Much of the lead was shipped down the Mississippi River through the Upper Rapids at Rock Island, on its way to St. Louis. Fort Armstrong, Rock Island, and the Upper Rapids appear at the lower left corner of the map (Wisconsin State Historical Society).*

Below: *The Old Chouteau Mansion in St. Louis, MO.*
Right: *Brothers Pierre and Auguste Chouteau, early Grench fur traders who respectively participated in the 1804 and 1816 U.S. treaty negotiations with the Sauk and Fox Indians. (Both photos from Augustana College Library Special Collections)*

Pierre Chouteau

Auguste Chouteau

> As long as the lands which are now ceded to the United States remain their property, the Indians belonging to said tribes (Sauk and Fox) shall enjoy the privilege of living and hunting upon them.[10]

The six chiefs who agreed to the 1804 Treaty were supplied with liquor but not unknowingly. Liquor was certainly nothing new to the chiefs for Sauk and Fox Indians had been trading with French and British agents for over a century and a half. Many traders included liquor as part of the trade goods offered to the Indians of the upper Mississippi River Valley.

The chiefs probably believed they were receiving free liquor in exchange for granting Americans the use of hunting grounds they already shared with other tribes. Furthermore, the White American concept of land as property was foreign to Indians. Adding to their confusion were the differences in negotiating with American agents rather than Europeans. Europeans gave "presents" to the Indians after counseling them. They also readily extended them credit for pelts yet to be trapped. The British especially ingratiated themselves with the Sauk Indians through the use of these tactics. The gifts and credit placed them in good favor with the Sauk, while at the same time indebting the Indians to the British for some future request or deed.

In contrast, the U.S. Government would not allow its agents to extend credit to Indians. United States agents were instructed to receive pelts, land, or something tangible in exchange for their trade goods. For several years after the treaty, many Sauk believed that the $1,000 annuities they received from U.S. agents were "presents" rather than payments for their land.[11] As experienced as the Sauk and Fox were in dealing with Europeans, they nevertheless struck a "bad bargain" with William Henry Harrison.

Rock Island Comes to the Attention of the U.S. Army

Lieutenant Zebulon Pike first brought Rock Island to the attention of the U.S. Army. In

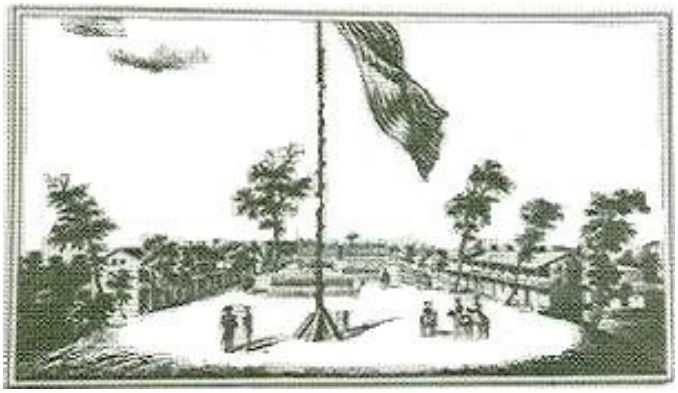
Right: *William Henry Harrison, the first governor of the Indiana Territory which included Illinois, was appointed special commissioner to negotiate boundary treaties with various Indian tribes. Later, William Henry Harrison became the ninth President of the United States. (AMSAS-HI)*
Below: *Excerpt from beginning paragraph of the 1804 Treaty with Sauk and Fox Indians cited below. Note that the purpose of the article was to bring the two tribes under U.S. influence by restricting the tribes' dealings with foreign powers. (AMSAS-HI)*

A Treaty Between the United States of America and The United States of Sac and Fox Indians

Articles of a Treaty made at St. Louis in the District of Louisiana Between William Henry Harrison, Government of the Indiana Territory and District and Commissioner Plenepotentary of the United States for concluding any treaty or treaties which may be found necessary with any of the Northwestern Tribes of Indians of the one part, and the chiefs and headmen of the United Sac and Fox Tribes of the other part.

Article 1. The United States receive the United Sac and Fox Tribes into their friendship and protection, and the said tribes agree to consider themselves under the protection of the United States, and of no other power whatsoever.

Right: *Early U.S. Army posts near St. Louis, MO, such as Fort Bellefontaine, Camp Adams, Cantonment Miller, and Jefferson Barracks, served as the starting points for numerous military expeditions and exploratory ventures into the Upper Mississippi River Valley. Jefferson Barracks is depicted in an early sketch to the right. (Augustana College Library Special Col-*



1805 he led an expedition up the Mississippi River from St. Louis. His instructions were to gather information regarding the river and to note potential sites for the construction of forts which were to be strategically located in the new territory. In addition, Pike was to record British activity among the Indians of the Upper Mississippi River valley. Based on Pike's report, Congress passed legislation in June 1809 to reserve Rock Island, or "big island" as it was referred to in Pike's journals, as a federal military reservation.

Pike recorded several chance meetings with individuals and groups on his journey up the

Below Left: *Lieutenant Zebulon Pike, who in 1805 led an exploring party up the Mississippi River. (Hauberg Museum, Black Hawk State Park)*
Below Right: *Winter lodge of Sauk and Fox Indians. (Hauberg Museum, Black Hawk State Park)*

Mississippi River. In the vicinity of Rock Island, he met with James Aird, a fur trader from Prairie du Chien who operated a trading camp on Credit Island. Mr. Aird informed Pike that in 1781 or 1782 the Sauk village on the Rock River was burned down by about 300 Americans. This account corroborated the story regarding Colonel Montgomery's raid on the Sauk village during the American Revolution. According to his journal, Pike met with four canoes of Sauk warriors near Rock Island.

> We met four canoes of the Sacs, with wicker baskets filled with young pigeons. They made motions to exchange them for liquor to which I merely turned the back of my hand.[12]

Another encounter with Sauk warriors was also included in the Pike journal. Pike mentioned in his journal a meeting he had with a Captain Many, who was traveling the river in search of Osage Indian prisoners among the Sauk and Fox Indians of the region. Captain Many told Pike that the Sauk expressed hostility towards Americans during his visit to their village near Rock Island. Pike also wrote that a White American, working as a government representative, was living among the Sauk and Fox Indians of the Rock Island vicinity. The American was hired to teach the Indians methods of farming; but, according to Pike, was fired the following year for neglecting his job. The teacher's position was a provision of the 1804 Treaty with the Indians.

Sauk and Fox Indians

Lieutenant Pike's journal supported the claim that Sauk and Fox warriors had a reputation for being hostile. When Fox and Sauk warriors controlled the Fox River—Wisconsin River portage, they were notorious for demanding tribute from those who traveled the route. They were also fond of "taking" pelts from neighboring tribes. French traders at Green Bay, tired of the hostile ways of the two tribes, formed an alliance with the Menominee, the Ottawas, and the Chippewas and forced the Sauk and Fox from the area. While migrating to the Rock River in present day Illinois,

Below: *Traditional Sauk and Fox summer lodge covered with tree bark. (Quad Cities Times Newspaper, Photo Archives)*

the Sauk and Fox warriors drove the Illini Indians from the Rock Island and Rock River regions out.

In addition to defeating the Illini and nearly annihilating the entire Mascoutin tribe, the Sauk and Fox Indians also sent war parties out against the Menominees, the Sioux, the Pawnee, and the Osage, among others. Today, writers and local museum curators tend to emphasize the Sauk's planting, mining, and hunting skills rather than their fighting ability. However, the Sauk and Fox were proud of their reputation as fierce warriors.

American artist George Catlin referred to a Sauk village on the north banks of the Rock River as "Saug-e-nug" in his 1837 writings. This may explain the popular use of the term "Saukenuk" for the name of the village since the Sauk and Fox had no written language and traders simply wrote down what they heard. Although neither tribe located its village on Rock Island, they frequently visited the island to gather berries, nuts, fish, and hunt game.

Black Hawk's British Band & the War of 1812

Sauk and Fox chiefs attempted to honor the 1804 agreement with the U.S. Government.

Below: *Sauk warrior Black Hawk as painted by American artist George Catlin. The original painting by George Catlin is in the National Portrait Gallery, Smithsonian Institution, Washington, D.C. (AMSAS-HI Archives)*

However, when war broke out between the United States and Britain in 1812, a large band of Indians led by the Sauk warrior Black Hawk chose to fight as auxiliaries for the British. Black Hawk, also called Ma-Ka-Tai-Me-She-Kia-Kiak or "Black Sparrow Hawk" allegedly offered his services to American soldiers at Fort Madison; but the soldiers declined the offer. It was known that Black Hawk was displeased with the Americans at Fort Madison for refusing to extend him credit for winter supply goods. Therefore, when the British traders arrived at Rock Island, he readily welcomed them. These traders had a variety of gifts for the Indians and a confidential message for Black Hawk. The message, from a British colonel, urged Black Hawk to raise a war party and join the British force at Green Bay.

The British Colonel was Robert Dickson, a trader active in recruiting Indians to aid the British in the War of 1812. He had long been a trader at Prairie du Chien.

Black Hawk raised the war party, traveled to Green Bay, and for a time fought as an ally of the British during the War of 1812. Despite his desire to wage war down the Mississippi Valley, the British instructed Black hawk to fight with their troops near Detroit. Black Hawk and his Sauk warriors were present during the Fort Dearborn Massacre of 15 August 1812. However, after initial success, the fighting did not go well for the British, and Black Hawk returned to his village on the Rock River.

Though he returned to the village, Black Hawk remained hostile towards the United States. On three occasions during the War of 1812, Black Hawk led Sauk warriors against U.S. military forces attempting to journey up river from St. Louis.

Governor William Clark of the Missouri Territory, and famous partner of the explorer Meriwether Lewis, organized the first expedition from St. Louis in 1814. Clark intended to build a fort near Prairie du Chien to protect American fur traders in the upper Mississippi River Valley and

Below Left: *William Clark, Governor and Superintendant of Indians Affairs for the Missouri Territory. He supervised the U.S. Indian agents at Fort Armstrong. (Hauberg Museum, Black Hawk State Park)*
Below Right: *The 1905 dedication of the Illinois State Memorial commemorating the 1814 Battle of Campbell's Island. (Rock Island County Historical Society)*

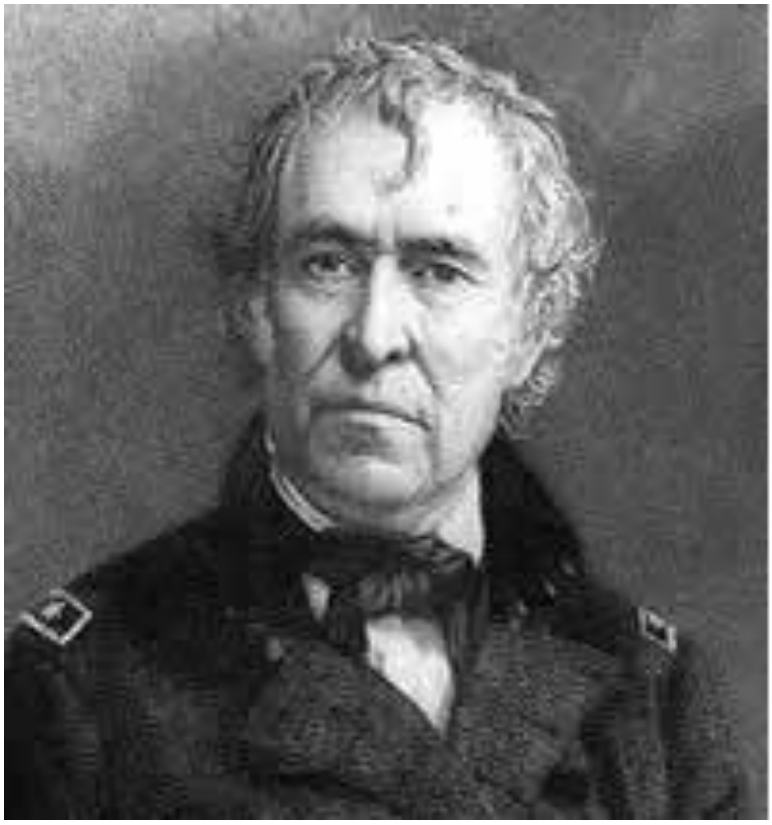
to create a buffer protecting St. Louis from British and Indian attack via the Mississippi River.

With the exception of a skirmish with Sauk Indians near Rock Island, Clark's expedition uneventfully made its way up river to Prairie du Chien. At. Prairie du Chien, Clark's men erected a stockade and named it Fort Shelby. The detachment of American troops left behind at Fort Shelby was attacked by the British, forcing them to abandon Fort Shelby and return to St. Louis. As they returned to St. Louis, the troops were again fired on by Sauk warriors as they passed Rock Island.

An earlier attempt by American soldiers to strengthen the garrison at Fort Shelby also failed. Lieutenant John Campbell, with three keelboats loaded with 133 regular army and volunteer soldiers, embarked from St. Louis in early July 1814 for Prairie du Chien. On 19 July, Campbell's expedition departed Rock Island and immediately encountered bad weather. Forced ashore on a island six miles upstream from Rock Island, Campbell's vessel came under attack by Indians. Black Hawk and other Sauk warriors had been trailing the three boats and ambushed the stranded craft. Lieutenant Campbell and several members of his crew escaped to another vessel. *The National Intelligencer* of August 1814 stated the number of killed and wounded in this engagement to have been thirty-six. Lieutenant Campbell and surgeon's mate Dr. Abraham Stewart were among the wounded.[13] Black Hawk pillaged the abandoned keelboat, while Sauk braves scalped the mortally wounded and the dead left behind. Later, according to Black Hawk's own account of this incident, the Sauk warriors "put on the clothes of the dead soldiers and danced over their scalps." Black Hawk's account of this incident was recorded by Antoine LeClaire, a government interpreter and prominent businessman of the Rock Island area. According to LeClaire, Black Hawk stated that he gave the books and papers found on Campbell's boat to British Soldiers.

Lieutenant Campbell's boat, partially destroyed by fire, remained at the battle site and for years was a landmark for river boats. Since this

Right: *Colonel Zachary Taylor who, in the War of 1812, unsuccessfully led U.S. forces against Sauk and Fox Indians at the Battle of Credit Island. Nearly twenty years later, Colonel Taylor would lead U.S. Infantry Regulars to victory over Sauk and Fox Indians in the Black Hawk War of 1832. Eventually, Zachary Taylor would become the twelfth President of the United*



historic battle, the island has been referred to as Campbell's Island. The Illinois state legislature, around 1904, appropriated $5,000 for a monument to be placed on Campbell's Island in commemoration of those who fought and died in the battle.

Zachary Taylor and the Battle of Credit Island

During the War of 1812, Zachary Taylor, later the twelfth President of the United States, led a reprisal attack against the Sauk of the Rock River region. In September 1814, as a Brevet Major, Taylor left St. Louis with 334 men, primarily militia and ranger, but also including a few regular army soldiers. His mission was to undertake a retaliatory strike against the Sauk to punish them for their attacks on the earlier American expeditions of Governor Clark and Lieutenant Campbell. However, before he could attack, his vessels were discovered. British artillery placed on Credit Island and Sauk musket fire riddled Major Taylor's vessels, forcing them to retreat back to St. Louis. Lieutenant Duncan Graham was the officer-in-charge of the British troops who aided the Indians.

Sergeant John Keating of the Royal Artillery Regiment earned a commission as a lieutenant for his efforts in the Battles of Credit Island and Fort McKay. Besides providing artillery, the British had gathered a large war party with Indians from other pro-British tribes to aid the Sauk and Fox in their fight against the Americans. Greatly outnumbered, there was little more Zachary Taylor could do but retreat.[14]

British Control of the Upper Mississippi River Valley

The rivalry between Great Britain and the United States for dominance over the Indians of the Northwest was a contributing factor to the War of 1812. The British in Canada, acting in their own self-interest without regard to the safety of Americans, began supplying arms and ammunition to Indians known to be hostile toward Americans. Congress considered British support of the Indians as one of the reasons for declaring war against Great Britain.

During the War of 1812, Great Britain

Right: Sauk warrior Black Hawk was the leader of the last hostile Indian uprising in the state of Illinois, known as the Black Hawk War of 1832. Black Hawk stated that Rock Island supplied his tribe with fruits, nuts, and plenty of fish from the rapids. He said he spent happy times on the island and that a good spirit lived in a cave in the rocky bluff beneath the fort. "But the noise of the fort has since driven him away and no doubt a bad spirit has taken his place." Black Hawk's Autobiography (AMSAS-HI Archives)

temporarily gained control of the upper Mississippi River Valley and the Great Lakes region of the Illinois Territory. American authority in the territory north of Fort Edwards collapsed. (The location of Fort Edwards is cited on the map on page 18.) The war ended with the British in control of all the U.S. forts and the U.S. Government trading factories in the Illinois Territory above a line that stretched from Fort Edwards to Peoria.

Pro-British sentiment remained strong among some of the Indians of the Northwest after the war. Indians such as the Sauk and Fox continued to trade with the British after the War of 1812 and, as late as 1820, Sauk warriors such as Black Hawk continued to make their annual pilgrimage to Fort Malden, Canada, to receive presents during their visit with their "British Father." Five years after the end of the War of 1812, some Indians, such as the Sauk of Rock River, continued to display the British flag and British medals in their village. The British in Canada had cast a special silver medal to honor Black Hawk for efforts during the war.[15]

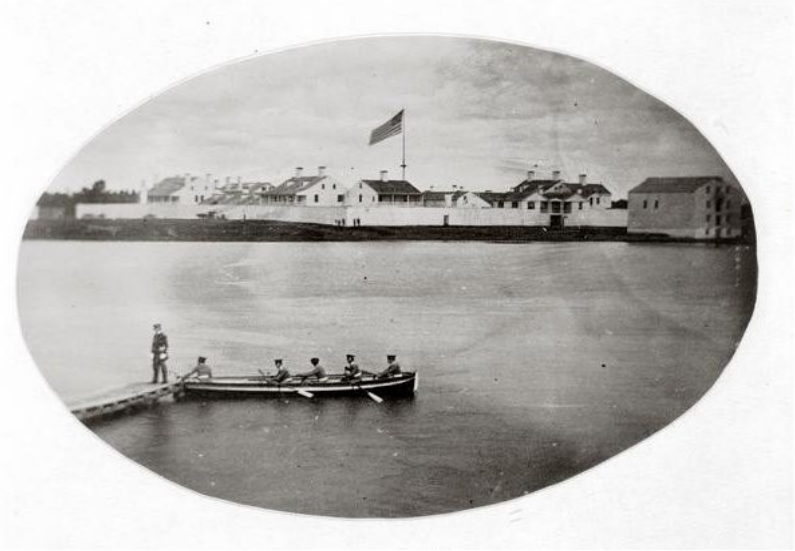
Major Morrell Marston, while commanding officer of Fort Armstrong, wrote to Jedediah Morse in November 1820 that he considered it important that, as soon as possible, the government should exchange all British flags and medals the Indians had in their possession for American ones. He also wrote that the flags given to them ought to be made of silk which would make them as durable and portable as the British flags. According to Major Marston, these American flags should be large to match the size of the British flags.[16]

Treaty of Portages des Sioux

Though Black Hawk's warriors had been successful in thwarting American expeditions up river from St. Louis, the war was not totally successful for the British. On 24 December 1814, the War of 1812 concluded with the signing of the Treaty of Ghent. Though peace with the British was achieved, such was not the case with their Indian mercenaries or allies.

However, in 1815, President James Madison appointed Missouri Territorial Governor William Clark, Illinois Territorial Governor Ninian Edwards, and Auguste Chouteau, a St. Louis fur trader, as commissioners to negotiate treaties with

Below Left: *Often government trading factories were established at military posts. Fort Howard at Green Bay was one such post. (AMSAS-HI)*
Below Right: *A typical fur trader of the Northwest Territory. (Augustana College Library Special Collections)*



the principal tribes who aided the British during the War of 1812. Nine months later, in September 1815, the U.S. signed a separate peace treaty at Portages des Sioux with all but a few of the Indians who had fought for the British. Instead of attending the peace conference, the Sauk of the Rock River sent messengers to Canada to meet with the British. However, the messengers returned without a promise of aid from the British. Receiving no support and fearing an attack by American troops, the Sauk of the Rock River agreed to peace terms in St. Louis on 13 May 1816. The treaty, approved by Sauk leaders, including Black Hawk, reaffirmed the United States Government's claim to Sauk and Fox Indian lands according to the term set down in the Treaty of 1804.

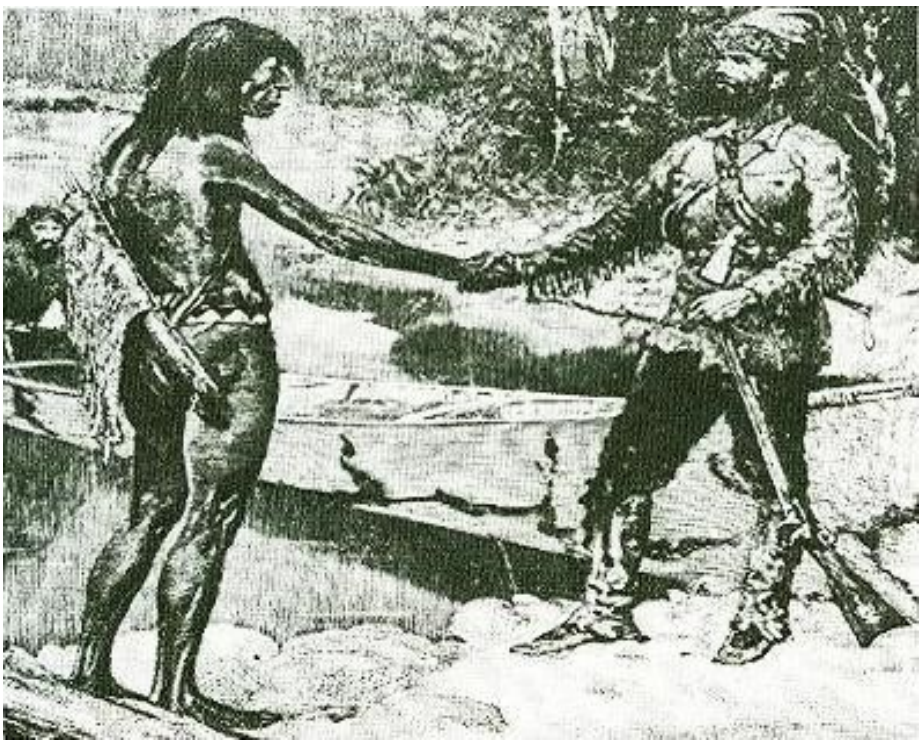
Government Trading Factories

As early as 1795, 17 years before the War of 1812, the U.S. Government devised a plan to reduce the presence of private traders upon the Indians of the Mississippi River Valley. The Federal Government established a system of government trading factories and trading posts in the Northwest. These government owned and operated trading houses made the Indians more economically dependent upon the United States, and by doing so, diminished the influence of foreign traders upon them. The government intended the trading factories to also provide the Indians with a more equitable deal than they had been receiving from private traders, especially the unscrupulous ones.

Unfortunately, the government trading factories were ineffective and too costly to maintain. They had higher overhead prices than the private traders, which may account for the fact that the government prices were usually higher than those of the private trader. The Indians continued, however, to trade with foreign agents and private American traders, though ostensibly under government control.[17]

A note written by Major Morrell Marston, of the Commanding Office at Fort Armstrong on Rock Island from August 1819—June 1821, best expressed the Indian attitude toward attempts by the U.S. Government to compete with private

Right: *Private traders regularly traveled to the Indian villages with their trade goods, contrary to the practice of government traders, who operated trading posts known as factories. (Augustana College Library Special Collections)*



traders for their Indian trade. According to Major Marston, a typical reply by Indians in his vicinity, when informed that the President of the United States supplied the trade goods at the government trading houses, was:

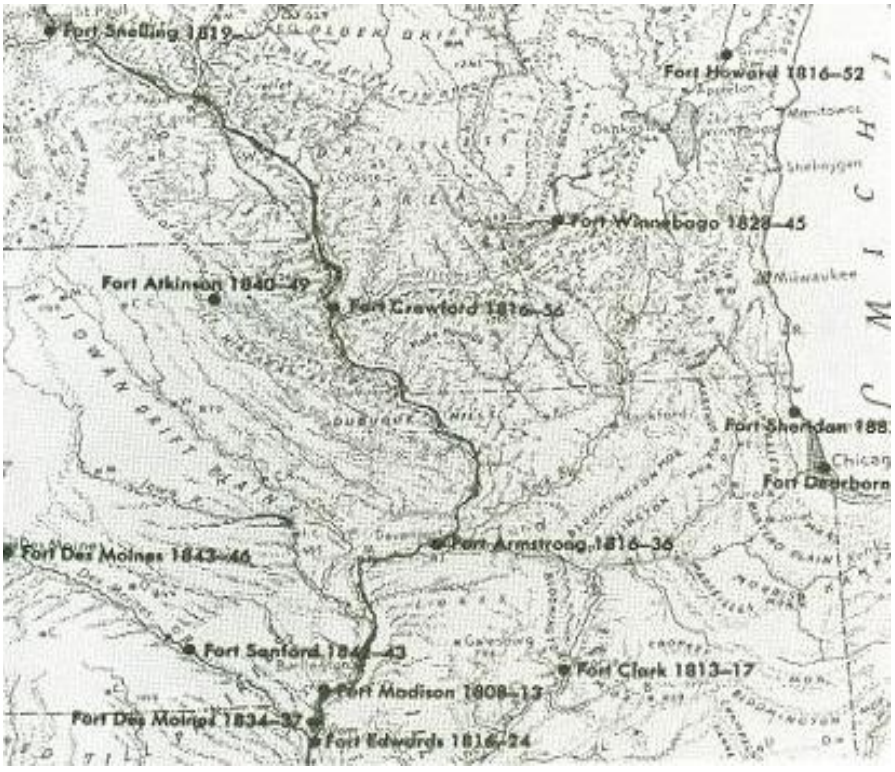
> You are pasi-i-to (a fool), our Great Father is certainly no trader; he has sent those goods to be given to use, as presents, but his agents are endeavoring to cheat us, by selling them for our peltries.[18]

After the War of 1812, the U.S. Government re-established trading factories at Prairie du Chien, Chicago, and Green Bay. In 1818, for example, the government added a trading house at Fort Edwards and, in 1819, it was operating independently. The high traffic of liquor traded to Sauk and Fox Indians between the region of Fort Edwards and Rock Island led to the establishment of the federal trading factory at Fort Edwards. The trading of liquor to Indians, though illegal, was commonly practiced by French, Spanish, English, and American traders. As an aside, Indians of the upper Mississippi Valley purportedly traded anything they possessed for whiskey. Those Indians supposedly bartered away an entire season's worth of pelts, clothing off their backs, their weapons used for hunting, and their women, to trade for liquor.[19]

At the factories or trading posts, furs were sorted as to grade and quality then treated and pressed into bales in preparation for shipment. Trading houses, such as the Fort Edwards factory, shipped pelts and skins of deer, bear, beaver, otter, raccoon, and muskrat down river to St. Louis. During the winter season of 1819, the Sauk and Fox Indians supplied five traders 980 packs of peltries. The estimated value of the furs was cited at $58,000.[20] A manager supervised each factory and, at times, had a staff that included clerks, laborers, and interpreters.

Government trading factories were too few and scattered to have had any effective impact on the fur trading business of the Northwest. The government estimated that during their peak years the factories only handled ten percent of the fur business. Indians saw little advantage in trading at the factories. It was more convenient for them to

Right: *Fort Armstrong, Fort Edwards, Fort Crawford, and Fort Snelling formed a chain of military posts, built along the upper Mississippi River, in 1816-1819. The U.S. Army constructed them to control the Indians and their trade, and to keep the river open to commerce. (AMSAS-HI)*



deal with private traders who traveled to their villages than to transport their pelts on a long journey to one of the scattered government trading houses. In addition, the government trading factories did not extend credit or offer liquor. Government trading factories eventually lost out to the powerful American Fur Company of John Jacob Astor and were abolished in 1822.

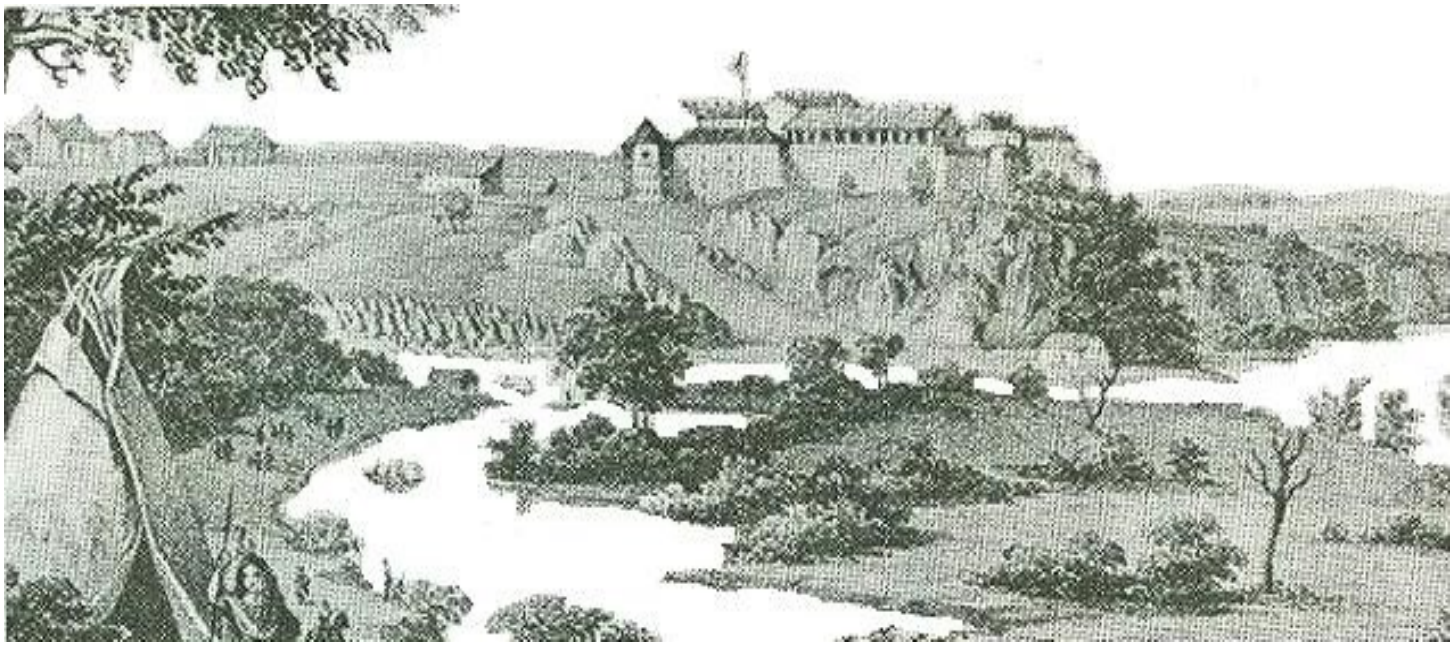
Act of 1816 and the American Fur Company

Congress passed the Act of 1816 that prohibited foreigners from engaging in trade with the Indians on American soil. John Jacob Astor, the leading American fur trading entrepreneur, lobbied for the passage of the bill. After securing the legislation, Astor immediately expanded the American Fur Company and set into motion his place to control the entire fur trading business within the United States. He purchased the remaining third of the Southwest Company which he had earlier formed with Montreal merchants, thus making him the sole owner. Astor then acquired a number of trading posts of the British Northwest Company, which were on American soil in the Great Lakes region of the United States and secured the services of the best traders in the upper Mississippi River Valley and Great Lakes region in his effort to corner the fur trade. The beginning of the American Fur Company's operation in the Northwest in 1817 coincided with the army's establishment of a series of military posts through the region. Two agents of the American Fur Company in the Rock Island vicinity were Colonel George Davenport and Russell Farnham, both of whom played significant roles in Rock Island's history.

Army Establishes U.S. Authority in Valley

The War Department, acting in support of the Fur Trading Act of 1816, began that same year to reassert its authority over the Northwest. The U.S. Army planned construct a chain of military posts through the upper Mississippi River Valley and the Great Lakes region. The purpose of constructing these posts was twofold: the forts provided safety for American fur traders and prevented British and French-Canadian traders from opening in the area.

Below: *Fort Snelling built in 1819, was originally named Fort Saint Anthony Falls. In 1824, it was renamed for its first commander Josiah Snelling. The Fort was situated on a high bluff at the confluence of the Minnesota and Mississippi Rivers. The Construction of Fort Snelling completed a series of U.S. forts built to re-establish United States control of the upper Mississippi River Valley. Today, it is a historical site of the Minnesota States Historical Society. Fort Armstrong, at Rock Island , was another of these posts built after the War of 1812. (AMSAS-HI)*



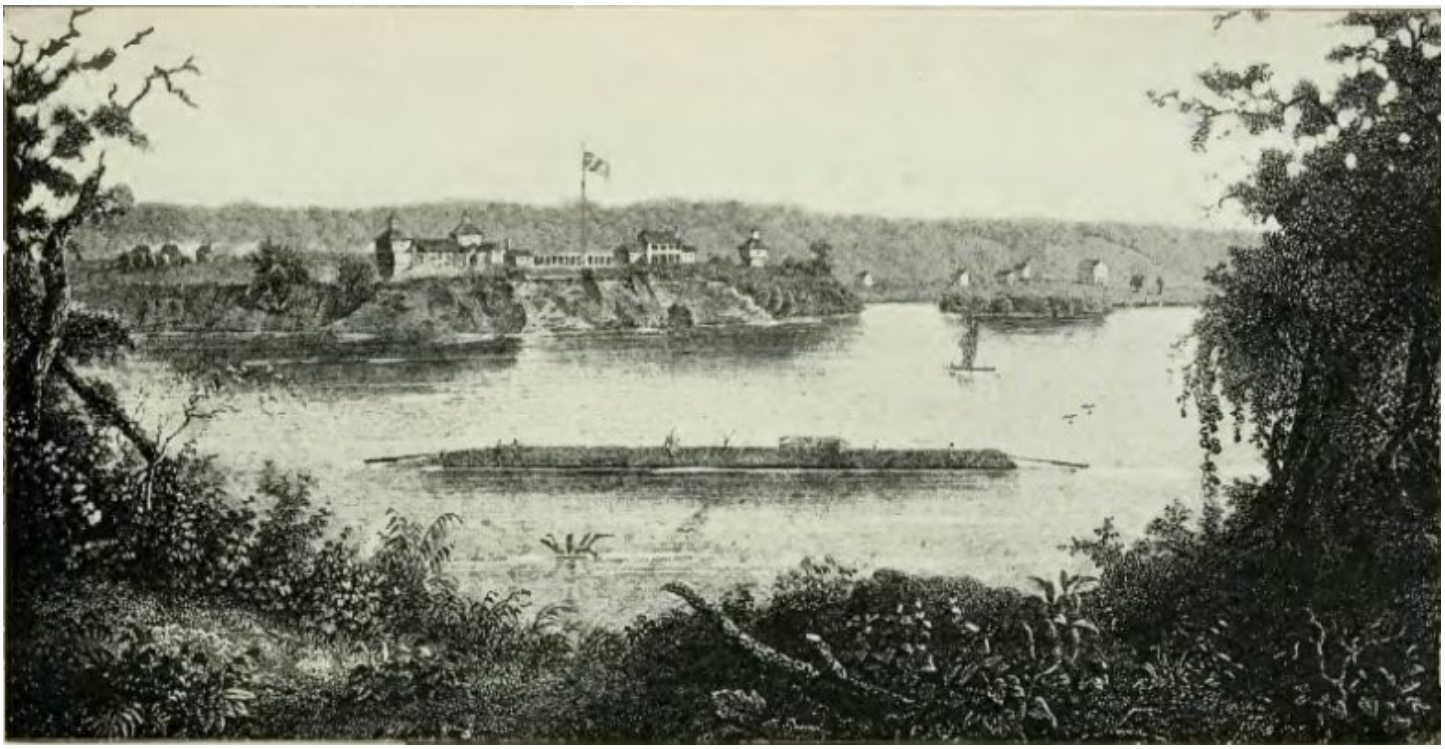
During the period from 1816 to 1819, the United States Army reconstructed Fort Dearborn near Chicago, built Fort Howard at Green Bay, and constructed Fort Crawford at Prairie du Chien. These forts effectively prevented foreign traders from using the Fox River-Wisconsin Waterway portage to enter the Mississippi River Valley. In addition to Fort Crawford, two smaller posts were constructed in 1816-1817. They were Fort Armstrong at Rock Island and Fort Edwards at the mouth of the Des Moines River. In 1819, Fort Snelling, constructed at the confluence of the Minnesota and Mississippi Rivers, completed the series of forts along the upper Mississippi River Valley.[21] The army strategically placed the forts where it did to impress the Indians and monitor their trade. Government Indian agencies were also frequently established at or near these military posts.

Indian Agents

Indian Agents and their subordinates were the official civilian representatives of the U.S. Government at many forts of the upper Mississippi River Valley. Agents, such as Thomas Forsyth at Fort Armstrong, provided a communication link between the Sauk and Fox Indians and the Federal Government. The duties of Forsyth and his subagents included administration of the Government's treaty obligations such as the payment of annuities to the Sauk and Fox tribes. Forsyth's other duties included granting licenses for trade with the Indians; enforcing regulations pertaining to the fur trade; distributing presents to principal chiefs; and receiving visiting Indians. Indian agents also performed the difficult task of explaining new government regulations and correcting Indian misconceptions of past treaties.

An example of an Indian agent performing such duties occurred in 1818 when agent Thomas Forsyth informed the Sauk and Fox tribes that the annuities they had been receiving were not presents but actually part of the purchase price for their lands. Although many Indians continued to accept the annuities, some did not. Black Hawk among others, refused to receive any annuities after hearing Forsyth.[22]

Below: *Fort Armstrong, active 1816-1836, situated on the northwest corner of Rock Island, strategically placed to control both channels of the Mississippi River. (AMSAS-HI Archives)*



CHAPTER THREE

FORT ARMSTRONG: THE FIRST PRESENCE OF FEDERAL GOVERNMENT ON ROCK ISLAND

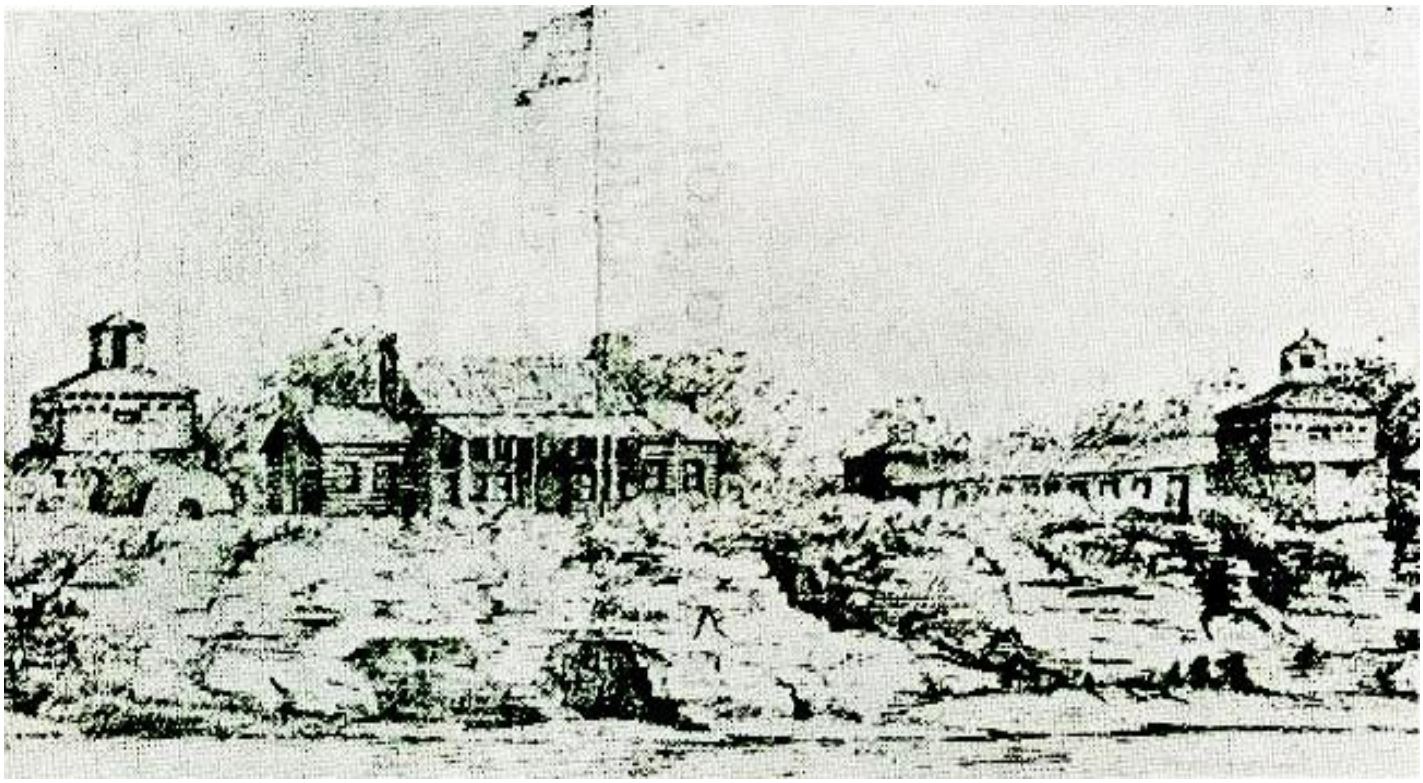
In the spring of 1816, Brevet Brigadier General Thomas A. Smith was dispatched from St. Louis to Rock Island. As earlier mentioned, the War Department instructed the army to build a number of military posts on the upper Mississippi River to deter British and other foreign trading outfits from operating in the river valley. General Smith, remembering the defeats inflicted upon U.S. expeditions by Sauk and Fox Indians, selected Rock Island as a site for one of the forts.[23]

Brigadier General Smith arrived at Rock Island in early May 1816 and chose the western tip of the lower end of the island as the construction site for the fort. From this site U.S. troops could observe the troublesome Sauk and Fox Indians; protect American fur traders; and keep open a line of communication and commerce to Prairie du Chien and other posts further up river.

On 10 May 1816, a detachment of troops from the U.S. 8th Infantry landed on the island and immediately began building a fort. Shortly thereafter, General Smith and a detachment of troops proceeded up river to construct Fort Crawford at Prairie du Chien . In General Smith's absence, Colonel William Lawrence assumed command of the construction site at Rock Island and, upon completion, the fort at Rock Island was named Fort Armstrong in honor of John Armstrong.

John Armstrong had been an army officer in the American Revolutionary War under President James Madison. His role in the U.S. invasion of Canada during the War of 1812, coupled with the British retaliatory capture of Washington and the burning of the capital, led ironically to Armstrong's resignation as Secretary of War in 1814.

Below: *View of Fort Armstrong. Note the absence of fortified walls on the sides facing the river. The 25' to 30' high bluffs provided sufficient protection. Also noticeable are the caves beneath the bluff that Black Hawk referred to in his autobiography. (AMSAS-HI Archives)*



Description of Fort Armstrong

In many respects Fort Armstrong represented the army's stock plan for building military posts on the Western Frontier. It had squared hewn timbers with dovetailed corners; and its blockhouses had an overhang and a monitored roof which provided a lookout station. Usually, buildings such as the barracks, which were made from hewn timber, formed the exterior walls of the fort. The most noticeable feature of the barracks were their inward-sloping shed-type roofs.

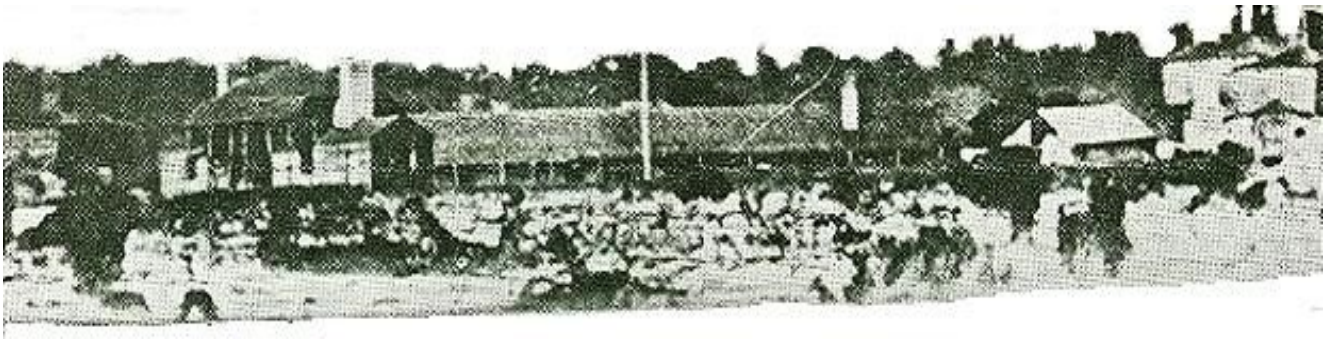
At many of the frontier military posts pickets were stationed to guard against surprise attacks. In 1817, the army assigned Major Stephen H. Long, a topographical engineer, the task of charting the Mississippi River as far north as Prairie du Chien. On 2 August 1817, Major Long wrote in his journal probably the best description of Fort Armstrong. He wrote:

> The Fort (Armstrong) is situated immediately upon the lower extremity of Rock Island, at which place the shores are perpendicular cliffs of limestone 30 feet high. In some instances the cliffs project over the base and even some parts of the Fort overhand the water.

Major Long elaborated with the following detailed description of Fort Armstrong:

> The Fort (Armstrong) has two entire faces only, the other two sides being sufficiently fortified against an assault by the cliffs before mentioned. The east face commences immediately upon the top of the cliff, where here is a Block (No.1) 2

Below: *Fort Armstrong, about 1845, probably during its last days as an army depot. Note that the fort had three blockhouses with the one towards the interior being the largest. (AMSAS-HI)*



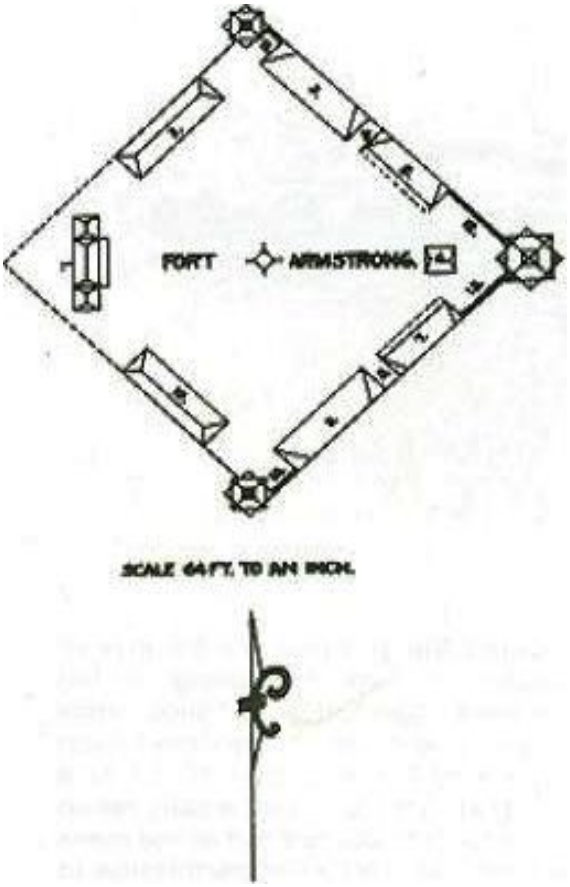
stores high and 21 feet square. The front upon this side is 277 feet including a Block House (No.2) at the NE corner of the Fort 26 feet square. The North face forms a tight angle with the east and extends from Block House No. 2 to the North Channel of the River, where it is terminated by Clock House No. 3 of the same dimensions as No. 1, presenting a front of this side of 288 feet. Both faces are flanked by Block House No. 2, the other Block Houses being placed in such a manner as to form a part of the Front of the two faces. The Block Houses are all two stories high, their second stories being placed diagonally upon the first. No. 2 has also a basement story which is used as a store house. The faces are made up principally by the rear walls of the Barracks and store houses. They are about 20 feet high and furnished with two rows of loop holes for muskets. The spaces between the buildings are fortified by walls of stone about 8 feet high supporting a breast work of timber 5 feet high.

The buildings ranged along the Faces contain 7 rooms 20 feet square upon each side; 8 of which are occupied as soldiers' quarters, 3 as hospitals, 2 as store houses, and 1 as Guard House. On the south and west sides detached from other parts of the works are situated 2 buildings (one word illegible) 64 feet long & 16 wide, containing four rooms each, designed for officers' quarters. In the SW corner is a 2 story building with low wings designed as quarters for the Commanding Officer and Offices for the use of the Garrison. The body of the building is furnished with Piazzas on both sides, and the whole combines a degree of taste and elegance worthy of imitation at all other military posts in this part of the country.

The works are constructed principally of square timber, the lower part of the block houses including embrasures (an opening for a gun in the war or parapet) is of stone. The magazine also is of stone, 7 by 10 feet in the clear, its walls 4 feet in thickness. Besides these, there are a few other buildings outside the Garrison, viz. a smith shop, sutler's and contractor's stores, a stable, etc .[24]

Fort Armstrong's strategic position on the western tip of Rock Island's lower end provided the fort with command of both channels of the Mississippi River. Troops constructed fortifications only on the two sides of the post facing inland. Steep bluffs eliminated the need for two fort walls and one blockhouse. The three blockhouses of the fort anchored the walls which

Below: *Excerpted from a report by Major Morrell M. Martson, Fort Armstrong Commander, 1819-1821, to Major General Macomb, dated 10 September 1819. Note that Major Marston's report refers to the three blockhouses being equipped with three 6*-pounders (cannons). (AMSAS-HI)



EXTRACT FROM THE REPORT OF MAJOR M. MARSTON, OF THE 5TH INFTY
TO MAJOR GENL MACOMB — COMMANDING 5TH MILITARY DEPARTMENT.
DATED, FORT ARMSTRONG, ROCK ISLAND,
SEPT. 10TH 1819.

THIS FORT IS ABOUT 170 FEET SQUARE, WITH THREE BLOCK HOUSES, MOUNTING THREE 6 POUNDERS. THE BARRACKS ARE WELL CONSTRUCTED OF HEWN TIMBER, AND ARE SUFFICIENTLY EXTENSIVE TO QUARTER THREE COMPANIES. THE MAGAZINE IS OF STONE AND WELL BUILT. THE COMMANDING OFFICER'S QUARTERS CONSIST OF A CENTER TWO STORY BUILDING 28 FEET IN LENGTH, WITH WINGS OF ONE STORY 18 FEET IN LENGTH, AND PIAZZAS BUILT IN FRONT AND REAR. THE FORT IS BUILT ON THE LOWER POINT OF ROCK ISLAND, AND UPON A PERPENDICULAR BANK OF LIMESTONE OF ABOUT 13 FT. IN HEIGHT, IT COMPLETELY COMMANDS BOTH CHANNELS OF THE RIVER. THE GARRISON IS A GREAT CHECK UPON THE INDIANS IN THIS COUNTRY AND FROM ITS CENTRAL SITUATION, IT APPEARS TO ME TO BE A STATION OF CONSIDERABLE IMPORTANCE. AN EXPRESS COULD REACH THIS IN TEN DAYS FROM COUNCIL BLUFFS, ON THE MISSOURI, AND IN THE SAME TIME FROM THE MOUTH OF THE RIVER ST PETERS, AND FROM FORT DEARBORN, AND IN FIFTEEN DAYS FROM FORT HOWARD, AND FIVE FROM ST LOUIS. THE SOIL OF THIS ISLAND APPEARS TO BE GOOD, AND IT CONTAINS A GOOD SUPPLY OF WOOD FOR FUEL AND OTHER PURPOSES. THERE IS ALSO, AN EXCELLENT SPRING OF WATER ABOUT ONE HUNDRED YARDS FROM THE GARRISON. THERE IS ABOUT FORTY ACRES OF LAND IN THE VICINITY OF THE GARRISON CLEARED AND FIT FOR CULTIVATION.

faced the interior of the island, and three companies of infantry were quartered in the barracks. Additional buildings housed the fort's surgeon, interpreter, Indian agent, blacksmith, servants, officer, and commander.

The Garrison at Fort Armstrong

Nearly 1,000 men comprised General Smith's expedition, which constructed military posts near the mouths of three major tributaries to the Mississippi River. The expeditions were composed of 800 regular army soldiers and 150 laborers, which actually comprised at that time approximately 1/10 of the nations' standing army.[25]

During construction, Fort Armstrong had a garrison of 600 soldiers; but shortly thereafter that numbers were reduced to less than 200 troopers. Frequently, between 1824 and 1836, the garrison at Fort Armstrong fell below 100 soldiers.

Fort Crawford, located near the mouth of the Wisconsin River, had a garrison strength of approximately double the size of Fort Armstrong. Fort Edwards, the first of the three posts to be constructed, was situated near the mouth of the Des Moines River at the site of present day Warsaw, Illinois, and generally had a smaller garrison than Fort Armstrong. Its garrison strength consistently numbered below 100 men. In 1824, the U.S. Army closed Fort Edwards. However, Fort Armstrong continued as an active military post until 1836, and an army garrison remained at Fort Crawford until 1856.

The initial site selection of Fort Crawford, near Prairie du Chien, was poor. Spring floods forced the selection of a new site further back from the Mississippi. Fort Crawford was abandoned briefly in 1826, but re-established a short time later with the construction of a new stone fort.

Below: *Fort Crawford, near Prairie du Chien, Wisconsin, at the confluence of the Wisconsin River and the Mississippi River. Spring floods forced the selection of a new site farther back from the river. The post was abandoned briefly in 1826, but with the increasingly hostile Indian situation a new stone fort was constructed. (Davenport Public Library Special Collections)*

The small army posts situated in the West, along the upper Mississippi River, were isolated from civilization especially during the winter months when the river froze over. Periodic stops by supply boats or mail couriers who arrived by river or by overland routes broke the isolation with news from the East. Each post, however, was also visited by an inspector general who attempted annually to conduct an inspection tour of all posts on the western frontier. His visits brought military discipline to the posts and raised the *spirit de corps* of troops whose spirit and training had eroded due to isolation and the lack of soldierly instruction.

From 1826 to 1845, Colonel George Croghan, a hero of the War of 1812, served as the inspector general of these outposts. Colonel Croghan annually toured the Western Frontier, inspecting posts and preparing first hand comments of activities at the forts for inclusion in his official reports to Washington.

His inspection report of Fort Armstrong in August 1826 praised the post for the excellent deportment displayed by its soldiers. Colonel Croghan attributed the lack of discipline to the lack of whiskey available at Fort Armstrong during Major J.H. Vose's command. Major Vose enforced general orders which restricted each soldier's purchase of liquor to one gill (1/4 of a pint or four ounces). The four ounce daily ration from the post sutler was poured out at the mess hall door. Soldiers who received permission to purchase whiskey received a half-a-gill ration (two ounces) just before breakfast, and the remaining two ounces at dinner. Although general orders from the Adjutant General's Office restricted, then banned, the daily ration of alcohol at military posts, replacing it with coffee, the soldiers at Fort Armstrong and other installations managed to purchase a steady supply of liquor from other sources.[26]

The life of a soldier at Fort Armstrong tended to be routine, especially during the winter months when the Mississippi River froze over and the river closed to navigation.

The soldiers, in addition to their military tasks of performing guard duty, drilling, and keeping the peace, served as carpenters, teamsters,

Below: *A partial listing of the Commanding Officers of Fort Armstrong, 1819-1832. These Officers commanded the fort during the events which led to the Black Hawk War of 1832. (AMSAS-HI Archives)*

FORT ARMSTRONG

Commanding Officer	Date: From	To	Garrison:
Capt. M. Marston, Fifth Infantry	Aug --, 1819	Jun --, 1821	Company F
Capt. S. Burbank, Fifth Infantry	Jun --, 1821	Jun --, 1823	Company D,E,F, and H
Maj. J. H. Vose, Fifth Infantry	Jun --, 1823 May 21, 1826	Jun 4, 1825 Oct 9, 1827	Company D,E,F, and H Fifth Infantry
Capt. J. Plympton, Fifth Infantry	Oct 9, 1827	Apr 28, 1828	Companies E and H Fifth Infantry
Capt. J. Green, Third Infantry	Apr 30, 1828	Jun --, 1828	Companies C and G Third Infantry
Capt. J. S. Nelson, Third Infantry	Jun --, 1828	Aug 13, 1828	Companies C and G Third Infantry
Capt. John Bliss Third & First Infantry	Jul 27, 1830 Sep 2, 1831	Jul 26, 1831 May 4, 1832	Companies D and H Third Infantry Companies C and K First Infantry

gardeners, orderlies, blacksmiths, and livestock handlers. At times, a portion of the troops stationed at Fort Armstrong would be detached to either Fort Crawford or Fort Edwards. Soldiers also were frequently dispatched to the lead mining region near Galena and Dubuque. Officers stationed at Fort Armstrong, or at one of the other frontier posts in the Mississippi Valley, often went on furlough to escape the drudgery of frontier duty. Soldiers on furlough for more than a year without leave, however, were reported as deserting the army. Desertion and drunkenness among the troops were two of the more serious problems that the Commanding Officer of Fort Armstrong had to contend with on the frontier. Other problems included enforcement of regulations that prohibited foreign traders and the sale of alcohol to Indians. Periodically, soldiers who strayed from the garrison were killed and scalped by Indians. One such soldier, John Haines, left Fort Armstrong alone to hunt on 27 September 1820. His body was discovered a week later, shot, scalped, and mutilated with multiple stab and club wounds. The army responded to such acts of violence by demanding that the responsible tribe, in this case the Winnebagos at Prophet's Town, turn over to them the guilty party. To ensure such actions were taken, the army held five Winnebago chiefs as hostages until the murderers were delivered to them.

Colonel George Davenport and Antoine LeClaire

Two future entrepreneurs, George Davenport and Antoine LeClaire, became historically significant individuals. Davenport was employed as the post sutler at Rock Island and

Below: *Russell Farnham, partner of Colonel Davenport. In 1826, they built an inn around which the village of Farnhamsburg, IL, developed. This site is now part of Rock Island, IL. (Hauberg Museum, Black Hawk State Park)*
Right: *Colonel George Davenport, foremost founder of Rock Island area. (AMSAS-HI)*

Antoine LeClaire was hired as the interpreter for the Fort Armstrong commander and the Indian agent. Both of these men became prominent business leaders of the communities they later founded on each side of the Mississippi River opposite Rock Island.

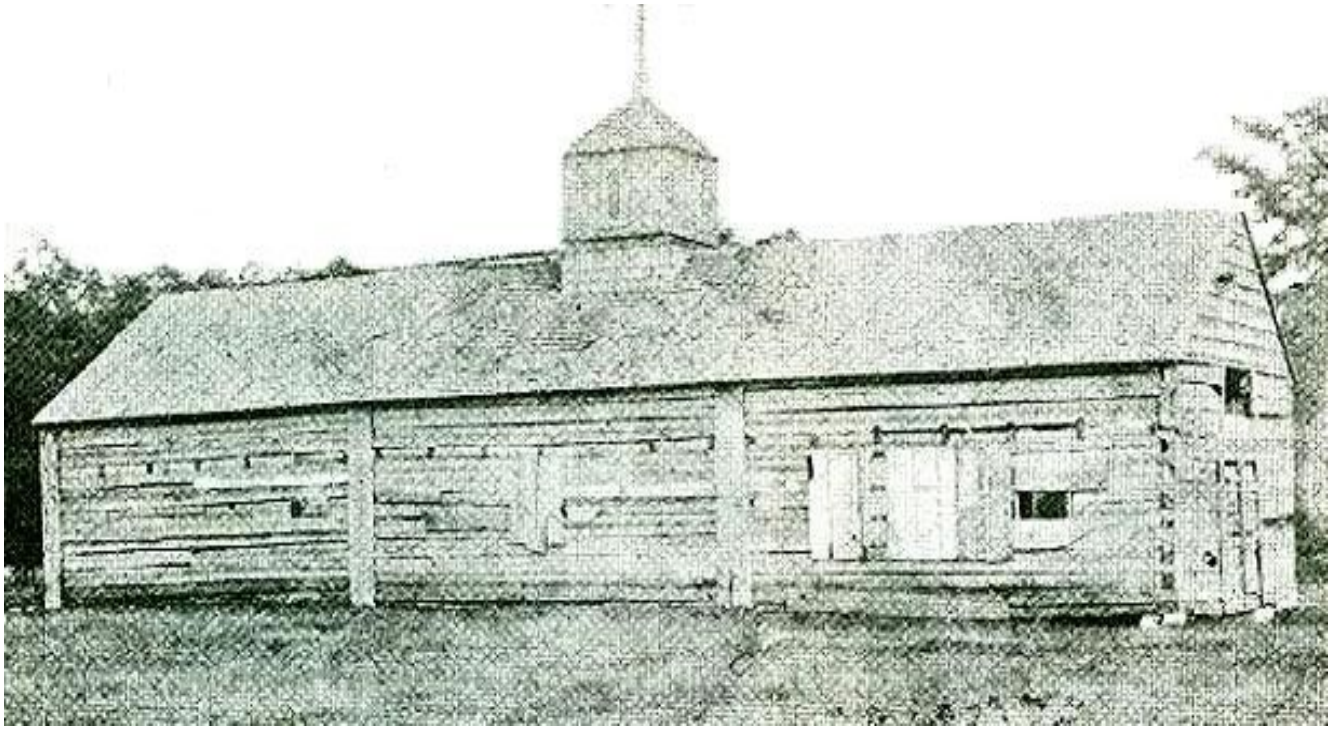
In 1816, the army did not have a commissary department that provided personal items to soldiers. Instead, a private contractor was commissioned by the government to provide the items. George Davenport, as the agent for the private contractor, sold supplies to the soldiers stationed at Fort Armstrong. He had been a seaman, an army recruiting sergeant, and a post sutler. However, Davenport did not become wealthy until he started trading with the Indians. In 1818, he quit his post sutler position and devoted his time entirely to his Indian trade business. Davenport became a full-time trader the same year Illinois became the twenty-first state to be admitted to the union. In addition to his store on Rock Island, Davenport established several other trading posts in the area.

In 1822, George Davenport expanded his trading operations with various tribes of the Upper Mississippi River Valley. He established a trading post on the Fever River near Galena, Illinois. Colonel Davenport also set up trading houses at Flint Hills (Burlington, Iowa), at the mouth of the Iowa River; and on the Wapsipinicon (Wapsi) and Maquoketa Rivers in Iowa territory. He also included in his operations three trading posts along the Rock River in Illinois.

At Rock Island, George Davenport's double log cabin initially served as a combination trading post and quarters. Indians and early settlers frequently visited Davenport's cabin to receive provisions on credit. He provided them with "grub stakes" (credit) until they were ready to market their peltries or crops.

Considered by many to be the first white civilian to live on Rock Island, George Davenport was born in England and came to the United States as a young man. He used his English background to gain the confidence and trade of the Sauk, Fox, and Winnebago tribes. Wabokieshiek, also known as the Prophet, was leader of the Winnebagos camped on the Rock River at Prophet's Town.

Below: *Double log cabin, Colonel Davenport's trading post and quarters on Rock Island. "Relic" of Fort Armstrong Series of stereoscope views by Western View Company. (AMSAS-HI)*



These Indians considered George Davenport, as an Englishman, a friend.

Davenport's wealth increased after he formed a partnership with Russell Farnham in 1824. In 1826, the two traders sold their trading business to Astor's American Fur Company and became agents for that trading company. Also in 1826, Davenport and Farnham built a combination inn, tavern, and stagecoach station, known as the John Barrel House, on the Mississippi shore in the city of Rock Island. The station was part of a stage route to Galena from Southern Illinois. The village of Farnhamsburg, one of two villages that formed the city of Rock Island, developed around that inn. The John Barrel House became the seat of justice for Rock Island County and was the site of the county's first election.

George Davenport capitalized on the increasing traffic between Southern Illinois and Galena. A man of many talents, he piloted *The Virginian;* the first steamboat to dock at Rock Island through the "Upper Rapids" or Rock Island Rapids of the Mississippi River. The steamboats serviced the lead mining region of Dubuque and Galena. Soon Mississippi steamboats were frequently navigating the "Upper Rapids" carrying workers and supplies to this mining region. Lead diggings near Dubuque and Galena, approximately 100 miles upstream from Rock Island, increased the local economy. Traders, such as Davenport, had for several years acquired lead, as well as pelts, by barter with the Sauk and Fox Indians. John Shaw, another trader who operated a trading boat between St. Louis and Prairie du Chien, also traded with the Indians for lead. By 1823, thousands of pounds of lead were being shipped downstream from the mines around Galena and Dubuque.

It was not long before settlers, speculators, and men looking for work made their way to these mines north of Rock Island. Not all of the traffic traveled by boat; many walked the trails across the Rock River Valley and along the Mississippi River to Galena. By 1823, a few of these travelers from Southern Illinois settled as squatters on Sauk lands along the Rock River Valley. Since the land had not yet been surveyed or opened for public sale, these settlers were encroaching upon the Indians camped near the mouth of the Rock River.

Antoine LeClaire, post interpreter, was of

Below: *Antoine LeClaire, part French and Pottawatomi Indian, was the U.S. interpreter at Fort Armstrong. Later, he became a prominent land developer and a prosperous resident of Davenport, Iowa. (Putnam Museum Davenport, Iowa)*
Right: *Signing of the Treaty of 1825 at Prairie du Chien.(Augustana College Library Special Collections.)*

French and Pottawatomi Indian background, and acquired vast tracts of land from the Sauk and Fox. He served as interpreter at treaty councils between the Sauka nd Fox nation and the U.S. Government which took place in 1829, 1831, 1832, 1836, 1837, and 1842. Through the Treaty of 29 July 1829, Antoine LeClaire and wife Frances received two sections of land totaling 1,280 acres from the Sauk and Fox Indians. The LeClaire Reserve, another tract of land, was acquired by LeClaire after serving as interpreter during the 1832 Black Hawk Treaty. Davenport purchased this land from LeClaire, and at the head of the "Upper Rapids" or Rock Island Rapids laid out the town of LeClaire naming it in his honor. According to George W. Wickstrom's work *The Town Crier:*

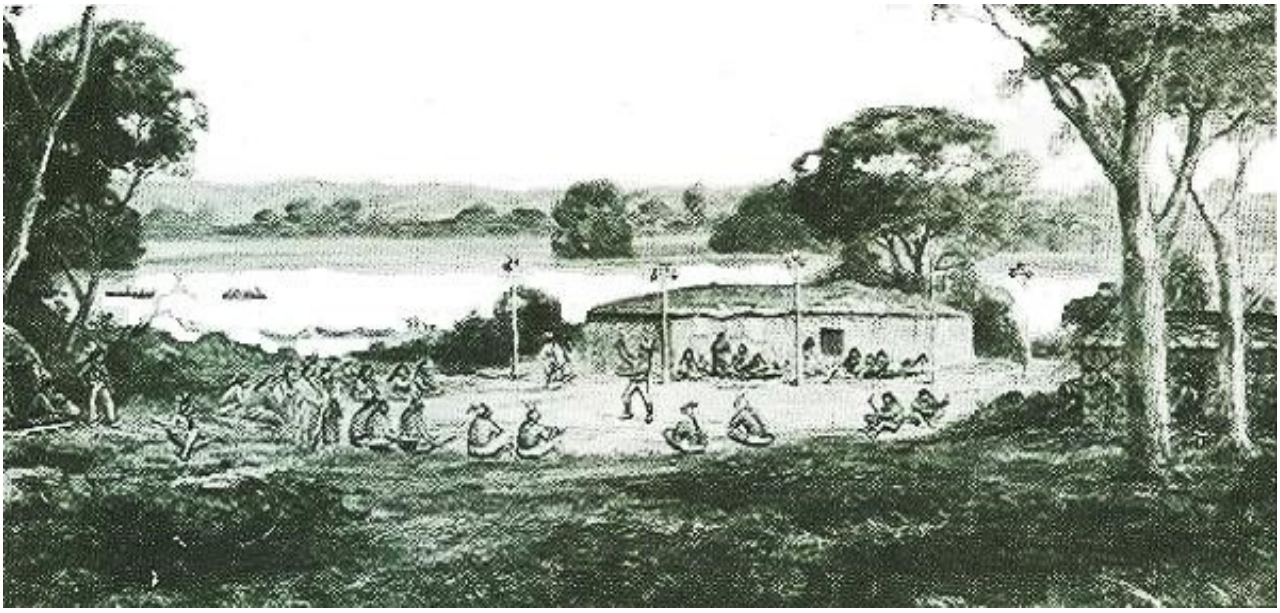
> Colonel George Davenport and two other men who had an eye for a little quiet speculation in corner lots plotted a city in 1832 or 1833 where downtown Rock Island now stands. They laid out whole clocks for court, jail, churches, and a college, and they named the streets for the mighty men, white and red, who then lived in these parts.[27]

In 1836, LeClaire and Davenport, along with a few other land speculators, founded the city of Davenport on the west bank of the Mississippi River opposite Rock Island. Colonel Davenport purchased an interest in the wotn site of Port Byron, Illinois, and later, in 1841, he laid out an addition to the city of Moline. Rock Island became the "cradle" of the Quad Cities. Much of the organizing and mapping out of these communities occurred at meetings held at the Davenport House located on Rock Island.

Impact of Intertribal Feuds Upon Rock Island Region

Intertribal squabbles and sporadic fighting took place among various tribes of the Mississippi River Valley which frightened and disturbed settlers near Fort Armstrong. Settlers were shocked by the ruthlessness of Indian intertribal warfare. Under the Indian code of conduct, no one of the enemy tribe was spared. Indian agents and commanders at Fort Armstrong and other military posts along the Mississippi River intervened constantly in intertribal feuds to prevent disputes from erupting into full scale frontier wars.

Below: *Saukenuk, a Sauk Indian village which was once situated on the banks of the Rock River, near the confluence of the Rock and Mississippi Rivers. (Hauberg Museum, Black Hawk State Park)*



In 1825, the U.S. Government attempted to arrange peace between warring Sioux and the Sauk and Fox tribes. According to Indian tradition, relatives of a murdered victim could demand payment in blood or "gifts" from the attackers to "cover" the loss of their dead relative. Government agents tried to develop a plan which eliminated the need for such avenging attacks. The government attempted to provide a peaceable solution to the problem. It agreed to cover the dead on both sides of the Indian conflict. Government officials considered such a procedure to be less expensive than mobilizing the army.

The plan, however, proved ineffective. Territorial encroachments by hunting parties continued to occur and many of the hunting parties returned to their villages with the scalps of their enemies.

Settlers feared an attack on the Sauk and Fox villages near Dubuque and Rock Island by the Sioux, Menominee, and Winnebago Indians might threaten their settlements. Captain Wynkoop Warner, a subagent at Fever River near Galena, attempted to ameliorate intertribal warfare by inviting the Fox chiefs to the Dubuque and Rock Island vicinities to parley with Sioux, Menominee, and Winnebago forces. However sixteen chiefs and one woman from the Fox village across from Rock Island were attacked by a war party of Sioux, Winnebago, and Menominee warriors while en route to the parley. The attackers spared one of the Fox chiefs so he could return to his village and tell the tale of the attacks. Again, as in other attacks, the massacre of the Fox leaders was in retaliation to earlier hostile acts performed by the Sauk and Fox against the Sioux.[28]

The Sauk and Fox tribes prepared for war by mobilizing a force of approximately 1,000 braves. However, the Fox tribe camped near Dubuque, fearing an attack form the Sioux and their allies, evacuated their village and fled downstream to Sauk and Fox villages near Rock Island. As soon as the Fox village was abandoned, squatters from Galena took possession of the Indian diggings. However, federal troops drove off these intruders.

Government agents negotiated a treaty in July 1830 with the feuding Indians that supposedly

Right: *Next to Keokuk, Chief Wapello was probably the most influential leader among the Sauk and Fox Indians. (Hauberg Museum, Black Hawk State Park)*

"covered" (provided payment for) the losses on all sides involved in the intertribal fighting. An interesting side note in the treaty was that the American Fur Company obtained a provision to the treaty whereby Sauk and Fox Indians were obligated to pay the debts they owed to Company agents, George Davenport and Russell Farnham, for the future sale of tribal lands to the United States.[29]

Unfortunately, the intertribal warfare was not resolved by the Treaty of 1830. Many Fox Indians felt the gifts they had received to cover the loss of their dead chiefs had not been sufficient; besides, the desire for revenge was too great among many of the Fox braves. In August 1831, a combined Sauk and Fox war party massacred twenty-five Menominee camped at Prairue du Chien in retaliation for the previous slaughter of Fox leaders. When United States agents realized that their plan to prevent any future revenge raids by covering the dead on all sides would not prevent another series of retaliatory attacks, they called for military intervention. However, winter prevented any immediate action by the United States Army. The following spring, General Henry Atkinson, representing the United States Government, held a council at Rock Island in which he threatened to use military force, if necessary, to apprehend the braves involved in the attack on the Menominees. Keokuk and Wapello, two chiefs who were consistently friendly to the United States Government, agreed to the demand. The chiefs, however, were not able to deliver more than three participants to the massacre. The others involved in the slaughter at Prairie du Chien had joined Black Hawk's hostile band camped on the Rock River. The government did not press the issue any further, fearing tha t show of military force might drive more braves into the camp of the hostiles. Many Sauk and Fox Indians were bitter against the Americans because their Fox leaders were killed while trying to comply with a request by the United States Government.

Encroachment by Squatters

Civilization steadily encroached on the Indians in Illinois. Though Illinois achieved statehood in 1818, much of the northern portion of the state had yet to be settled. By 1827, the lead mining community of Galena had become the county seat for the newly organized Jo Davies County, as a result of an increase in population. In that same year a road linking Southern Illinois with Galena was begin surveyed and stakes out. In the midst of this progress, the Commanding Officer at Fort Armstrong had to dispatch arms and ammunition to Galena to defend the settlement against an uprising of hostile Winnebagos. A Show of military force by army regulars quickly put down the uprising. Illinois Governor Ninian Edwards, in response to the outbreak of Indian hostilities, petitioned to the War Department to remove all hostile tribes, including the Winnebagos and the Sauk and Fox from Illinois.

Right: *Keokuk and his son. (Hauberg Museum, Black Hawk State Park)*

The War Department, in turn, pressured Tom Forsyth, the Indian agent at Fort Armstrong, to convince the Sauk and Fox tribes that they should leave Illinois and relocate on the west bank of the Mississippi River. In the fall of 1828, Keokuk, spokesman for the friendly faction of the two tribes, persuaded many of the Indians to join him at a new camp situate don the Iowa River in what is now the state of Iowa. However, a smaller more militant faction led by Black Hawk remained at the Sauk village located on the banks of the Rock River. Eventually dissident Indians from the Fox and the Kickapoo tribes joined Black Hawk's band. Counting women and children, the hostile band numbered approximately 1,500 Indians. Keokuk's peaceful group included a majority of the Sauk and Fox braves and their chiefs, and the camp numbered approximately 3,500 Indians.

Black Hawk's band continued to live in Illinois and practiced their Indian traditions. After the crops had been harvested in the fall, the braves left their village on the Rock River to participate in their annual winter hunt. In the fall of 1828, and again in 1829, news spread throughout the state that Black Hawk's British band had left Illinois for good. A rumor also spread that the supposedly abandoned Sauk land would be offered for public sale by the Government Land Office. Soon squatters began to occupy some of the lodges and portions of the land near the Rock River village; but each spring, to their surprise, Black Hawk's band returned to the village. Black Hawk was astonished by the increasing number of settlers residing in the Rock Island vicinity. Disputes arose between the settlers and Indians over possession of lodges, cornfields, and land. The Indians resented their cornfields being fenced in and taken possessions of by these settlers; and their burial grounds being destroyed by the squatter plows. A clash between the Indians and settlers was inevitable as both sides continuously harassed one another. The Indian agent at Fort Armstrong received a steady stream of complaints from settlers and braves. Squatters were especially adept at writing petitions and letters of grievances. Governor Reynolds, upon receiving these written pleas for the removal of Black Hawk's British band from Illinois, wrote the War Department for assistance. He also called a for a volunteer army of Illinois citizens to, if necessary, remove Indians by force.[30]

Article seven of the 1804 Treaty stated the Sauk and Fox Indians could remain at their Indian settlements for as long as the Federal Government possessed the land. Instead of dispatching troops to force an eviction, which would have violated the spirit of the 1804 Treaty, the Federal Government began to open portions of the Sauk

Below: *Keokuk, r*ival of Black Hawk, was appointed Chief of Sauk Indians by Illinois Governor J. Reynolds and General W. Scott at the close of the Black Hawk War. (AMSAS-HI Archives)

Right: *Illinois Governor John Reynolds organized the State Volunteers against Black Hawk's party. (Hauberg Museum, Black Hawk State Park)*

land for public sale. In October 1829, the U.S. Government Land Office put the old Sauk village up for sale. Colonel George Davenport and his partner, Russell Farnham, purchased eighty percent of this land. Black Hawk, believing he had the support of other tribes and the support of the British in Canada, threatened the settlers and demanded they leave.

The settlers were convinced the Sauk had formed an alliance with the Fox, Kickapoo, Potawatomi, and Winnebago tribes. Fearing an attack, the settlers fled to Fort Armstrong and Davenport's trading post on Rock Island.

Colonel Davenport erected a stockade around his cabin and outbuildings and placed an old swivel gun at the entrance. Only a garrison of eighty U.S. Regulars, under the command of Captain John Bliss, stood between the settlers and what they believed to be several thousand hostile Indians.

Governor Reynolds, fearing a possible massacre, requested additional federal troops to protect the settlers. In response, General Gaines, at Jefferson Barracks near St. Louis, dispatched a large military force to Rock Island.

As a show of force until reinforcements arrived, Captain Bliss had his soldiers begin target practice. He also ordered the firing of morning and evening guns (cannons) for the first time.

General Gaines and six companies from the 6th U.S. Infantry arrived at Rock Island by steamboat in early June 1831. In addition, Colonel Zachary Taylor brought four additional companies down from Fort Crawford. In an attempt to peaceably settle the dispute, General Gaines held a council with Sauk and Fox leaders. Keokuk, Wapello, and other chiefs arrived peacefully at the council; however, Black Hawk did not. He appeared with his warriors in war paint; carrying arms; and signing war chants.[31]

General Gaines explained the government's position regarding the land the Sauk and Fox had ceded to the United States. He stated that by the provisions of the 1804 Treaty, the Indians must relocate because the government had opened the ceded land for public sale. Keokuk and

Right: *Major General Edmund P. Gaines parleyed with Black Hawk at For Armstrong in 1831. (Hauberg Museum, Black Hawk State Park)*

the other chiefs encouraged Black Hawk and his band to cross the Mississippi River and join them at their camp. However, Black Hawk refused to leave.

On 19 June 1831, Governor Reynolds arrived with his volunteer army and joined General Gaines near the mouth of the Rock River. The combined forces closed in on the Sauk village. U.S. Regulars, along with a company of local volunteers known as the Rock River Rangers, marched from Fort Armstrong across the site of the present day city of Rock Island to the Sauk village on the Rock River. The Rock River Rangers were comprised of 58 men and older boys from the Rock River Region.

The steamboat *Enterprise* carried a company of soldiers and a cannon up the Rock River to the Indian camp. However, when the troops arrived at the village, they found it deserted. Black Hawk, fearing that the rowdy, undisciplined Rangers could nto be controlled by their officer, had fled with his band across the Mississippi River the previous night. The Rangers, who were spoiling for a fight, took out their frustrations by destroying the abandoned Sauk village.

General Gaines sent an ultimatum to Black Hawk stating that if he did not return to the council he would send his army across the Mississippi River after him. On 30 June 1831, Black Hawk met with Governor Reynolds and General Gaines at Rock Island. At this conference, 27 chiefs and warriors, including Black Hawk, signed a treaty that included three major agreements: to honor the provisions of the 1804 Treaty; to move to Keokuk's camp on the Iowa; and not to return across the Mississippi River without the permission of the U.S. Government. In addition, the Sauk and Fox tribes were to break off all communication with the British. In return, the U.S. Government agreed to provide food and replace the loss of the cornfields that Black Hawk's party abandoned on the Rock River in Illinois.

Within a year Black Hawk had broken his promise. On 8 April 1832, Black Hawk and his party re-crossed the Mississippi River. They entered the state of Illinois at Yellow Banks near the present community of Oquawka. According to several accounts, Black Hawk and his British band crossed the Mississippi singing and banging their

Below: *General Henry Atkinson.*
(AMSAS-HI Archives)
Right: *Map showing the course of Black Hawk's band during the Black Hawk War of 1832*
(AMSAS-HI Archives)

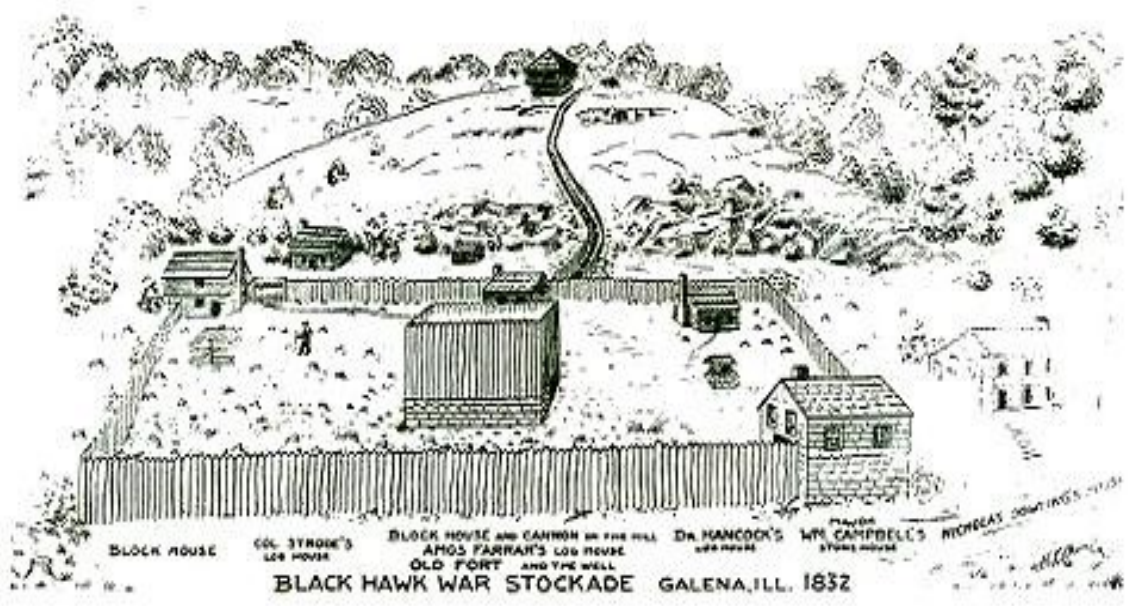
drums in what seemed a very threatening manner. Settlers in the Rock Island vicinity, upon hearing the ruckus, fled to Fort Armstrong for protection. To the settlers on the Illinois frontier, it appeared that Black Hawk's band was a war party invading the state to attack their settlements. The settlers and government officials responded to this threat by arming themselves, organizing a state army of mounted volunteers, and calling for assistance from federal troops.

Although the sight of approximately 1,500 Indians noisily crossing the river startled the settlers, the band was not a typical war party. Women ad children customarily did not travel with war parties. Black Hawk's band that crossed the river, however, consisted of nearly 500 warriors and approximately 1,000 women and children.

Black Hawk claimed his party had accepted an invitation from the "Prophet" to live and to plant corn at Prophet's Town, located up the Rock River nearly forty miles from Rock Island. However, Black Hawk did posses some vague plan to persuade Keokuk and his followers to join his conspiracy; but they refused. Two members of the dissident band provided Black Hawk with faulty advice. The Prophet related to Black Hawk his visions of neighboring tribes joining him in driving off the settlers. Neapope, one of the few Sauk chiefs to have joined the dissident band, falsely informed Black Hawk that he had received a pledge of arms and ammunition from the British during a visit to Canada in 1831. Based on this information, Black Hawk began his journey to retake his former village. Not grasping the severity of the situation, he ignored messages from Fort Armstrong and from the peaceful Sauk and Fox camps advising him to return to the west banks of the Mississippi River. Illinois Governor John Reynolds labeled the Indian crossing an invasion and called for the immediate formation of an army of state volunteers to drive them back across the river.

Governor Reynolds defended his organization of a volunteer army by saying, "If I did not act, and the inhabitants were murdered after (I was) informed of their situation, I would be

Below: *The stockade erected by anxious civilians near Galena during the Black Hawk War. (Alfred W. Mueller, Galena Historical Collections)*



condemned".[32] It was also clear that Governor Reynolds equoated victory over the Indians with political victory. In a letter to General Atkinson he wrote: "Nothing will save me but a decisive stroke on the Indians".[33] The Governor circulated petitions asking for aid throughout the counties, and he made speeches urging people to volunteer to defend the frontier. After receiving General Gaines' written report of his earlier meeting with Black Hawk at Rock Island, Governor Reynolds wrote to Gaines that:

> I was very much rejoiced on receiving (you) letter, as it puts my whole proceedings on a legal and constitutional footing, the responsibility of the war was removed from me.[34]

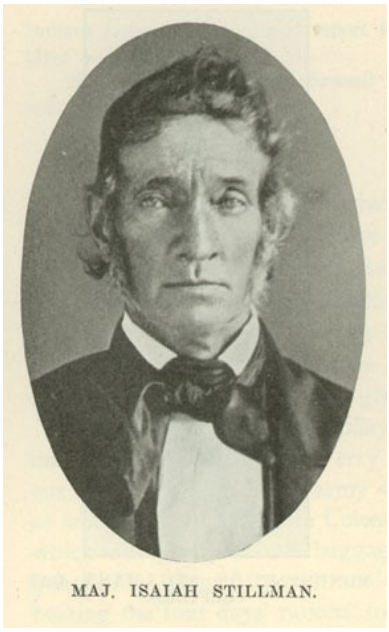
While Black Hawk's band was proceeding up the Rock River toward the Winnebago camp at Prophet's Town, federal troops were on their way to Rock Island. General Atkinson left Jefferson Barracks near St. Louis with the 6th Infantry Regiment on 10 April 1832. Governor Reynolds had assembled 2,000 volunteers at Beardstown, Illinois. Near Yellow Banks, the volunteers, under the command of General Samuel Whiteside, were to be joined by General Atkinson's Regiment.

Fort Armstrong became the headquarters for military operations during what would be known as the Black Hawk War. A company of Illinois volunteers were stationed at Fort Armstrong as reinforcements from April to June 1832. The company pulled garrison duty and was composed of men from Rock Island and nearby counties. George Davenport supposedly volunteered for duty during the Indian trouble and received the commission of quartermaster at Fort Armstrong with the rank of Colonel.

In the 15 weeks of the Black Hawk War, a majority of the fighting actually took place in Northern Illinois and Southern Wisconsin, even through the spark that ignited the conflict happened in the vicinity of Rock Island. After Black Hawk had inflicted a humiliating defeat on a detachment of 275 mounted volunteers commanded by Major Isaiah Stillman at Sycamore Creek near Dixon Ferry, it was no longer possible to settle the dispute peaceably.

Major Stillman's Rangers, anxious to fight Indians, had volunteered to serve as a scouting

Left: *Posters such as this helped shape public opinion and contributed to the spreading of fear among civilians of a general Indian uprising on the frontier. (Davenport Public Library Special Collections)* ***Middle:*** *Sauk warrior Se-us-kuk, son of Black Hawk. (Rock Island County Historical Society)* ***Right:*** *Major Isaiah Stillman. (Augustana College Library Special Collections)*

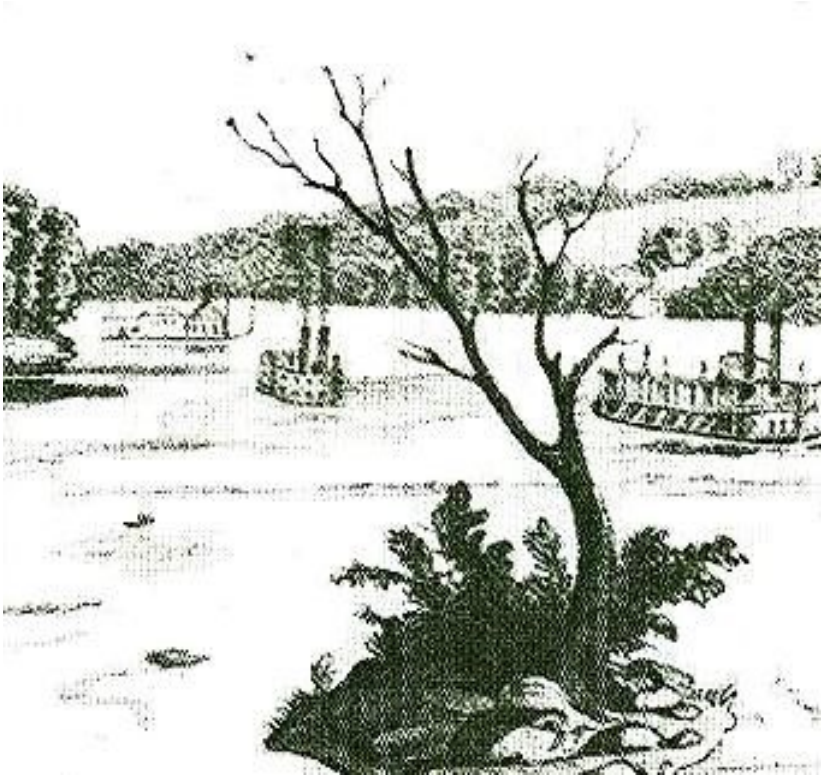


party for the U.S. Regulars. Stillman's troops, ignoring an opportunity to parley with Black Hawk, fired on Indian messengers carrying a flag of truce. The Rangers pursued the few Indians that escaped to Sycamore Creek, where Black Hawk surprisingly attacked the Rangers. Black Hawk and approximately 40 braves routed the volunteers. Stillman's mounted Ranger panicked and retreated. Only 11 volunteers actually were killed in the skirmish but their bodies were horribly destroyed. The Indians scalped them and mutilated them. The route of these undisciplined volunteers became known in the Rock Island vicinity as the Battle of Stillman's Run. War could no longer be avoided, and state-wide panic occurred as newspapers in the state carried vivid accounts of the butchery. The politicians, regular soldiers, and volunteer Rangers became more determined to defeat Black Hawk.[35]

Black Hawk's band fled north, searching for a place to re-cross the Mississippi River. During these weeks of flight, isolated attacks occurred by small bands of warriors. The raiding Indians would sneak up on a lone cabin then murder, scalp, and steal provisions of the inhabitants. The roving parties included Winnebago, Potawatomi, and Kickapoo braves in addition to Sauk and Fox warriors. On 27 May 1832, a raiding party attacked three families that had gathered at a cabin along Indian Creek, just six miles north of Ottawa, near the Illinois River. The Indians massacred 15 men, women and children at the cabin but spared two 17 and 15 year old sisters. The sisters were taken captive and later ransomed for horses at Blue Mound, Wisconsin.[36]

Besides attacking lone cabins, the small band of marauding warriors also ambushed travelers. Another example of the random nature and savageness of the attacks by these small, roving war parties occurred on 23 May 1832. Felix St. Vrain, an Indian agent at Fort Armstrong who had replaced Thomas Forsyth, was killed while delivering dispatches from Fort Armstrong to Galena. Agent St. Vrain and his three companions were killed and scalped. Reportedly, St. Vrain's body was dismembered and his heart cut out and eaten by his killers.[37]

Below: *Lieutenant Robert E. Lee. In 1837, he surveyed the upper rapids of the Mississippi River at Rock Island.*
(Davenport Public Library)
Right: *The upper rapids at Rock Island forced steamboat crews to unload their cargo and transport it overland past the rapids in order to lighten the vessel for its trip through the rapids. Rock Island was a break-of-bulk point. (AMSAS-HI)*



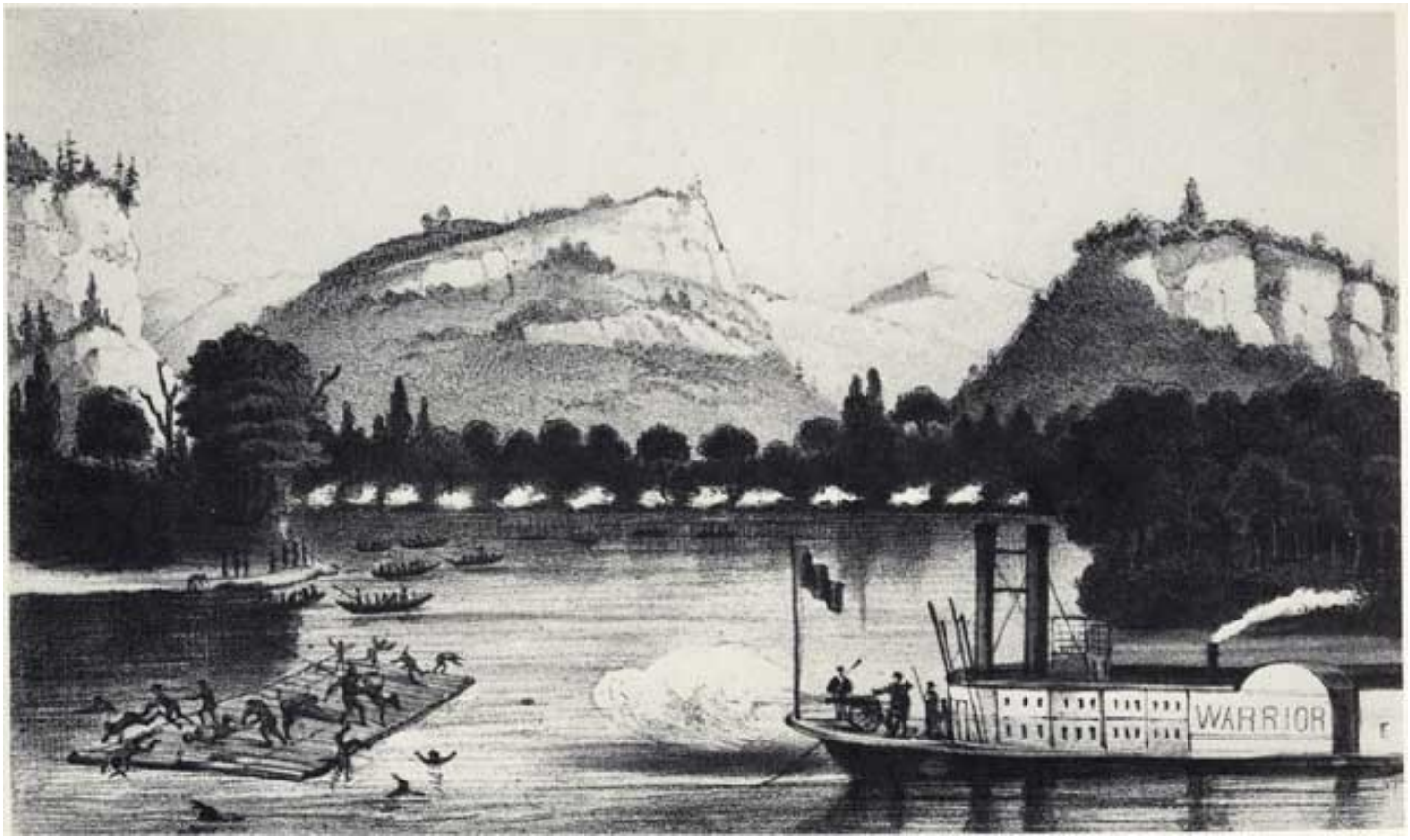
Many of the settlers serving as Rangers on the Illinois frontier were just as savage. Several of these citizen volunteers took Indian scalps as trophies during the campaign. The federal troops were issued specific orders not to scalp or mutilate any Indians in the course of the conflict. The Black Hawk War was the last gasp in defense of preserving the Indians' way of life in Illinois.

During the Indian conflict, progress continued to be made in opening the state's northern frontier region. In 1829 Lieutenant Napoleon Buford, while on topographical duty, began to draw up surveys of the rapids of the upper Mississippi River, including those at Rock Island. Also in 1829, President Andrew Jackson appointed a commission to approach the Fox Indians regarding the transfer of mineral rights to the Federal Government.[38] On 9 February 1831, the Illinois state legislature passed an act to establish Rock Island County, which included the area of the former Sauk village. Section One of the act established the boundaries. Section Two stated that 350 inhabitants were needed for a general election to be held for the election of three commissioners, a sheriff, and a coroner, Due to the Indian unrest in the Rock Island area, the county elections were not held in 1833.

Battle of Bad Axe & the Capture of Black Hawk

Black Hawk and his followers continued north along the Mississippi River searching for a place to cross. On 2 August 1832, General Atkinson, with about 500 Regulars and some volunteers, caught up with Black Hawk's band in Southern Wisconsin at the confluence of the Bad Axe River and the Mississippi. At the Battle of bad Axe the Indians were decisively defeated by federal forces with the aid of the steamboat *Warrior* and its six-pound gun. Driven into the river by their pursuers, the Indian warriors, their elders, women, and children were shot down or drowned as they tried to escape. Many of those that reached the west banks of the Mississippi were slain by a band of Sioux recruited by the U.S. Army. Black Hawk, however, escaped with a small band that included the Prophet. Two weeks later, they were captured by the Winnebago Indians who also had been recruited by the United States Army. The army recruited Sioux, Winnebago, and Menominee warriors to aid in the warriors in the capture of Black Hawk.

Below: *The Battle of Bad Axe depicted below resulted in a crushing defeat and slaughter of Black Hawk's band of hostile Indians. (AMSAS-HI Archives)*



Lieutenant Robert Anderson, later of Fort Sumter fame, was one of the army officers aboard the *Warrior.* In addition to Lieutenant Anderson, an impressive number of participants in the Black Hawk War later became famous as politicians and as soldiers. Included among the roll call of Black Hawk War veterans were United States Presidents, Abraham Lincoln and Zachary Taylor; Commander-in-Chief of the U.S. Army General Winfield Scott; and Secretary of War and later President of the Confederate States of American Jefferson Davis. Several other participants later rose to the military rank of General. Among this group were two Confederate Generals, Albert Sidney Johnston and Joseph E. Johnson. A half dozen other veterans of the Black Hawk War were later elected Governor of Illinois, and another veteran of the Indian conflict later became Governor of Wisconsin.[39]

The Black Hawk War became a secondary issue during the 1832 presidential campaign of Andrew Jackson. Governor John Reynolds' volunteer army of Illinois settlers, with politicians as officers, had been unable to apprehend Black Hawk's hostile band of Indians. When the governor requested additional federal troops to subdue Black Hawk, President Jackson ordered General Winfield Scott to assume command of an army of 1,000 Regulars, which was to be dispatched from the east to Fort Armstrong.

General Scott's expedition was ill fated from the beginning. While en route to Chicago, aboard four steamboats, his troops were stricken with an outbreak of Asian cholera. When General Scott's forces finally reached Fort Armstrong they had been decimated by the disease. Only 220 U.S. Regulars completed the march from Chicago to Rock Island. Scott's army arrived too late to take

Below: *General Winfield Scott's headquarters at Rock Island just east of the present Clock Tower. (AMSAS-HI Archives)*
Right: *General Winfield Scott, Commander of U.S. troops at the close of the Black Hawk War. (AMSAS-HI Archives)*

the field against Black Hawk. A few weeks earlier, Black Hawk's dissident band had been virtually obliterated at the Battle of Bad Axe in Southern Wisconsin. All that was left for General Scott and his troops to do was to assist Governor Reynolds in drafting the peace treaty and to guard the few prisoners that survived the battle.

However, within a week of General Scott's arrival at Fort Armstrong, cholera once again surfaced among the soldiers in epidemic proportions. General Scott had distinguished himself in an exemplary manner in his efforts to save the lives to his soldiers. General Scott, in disregard to his personal safety, dispensed medicine and cared for the sick. His strict orders to enforce discipline provided the critical leadership needed during such a crisis. Army physicians knew littler as to the cause of the disease except for their observation of the stricken. The disease seemed to attack men that were under the influence of alcohol and those weakened by the lack of proper eating habits of living in crowded, unsanitary quarters. General Scott issued the following order to the U.S. Regulars and volunteer Rangers stationed at the fort on 28 August 1832:

> It is believed that all these men were of intemperate habits. The Ranger who is dead, it is known, generated this disease within himself by a fit of intoxication… Sobriety, cleanliness of person, cleanliness of camp and quarters, together with care in the preparation of the men's messes are the great preventatives… The Commanding General… therefore peremptorily commands that every soldier or Ranger who shall be found drunk or sensibly intoxicated, after the publication of this order, be compelled, as soon as his strength will permit, to dig a grave at a suitable burying place, large enough for his own reception, as such grave cannot fail soon to be wanted for the drunken man, himself, or some drunken companion. This order is given as well to serve for the punishment of

Below: *Black Hawk in captivity. (Hauberg Museum, Black Hawk State Park)*

Below: *Veterans of the Black Hawk War. General Samuel Whiteside of the Illinois Volunteers, seated third from the left. (Hauberg Museum, Black Hawk State Park)*

> Drunkenness as to spare good and temperate men the labor or digging graves for their worthless companions.[40]

The order also served as a means of controlling fearful soldiers who might turn to drink in despair. After prohibiting intoxication, improving sanitary conditions, and quarantining nearly 1,500 federal soldiers and state volunteers in small groups about the banks and hills along the Mississippi River and the Rock River, the army was successful in bringing about an end to the cholera epidemic.

The Winnebago Indians had been under suspicion of having possibly assisted Black Hawk's band during the war, but they demonstrated their loyalty to the United States government by detaining Black Hawk and his followers. The reward of money and horses made the task more palatable. On 17 August 1832, the Winnebagos turned Black hawk over to authorities at Prairie du Chien. Colonel Zachary Taylor, the Commanding Officer at Fort Crawford, appointed Lieutenant Jefferson Davis to take Black Hawk by steamboat to Jefferson Barracks near St. Louis.

The Black Hawk Purchase (Treaty of 1832)

The United States Government held a three day peace conference from 19-21 September 1832 with the Sauk and Fox tribes. General Winfield Scott and Illinois Governor John Reynolds conducted the sessions and drafted the final treaty. The opening session was held in a tent on the west banks of the Mississippi, rather than at Fort Armstrong, since some soldiers were yet inflicted with cholera. The Sauk and Fox tribes ceded to the U.S. approximately 6 million acres of land bordering the west banks of the Mississippi River, primarily in Eastern Iowa. The ceded land included the Fox Indians' lead diggings near Dubuque . The Indians received $660,000 in exchange for the land, and the money wad divided in $20,000 annuities to be paid over a thirty-year period by the U.S. Government. The first two years' annuities, totaling $40,000 were awarded to Colonel Davenport to settle a credit debt the Sauk and Fox tribes owed him.[41]

The Indians agreed to vacate the ceded area by 1 June 1833. However, a 400 square mile tract of land on the Iowa River known as the Keokuk Reserve, remained in possession of the appointment of Keokuk as Chief of the Sauk tribe; the awarding of two sections of land to the U.S. interpreter, Antoine LeClaire, and the supplying of food to Sauk and Fox women and children whose men were killed in the war. In addition, General Scott and Governor Reynolds agree to honor a

Below: *Black Hawk Purchase Treaty depicting Antoine LeClaire, Governor John Reynolds, and General Winfield Scott at the table. Original mural on display at the Davenport Bank Building, Davenport, Iowa. (Quad City Times Photo Collection)*

Below: *Early photo of Fort Armstrong from the levee at Rock Island (1845). Note the extremely high flagpole. (AMSAS-HI Archives)*

Request by Keokuk for forty kegs of tobacco and forty kegs of salt.

Keokuk (He Who Has Been Everywhere), Wapello (He Who Is Painted White), and Poweshick (The Roused Bear) were among the Indian leaders listed as agreeing to the provisions of the treaty. Wapello and Poweshick were the two leading Fox Indian chiefs at the peace council. This treaty, later known as the Black Hawk Purchase of 1832, officially ended the Black Hawk War. Within a couple of years, all the other Indian tribes in Illinois were also relocated to areas west of the Mississippi River by the United States Government.

Since the threat of Indian hostilities no longer existed, the War Department removed the garrison at Fort Armstrong. Although the army abandoned the fort in 1836, the government retained Rock Island as a government reservation. In 1840, the U.S. Army made some repairs at Fort Armstrong and established an ordnance depot at the old post. Captain William Shoemaker commanded the depot until 1845, when its stores were transferred to St. Louis in support of American efforts during the Mexican War. Fort Armstrong again became vacant, a decaying reminder of Rock Island's vanishing frontier. In 1856, the last of several fired destroyed the abandoned old post.

The Rock Island area settled quickly once the Indians were removed from the vicinity. Colonel Davenport played a prominent role in its development and became one of the first three commissioners of Rock Island County. With help from others, Davenport laid out the county seat, which was to be named "Davenport". However, in a letter published in the *Galena Advertiser,* Colonel Davenport ridiculed a state legislator for his participation in the Battle of Stillman's Run. The legislator, in retaliation, blocked the naming of the county seat in honor of Davenport. In 1835, the name Stephenson was substituted for Davenport, and Illinois State Legislature approved the charter. In the meantime, Colonel Davenport, Antoine LeClaire, and other organized and plotted another community on the west bank of the Mississippi River opposite Stephenson. In 1836, the community on the Iowa banks became Davenport. The village of Stephenson became Rock Island in 1841.[42]

Below: *Official letter announcing the newly elected Commissioners of Rock Island County, for the first county election held in 1833. (AMSAS-HI Archives)*

Separation No A

Special Term of the Commissioners Court July 1833

Be it Remembered that in pursuance of an Act of the people of the State of Illinois represented in the General Assembly entitled an act establishing the Courts of County Commissioners, and also an act passed at the last Session of the General Assembly entitled an act to establish a permanent seat of Justice for Rock Island County It appearing from the election held on the first monday in the month of July 1833, for Rock Island County, that George Davenport John M Spencer and George M Harlan were duly elected as Commissioners for the County of Rock Island and thereupon they took the annual oaths prescribed by law as Commissioners for the County of Rock Island Legal notice being given that a special Term would be held on the eight day of July 1833 for Rock Island County Whereupon the said George Davenport John M Spencer and George Harlan took their seat; And thereupon a special Court was holden by the Commissioners for Rock Island County on the 8th day of July in the year of our Lord one thousand eight hundred and thirty three

Present

George Davenport } Com.
John M Spencer } sioners
George M Harlan }

Below: *A view of Colonel Davenport's house built in 1833. Note the original structure had three wings, two of which are visible in the photograph. (AMSAS-HI Archives)*

The planning of these two communities, along with organizing the villages of LeClaire and Port Byron, occurred during meetings by Colonel Davenport at his island estate. In addition to land speculation, the building of railroads, bridges, river commerce, and business development in the Rock Island area were also topics discussed at these meetings. The Davenport House became the gathering point for the early "shakers and movers" of the Rock Island area.

The Colonel Davenport House

In 1833, a year after the Black Hawk Purchase, Colonel Davenport built the most elegant family home for that time in the Rock Island vicinity. The Davenport family included his wife, Margaret; stepdaughter, Susan Lewis; and sons, George L'Oste and Bailey, the latter born to his stepdaughter, and purportedly fathered by Colonel Davenport.

Federal authorities in 1833 rewarded Colonel Davenport for his services to the government by allowing him to build his family residence on the northwest shore of Rock Island. In 1844, Congress passed a special act confirming Colonel Davenport's title to the property.[43]

Colonel Davenport's home was not the typical pioneer cabin. Clapboard lumber, ordered from the East, covered the two-story log-frame house. The clapboard siding gave Colonel Davenport's frontier home the exterior appearance of a fine eastern residence. Other features of the house included a portico or porch roof, supported by columns; double hung wood sashes; a gable roof with sawed shingles; and two massive brick chimneys.

The Murder of Colonel Davenport

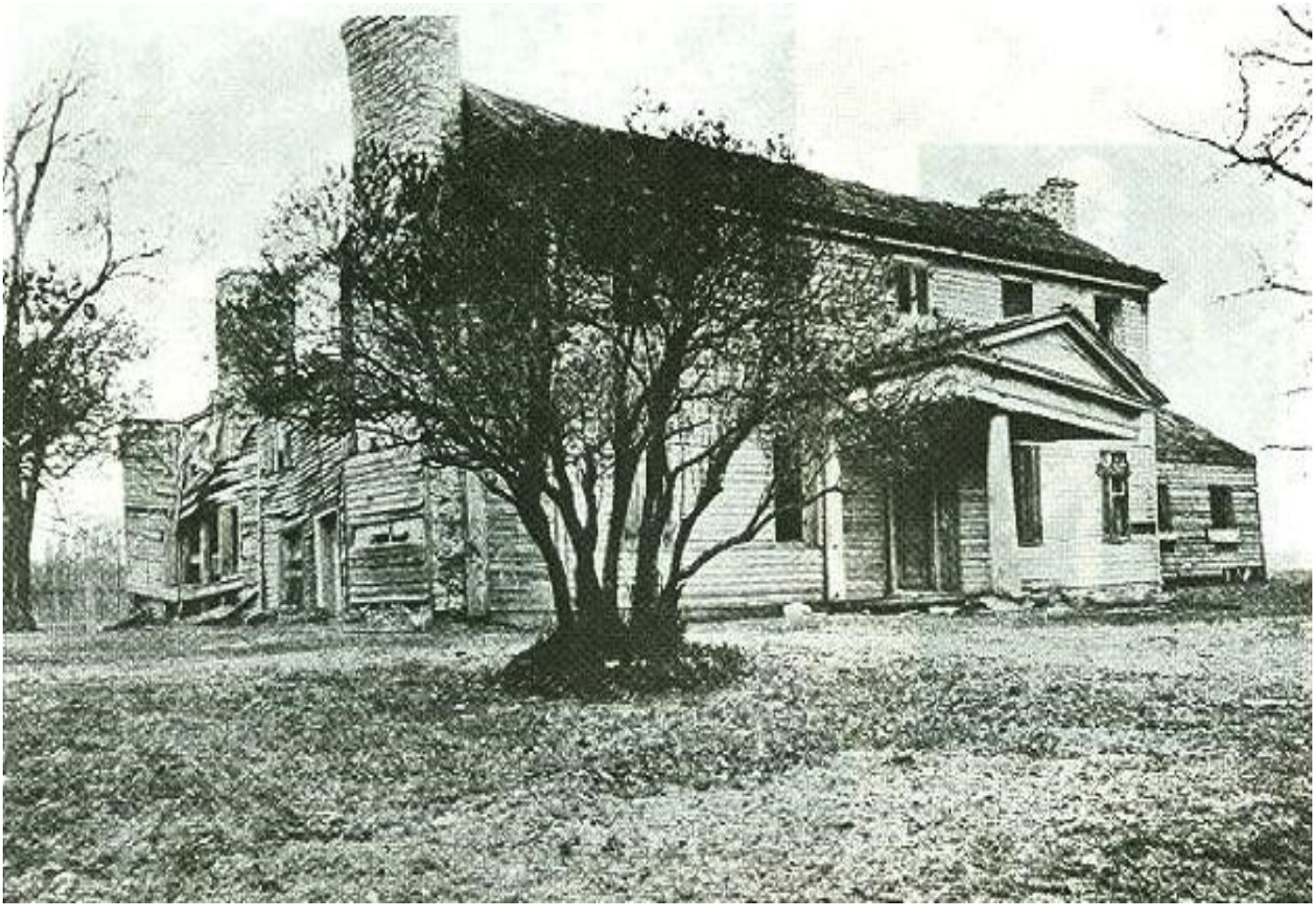
On 4 July 1845, robbers murdered Colonel Davenport at his island estate. Rumors of $20,000

Below: *Outlaw John Long's skeleton. (Quad City Times Photo Collection)*
Right: *Long's Grave, in Rock Island's Pioneer Cemetery. He was buried 133 years after his hanging. (AMSAS-HI Archives)*

in gold, supposedly hidden on the Davenport property, attracted the robbers to the island. Colonel Davenport's wife and two songs had gone to an Independence Day celebration in the city of Rock Island. Finding the Colonel alone, the four bandits shot, stabbed and tortured him. However, they departed the island with only a few hundred dollars they had found in the house. Colonel Davenport died from the wounds inflicted upon him by the robbers. A few months later, on 29 October 1845, John Long, Aaron Long, and Granville Young were hanged in the town of Rock Island for the murder of Colonel Davenport. The three outlaws were members of the notorious "Banditti of the Prairie" gang. A crowd of nearly 5,000, which was then approximately three times the population of Rock Island, witnessed the public hangings. The crowed watched and cheered as the Rock Island County Sheriff paraded the Three bandits through the streets of Rock Island to the gallows. Then the band played, the people prayed, and the three were hanged. Unfortunately, for Aaron Long, his rope broke. The sheriff supposedly supplied him with a stiff drink, the hanged him a second time.

As for Aaron's brother, John Long, his body was supposedly shipped to a physician in a barrel of rum. The physician displayed Long's skeleton in his office. Years later, the doctor's widow returned the skeleton to Rock Island. For years, the bones of the murderer of Colonel Davenport were displayed at the Rock Island County House, and later at Black Hawk State Park Museum. After several more years in storage, John Long's skeleton was finally buried in the old pioneer's cemetery at Black Hawk State Park on 14 September 1978.[44]

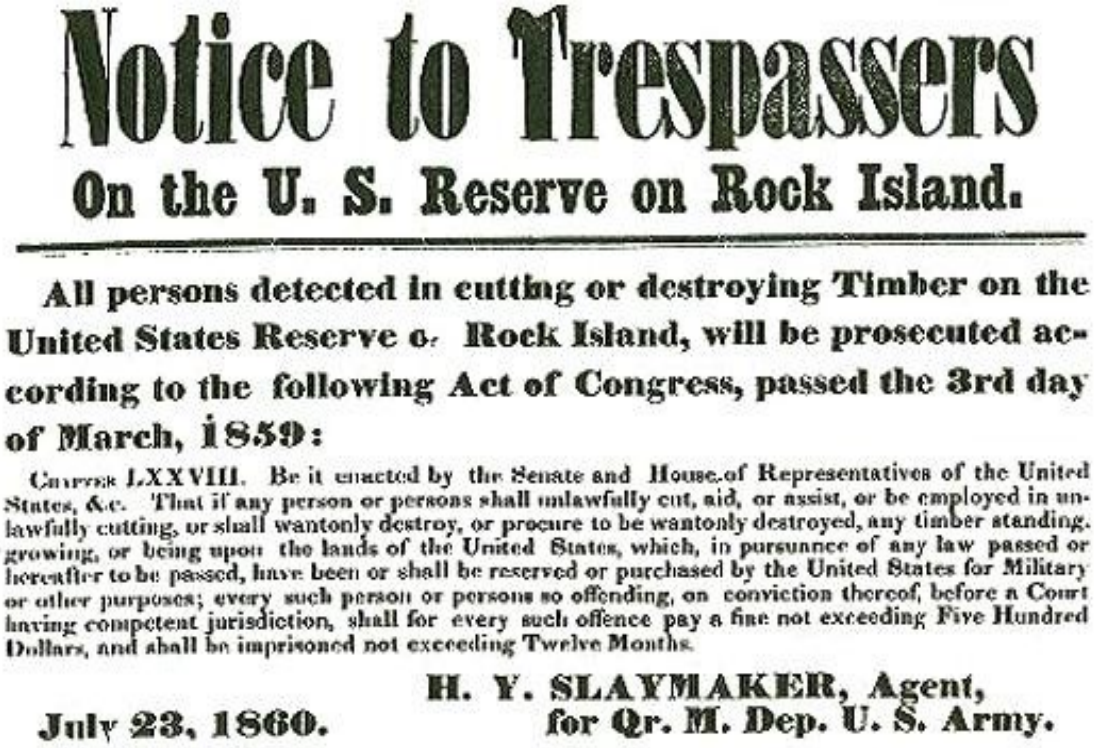
Below: *Colonel Davenport's house prior to renovation in 1906. (AMSAS-HI Archives)*



Repair of the Colonel Davenport Ruins

In preparation for establishing an arsenal on Rock Island, the Federal Government regained sole possession of the island. A federal commission purchased the more legitimate property claims held by private citizens such as the Colonel Davenport family. The government used the house as an office, and later as a storehouse. Gradually, the Colonel Davenport home deteriorated and fell into disrepair. By the turn of the century, the building was in a state of ruin. In 1906, the Association of Rock Island County sponsored the repair of the dilapidated structure. Public interest in the Davenport House during the 1950s and early 1960s again saved the building from disrepair. On the occasion, the Scott County Home Builders Association collaborated with the Quad Cities Association of Home Builders to repair the structure. Whereas the main portion of the Davenport House has been renovated, the attached wings to the house were removed in 1906 and have not yet been restored. Currently, the Colonel Davenport Historical Foundation maintains the house as a historical site open to visitors.

Below: *After the departure of the military in 1836, civilian custodians such as H.Y. Slaymaker, had difficulties preventing trespassers from exploiting the island's timber. (AMSAS-HI Archives)*



Notice to Trespassers

On the U. S. Reserve on Rock Island.

All persons detected in cutting or destroying Timber on the United States Reserve on Rock Island, will be prosecuted according to the following Act of Congress, passed the 3rd day of March, 1859:

CHAPTER LXXVIII. Be it enacted by the Senate and House of Representatives of the United States, &c. That if any person or persons shall unlawfully cut, aid, or assist, or be employed in unlawfully cutting, or shall wantonly destroy, or procure to be wantonly destroyed, any timber standing, growing, or being upon the lands of the United States, which, in pursuance of any law passed or hereafter to be passed, have been or shall be reserved or purchased by the United States for Military or other purposes; every such person or persons so offending, on conviction thereof, before a Court having competent jurisdiction, shall for every such offence pay a fine not exceeding Five Hundred Dollars, and shall be imprisoned not exceeding Twelve Months.

H. Y. SLAYMAKER, Agent,
for Qr. M. Dep. U. S. Army.

July 23, 1860.

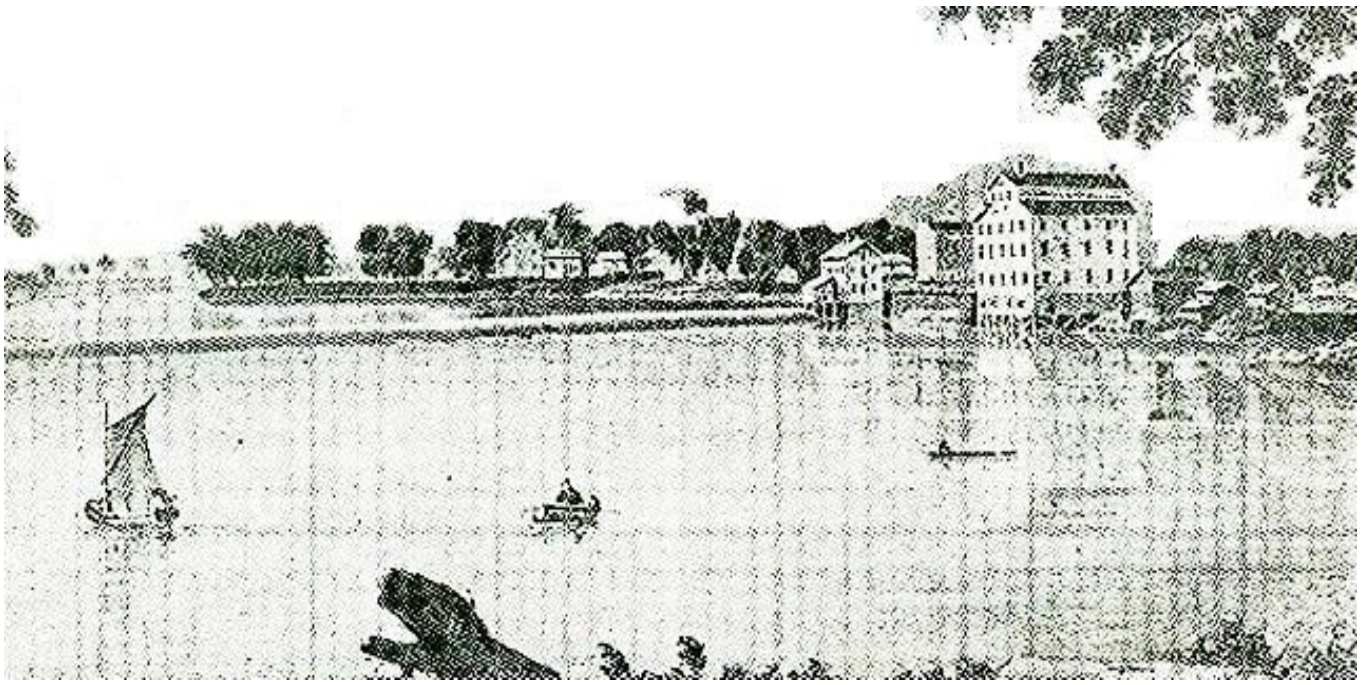
CHAPTER FOUR
CIVLIAN DEVELOPMENT ON ROCK ISLAND AND THE CAMPAIGN FOR AN ARMORY

After the soldiers left Fort Armstrong in 1836, and again when the army depot closed in 1845, the Federal Government placed civilian agents or custodians in charge of Rock Island. Joseph Street, an Indian agent from Prairie du Chien, was the first of these civilian agents. In 1836, the government transferred him to Rock Island. From 1836-1838 "General" Street served as Indian agent and custodian of Rock Island. In 1838, William Davenport succeeded Joseph Street as the Indian agents to the Sauk and Fox residing in Eastern Iowa. Captain W.R. Shoemaker, the Army Depot Commander, assumed command of the island and the depot from 1840-1845. After the depot closed, a series of four civilian agents were placed in charge of Rock Island. The four agents and the period that they served as custodians of Rock Island were: Thomas L. Drumm, 1845-1853; Sergeant Cummings, 1853-1854; Mr. J.B. Danforth, Jr., (founder of the *Rock Island Argus*) 1854-1857; and H.Y. Slaymaker, 1857-1863. Though these agents were placed in charge of Rock Island they did not usually reside on island.

The civilian development of Rock Island occurred during the time when there was no military presence nor civilian agents residing on the island. During this period, numerous interested civilians attempted, with some success, to settle on portions of the island. These squatters considered Rock Island to be part of the public domain, especially after the military had departed the island.

The War Department was somewhat reluctant to release the island property for public sale. The army wanted to keep Rock Island in reserve and as early as 1825, Secretary of War John C. Calhoun had informed the Commissioner of the General Land Office that Rock Island was necessary for military purposes. Secretary of War Calhoun directed that Rock Island be reserved from public sale. Ten years later, in 1835, Congress ordered a survey to select potential construction sites for a new armory in the West. In the next two decades, several reports drafted by army officers favorably suggested Rock Island as a potential site for the armory. Major D.W. Flagler's *History of the Rock Island Arsenal,* published in

Below: *The first dam built on the Mississippi River in 1841; it stretched from Moline across Sylvan Slough to Rock Island. The two large mills at the dam were owned by David B. Sears. (AMSAS-HI)*



1877, included the following excerpts from one such report, submitted by ordnance officer Captain William H. Bell.

> Soon after returning, about the 16th of October 1840, from Cincinnati, I proceeded up the river to Rock Island, agreeably to your orders of the 17th September, and having surveyed the grounds and buildings (old buildings of Fort Armstrong) of the island, have the honor to report that the whole island, containing about 850 acres, belongs to the United States, having been specially reserved from sale for public purposes.[45]

Captain Bell concluded his report with a strong statement of Rock Island's value.

> I thought it advisable to communicate these facts that the Government may be fully aware of the value of this island and it's vicinity as the greater and most practicable and desirable water power in the valley of the Mississippi.[46]

In September 1841, Congress passed an act empowering a commission or board, appointed by the Secretary of War, to conduct a thorough examination of the western regions "for the purpose of selecting a suitable site on the western waters for the establishment of a national armory." The Secretary of War selected Brigadier General W.K. Armistead, Surgeon General Thomas Lawson, and Lieutenant Colonel S.H. Long as the commissioners for the survey.

The board's final report to Congress covered 400 pages and included a section on Rock Island. The three officers stressed in their report the ample supply of resources that they "discovered" on Rock Island and in the nearby vicinity. The officers specifically cited the abundance of limestone and the variety of timber on the island as more than sufficient for building purposes. The commissioners also emphasized the potentially great source of water power available at Rock Island. Surgeon General Thomas Lawson endorsed the Rock Island site as a healthy location.

Below: *David B. Sears built a second dam that connected Rock Island with Benham's Island. He also constructed the mill shown below on Benham's Island. (Moline Public Library)*

Lawson stated in the study that his endorsement was based on health reports of troops stationed at various military posts. He compared those reports with the shorter sick lists from Fort Armstrong for the same twenty year period. The board also listed Rock Island's convenient location, its rich soil, and its nearness to coal, lead, and other mineral deposits.

The board visited Rock Island in 1842, shortly after David B. Sears had erected a mill-dam across the south channel of the Mississippi River. The dam connected Rock Island with the Illinois mainland; and the officers reported the dam had attracted another saw mill to the island. In 1846, David B. Sears built a second dam. This dam linked the main island, Rock Island, with Benham's Island, an island in the main channel. The flat surface of the two dams provided a convenient wagon route from the Illinois mainland to Rock Island.

By the next decade, civilian development on the island had increased. The dams and the water power attracted additional mills, plants, and squatters to Rock Island. These interested civilians, along with speculators, manufacturers, railroads, and waterpower companies, attempted to acquire titles to lands on the island. Eastern speculators who had investments in western land development, railroads, and waterpower companies also attempted to acquire the island. The local citizenry was divided between those natural resources and those that supported the establishment of an arsenal on Rock Island.

Many citizens of the Rock Island vicinity recognized the positive economic impact an arsenal would have on the development of the area. A committee, comprised of Rock Island County citizens, John Buford, Joseph Knox, Joseph B. Wells, John Morse, and George Mixter, drafted an appeal to President John Tyler in the early 1840s to select Rock Island as the site for the new arsenal. The committee reminded the President that the selection of Rock Island would eliminate the need to purchase a site. Another argument presented by the committee included the ease by which arms could be supplied to the West from Rock Island via the Mississippi River and its tributaries. In addition, the appeal cited the rich mineral regions near Rock Island and the vast water power at Rock Island.[47]

Left: *Jefferson Davis, Secretary of War, 1853-1857, used the authority of his office first as Senator then as War Secretary to block the sale of Rock Island. (AMSAS-HI Archives)*
Right: *Dred Scott, slave and household servant of Dr. John Emerson, accompanied the doctor, an army surgeon, to Rock Island in 1833. Years later, Dred Scott became involved in a legal battle for his freedom which reached the U.S. Supreme Court. In its famous "Dred Scott Decision" of 1857, the U.S. Supreme Court declared that Scott and other Negro slaves were not citizens of the U.S. and therefore, not entitled to sue in court for their freedom. (AMSAS-HI)*

Several prominent politicians in Washington, D.C. also supported the view that Rock Island should be kept in reserve and not offered for pubic sale. The staunchest of these supporters was Jefferson Davis. First as a Senator in 1850, and four years later, as the Secretary of War, Jefferson Davis used the authority of his office to block the sale of Rock Island. In an 1854 response to a congressional request for his views regarding the sale of the island, War Secretary Davis outlined his department's plan for Rock Island.

> I have the honor to acknowledge the receipt of your letter… asking the views of this Department as to the expediency of selling the military reservation at Fort Armstrong, on Rock Island, Illinois, as contemplated by Senate bill No. 195. The water power available at that place, and the communication by water and railroads projected or in course of construction, concur with other circumstance in rendering Rock Island one of the most advantageous sites in the whole western country for an armory or an arsenal of construction for the manufacture of wagons, clothing, or other military supplies… Any act that may pass to authorize the sale of (the island) should, I think, leave to the (War) Department full power to retain whatever of the reservation may be found useful and proper for the contemplated works, for which it is hoped that congress will at some future day make the necessary appropriation.[48]

Ironically, less than a decade later, Jefferson Davis had become President of this Confederate States of America; Congress had appropriated funds for the establishment of an arsenal at Rock Island; and the Union Quartermaster Corps had constructed on Rock Island a prison barracks for the detention of captured confederate soldiers during the Civil War.

Despite Jefferson Davis' success in preventing the sale of Rock Island, private encroachment continued. By 1854, private

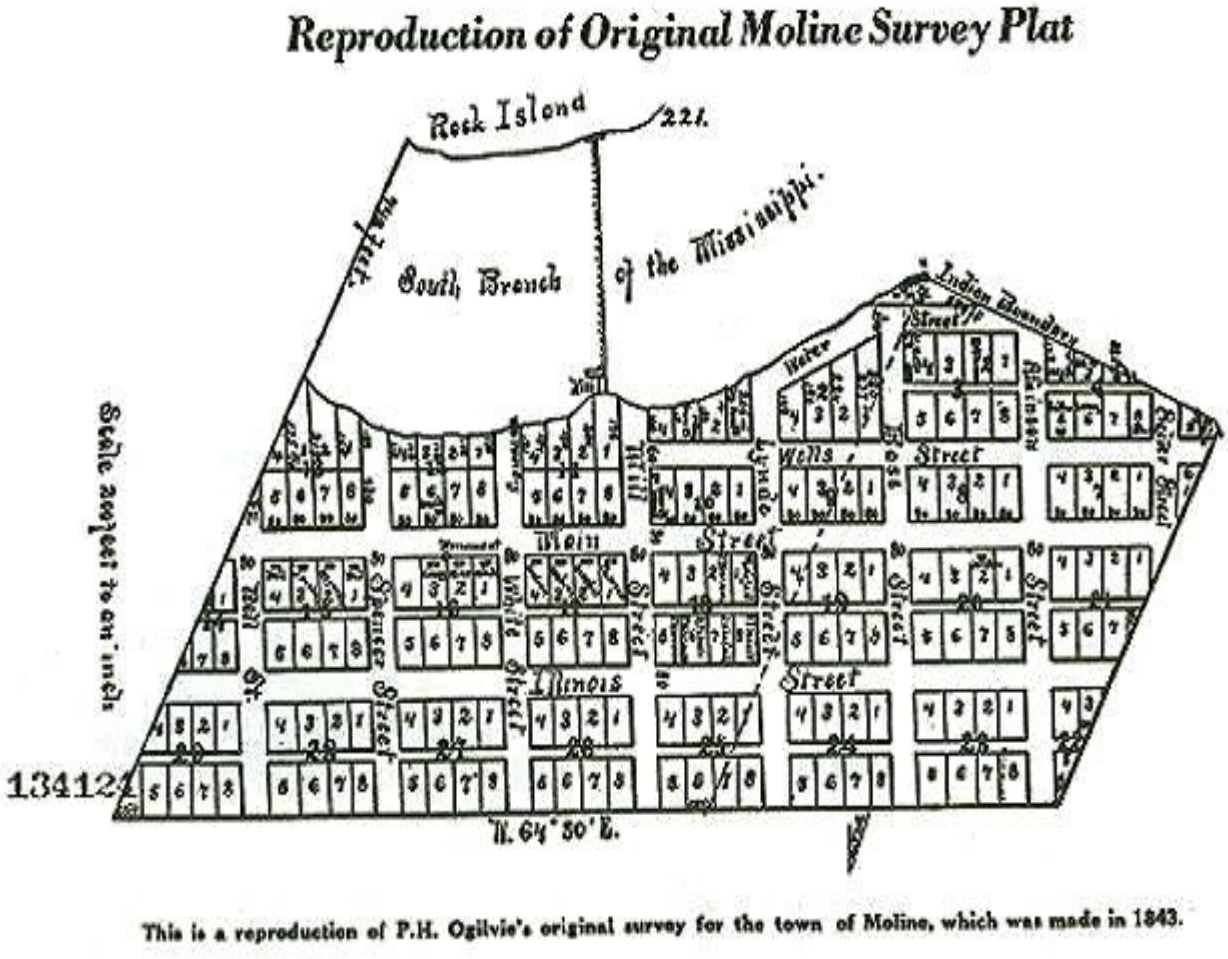
Below: *David B. Sears' 1850s Mississippi Mills on Rock Island, along the northeast opposite Benham's Island. (Cartouche from 1857 map of Moline) (Rock Island County Historical Society)*

citizens, in disregard to government objections, erected a variety of buildings on Rock Island. These citizens did not fit the stereo-typed "dirt poor" pioneer squatter found in contemporary literature and films. Instead, many of the "squatters" on Rock Island were successful businessmen. They operated on the island several sq mills, a sash and blind factory, a chair factory, a wooden tub and pail plant, two shingle shops, two warehouses, a number of shanties, a dozen or so homes, and other lesser buildings were also on Rock Island. Several of these island businessmen became prominent citizens of the local area. They included David B. Sears, Spencer H. White, and John W. Spencer, owners of a brush dam built in 1841 across Sylvan Slough which connected Rock Island to the Illinois mainland. The three dam owners laid out a town on the Illinois mainland opposite the upper end of Rock Island. Initially, they named the town site Rock Island Mills. However, there were already numerous communities, a river, and an island with similar Rock Island names. Therefore, David B. Sears and the others joined with Huntington Wells, Charles Atkinson, and Joel Wells in plotting out a larger town in 1843, naming it Moline.

David B. Sears, DeWitt Dimock, and John Gould—Early Entrepreneurs

In 1855, David Sears purchased title to Benham's Island, situated near the upper or eastern portion of the larger island of Rock Island. Earlier, in 1846, he had built a stone wall dam which connected Benham's Island with Rock Island. The dam furnished water power to Sear's Flour Mill on Benham's Island and to several businesses on the main island. In addition to the mill, a house with barn, outbuildings, three warehouses, and a steamboat landing were built by David Sears on Benham's Island. A road built between the two dams formed part of a wagon route that stretched from Moline, across the dam at Benham's Island, to the steamboat landing. From this steamboat landing, wagons were ferried across the Mississippi River to the Iowa shore.

Below: *Reproduction of original Moline survey plat by P.H. Ogilvie in 1843. Note the dam across Sylvan Slough to Rock Island and the notation of the Sears Mill at the southern end. (AMSAS-HI Archives)*

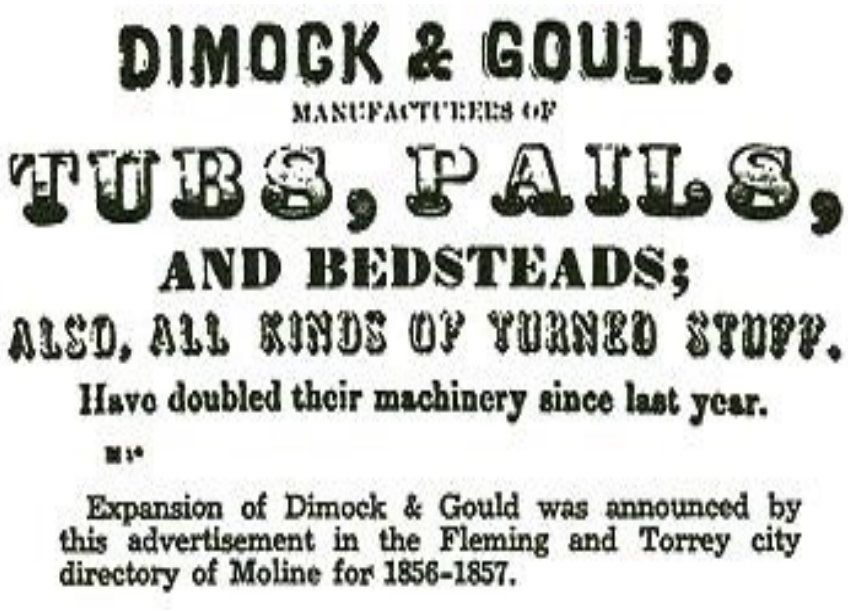


The Sears' mill and dams built at Rock Island attracted other businesses to Rock Island. The waterpower available at Rock Island brought commerce to the island. In 1847, Sears persuaded John Deere and his partners, Robert N. Tate and John Gould, to resettle in Moline along the shore of the Sylvan Slough. He id this by offering Deere and Associates rent free waterpower for a period of time and also promising he would build them a frame factory if they would relocate their grand plow shop from Grand Detour, Illinois to Moline.

David B. Sears and other citizens who held property on Rock Island without legal authority maintained extended correspondence with legislators in Washington D.C., in an effort to obtain titles to the properties. Only the persistence of Colonel George Davenport and David B. Sears paid off. They were the only ones to receive legal title to property on Rock Island. As with the case of Colonel Davenport, David Sears received title to the 35.45 acres of land on Rock Island opposite Benham's Island through a special act of Congress. Influential politicians had aided both Sears and Colonel Davenport. In 1855, David B. Sears succeeded through the special act of Congress to purchase 35.45 acres of island property for $1.25 an acre; the same price per acre that Colonel Davenport paid for his 158 in 1844.

Mr. Sears, an enterprising man, laid out a portion of his island property in lots. He planned to develop it as a subdivision to the city of Moline. Although David Sears sold a few lots to his Rock Island Village, the village never developed, and Mr. Sears sold the property back to the Federal Government for $145,175. The price reflected improvements he had made on his property.

Top Right: *DeWitt Dimock. (Moline Public Library)*
Bottom Right: *John M. Gould. The two partners operated a woodenware factory on Rock Island, 1852-1857. Dimock, Gould and company continued its lumber business for over a century in Moline, IL. (Moline Public Library)*
Bottom Left: *Expansion of Dimock & Gould was announced by this advertisement in the Fleming and Torrey city directory of Moline for 1856-1857. (Moline Public Library)*


DIMOCK & GOULD.

MANUFACTURERS OF

TUBS, PAILS,

AND BEDSTEADS;

ALSO, ALL KINDS OF TURNED STUFF.

Have doubled their machinery since last year.

Expansion of Dimock & Gould was announced by this advertisement in the Fleming and Torrey city directory of Moline for 1856-1857.

Dimock, Gould, and Company

Shortly after John Deere and Robert N. Tate moved their plow shop from Grand Detour to Moline, the two partners invited John Gould, an accountant from Grand Detour, to buy into their plow business. In November 1851, Mr. Gould sold his interest in the company to John Deere for $2,600. John Gould then formed a partnership with his brother-in-law, DeWitt Dimock. In 1852, they opened a woodenware business on Rock Island named Dimock, Gould, and Company. The two partners selected the island as a site for their business in order to take advantage of the waterpower and to be closer to the lumberyards on the island. DeWitt Dimock had earlier, in 1846, established a bedstead factory on Rock Island; but, in 1852, he sold his factory and joined John Gould in forming their wooden tub and pail factory on the island. Their printed business cards read: "Dimock and Gould manufacturers of wooden tubs, pails, bedsteads, and all kinds of (wooden) turned stuff.[49]

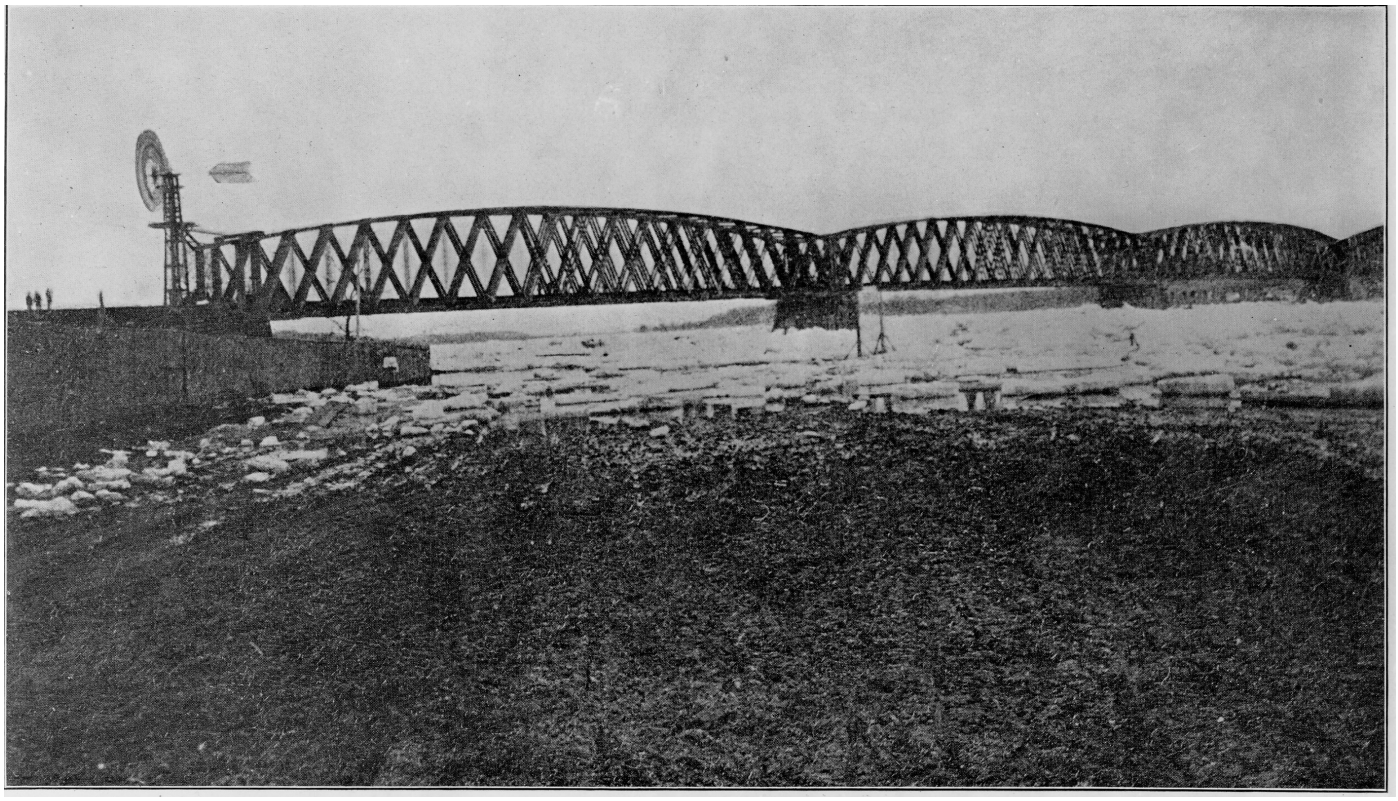
Dimock, Gould and Company's wood-enware factory was the first of its kind of the local area. Prior to 1852, woodenware was shipped into the area fro the east at great expense. DeWitt Dimock employed the latest technology in his plant. He instituted the assembly line system and mass production methods, and relied heavily upon machinery to do practically everything but fasten rivets and paid the products. In 1856, a fire destroyed the factory, but by the following year, Dimock and Gould had built another on the island. After the old brush dam road was washed out due to a flood, Dimock, Gould, and Company replaced the road with a wooden bridge that spanned the slough from Moline to the island. Later, the Federal Government replaced the bridge with a stronger one, constructed in 1873. During the Civil War, Dimock and Gould found an excellent customer for their products right on the island. The woodenware company provided wooden barrels, tubs, pails, and other wooden products for the Rock Island Prison Barracks. Later, wooden buckets, pails, barrels, etc., were replaced by galvanized (coated with rust-resistant zinc) metal products.

Below: *Dimock, Gould, and Company's Tub and Pail Factory on Rock Island. The island factory was located near the dam which crossed Sylvan Slough to Moline, Illinois. Cartouche from 1857 map of Moline. (Rock Island County Historical Society)*

In 1862, when Congress passed an act establishing a National Arsenal at Rock Island, Dimock, Gould and Company, plus several other parties who had received grants for temporary property leases, were notified by the War Department to leave the island. By 1867, it became evident to the two parents that they were not going to receive a permanent title to the property which they had developed on Rock Island. Neither Dimock or Gould submitted a claim for monetary settlement to the federal commission that handled the final settlement proceedings. Instead, the firm packed its equipment and re-established itself at a new location on the Moline side of the Mississippi River. It was at this new location that Dimock, Gould and Company developed their famous paper pail. Dimock, Gould and Company outlasted its founders. For over a century, the company which the two brothers-in-law initially started on Rock Island continued to operate in Moline and the surrounding communities.

The presence of squatters on Rock Island, however, had a negative effect on the island. They damaged Rock Island's timber by cutting and stealing wood. Joseph M. Street, U.S. Indian agent for the Sauk and Fox Indians after the Black Hawk War, notified the War Department that the island, though once well-timbered, had been nearly cleared of its original growth by the public. The squatters destroyed young and old trees and also took possession of favored spots of land on the island. After being informed regarding the squatters and wood stealing at Rock Island, president Martin Van Buren issued a statement instructing the marshal to remove the squatters from the military reservation at Rock Island and, if necessary, to take additional legal steps against the trespassers. Nevertheless, the U.S. marshals and other civil officers were, for the most part, ineffective in their attempts to remove the offenders. In addition to squatters cutting clearings in the island's timber; and other trespassers pilfering wood for fuel, railroad workers in 1853 began clearing a 100 foot wide path across the island in preparation for laying track.

Below: *View of the original railroad bridge from Rock Island to Davenport 1853-1856. Note the suspension chains added in 1859 to reinforce the fixed wooden spans. (RIA Museum; ASC History Office)*



First Bridge Across the Mississippi River

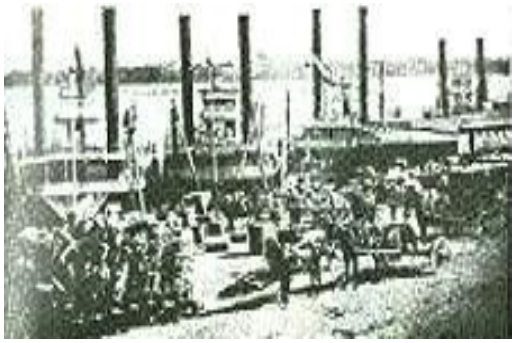
Plans for a transcontinental railroad had long been a dream of railroad men in America. But, before the dream could be a reality, major obstacles had to be overcome. Several of these obstacles were man-made, such as the right of each state government to grant charters and to regulate railroad construction within the boundaries. Southern politicians attempted to block the advancement of the northern rail route across the United States. Northern Congressmen, in turn, were successful in vetoing a southern rail route to the Pacific Coast. In 1853, Jefferson Davis, Secretary of War in the pro-southern administration of President Franklin Pierce, arranged to buy the Gadsden Purchase from Mexico. This strip of 30,000 square miles in New Mexico and Arizona provided the missing link in a proposed New Orleans to San Diego railroad. Davis, smarting from the congressional defeat of a southern rail route to the Pacific Coast, was extremely active in delaying the northern route to California.

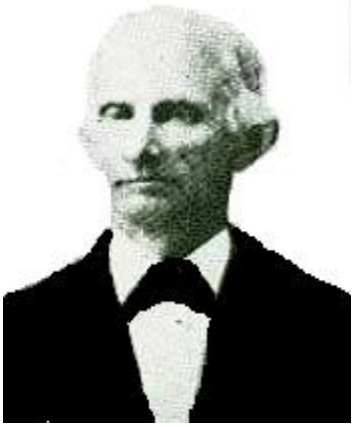
A proposed Chicago to San Francisco rail route crossed the Mississippi River at Rock Island, an island under control of the War Department. Secretary of War Davis attempted to halt construction by involving the bridge company in litigation over the company's right-of-way across the island.

Other interests, besides southern politicians and southern railroad men, were against the building of a rail route across the heartland of America. Steamboat and river town interests received the railroad as a threat to their inland waterway commerce. The Mississippi River and its tributaries provided a natural north-south trade route for the Midwest's agricultural products and raw materials. St. Louis became the clearing-house for such trade. From St. Louis, merchants shipped trade goods up the Ohio River to Pittsburgh or transported the cargo down river to New Orleans.

The arrival of the railroad on the east bank of the Mississippi River at Rock Island, however, offered Midwest farmers of Iowa and Northern

Left: *A view of the St. Louis docks jammed with packets. St. Louis steamboat owners attempted to block construction of the 1856 railroad bridge at Rock Island. (Davenport Public Library)*
Right: *Bridge advocate A.C. Fulton (Davenport Public Library)*
Middle: *Judge James Grant, President of the Rock Island and LaSalle Railroad Company. Judge Grant resided in Davenport, Iowa. (Davenport Public Library Special Collections)*





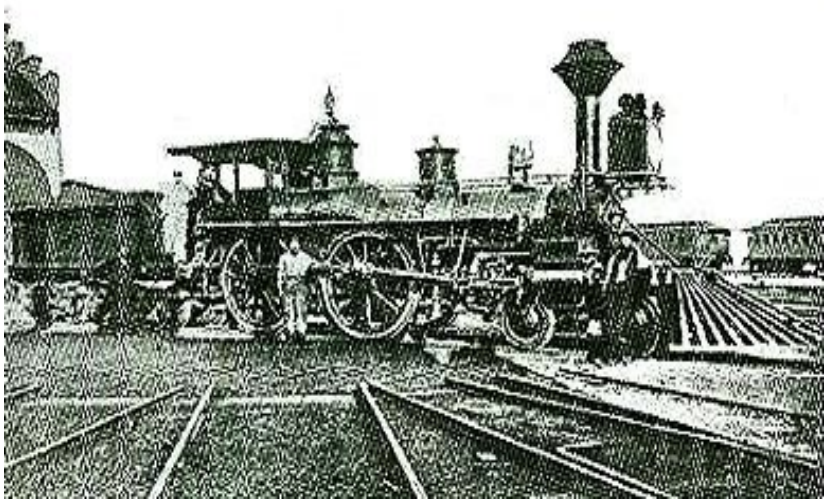
Illinois a direct east-west trade route to Chicago and to urban markets farther east. The St. Louis Chamber of Commerce could see its city being replaced by Chicago as the new "hub of the Midwest". The clash between these two powerful centers of commerce for control of the Midwest's commercial shipping occurred at Rock Island.

It was not by accident that the railroad came to Rock Island. In June 1845, Colonel George Davenport had hosted a meeting at his island estate to discuss bringing a railroad to Rock Island. Prominent citizens from the Rock Island area such as Antoine LeClaire and Judge James Grant attended the meeting. These enterprising men realized the commercial benefits which would result from railroad and bridge construction at Rock Island. Although Colonel Davenport was murdered two weeks after the meeting, others who attended the event continued to formulate plans to bring a railroad to Rock Island. On 27 February 1847, they succeeded. The Illinois General Assembly granted them a charter to construct a LaSalle to Rock Island railroad line.

LaSalle was the community at the end of the Illinois and (Lake) Michigan Canal from where Rock Island an LaSalle Railroad Company began and was initially managed by local tri-city investors. Judge James Grant of Davenport was elected president of the company. Among the directors of the new line were Napoleon B. Buford, Rock Island; Ebenezer Cook, Davenport; and Charles Atkinson, Moline. The Rock Island and LaSalle Line developed slowly though, as these men lacked experience in railroad construction .[50]

Fortunately, Mr. Henry Farnam, an experienced railroad man and investor, took an interest in the project as an extension of his Michigan and Southern Railroad and for other railroad men to invest in the line. Interest increased sharply after the directors followed Mr. Farnam's suggestion and extended the line east to Chicago. On 1 October 1851, under its new name, the Chicago and Rock Island Railroad Company began to build westward from Chicago towards Rock Island. As the railroad advanced in the direction of Rock Island, it attracted additional investors. The prospect of

Right: *Portrait of Henry Farnam, President and Chief Engineer of the Railroad Bridge Company, chartered in 1853. (AMSAS-HI Archives)*
Below: *The John A. Dix, Seventh Engine of the Mississippi and Missouri Railroad. It crossed the river on the ice in the winter of 1855.*



linking Chicago and linking Chicago and Lake Michigan with the Mississippi appealed to many investors. However, the additional prospect of Rock Island becoming the site for the first bridge to span the Mississippi River certainly sweetened the investment.

For years, Rock Island had been recognized as the best point at which to bridge the Mississippi River. Mr. A.C. Fulton, a noted civil engineer, among others, surveyed the river crossing at Rock Island and endorsed it as the best site for the first bridge. Engineers of the railroad company preferred Rock Island for numerous reasons. The Mississippi River was narrow at that point, and the shores were bedrock. However, the key attraction seemed to be the island of Rock Island. Using the island as a stepping stone to cross the river appealed to the engineers. The bridge's construction would be easier, therefore more economical. Rock Island's location, 180 miles directly west of Chicago, made it less expensive to build than, for instance, in the Galena, Illinois area.

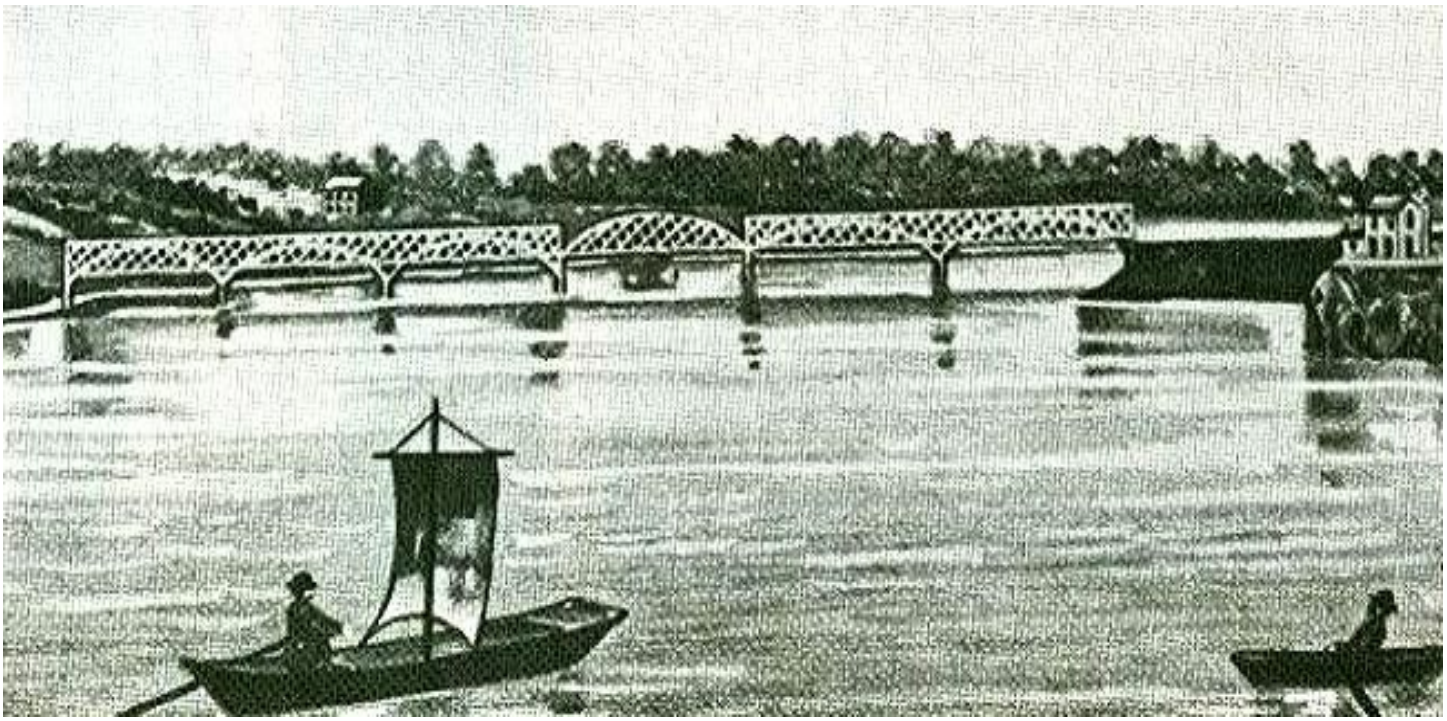
Ironically, an 1859 study, performed by a board of engineers after the construction of the first bridge, cited the location as a poor choice. Notations on a map prepared by the engineers to accompany their report to the War Department had "Bad location for a bridge" written besides the original bridge. A better choice was further downstream, at the old ferry crossing from the city of Rock Island to the Davenport levee. Two main criticisms of the bridge's original site were that it was too near the rapids and that its draw span did not line up with the current of the main channel.[51]

The M & M Bridge Company

Three corporations had to be formed in order to build a railroad that would span the Mississippi River at Rock Island. The Chicago & Rock Island (C&RI) Railroad Company's charter only applied to constructing a railroad within the boundaries of the state of Illinois. Several directors from the C&RI Railroad joined with a group of Iowa investors to organize the Mississippi and Missouri (M&M) Railroad Company.

The M&M Railroad Company's charter empowered them to construct a railroad from Davenport, Iowa, on the west banks of the

Below: *The original Rock Island to Davenport bridge had a Howe-Truss superstructure. This first railroad bridge across the Mississippi River was constructed of five wooden spans plus a draw span. The single tracked railroad bridge was painted with coats of white paint. (AMSAS-HI Archives)*



Mississippi River, to Council Bluffs, Iowa, situated on the east banks of the Missouri River.

The C&RI Railroad and the M&M Railroad formed a subsidiary firm named the M&M Bridge Company. The bridge company had interlocking directors from the two railroad firms as officers. The officers of the two companies agreed to cooperate in building a bridge across the Mississippi River and to jointly finance the project. In January 1853, the M&M Bridge Company acquired a charter from the state of Illinois to construct a railroad bridge across the Mississippi River to the Iowa Side. The two railroad lines that composed what was, in reality, one railroad were later allowed to merge. The Chicago & Rock Island track was complete in 1854. The Mississippi & Missouri Railroad, organized in 1853, finished its route from Davenport to Council Bluffs in 1869. By then the company had become the Chicago, Rock Island, and Pacific Railroad Company.

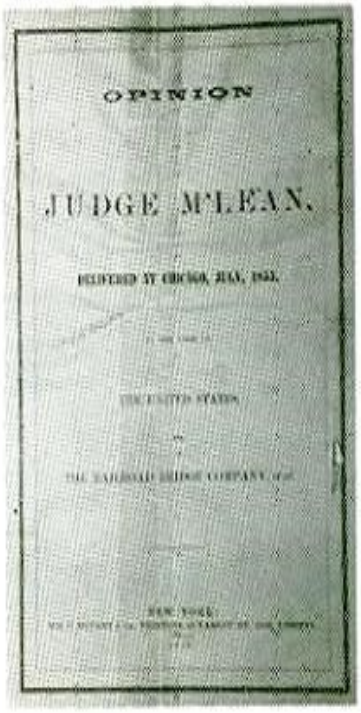
The bridging of the Mississippi River required three phases: first, the construction of a span across Sylvan Slough (southern channel) to Rock Island; second, the laying of a railroad bed in a northeast direction across the island, past Colonel Davenport's property, to the north shore of the island; and third, constructing the bridge over the main or northern channel.

The Act of 1852 granted rights-of-way through public lands to railroads and road building companies; the M&M Bridge Company directors assumed that Rock Island was public land and proceeded to survey the river and the island. The island's status, however, seemed uncertain at that time because of past announcements and rumors of its sale.

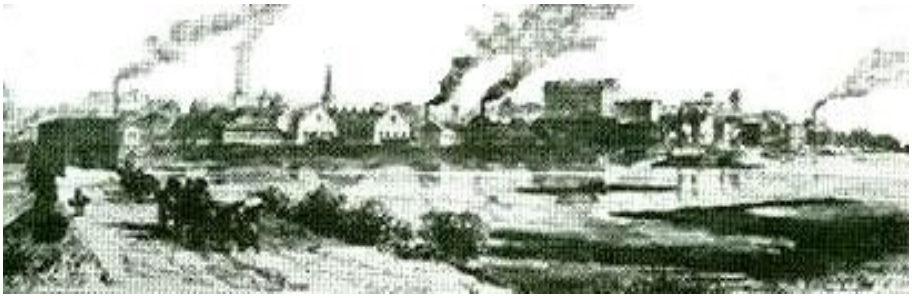
Description of the Bridge

The company went ahead and hired two private contractors to build the bridge at Rock Island. The John Warner Co., a local firm, received a contract to contract the piers and establish the grade for the railroad bed across the island. Stone & Boomer Co., of Chicago, constructed the superstructure of the bridge using specially fabricated Howe Truss-type spans.[52]

Left: *The cover of Judge John McLean's written opinion delivered July 1855, in the case of the United States vs. the Railroad Bridge Company, et. al. (Augustana College Special Collections)*
Right: *Rock Island wagon bridge that provided access to the island from the city of Rock Island, across Sylvan Slough. (Moline Public Library Local History Collections)*


OPINION

JUDGE M'LEAN.



Description of the Original Bridge

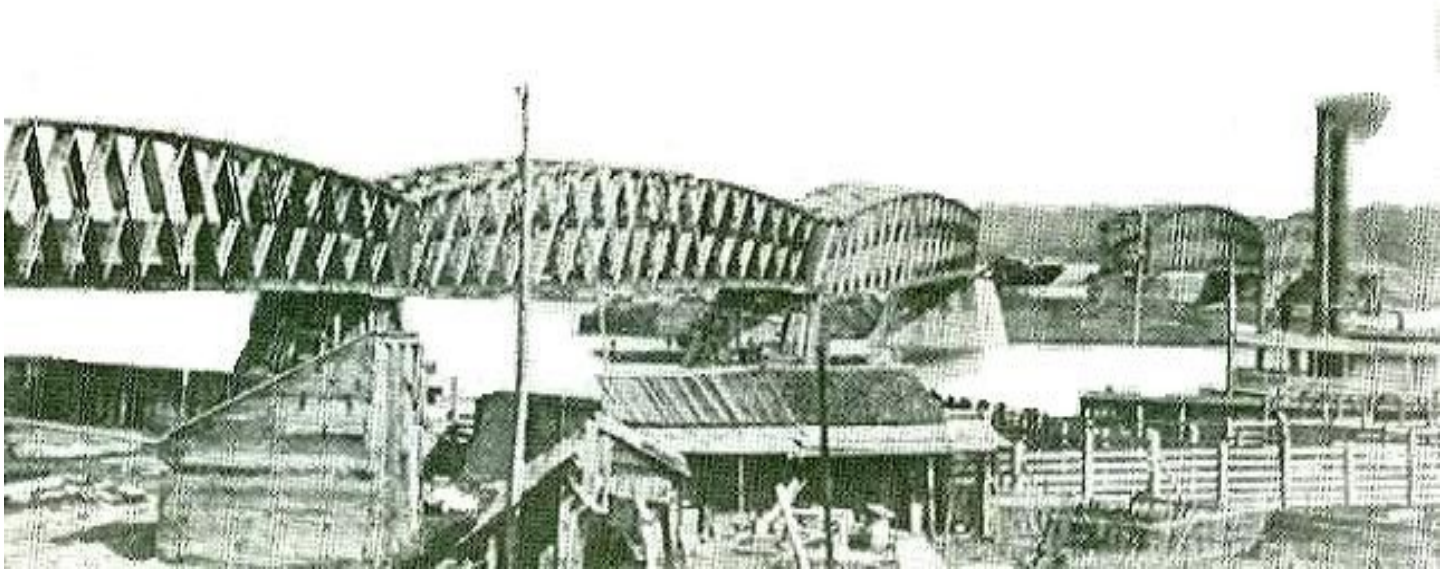
The original bridge had a Howe-Truss-type superstructure with a single track. The superstructure was constructed of timber and consisted of five wooden spans, plus a draw span. Its draw span, the heaviest and largest of its time, was located in the middle of the river. The timber cords of the bridge were protected with two coats of white paint. The bridging of the Mississippi was a major technological achievement. Nothing of that size or status had yet been constructed in the area.

United States vs. Railroad Bridge Company, et al (and others)

By June 1854, the John Warner Company had the stone abutments in place on both sides of Rock Island, plus the stone piers in the south channel (Sylvan Slough) finished. At this point in the bridge's construction, an officer from Washington, accompanied by two U.S. marshals, appeared at Rock Island. On behalf of the Secretary of War, the officer notified the contractors that they were trespassing on federal property. The officer then instructed the contractors to halt their work and remove all their buildings and other property from Rock Island within 15 days. Directors of the M&M Bridge Company decided to ignore the order. They ordered the contractors to continue their work on Rock Island. Construction work did continue but at a slow pace because of the bridge uncertainty of the situation. Railroad and bridge interests considered Rock Island to be public land, since there was no military presence on the island. They hoped that the Act of 1852 would substantiate their claim to a right-of-way for construction of a railroad across the island.

After lengthy correspondence between the War Department and the railroad, Secretary of War Jefferson Davis ordered the U.S. District Attorney in Northern Illinois to begin litigation against the M$M Bridge Company. The district attorney applied for a court injunction to prevent the construction of a railroad across the island and also to prevent the building of bridges over the river. In its suit, the government charged the bridge company with trespassing on federal

Below: *The second Rock Island to Davenport bridge, shown below, was damaged in the spring of 1868 after ice moved a pier and wind blew the swing span into the water. (AMSAS-HI Archives)*



property and with obstructing river navigation. In July 1855, the case, titled "The United States vs. Railroad Bridge Company, et al., (and others)," came before the United States Circuit Court. Judge John McLean, an Associate Justice of the Supreme Court, presided over the case. After listening to testimony from both parties, Judge McLean ruled against granting an injunction sought by the War Department. The judge cited the Congressional Act of 1852 as part of his reasons for refusing to grant the United States Government its application.

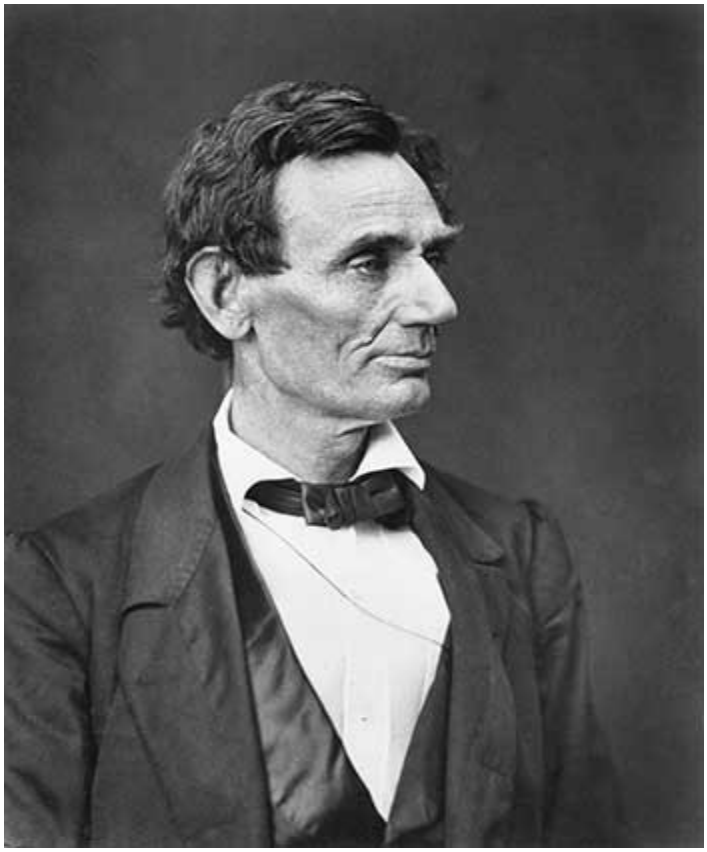
Influx of Squatters on Rock Island

Judge John McLean's decision to reject the government's request for an injunction to halt bridge and railroad construction on Rock Island had an impact on another issue: whether Rock Island would be open to civilian settlement or reserved for a future military purpose. Settlers interpreted the judge's ruling to mean the island would soon be offered for public sale.

For years a cloud of uncertainty in regard to Rock Island's future hung over the island. The Secretary of War's Office had argued with Congress and squatters alike over the future of Rock Island. Finally, in 1848, Secretary of War, William March, offered the island property for sale at public auction. He succumbed to pressures applied by persistent squatters and influential land speculators. Curiously, no announcements of the auction date appeared in the local Rock Island area. Only after someone "spotted" an advertisement announcing 5 January 1850 as the day of the auction did area citizens become aware of the plan. Local residents feared the sale was a scheme, whereby St. Louis and New York land speculators could acquire title to the land they held on Rock Island.

Not all area residents favored civilian development of Rock Island. Many local people supported the building of a National Armory on Rock Island. These local citizens immediately wrote their congressmen and sent a spokesman to Washington, D.C. to protect the sale and promote their cause. The hostile mood of some of the local citizens prevented the sale. Squatters, who occupied land on Rock Island without legal title, posted warnings that any bidding by outsiders on

Below: *Abraham Lincoln during his days as an attorney in Illinois. (Illinois State Historical Society)*



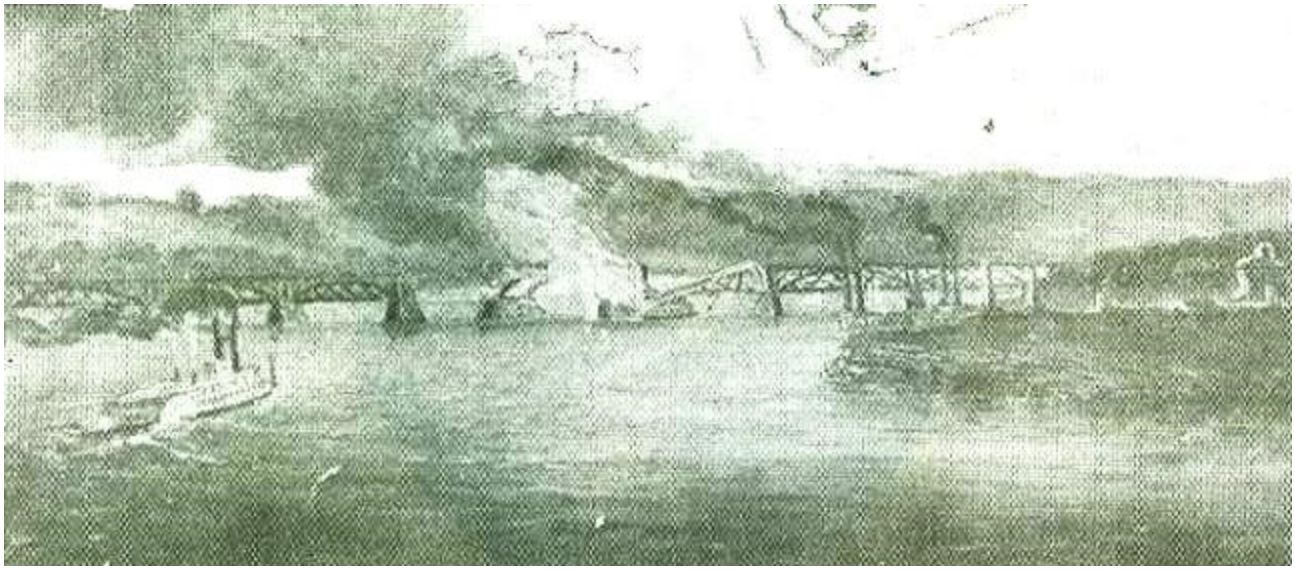
their claims would be at their own peril. After being alerted to the potentially volatile situation at Rock Island, officials in Washington telegraphed the auctioneer to postpone the sale. Private parties who had an interest in the private commercial development of Rock Island hired several attorneys to present their case in court. Abraham Lincoln was one of those attorneys who unsuccessfully attempted to win title claims for some of the squatters.

With this past history in mind, and with news of Judge McLean's decision allowing the railroad and the bridge to be constructed across and on Rock Island, squatters converged on the island. The number of applications for preemption to Rock Island property filed with the Register of the General Land Office in Springfield rose sharply after McLean's decision was announced. Squatters literally flocked to Rock Island and staked out their claims. Quarrels developed over which party was occupying which quarter section. Major D.W. Flagler stated in his work, *History of the Rock Island Arsenal that* "one man, Mr. Shaub of Davenport, who had a house near the present site of the commanding officers quarters, had his house torn down, loaded on a raft, set on fire, and sent downstream."[53]

From the late 1850s until the beginning of the Civil War in 1861, squatters on Rock Island continued to seek legal confirmation of their preemption claims to land on the island. However, when the Civil War began, the attentions of the Squatters and the nation turned to the more urgent issue of preserving the Union. A majority of the private parties who had occupied land on Rock Island relinquished their preemption claims when Congress passed an act establishing a National Arsenal there. Others agreed to vacate the island once the Federal Government actually began occupying the island. Eventually, the Federal Government established a commission to hear and settle monetary claims filled by certain squatters.

However, prior to the establishment of an arsenal at Rock Island, The Rock Island Bridge Company was involved in yet another landmark court case. The railroad bridge at Rock Island

Below: *The Effie Afton incident (Artist unknown). On 6 May 1856, the steamer Effie Afton crashed into the recently constructed railroad bridge at Rock Island, setting it afire. (Rock Island County Historical Society)*



enhanced the island's attractiveness to Congress as a potential site for a National Arsenal. First, the bridge company had to survive a court battle waged by commercial steamboat interests.

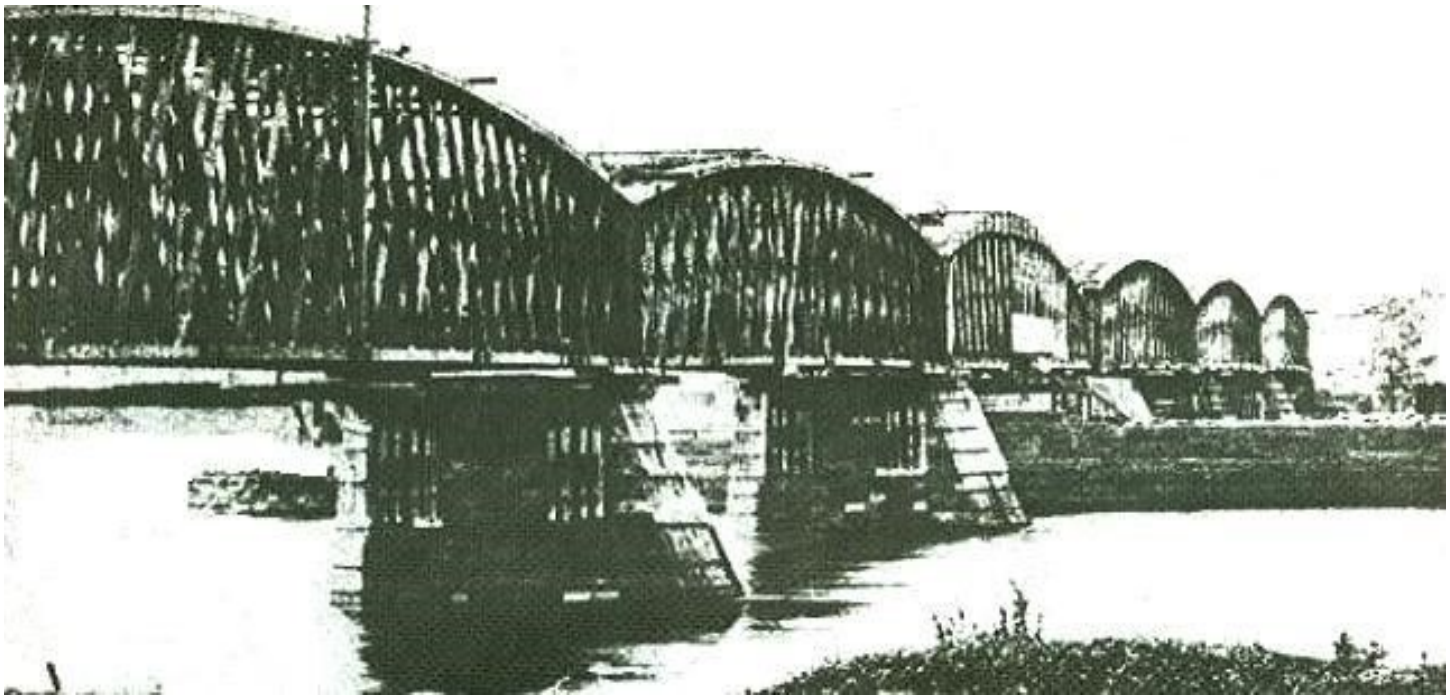
Effie Afton Incident

The railroad arrived on the eastern bank of the Mississippi River in the midst of the steamboat's golden era. Transportation of the upper Mississippi River Valley was controlled exclusively by St. Louis steamboat interests until the railroad's arrival. Steamboat owners watched developments at the bridge and waited anxiously for an opportunity to confront the railroad and bridge builders in court. They considered the bridge at Rock Island to be a threat to their packet and ferry business, which operated on the upper Mississippi River.

On 22 April 1856, the first locomotive to span the Mississippi River crossed the railroad bridge at Rock Island. Two weeks later, the incident that the steamboat owners had hoped for occurred. On 6 May 1856, the steamboat *Effie Afton* departed the town of Rock Island bound for St. Paul, Minnesota. As the steamer entered the main channel of the river, she collided with a ferryboat. Receiving only slight damage, the *Effie Afton* proceeded through the bridge's draw span. Once the vessel had cleared the span, her side paddles stopped churning. The swift current of the upper rapids carried the ill-fated *Effie Afton* crashing back against the railroad bridge. Shortly after the crash, nearby boats rescued the passengers, some luggage, and the boat's crew. While the *Effie Afton* lay against the bridge, a fire ignited the boat and spread onto the bridge, burning portions of the bridge's wooden superstructure. Newspaper articles of the incident stated that the steamboats along the shore blew their whistles, some as a warning to other boats traveling the river, and others as an act of celebration.

Mr. James Hurd and Associates, owners of the *Effie Afton*, filed a lawsuit against the bridge company for damages. Steamboat owners hoped that this test case would hinder other bridge building ventures along the Mississippi River Valley. They believed a favorable verdict would discourage investors from financing future bridge building on the Mississippi River. Officially, the

Below: *In 1865, the railroad bridge at Rock Island was completely rebuilt using heavier timber. This second super structure was replaced by an iron double deck bridge, when the location of the bridge was changed to its present site in 1872. (AMSAS-HI Archives)*



case was titled "Hurd et al., (and others) vs. the Railroad Bridge Company", but it became popularly known as the "*Effie Afton Case".* The Hurd lawsuit came to trial in Chicago before the federal district for Northern Illinois. The presiding officer was Judge John McLean, who had earlier ruled against the Federal Government's request for an injunction to halt railroad and bridge building operations across Rock Island. The M&M Bridge Company obtained Abraham Lincoln who argued the case. Two plaintiffs, Mr. Hurd and Associates, solicited two prominent Midwest lawyers, H.M. Wead and T.D. Lincoln, to argue their cases. The two Lincolns, however, were not related. Abe Lincoln, then a young, rising Springfield attorney, had been generally credited with winning the case. However, court records show the trial actually ended in a hung jury; nine jurors stood in favor of the bridge, and three members of the jury opposed the structure. Legally, the case was subject to retrial, but the steamboat interests decided to submit another case to a different federal court.

On 7 May 1859, the steamboat filed a suit against the M & M Bridge Company in attorneys the U.S. District Court in Southeast Iowa. The objective of this suit was to have the federal court declare the bridge at Rock Island to be a public nuisance and to receive a court order its removal. Judge John M. Love ruled in favor of James Ward, a St. Louis steamboat owner. Judge Love declared the bridge a nuisance and ordered those portions of the bridge which extended into Iowa be removed. The M&M Bridge Company promptly appealed the decision to the U.S. Supreme Court. In December 1862, the highest court in the land set aside the lower court decision and nullified the order.

Still, steamboat owners continued to harass the bridge builders with law suits until the U.S. Congress passed a law declaring a similar type of bridge in Clinton, Iowa, to be a legal structure. After this congressional decision, the judge dismissed lawsuits that were still pending against the bridge.[54]

Both Chicago and St. Louis newspapers, as well as the respective Chambers of Commerce, actively supported their city's interest during the

Below: *Pier of the original bridge at Rock Island. (AMSAS-HI Archives)*

trials. The St. Louis Chamber of Commerce took an especially active interest in the trials. St. Louis businessmen actively raised money for lawyers' fees and court costs to battle the bridge. In addition, the St. Louis Chamber of Commerce dispatched its own committee to Chicago to present its arguments to the public during the *Effie Afton* trial.

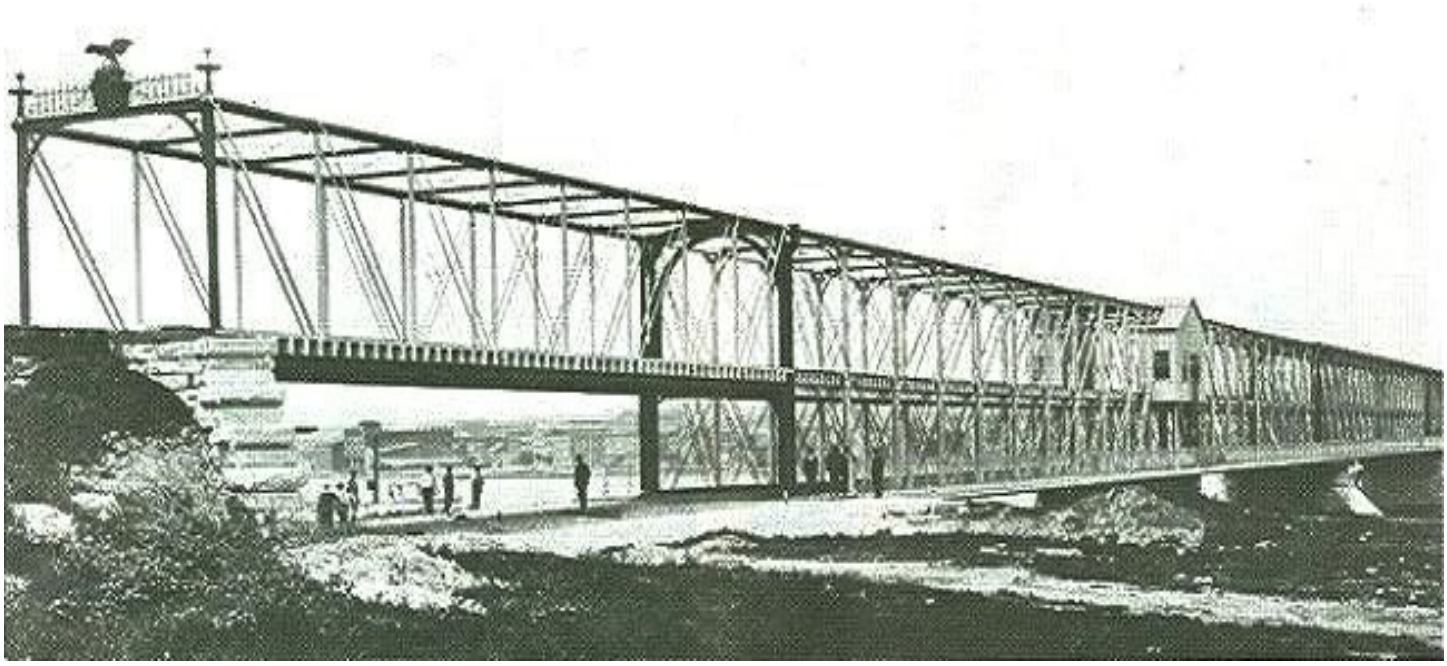
The St. Louis Chamber of Commerce's strong commitment to removing the bridge at Rock Island may have led some of its members to use criminal means in accomplishing this objective. Two men were arrested at Rock Island and charged with attempted arson of the railroad bridge. Although the two were not convicted, it was generally believed by tri-city residents that they had been recruited by the St. Louis Chamber of Commerce to set the bridge on fire.[55]

Despite these efforts to remove the bridge, the structure endured. The first bridge superstructure lasted for nearly ten years. During the 1850s, portions of its timbers were destroyed by fire and damaged by ice jams and windstorms. After only three years, the bridge's wooden spans needed strengthening due to the volume of trains and vehicles that used the bridge. More powerful, heavier, stronger spans were needed to support this additional weight.

Eventually, in 1865, the bridge company completely rebuilt the bridge using heavier timber. The new span was constructed over and around the old chords and then the original timbers were removed. This procedure allowed the bridge to remain open during the building of the new span.

A stone memorial commemorating the site of the original railroad bridge across the

Below: *The Government Bridge of 1872 was made of iron with a rail deck above the wagon deck. It was situated in the present location of the Government Bridge to Davenport, Iowa. (AMSAS-HI Archives)*



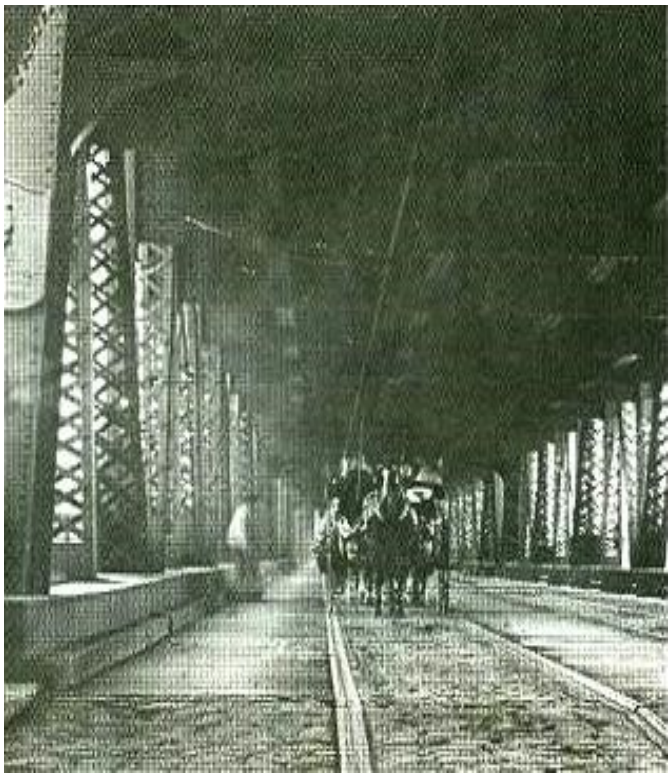
Mississippi River is presently situated near the Colonel Davenport House, along the northwest shore of the island.

In 1866, the Federal Government proposed to the M&M Bridge Company that the location of the bridge be changed to its present site. The government offered to share the expense of building the new bridge. Brigadier General Thomas J. Rodman, the second Commanding Officer of the Rock Island Arsenal, drafted the plan which satisfied the requirements of both the railroad company and the United States Government. The railroad company agreed to give up its old right-of-way across Rock Island and remove its tracks and bridges in exchange for a new bridge, which would be built at the extreme west end of the island. The railroad tracks across the island were relocated to allow the Arsenal to fully develop the interior of Rock Island. Also, the tracks were connected to an arsenal trackage. The bridge was finally completed and turned over to the Rock Island Arsenal in February 1873. General Rodman's commitment to the relocation of the rail tracks and the construction of a new bridge at the northwest end of the island was a key to the success of the project. In 1869, General Rodman ordered surveys of the Mississippi riverbed and measurements of the river current's velocity at various stages. He then determined the sites for the bridge abutments and piers. Letters written by General Rodman to his superiors reveal the energy and thought he had put into the bridge project.

Initially, the bridge was to be a double track bridge with an extra deck for wagons. However, estimated costs for such a bridge exceeded congressional appropriations. General Rodman carried on a lengthy correspondence with the Chief of Ordnance and the Secretary of War seeking the additional funds necessary to build the bridge. Unfortunately his persistence led to the transfer of the bridge construction to the Engineering Department. Major Daniel Flagler, his successor as Commanding Officer of the Rock Island Arsenal, stated: "General Rodman was deeply interested, and took great pride in his work, and its (bridge construction) transfer to other offices was a serious blow to him."

General Rodman remained interested in the bridge after its transfer to the engineers. Periodically, he recommended changes in its construction. His suggestions included such

Below: *The 1896 U.S. Government Bridge's upper (railroad) deck. (AMSAS-HI Archives)*
Right: *The lower (wagon) deck of the 1896 bridge. Note the street car tracks used by horse carriages. (AMSAS-HI Archives)*



basic revisions as the placing of the wagon road deck under the railroad tracks, rather than above it, as initially planned.[56]

Description of the 1872 Bridge

The 1872 iron bridge which connected Arsenal Island to Davenport measured slightly over 1,500 feet in length.[57] The bridge had five spans 220 to 260 feet long, plus a draw span of 368 feet in length. The superstructure of the bridge was a double Whipple truss with two decks. The bridge stood thirty seven feet and two inches tall from the top of the piers to the top bracing. The width of the structure was a narrow sixteen feet, considering it was for two way wagon traffic. The posts and the top chords of the bridge were wrought-iron and the ties were flat iron bars. The Baltimore Bridge Company erected the superstructure, and the Phoenix Company manufactured the iron work. Two vertical hydraulic jacks, operated by steam power, swung the 368 foot draw span. (For a more detailed description of the 1872 iron bridge consult Chapter V of Major Flagler's *A History of the Rock Island Arsenal,* published in 1877).

U.S. Government Bridge 1896

By the 1890s, locomotives and rail cars had become too large and heavy for the old 1872 iron bridge. A replacement was needed and, in 1895, construction began on a stronger bridge of steel structure capable of supporting the increasingly heavier traffic. Ralph Modjeski of Chicago, Illinois, was the design engineer for the new bridge. Completed in 1896, the new bridge was constructed on the old piers. Eventually, it accommodated street cars, as well as railroad cars, vehicles, and foot traffic. Known as the Government Bridge, the 1896 bridge is still used today between Arsenal Island and Davenport, Iowa.[58]

Citizen Support for an Arsenal at Rock Island

Area residents periodically campaigned for the establishment of the Arsenal at Rock Island. In 1859, the Iowa State Legislature joined the cause by sending a memorial advocating such a plan to the U.S. Congress. A joint resolution of the Iowa State Senate and House of Representatives, approved in 1861, called for the

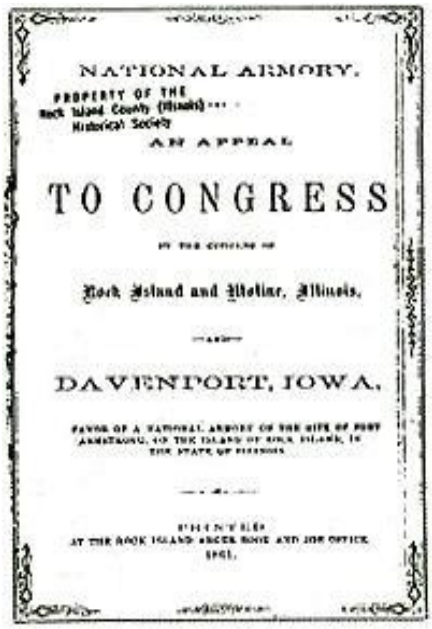
Left: *Major H.C. Connelley toured the Midwest promoting Rock Island as a site for a new arsenal. Mr. Connelley was a prominent Rock Island attorney. (Rock Island Arsenal Museum)* ***Right:*** *Bailey Davenport, as Mayor of Rock Island, actively promoted the island of Rock Island as a site for a national arsenal or armory. (Rock Island Arsenal Museum, Rock Island Arsenal)*

Congressional Legislators from Iowa to work for the establishment of an arsenal on Rock Island.[59] During the same year, Governor Yates of Illinois, and other state officials, sent a letter to the Secretary of War encouraging him to support the location of an armory at Rock Island. The destruction of the federal armory at Harper's Ferry by Confederate troops in April 1861 dramatically demonstrated to Congress the need for a replacement site secure from enemy attack.[60]

In 1861, Bailey Davenport, son of Colonel George Davenport and Mayor of Rock Island, marshaled local support in a well organized effort to attract congressional votes favoring Rock Island as the replacement site. Local newspapers contributed articles promoting the island as a site for a national arsenal. Mayor Davenport persuaded the Rock Island City Council to appropriate funds for the printing of a promotional pamphlet. The pamphlet stressed the potential waterpower and rich resources found in the upper Mississippi River Valley and nearby regions. It also emphasized Rock Island's strategic location, which made it relatively impervious from invasion and its excellent access to river and rail transportation. The pamphlet went on to cite the plentiful supply of inexpensive labor and food found in the Rock Island vicinity. Another argument noted the patriotism of the local citizens. A series of foldout maps of the area were also attached to the pamphlets. The pamphlets were freely distributed to the congressmen.[61]

A committee of ten men, led by Bailey Davenport, served as the executive committee for the campaign. The committee members came from the tri-cities, with half the representatives from Rock Island, and the remaining five from Davenport, Iowa, and Moline, Illinois. Major H.C. Connelley, a prominent Rock Island attorney, conducted a tour through the Midwest to promote the case in other communities. Committee members also traveled to Washington, D.C. to lobby for the adoption of Senate Bill No. 352, which called for the creation of an arsenal on Rock Island and which had been sponsored by one of the Iowa Senators. James W. Grimes, Illinois Senator, however, favored other locations elsewhere in Illinois, such as Chicago. An amendment to the

Left: *A promotional memorial to Congress from interested citizens of the Tri-Cities appealing for the establishment of a national armory at Rock Island. An armory is generally limited to the manufacturing of small arms, while an arsenal includes the production of heavier weapons and equipment.*
Right: *J.B. Danforth contributed to the cause by publishing pamphlets at the Rock Island Argus Book and Job Office in 1861. (Both photographs are from the Rock Island County Historical Society)*


NATIONAL ARMORY.

PROPERTY OF THE
Rock Island County (Illinois)
Historical Society

AN APPEAL

TO CONGRESS

Rock Island and Moline, Illinois.

DAVENPORT, IOWA.

bill reduced the Arsenal to a repair and deposit arsenal, rather than a manufacturing arsenal.[62] Also the amendment increased the number of arsenal sites to three. These sites were Indianapolis, Indiana; Columbus, Ohio; and Rock Island. The amended bill passed both houses and became law on 11 June 1862. [63]

The present day Rock Island Arsenal officially recognized the year 1862 as the beginning date of the Arsenal. Congressional approval of the Act of 11 June 1862 set off a chain of events that had considerable impact on the future of Rock Island. Within a year after Congress had approved the Act of 1862, the U.S. Army had re-established its military presence on Rock Island. The next year Congress approved the Act of 19 April 1864, which authorized the army to clear the island of all property claims made by private parties and by the local communities. A Board of Commissioners, appointed by the President of the United States, reviewed the more legitimate claims and settled them. By 1868, the U.S. Government had acquired a clear title to the island. These actions provided the necessary space needed for the establishment of a grand national arsenal for manufacturing.

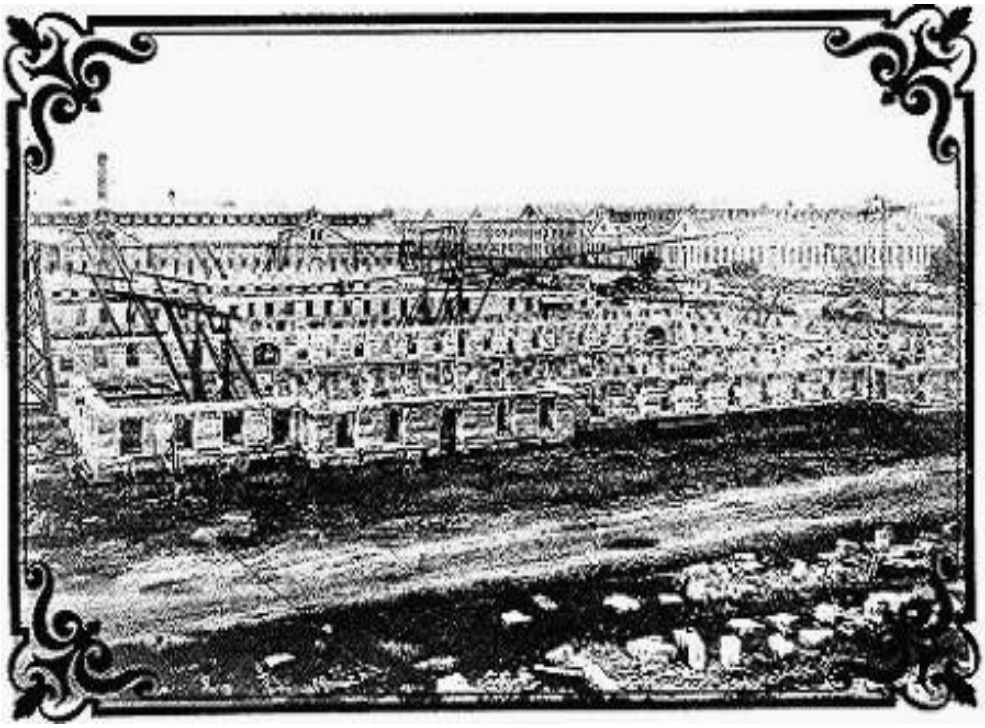
Two separate army commands began constructing on the island in 1863. The Ordnance Department broke ground for the first permanent arsenal building in September 1863. The Quartermaster Department, in turn, began erecting a prison barracks for captured Confederate soldiers in August of that same year.

The removals of settlers and squatters from the island and disputes with soldiers assigned to the prison barracks were two conflicts that confronted the first Arsenal Commander, Major C.P. Kingsbury. These and other topics will be examined in Part II of this history.

Present day Rock Island is the "Heart of the Quad Cities" area. Its bridges are the arteries which provide the flow of commerce and people through the local communities. The establishment of an arsenal at Rock Island, rather than the opening of the island to civilian development, has protected the historical landmarks of Arsenal Island from commercial exploitation and encroachment. Today local citizens visit such historic sites as the Colonel George Davenport House and the Confederate Cemetery in a "park like" setting. While operating as a vital manufacturing arsenal for our national defense, the Rock Island Arsenal has been able to maintain the island as a national historic site.

An Illustrated History Of The Rock Island Arsenal And Arsenal Island

Part Two



National Historic Landmark

FOREWORD

On 11 July 1989 the Rock Island Arsenal commemorated its designation as a National Historic Landmark by the Secretary of the Interior. This auspicious occasion came about due in large measure to the efforts of the AMCCOM Historical Office, particularly Mr. Thomas J. Slattery, who spent many hours coordinating the efforts and actions necessary to bring the landmark status into fruition. Rock Island Arsenal Commander, Colonel David T. Morgan, Jr., was also instrumental in the implementation of the above ceremony by his interest, guidance, and support of Rock Island Arsenal's National Historic Landmark, status.

Incidental to the National Historic Landmark commemoration, the AMCCOM Historical Office has published *An Illustrated History of Rock Island Arsenal* and *Arsenal Island, Part Two.* Mr. Thomas J. Slattery is the author of this history and has presented a very well-written and balanced study of the beginning of Rock Island Arsenal in 1862 through 1900, including the arsenal construction period, the arsenal's role in providing ordnance stores to the west, and its contributions during the Spanish-American War. This information was gathered from a number of primary and secondary sources including the author's own files, the AMCCOM Historical Office archives, and the Rock Island Arsenal Museum collection. Mr. Slattery would like to acknowledge the efforts of past and present historians who gathered and preserved historical sources maintained in the holdings of these two institutions. Mr. Slattery is especially appreciative of the contributions made in this area by his colleagues Mr. O. Bryan England, Mr. Ralph Krippner, and Dr. Robert Bouilly. Mr. Slattery would also like to thank Mr. Daniel Whiteman, Rock Island Arsenal Museum Director; and Mrs. Kris Leinecke, Rock Island Arsenal Museum Curator; for the use of the U.S. War Department's *War of Rebellion* series, a compilation of the official records of the Union and Confederate Armies; and the Rock Island Arsenal Commander's *Annual Report to the Chief of Ordnance from 1871-1900.*

Mr. Slattery's history illustrates well the importance of individuals such as Thomas J. Rodman and Daniel W. Flagler in the construction of the great stone buildings which still stand today and serve as a silent tribute to these arsenal commanders. The history also addresses problems experienced during the construction of the arsenal. The reader will hopefully be enriched and educated by having learned something about Rock Island Arsenal's illustrious past, and how the past has impacted upon the present arsenal as it continues to serve our nation.

Colonel David T. Morgan, Jr., is accorded special thanks for his support and enthusiasm. Special thanks are also extended to Mrs. Carol L. Secoy and Ms. Nancy Newton of the AMCCOM Historical Office for respectively providing exemplary editorial and administrative support for this history. In addition, gratitude is extended to the Field Printing Office for its professional assistance.

HERBERT P. LEPORE
Chief, Historical Office

AN ILLUSTRATED HISTORY

OF THE

ROCK ISLAND ARSENAL AND ARSENAL ISLAND

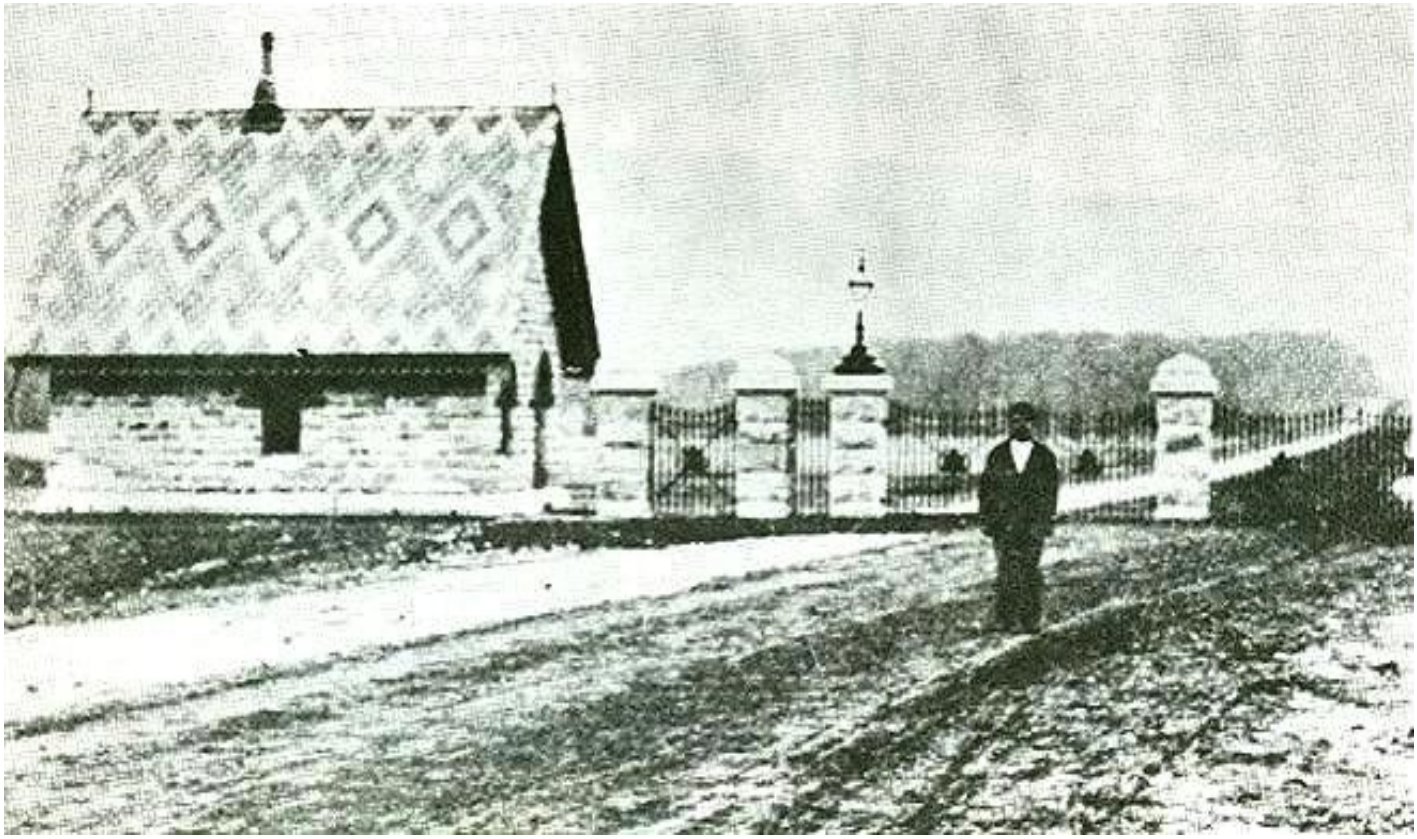
PART TWO

By

Thomas J. Slattery

Historical Office
U.S. Army Armament,
Munitions and Chemical Command
Rock Island, Illinois 61299-6000
1989

Below: *The western entrance to the Rock Island Arsenal via Main (Rodman) Avenue, the island's principal east-west thoroughfare. The limestone Gate House, built in 1875 and portions of the cast iron gate and limestone pillars still grace the entrance to the Arsenal. Note: the Gate House has since been reroofed and the "gingerbread" trim removed.*



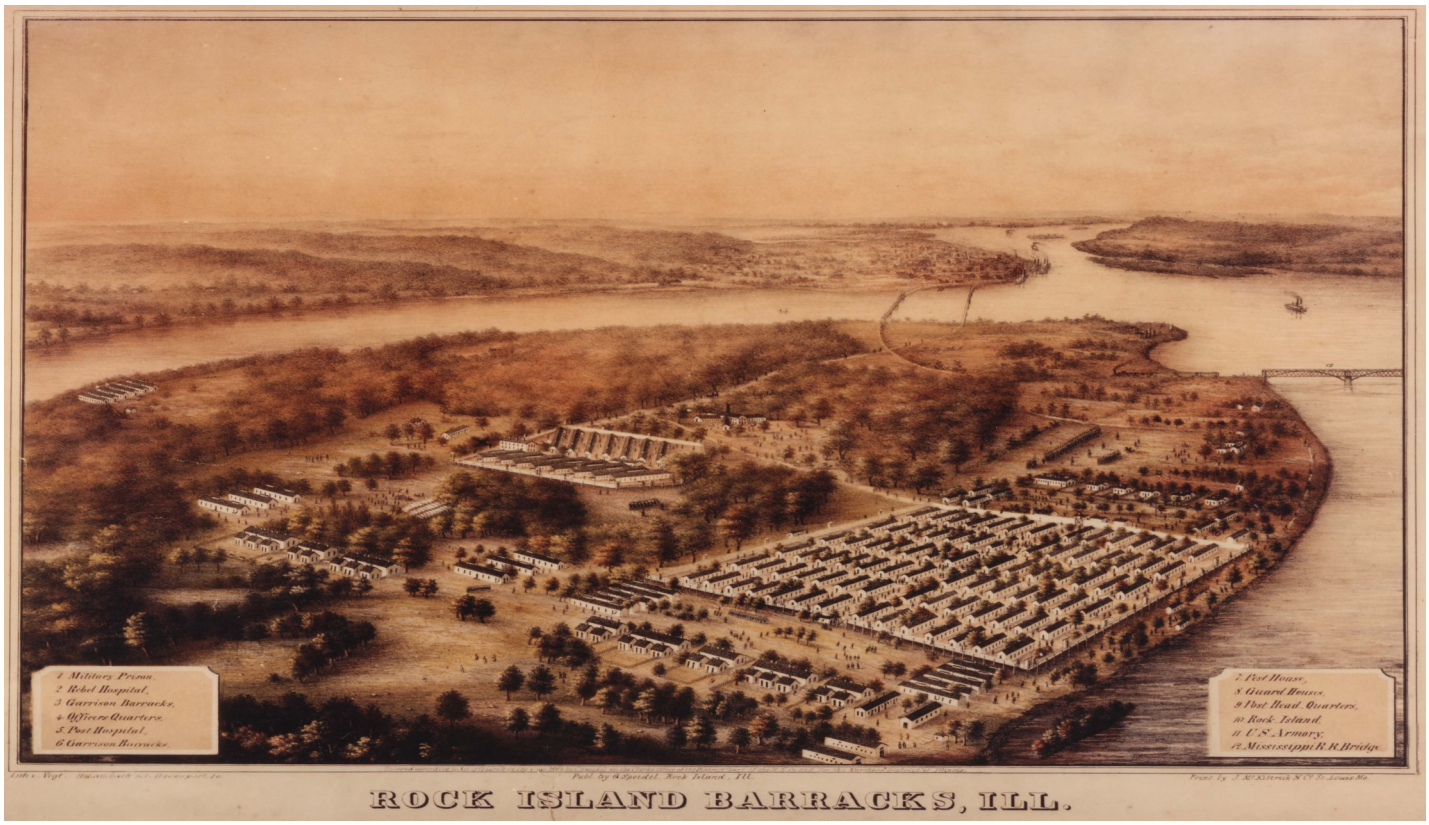
CHAPTER FIVE

SOLDIERS RETURN TO ROCK ISLAND

The history of Arsenal Island is divided into several periods of government occupancy. These periods are mirrored in the divisions of this history. Part one focuses on the Federal Government's acquisition of the island; the reasons for this acquisition; the Fort Armstrong era; and the subsequent caretaker period which ended in 1863. The Black Hawk War, the last Indian uprising in the state of Illinois, resulted in hostile tribes being transferred to reservation camps west of the Mississippi River, thus ending the Indian threat in Illinois. Therefore, with the need for Fort Armstrong diminished, the federal government reduced the fort's status to that of a depot. From 1845 to 1863, a number of War Department civil custodians managed the affairs of Rock Island.

During the American Civil War, 1861-1865, the United States Army returned to Rock Island. This was the beginning of the second, or arsenal construction period which continued until approximately 1908 when the original Arsenal was completed and had its first test in meeting the demands of the Spanish-American War and the subsequent retrenchment. This second period began on 11 July 1862, when the United States Congress passed an act which established an arsenal on Rock Island. The next year, the Army Ordnance Department started construction of a storehouse on the western tip of the island, near the ruins of Fort Armstrong. This storehouse, completed in 1867 and known today as the Clock Tower Building, was the first permanent arsenal building erected.[64]

Below: *A total of 12,192 Confederate soldiers were confined at Rock Island during the Civil War years of 1863-1865. The camp, constructed on the north central shore of the island, consisted of 84 wooded barracks and a variety of ancillary buildings. However only the Confederate Cemetery remains as a reminder of the prison's existence. (AMSAS-HI Archives; RIA MUSEUM)*



CHAPTER SIX

ROCK ISLAND PRISON BARRACKS

During the Civil War the Union Army's Ordnance Department had company on the island. Two separate army units operated on Rock Island during the last two years of the Civil War. Several months prior to initial construction of the Clock Tower Building in 1863, the U.S. Army Quartermaster Department began to build a prisoner of war camp on the north central section of Rock Island. The Union Quartermaster General Montgomery Meigs became aware of the island's advantages in 1837 when he assisted a young army lieutenant named Robert E. Lee in surveying the upper rapids of the Mississippi River at Rock Island.[65] General Meigs then ordered Captain Charles A. Reynolds to build a prison barracks large enough to accommodate 10,000 prisoners of war. In August 1863, Captain Reynolds began construction of the prison barracks near the north central shore of the island. [66]

The prison, rectangular in shape, covered approximately twelve acres of land. Eighty four wooden-framed barracks, 22 x 100 feet in size, arranged in six rows of fourteen barracks each, comprised the containment area. Each barracks had a kitchen, with a stove and a forty gallon kettle for cooking, located at the west end of the building. Captain Reynolds built enough bunks in each barracks to accommodate 120 prisoners. A main avenue running east to west divided the camp and led to the two main gates. The barracks were enclosed by a twelve foot high rough board fence. A guard platform built four feet from the top of the stockade fence, on the exterior side, had a sentry box every 100 feet. Trenches maintained inside the fence served as a warning line. Sentries were ordered to fire at prisoners venturing beyond this point. The "dead line" supposedly deterred prisoners from tunneling under the stockade. In addition, the closeness of bedrock to the surface prevented tunneling near the southern side of the stockade.[67]

Below: *Persons visiting the Rock Island Prison Barracks were required to obtain passes issued under the order of Colonel A.J. Johnson, prison commandant.*
Right: *Colonel Adolphus J. Johnson, commanding officer of the Rock Island Barracks for most of its operational period.*


Headquarters Rock Island Barracks.
Rock Island, Illinois.
1864
NOT TRANSFERABLE
GUARDS AND PATROLS WILL PASS
with Team
To Camp until further orders
By order of
A. J. JOHNSON,
Col. Vet. Res. Corps, Comd'g Post
1st Lieut. and Post Adjutant.

The barracks were numbered consecutively from one to eighty four, and each building had a prisoner who served as sergeant of the barracks. Wooden bunks in three tiers, one above the other, extended the length of each building on each side.

The commandant of the prison, for all but a few early days of its twenty-month existence, was Colonel Adolphus J. Johnson. The government selected the Rock Island site for the prison for basically the same reasons it had chosen the island as the location for the new western arsenal—security, location, and space. In addition, government ownership made the island a prime location for both a prison camp and an arsenal.[68]

By the time the Rock Island Prison Barracks received its first Confederate prisoners-of-war in December 1863, the Union Army had established 21 other prison sites. During the course of the war, some of these prisons closed, while new prisons opened.

Prior to the arrival of the first Confederate prisoners. Colonel William Hoffman, the Union's commissary general of prisoners, inspected the Rock Island Prison Barracks in November 1863. A few days before Colonel Hoffman's visit, several barracks at the Camp Douglas [rison near Chicago were destroyed by fire, thus necessitating the apparent relocation of some of the Camp Douglas prisoners may have been sent to the Rock Island Prison Barracks. However, it is not certain whether this transfer actually took place.[69]

Construction of the Rock Island Prison Barracks was behind schedule from the start. In the rush to organize prison camps to handle the influx of southern prisoners, the Rock Island prison opened before it was completed. Some of the prison guards were quartered in tents, others in local communities, and still others in cheap shanties built to house prisoners of war. Union Quartermaster General M.C. Meigs, in a letter dated 12 August 1863, instructed Captain C.A.

Below: *Union Quartermaster General Montgomery C. Meigs.*
Right: *A roll call at the Rock Island Prison Barracks. The guards are standing in formation in the front while the prisoners are in the background standing in front of the barracks. Note: Wooden "Morgan Mule" in foreground used to discipline insubordinates.*

Reynolds that: "That barracks for prisoners at Rock Island should be put up in the roughest and cheapest manner – mere shanties, with no fine work about them."[70]

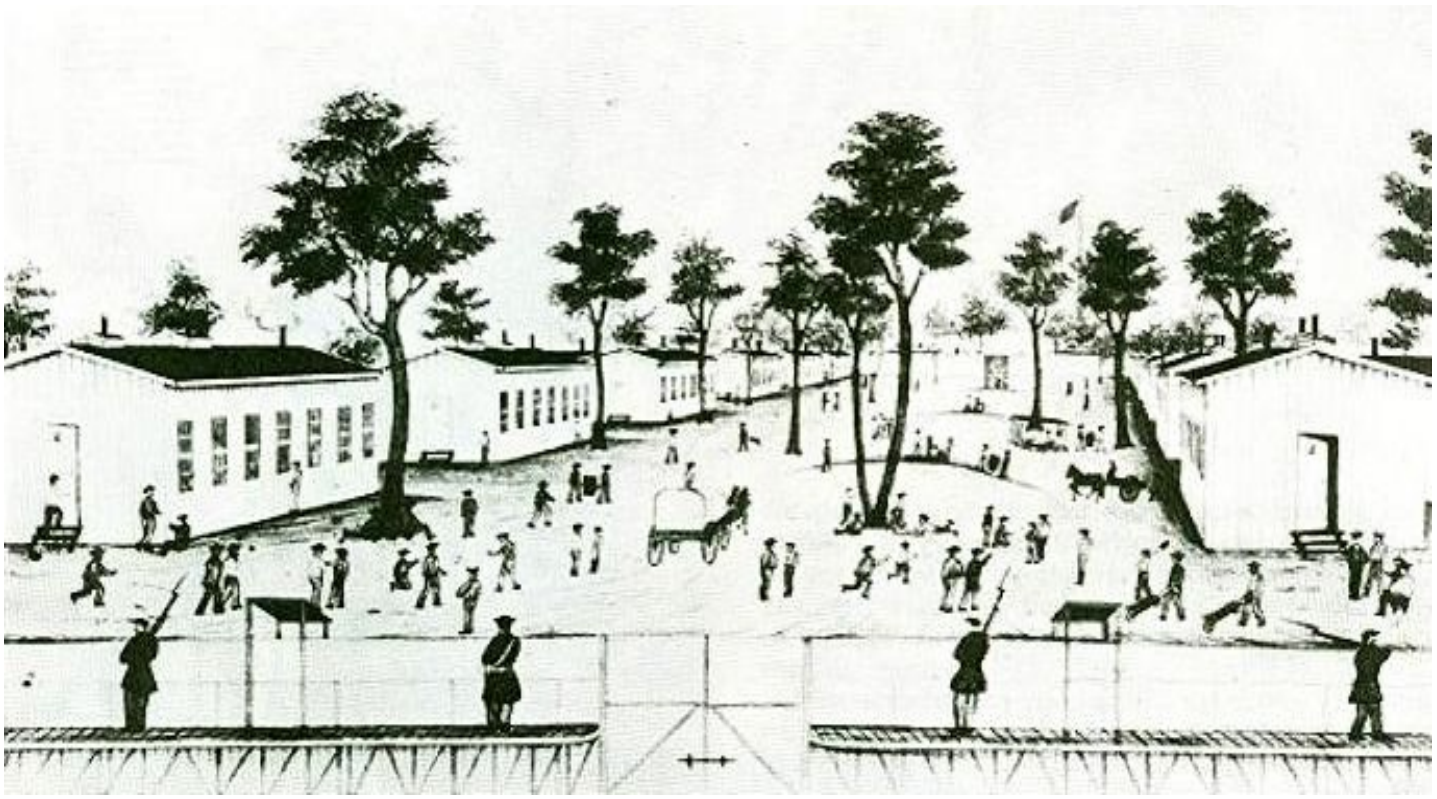
The first 468 Confederate prisoners arrived at Rock Island by train on 3 December 1863. They had been captured in the Battle of Lookout Mountain in southeastern Tennessee. Hundreds of curious citizens gathered to watch the prisoners be unloaded on the far western edge of the island. In an effort to control the crowd, local police officers and their deputies confined the spectators to a roped-off area. The prisoners were marched past the crowd a mile or so inland to the prison.[71]

Within a few weeks the prison population rose from the original 468 to over 5,000 prisoners. Eventually, the prison population grew to 8,594 prisoners, the largest number of prisoners held at any one time at the Rock Island Prison Barracks.[72]

Though the prisoners' existence at the Rock Island Prison Barracks was harsh, especially by present day standards, living conditions were relatively typical of prison camps in the north. Most southern prisoners had difficulty adjusting to the cold winter of the North and, unfortunately, the first prisoners arrived during a severe cold spell with temperatures plummeting to thirty degrees below zero Fahrenheit. Not long after the prison had opened, the supply of winter clothing and blankets for the prisoners became depleted; however, nearby coalfields provided each barracks with sufficient heating coal to burn in the barrack's stoves.

Diaries kept by Confederate prisoners and recollections written after the war were two valuable sources of material regarding prison conditions at Rock Island. One prisoner at the Rock Island Prison Barracks, Lafayette Rogan, recorded in his diary these comments in regard to the winter he experienced at Rock Island:

Below: *An illustrated view of the Rock Island Prison Barracks depicting sentinels, gate, barracks, and prisoners. The first Confederate prisoners arrived by prison train on 3 December 1863 during a particularly bitter cold spell. Ill-clothed for severe winter weather and carrying small pox disease among them, many of these prisoners died at Rock Island during their confinement.*



> 1 January 1864 – The coldest day I have ever felt. Thermometer 30 (degrees) below zero…
> 3 January 1864 – I suffer greatly for blankets. Many fellows have no blankets yet and are very thinly clad. Such men suffer terrible. We sleep by reliefs (to man the fires in the barracks) and fill each bunk heads and tails fashion. I fear that disease and death will be the result of all this suffering. Deaths have already occurred from freezing.[73]

In addition to surviving the bitter winter cold of the North, Confederate prisoners had to endure exposure to a deadly smallpox epidemic, among other contagious diseases. Within days of the barracks opening, the prison was hit by the smallpox. In a hurry to complete the camp's construction, the Quartermaster Corps had failed to erect a prison hospital. Without a hospital, adequate medicine, or a well-equipped medical staff, hundreds of prisons and prison cadre became infected. Initially, prison doctors diagnosed ninety- four cases of smallpox among the first prisoners. Unfortunately, they did not detect all the cases, and those that processed into the camp undetected exposed the entire camp to the dreaded disease.[74] Colonel Johnson, the prison commandant, arrived only a short time after the prison was constructed and had little time to address and ameliorate logistical problems relative to the well being of the prisoners.

Conditions did not improve at the Rock Island Prison Barracks until Ambrose M. Clark, assistant surgeon general, arrived in February 1864 to inspect the island camp. He immediately instituted corrective measures such as establishing a temporary hospital isolation ward in fenced-off barracks and ordering a half-dozen pest houses be built on the southern shore of Rock Island, away from the prison. During his stay at Rock Island,

Right: *Colonel William Hoffman, Federal Commissary General of prisoners standing on the steps to his office in Washington, D.D. Upon retiring from the military, Hoffman resided in the Tri-Cities,. His grave site is in Chippiannock Cemetery, Rock Island, Illinois.*

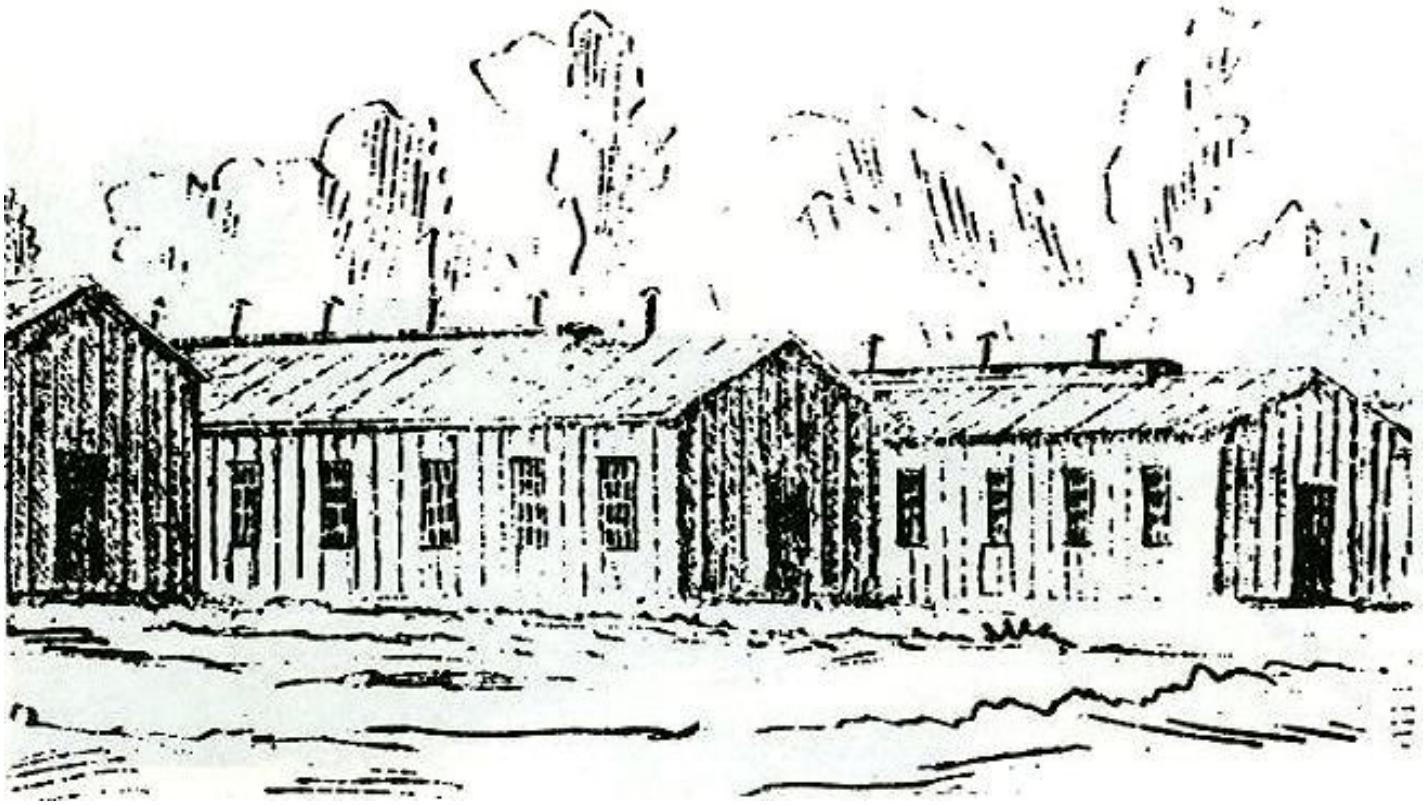
from 10 February to 4 March 1864, Surgeon Clark had plans drawn up for an adequate hospital, sufficient to care for the non contagious disease cases. His report to Colonel Hoffman stated, "The most urgent necessity exists for the speedy completion of this (prison hospital) building. For in the great rush to open the prison, not only was the building of barracks for the cadre not completed but the construction of a prison hospital was overlooked.[75] Clark also noted the conditions which enhanced the spread of smallpox, such as the faulty drainage system of the prison compound. The prison was situated in a low land area of the island, causing water to drain in, rather than out, of the camp. Therefore, during the spring of 1864, the camp ground was constantly wet and muddy. Clark also noted that a marsh located near the southeast corner of the prison would have to be drained before summer.

Approximately two months later, in April 1864, Clark returned to inspect the Rock Island Prison Barracks and filed his report to Colonel Hoffman on 8 April 1864. In his report Clark described the prisoners' living conditions at Rock Island as having somewhat improved. He found the prison barracks well-heated, ventilated, and sufficiently stocked with food and blankets. However, Clark reported that the corn bread tasted rancid to the prisoners and made them ill; the condition of the prison grounds and its water supply were still poor and several unsanitary conditions and practices still continued at the prison.

The latter included prisoners tossing their kitchen refuse and was water on the ground near their barracks. The was water contributed to the standing water and muddy conditions of the grounds within the stockade. Collectively, the garbage, standing, water, and muddy grounds severely hindered the prison's already inadequate drainage system. Prisoners also emptied and washed barrels from their privies facilities were available to the prisoners, and according to Clark, not heavily used.

Clark further noted in his April report to Colonel Hoffman that improved sanitary conditions and new clothing for convalescents

Below: *Early sketch of the Rock Island Prison Barracks pest houses erected on the island to quarantine those inflicted with contagious diseases, such as small pox, from others at the camp.*



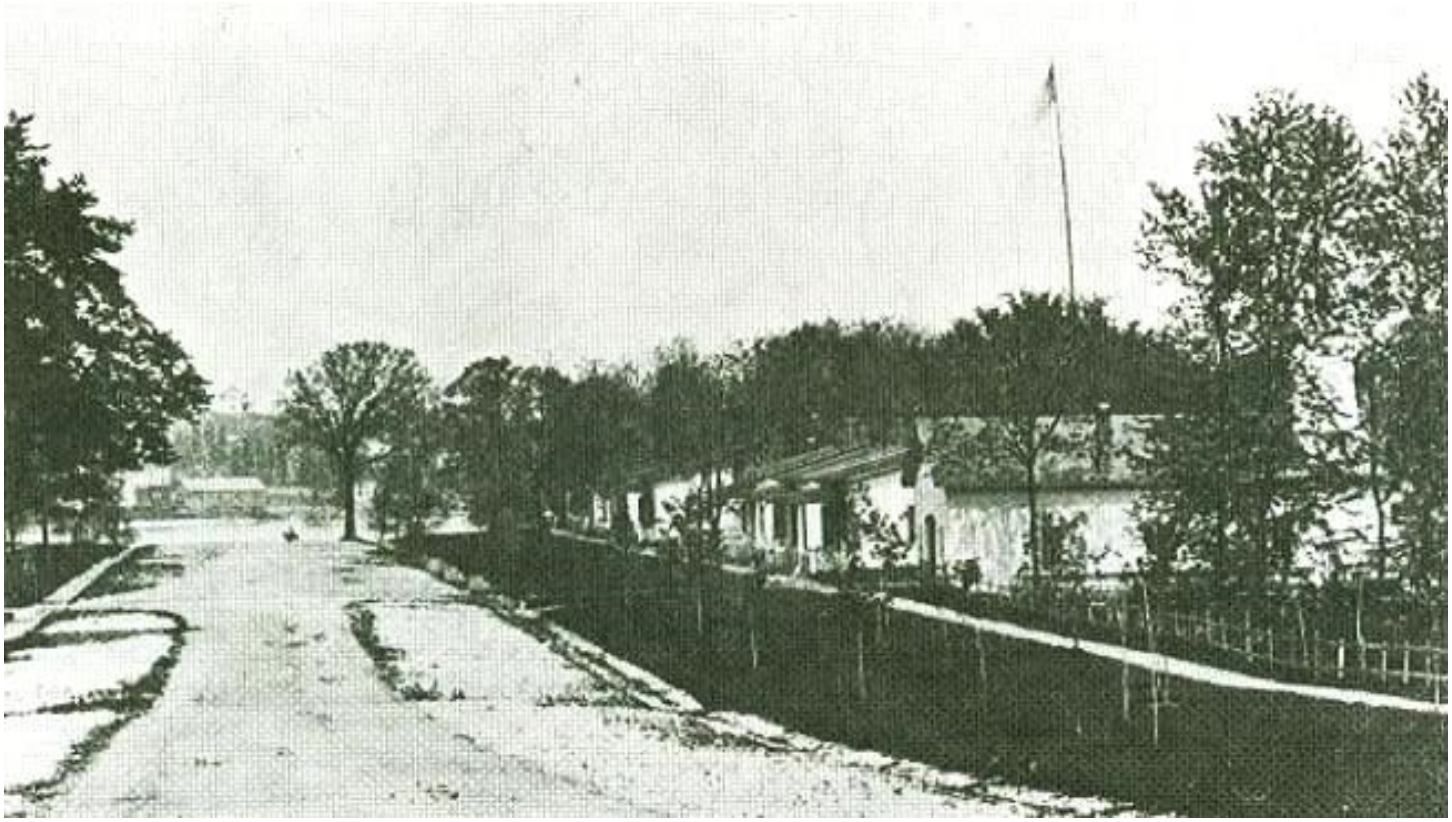
were necessary to stem the camp's smallpox epidemic. The surgeon general attempted to purify and disinfect the prisoners' clothing by thoroughly boiling the clothes; then subjecting them to the fumes of burning sulfur; and finally, a second boiling. This method seemed to effectively destroy the infection since no new cases were traced to the use of the boiled clothing. Later, however, Clark commented that he did not trust this procedure and thought new clothing should be furnished to all prisoners who had been released from the hospital and returned to their quarters.[76]

Under Surgeon Clark's instructions, all soldiers and prisoners infected with smallpox were quarantined in the newly erected pest house on the south shore of the island. Other corrective measures were undertaken by Clark, such as the construction of a sewage system to improve drainage and sanitation conditions, and the development of a sufficient water supply system in the prison.

The post surgeon's morning report of sickness for 4 March 1864 provided some insight into the epidemic faced by the medical staff of the Rock Island Prison Barracks. Surgeon William Watson, U.S. Volunteers, listed 350 prisoners sick in their quarters and 714 in the temporary barracks hospital. Of those in the hospital, 420 were smallpox cases.[77]

As previously mentioned, the death toll from disease increased steadily among prisoners and guards after the camp opened in December 1863. Smallpox claimed 98 prisoners and three guards in December 1863; 231 prisoners and four guards in January 1864; and 350 prisoners and ten guards in February 1864. The War Department, alarmed by these statistics, reversed an earlier directive issued by Colonel Hoffman which had halted construction of the Rock Island Prison Hospital. After pest houses and laundry facilities were constructed, as recommended by Assistant Surgeon General Clark, a gradual decline in smallpox cases and deaths occurred.[78]

Below: *The Rock Island Prison administrative buildings, possibly after the Rock Island Arsenal assumed control of them following the Civil War. Since, traditionally, post flagpoles were planted near a headquarters building it could be assumed that these structures were temporarily administrative buildings for the arsenal.*



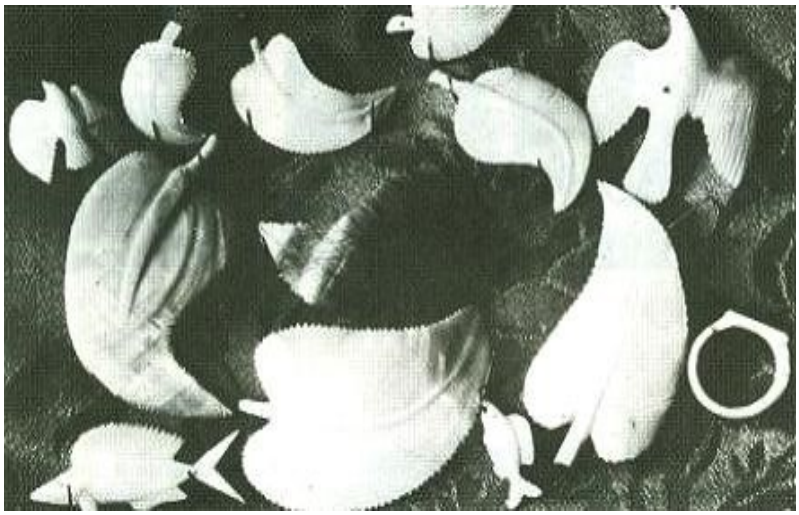
Clark also ordered the relocation of the original Rock Island Confederate Cemetery, which had been adjacent to the prison compound, to its present site.[79] During the twenty months that was in operation, more than 1,964 Confederate prisoners died while confined at the Rock Island Prison Barracks. Smallpox, combined with pneumonia and diarrhea, accounted for the majority of these deaths. In the same time frame, 171 Union guards died of diseases or exposure to the elements while serving guard duty. The bodies of dead Union soldiers not claimed by their families were reinterred in the current Rock Island National Cemetery on Arsenal Island.[80]

Because of the smallpox epidemic at the prison, the government issued the following instructions through the Rock Island *Argus* newspaper:

> Visitors to these stations, out of mere curiosity, will in no case be permitted. Persons having business with the Commanding Officer, or Quartermaster, may, with the permission of the Commanding Officer, enter the camp to remain only long enough to transact their business. When prisoners are seriously ill, their nearest relatives, parents, wives, brothers or sisters, if they are loyal people, may be permitted to make short visits; but under no circumstances… (will) visitors be allowed to see them without the approval of the Commissary General of Prisoners. [81]

The prison commandant, Colonel Johnson, initially permitted the southern prisoners to receive clothing and food packages from sympathetic local citizens, friends, and relatives. Colonel Johnson also allowed the prisoners to correspond with their relatives and friends, but their unsealed letters were censored at the prison by Captain A.D. Collins, post quartermaster, and Colonel Hoffman. Letters could not exceed one page and had to relate solely to personal matters.[82]

Left: *Clam shell trinkets carved by Confederate prisoners at the Rock Island Prison Barracks. The prisoners used them to barter and to sell to guards and visitors.*
Right: *Confederate soldiers making trinkets out of clam shells from the Mississippi River.*



Books provided a temporary escape from the monotonous routine of a prisoner's life. Other diversions undertaken by prisoners included attending church services, organizing skits, forming singing groups, gambling, and debating the many issues of the war. Tobacco, blankets, clothing, books, and personal items, acquired in several different manners by the prisoners, made their incarceration bearable. Some of the prisoners volunteered their labor on prison construction projects, such as the building of the prison sewer system; and each prisoner that worked, depending upon his skill, received a credit of five to ten cents a day on his account at the prison sutler store. Enterprising prisoners also used their craft skills to fashion rings and trinkets from available material such as gutta percha (a hardened tree sap or resin) and mussel shells. These ornaments were inlaid, cut out, and often polished into the shapes of eagles, doves and fish. The trinkets were traded or sold to the guards for tobacco or peddled to local citizens.[83]

By 1864 the North had become aware of the wretched conditions that Unions soldiers had been enduring in southern prisons. The report of deplorable treatment of Union prisoners of war at Andersonville, Georgia, site of the infamous Confederate prison, caused bitter resentment in the North. In June 1864, Secretary of War Edwin Stanton ordered Union prisons to enforce stricter rules for Confederate soldiers.[84]

At the Rock Island Prison Barracks, Colonel Johnson zealously followed these instructions. He restricted the type of packages prisoners could receive from relatives and friends by no longer accepting food baskets addressed to individual prisoners. Instead, Colonel Johnson had these baskets delivered to the sick wards. Only clothing packages were to be received by individual prisoners. Further restrictions included

Left: *Confederate prisoners at Rock Island Barracks taking oath of allegiance to become "galvanized Yankees".*
Right: *Confederate prisoners "riding Morgan's Mule" as punishment for their misconduct.*

prohibiting the sutler's wagon from entering the compound and doing business with the Confederate prisoners. Supposedly, in response to conditions at the Andersonville Prison, Colonel Johnson also ordered that prisoners' rations be reduced to fourteen ounces of bread and twelve ounces of "fresh" beef. In addition, the prisoners were to receive a quart of hominy per man each day. The Southerners made hominy soup and also boiled other food, serving it in sauce pans produced from canteens and burned-out stove pipes. The prisoners had a difficult time swallowing the course yellow corn bread provided by the prison and asked for flour to bake white bread, with varying degrees of success. At times slab bacon was added to the prisoners' diet. Years after the Civil War, former Confederate prisoners who had been incarcerated at Rock Island during the war wrote colorful accounts which depicted episodes of prisoners eating stray dogs and cooking rat stew.[85]

Many southern prisoners suspected that harsher rules ordered by Colonel Johnson were part of a Union plan to reduce their allegiance to the South, and entice them to join the Union Army. If so, the program enjoyed a measure of success.

On 8 December 1863 President Abraham Lincoln had announced his Amnesty Proclamation to Confederate prisoners. Confederate prisoners who pledged their allegiance to the United States and who agree to enlist in the Union military service would receive amnesty. These "galvanized Yankees" were recruited to fight Indians on the Western Frontier and to man Union ships on the high seas. At the urging of General Ulysses S. Grant, Lincoln agreed not to employ former Confederate prisoners on the battlefield against their fellow southerners. In the heretofore mentioned *Diary of Lafayette Rogan 1863-1865,* Rogan, a prisoner-of-war clerk at the Rock Island Prison Barracks, recorded briefly in his 9 February 1864 entry,… "Navy Roll of 644, traitors to our country (was) completed today."[86] On 1 September 1864 President Lincoln wrote the following to War Secretary Edwin Stanton:

> …there are at Rock Island, Ill., as rebel prisoners of war many persons of northern or foreign birth, who are unwilling to be exchanged and be sent South, but who wish to take the oath of allegiance and enter the military service of the Union.[87]

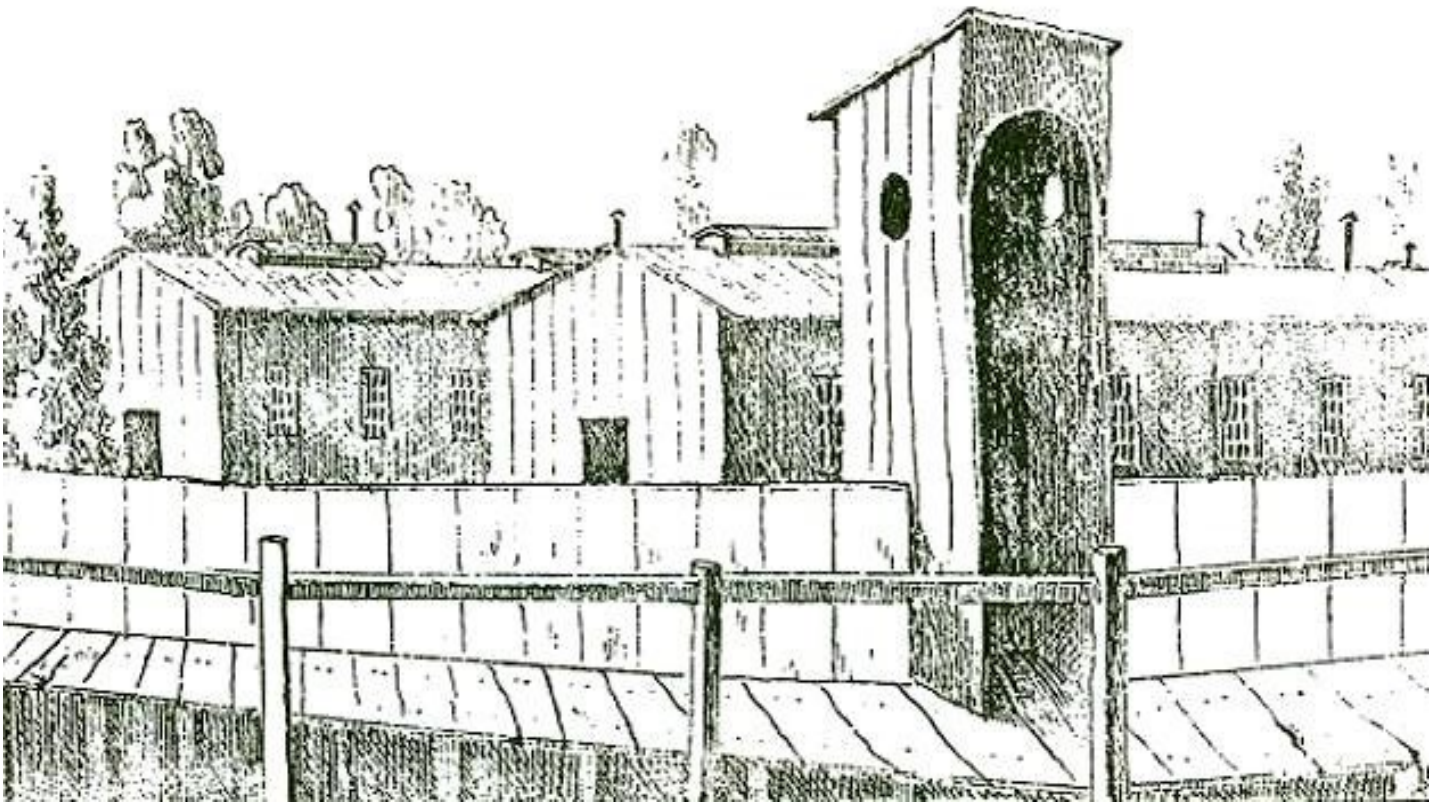
Below: *A.C. Dart, camp sutler, and his wagon from which Confederate Prisoners bartered or purchased personal items such as tobacco.*

Within a few weeks after President Lincoln's proclamation, Rogan again wrote in his diary, "Yanks make a call for volunteers offering $100 for (a) year as bounty and promise not (to) oppose them… (by returning to) the rebel Army." The next day Rogan's entry read: "The heart grows sick and the soul sinks within me when I see so many deserting our (South's) cause. From 1,500 to 2,000 of the prisoners here will enlist for frontier service.[88] Another Confederate prisoner, B.M. Hord, wrote an article in 1904 for *Confederate Veterans Magazine* titled, "Forty Hours in a Dungeon at Rock Island," in which he states that those who took the oath and joined the Union Army or Navy were moved to a new pen for their protection. Twelve barracks in the southeast corner of the enclosure, near the main entrance to the prison, were cordoned off and the occupants transferred to other barracks. No longer technically prisoners, these new Union recruits were furnished with the clothing and rations of a Union soldier. Southern soldiers who remained loyal to the South stayed in the main compound called the Bull Pen. During the camp's existence, nearly 3,000 rebel prisoners "escaped" the confines of the Rock Island Prison Barracks by volunteering for frontier or sea duty within the Union Forces.[89]

Prison records cited forty-one successful escapes. Colonel Johnson reported the details of one such escape to Colonel Hoffman in a letter dated 25 June 1864:

> COLONEL: I have the honor to report that on the night of the 14th instant ten prisoners of war made their escape from the prison enclosure by tunneling under Barracks 42, their egress being made directly under the parapet. The last two were discovered by the sentinel, who gave the alarm, and all necessary measure taken for their

Below: *A 12 foot high wooden fence with sentry walk (parapet) surrounded the entire Rock Island Barracks prisoner area. Sentry boxes were positioned every 100 feet along the walk.*

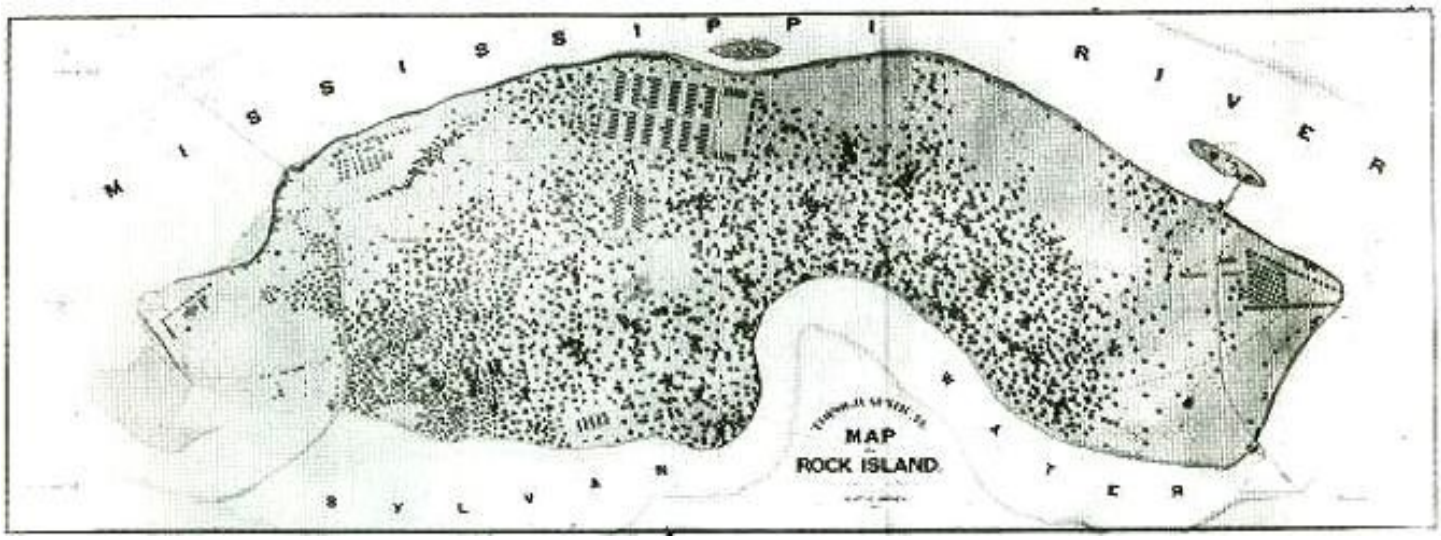


recapture, which has resulted in securing seven of them. Three were taken on the island, four near Rock River, about four miles distant, and one was drowned in attempting to cross the slough. Mounted patrols have been on the track of the remaining two until today, with the fair prospect of taking them. Barrack 42 was used for a variola ward during the prevalence of that disease and while the pest houses were being erected, and has been kept unoccupied since by request of the surgeon. The tunnel was made on the south side of the prison. Deep trenches had been made on the north, east, and west sides to prevent tunneling, it being deemed unnecessary to trench on the south side in consequence of the rock coming so near the surface. A trench has now been made down to the rock on that side also. [90]

The Confederate prisoners were guarded by troops of the 4th Regiment of the Veterans Reserve Corps; the 37th Iowa Regiment; various "100 day" volunteer regiments; and the 108th U.S. Colored Infantry Regiment. The 4th Invalid Corps Regiment was a veteran reserve organization comprised of wounded soldiers who were no longer fit for regular military service. Under the command of Colonel Richard H. Rush, the 4th Invalid Corps were the guards at the Rock Island prison when the camp received its first Confederate prisoners in December 1863. Shortly thereafter, Colonel Johnson arrived at Rock Island and assumed command of the prison barracks in January 1864. In the same month, the 37th Iowa Volunteers Regiment arrived to supplement the guard force.

The 37th Iowa Volunteers, known as the "gray beard" regiment, was comprised of men too old for conscription. George Washington Kincaid, an Iowa pioneer settler and member of the state's

Below: *A topographical map drawn by the Rock Island Arsenal master draftsman, W. Otto Gronen, in 1870. The map depicts the prison barracks in the north central section of the island. During the 1870s the prison buildings were razed and the officer's quarters which now stand along Terrace Dive were constructed in their place. Note that the Rock Island Arsenal construction was limited to the far western tip of the island, west of the railroad tracks. The map actually depicts the island in 1867 before the Arsenal began construction of manufacturing buildings on the high ground in the center of the island.*

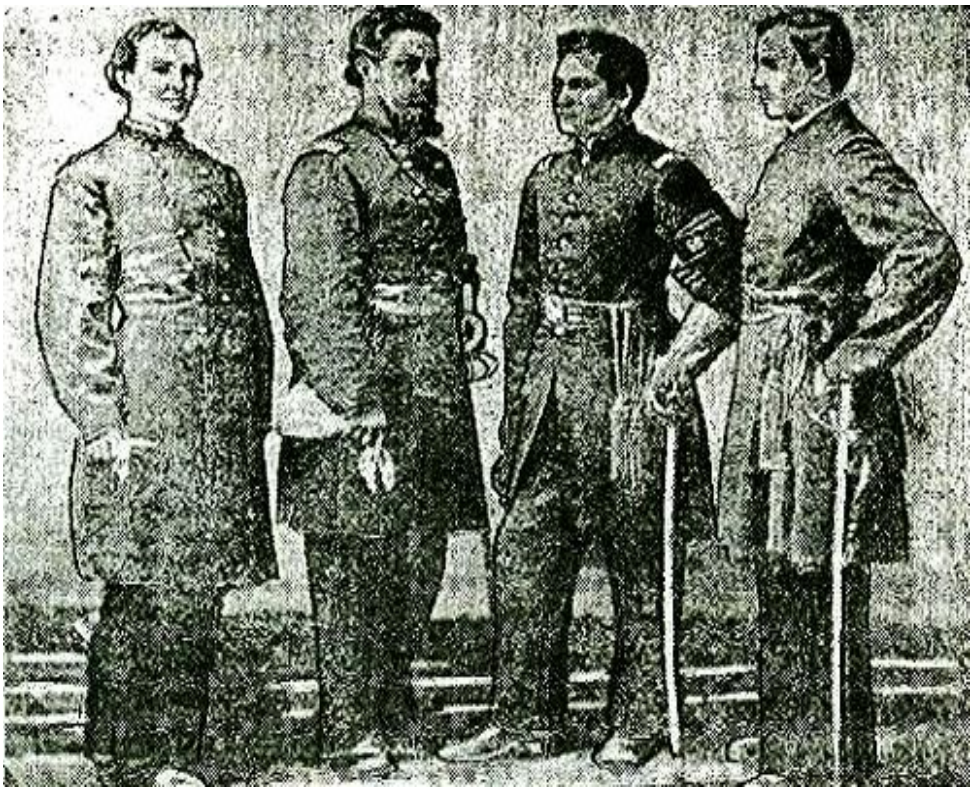


First Constitutional Convention sought first federal, then state, permission to form a unique regiment of men too old to enlist in the Regular Army. Iowa Governor Samuel J. Kirkwood granted his approval and appointed Mr. Kincaid the commanding officer of the 37th Iowa Volunteers. The regiment of "gray beards" was exclusively composed of men forty-five years of age or older; 428 men over the age of fifty, 145 of which were in their sixties, and one man, Curtis King of Muscatine, Iowa, who was eighty. Attractive as a public relations endeavor for the Union Army, the "gray beards" were to be exclusively used as garrison and guard troops. Used in this capacity, the 37th Iowa Volunteers relieved troops better fit for combat duty. The uniqueness of being the oldest regiment to serve in the U.S. Army initially earned the regiment celebrity status in the North. Among these troops were men who had prior military service dating back to the War of 1812. However, the novelty of federal service eventually wore off under the strain of everyday and the bone chilling winter winds that whipped across Rock Island.[91]

In October 1862, the 37th Iowa Volunteer Regiment was comprised of ten companies when it was mustered into the army at Camp Strong, near Muscatine, Iowa. The "gray beards" initially served provost and garrison duty in St. Louis, Missouri, and earned commendations and praises for their service in St. Louis, Missouri and Alton, Illinois.[92] However, they did not receive accolades for their duty at Rock Island. In April 1864, Lieutenant Colonel John F. Marsh inspected the prison barracks for the Inspector General's Office. His written findings included this critical comment regarding the "gray beard" regiment. "(A) regiment of decrepit old men and the most unpromising subjects for soldiers I ever saw."[93] In another instance, Surgeon August M. Clark reported to Colonel Hoffman concerning his inspection of the Rock Island Prison Barracks:

> Colonel Kincaid, Thirty-seventh Iowa Volunteers, (should) under no

Below: *Officers of the 108th Regiment, U.S. Colored Infantry, stationed at Rock Island during the Civil War. Left to right, Dr. Ellis, surgeon; Colonel John S. Bishop; Adjutant Morris T. Stafford; and Henry Clay Cleaveland, quartermaster.*



> circumstances placed in command of their post. He is altogether too slow and easy, and his officers and men appear to have no idea of the value of discipline.[94]

On 24 September 1864, the U.S. 108th Colored Infantry Regiment, commanded by Lieutenant Colonel John Bishop, a white officer, arrived by train to assume guard duty at the Rock Island Prison Barracks. The regiment's recruits, primarily from the slave population of north and west central Kentucky, enlisted for a three year term of service.[95]

Confederate prisoners expressed first indignation, then anger, over the prospect of armed former slaves in uniform guarding over them. Lafayette Rogan expressed these emotions in his diary, writing, "A regt (regiment) of contrabands arrived at this post for garrison duty." His next day entry read: "The contrabands have no yet come of the parapet. We hate it but I suppose we must submit to this indignity… (as) we have to other." Two days later, Rogan wrote: "8,000 Southern men today are guarded by the slaves who have been armed by the tyrant. One of our number was killed and two wounded last night in cold blood."[96] It was not long before black guards had earned a reputation for shooting prisoners. Prisoners accused the guards of firing without provocation into their barracks and shooting prisoners without cause. However, in at least one instance, the post commander, Colonel A.J. Johnson, appointed a commission of officers to investigate the shooting death of a prisoner; and after deliberating on the evidence, the commission acquitted Private John Cowherd of Company C. 108th U.S. Colored Infantry Regiment, of all blame in the shooting of John P. McClanahan, prisoner of war, assigned to Barracks 8. The commission ruled that Private Cowherd acted in accordance with the spirit of his instructions, and discharged his duty as a good soldier and faithful sentinel.[97]

Right: *A formal photograph of Private Christopher Anderson, a member of the 108th U.S. Colored Infantry Regiment, who served as a prison guard at the Rock Island Prison Barracks during the Civil War. The photo is from a carte de viste, a small portrait photograph used as a substitute for a visiting card by soldiers. This is one of a set photographed by Gayford & Speidel, photographers, Rock Island, Illinois .*

Prisoners and guards who disobeyed orders were often assigned to "ride" a narrow wooden rail, known as "Morgan's Mule". The guilty party "rode" the rail for several hours with his feet dangling above the ground.

The 108th Colored Infantry Regiment remained at Rock Island until May 1865. On the eve of their departure to Mississippi, the Rock Island *Argus* commented, "the colored soldiers, as a general thing, have conducted themselves with great propriety, since they were stationed here."[98]

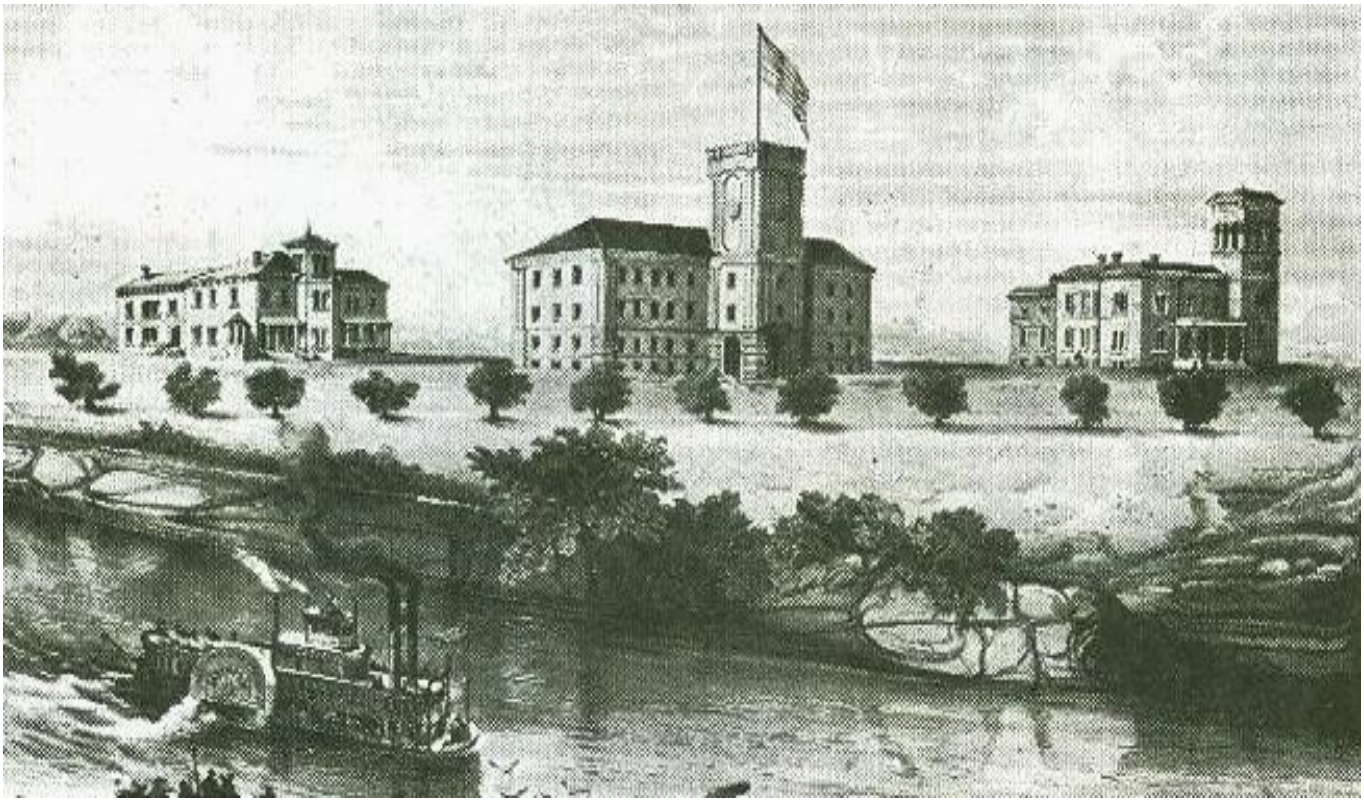
In a separate section of the National Cemetery, at the far east end of the island, are fifty graves of the men of the 108th who died while serving the Rock Island Prison Barracks. Also buried in this section were the sixteen southern "galvanized Yankees" who died prior to being assigned to the Western Frontier.[99]

A total of 12,192 prisoners were confined to the prison barracks during its existence. Of this number, 730 Confederate prisoners were transferred; 3,876 exchanged; and 5,581 released.

The last two prisoners were released from the prison hospital in July 1865. After the prison was closed, the 207 buildings, including the prison barracks, hospital, and garrison building, were turned over to the Arsenal. All of these structures have long since been razed. The last vestiges of the prison disappeared in 1909. Only the Confederate Cemetery remains as a permanent reminder of the existence of the Rock Island Prison Barracks.[100]

The cemetery was relocated to its present site in February 1864. Between 1906 and 1912 a congressional commission responsible for marking the graves of Civil War dead provided the grave markers. Each year Memorial Day commemorative ceremonies are held at the cemetery.

Below: *This copy of an old lithograph depicts the Army Ordnance Department's original plan to build a small arsenal comprised of three structures for the repair and storage of ordnance weapons and equipment at the far western edge of the island. Note: Only the Clock Tower Building in the center was ever erected.*



CHAPTER SEVEN

BEGINNING OF THE ARSENAL

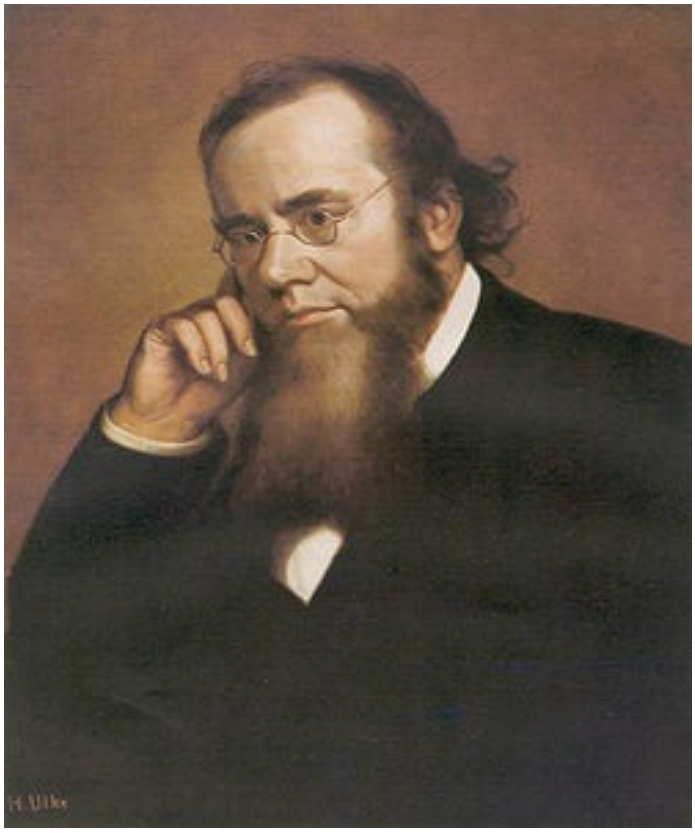
Prior to the Civil War, prominent army officers such as Brigadier General Thomas S. Jesup, Quartermaster General, expressed the importance of Rock Island. In 1852 General Jesup wrote:

> The site of Fort Armstrong, Rock Island, is one of the most valuable in our western country for an armory. The whole water power of the Mississippi River is available there. The island is under the control of an agent, who resides on it, and who is under the order of, and reports to, the quartermaster of Saint Louis. The agent should protect the property from depredation. I would not advise that any part of it be rented or leased.[101]

The legislation which authorized the building of an arsenal at Rock Island in July 1862 envisioned only a small facility designed for the "deposit and repair" of ordnance and provided $100,000 for the building of the Arsenal. Besides Rock Island, Indianapolis, Indiana, and Columbus, Ohio, were designated as additional sites for the building of other small arsenals.[102] As a result of the destruction of Harper's Ferry Armory, in Virginia, Congress realized the necessity of federal arsenals being far from the Mason-Dixon Line. Rock Island, being situated in the upper Mississippi River, satisfied this criteria. None of the Arsenal buildings, however, were completed at Rock Island during the Civil War.

Shortly after Congress had passed the Act of 11 July 1862, establishing an arsenal at Rock Island, General C.P. Buckingham conducted a preliminary inspection of the island for the War Department. On 24 October 1862, he wrote to the Secretary of War:

Right: *Edwin M. Stanton served as Secretary of War during the period in which plans for the Rock Island Arsenal were expanded and upgraded to include manufacturing operations.*



> The island is, without a doubt, the best place for an arsenal. The only question connected with the location of an arsenal at this point is, I conceive, whether it shall be at the upper or lower end of the island… I think the advantages of the lower end of the Island for the purpose of an arsenal are superior to those of the upper end. [103]

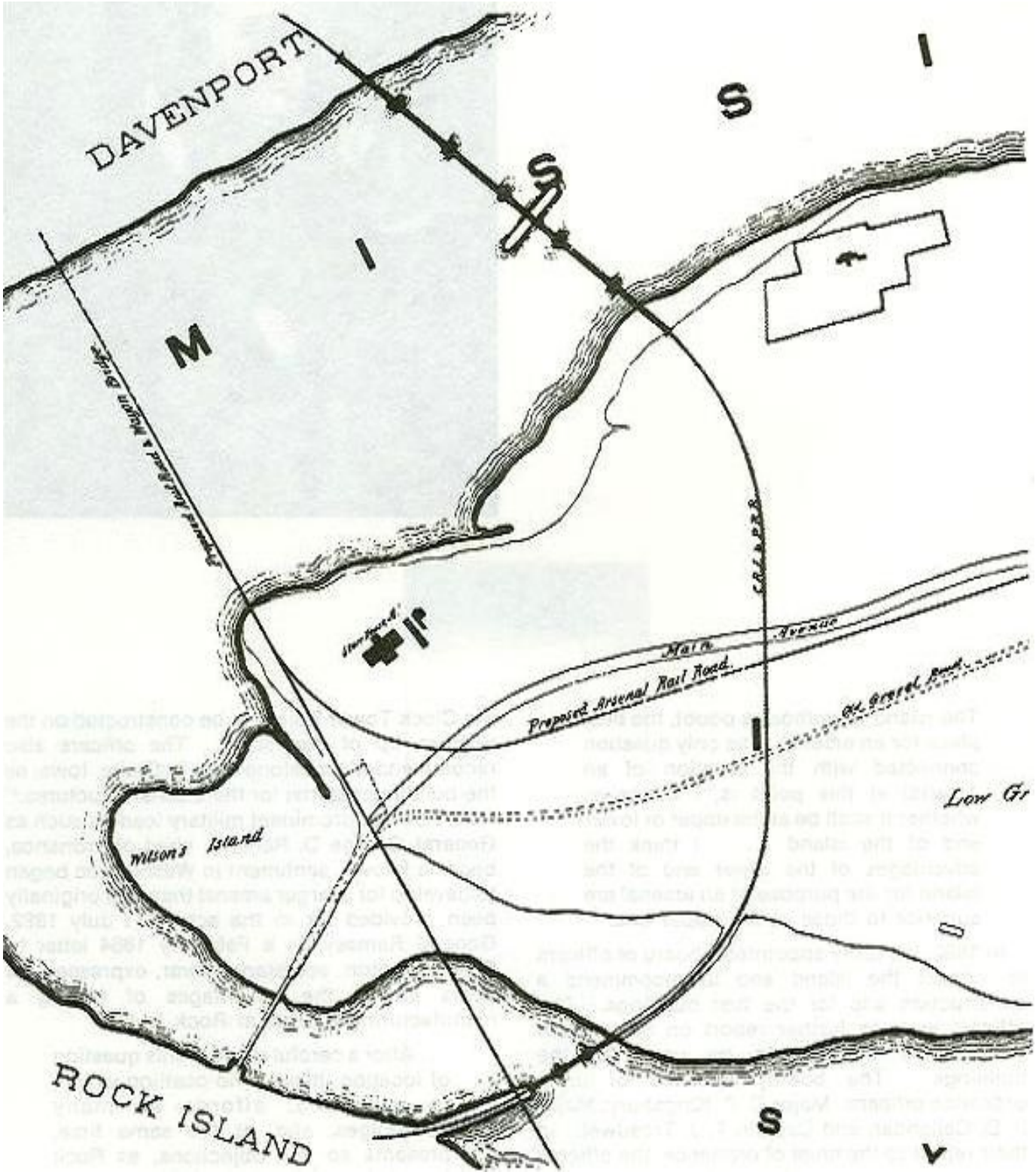
In 1862 the army appointed a board of officers to inspect the island and to recommend a construction site for the first buildings. The officers were to further report on the type of construction material to be used for the buildings. The board consisted of three ordnance officers: Major C.P. Kingsbury; Major F.D. Callendar; and Captain T.J. Treadwell. In their report to the Chief of Ordnance, the officers recommended the first Arsenal building, designated "Storehouse A" and today known as the Clock Tower Building, be constructed on the western tip of the island.

The officers also recommended limestone from LeClaire, Iowa, as the building material for the Arsenal structures.[104]

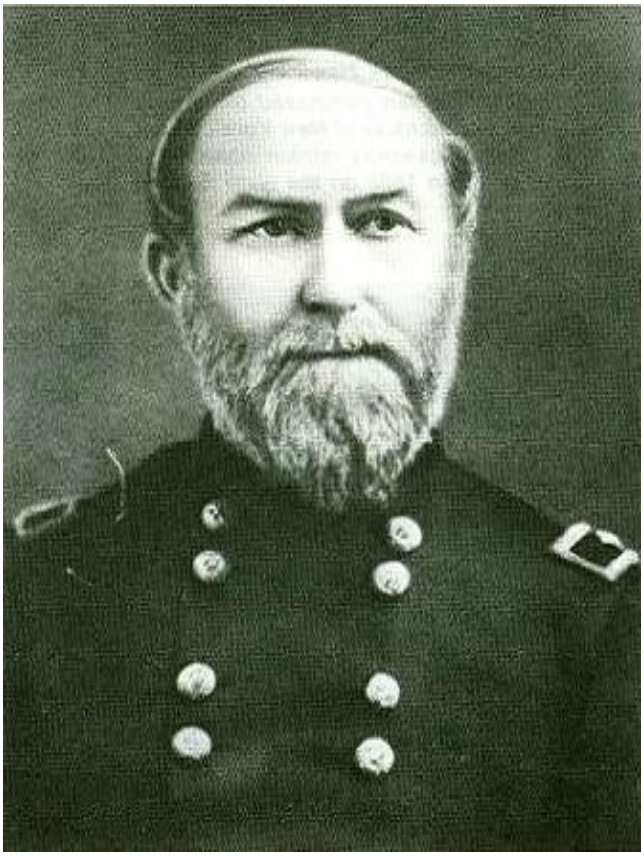
As views of prominent military leaders such as General George D. Ramsey, Chief of Ordnance, became known, sentiment in Washington began to develop for a larger arsenal that had originally been provided for in the Act of 11 July 1862. General Ramsey, in a February 1864 letter to Secretary of War Edwin Stanton expressed his views on the advantages of having a manufacturing arsenal at Rock Island.

> …After a careful study of this question of location, there is no position which, to my mind, affords too many advantages, and, at the same time, presents so few objections, as Rock Island, in the Mississippi River. In a military point of view it is perfectly secure from an enemy, advancing either by the lakes or the river.

Below: *The original location of the Chicago, Rock Island and Pacific railroad tracks across Arsenal Island and the site of the first railroad bridge from the island to Davenport, Iowa. Relocation of the tracks and bridge to the far western edge of the island in 1872 allowed the Arsenal to use the entire island for expansion. Note: Storehouse A (Clock Tower Building) was situated east of the proposed bridge and track route.*



Right: *Major Charles P. Kingsbury was one of the three ordnance officers that selected the site of the first Rock Island Arsenal building. Afterwards, he became the Arsenal's first Commanding Officer and supervised its construction from 3 August 1863 to 16 July 1865. In addition to his duties as Commander, Major Kingsbury armed and equipped Iowa, Wisconsin, and Minnesota Volunteers during the Civil War.*



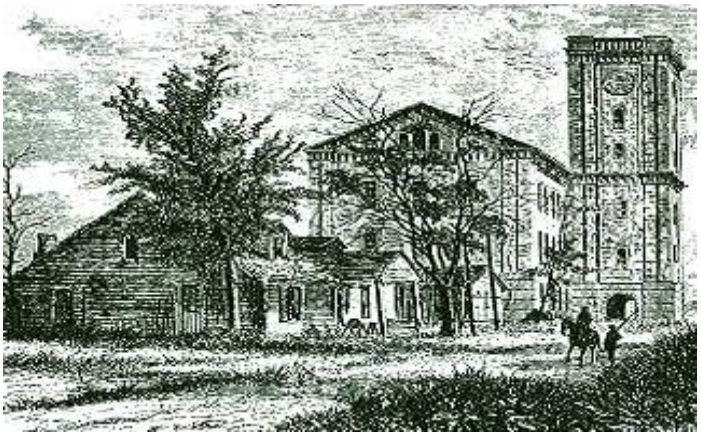
> From it, supplies can be transported in any direction and at any season of the year. It is in the midst of a country teeming with coal and wood, and especially adapted to agriculture—an important element in cheapening labor. The site is elevated far above river floods, the climate and situation are health(y), and while the island is sufficiently isolated to secure it from sudden attacks, it is near enough to the cities of Rock Island and Davenport to afford ample accommodation for all necessary employees.[105]

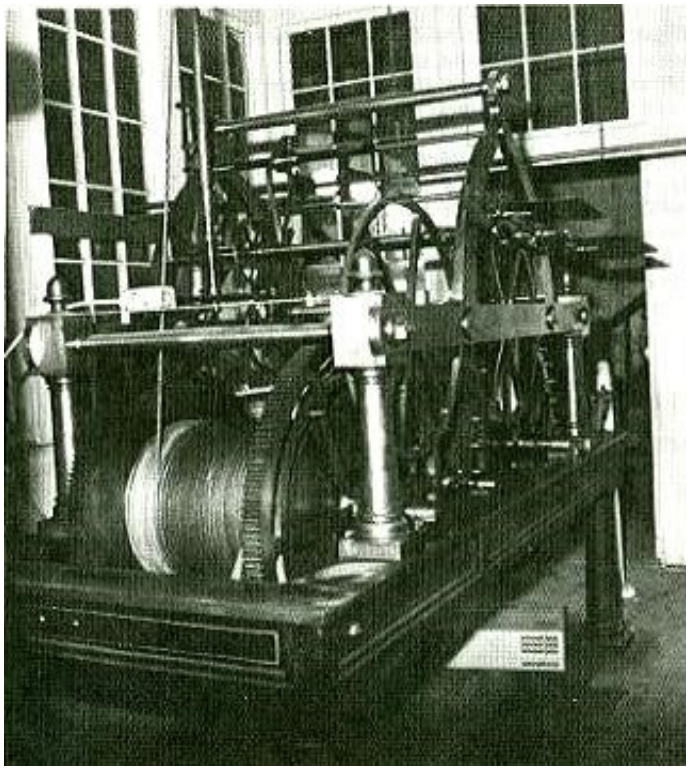
The board of ordnance officers submitted the following report to the Ordnance Office, dated May 18, 1863:

> The undersigned, appointed a board under orders from the Ordnance Office, dated May 6, 1863, to select a site for certain buildings pertaining to the proposed arsenal at Rock Island, respectfully report: That they have carefully examined the ground at the lower end of the Rock Island, selected by the War Department for United States arsenal, and recommended that the front of the principal storehouse be on the prolongation of a line drawn from the southwest corner of a wooden building, now occupied by a tenant, (possibly the old General Winfield Scott headquarters or one of the old Fort Armstrong buildings) and that the southwest corner of said storehouse be placed at a point of this line 300 feet distant from said wooden building, the said line… (bearing) about south 40 degrees, west.[106]

In addition, the board selected two possible sites for an ammunition magazine, also on the west end of the island. Once the officers' final report was approved, Major Charles P. Kingsbury was appointed to command the initial construction of the Arsenal.[107]

Left: *An early etching of Storehouse A (Clock Tower Building), a stable, and a wooden house which served as General Winfield Scott's headquarters during the Black Hawk War of 1832.*
Right: *Colonel Rodman purchased the Tower Clock from A.S. Hotchkiss of New York City for $5,000.00. The clockworks remain operating today as installed in 1868 on the sixth floor of the tower.*



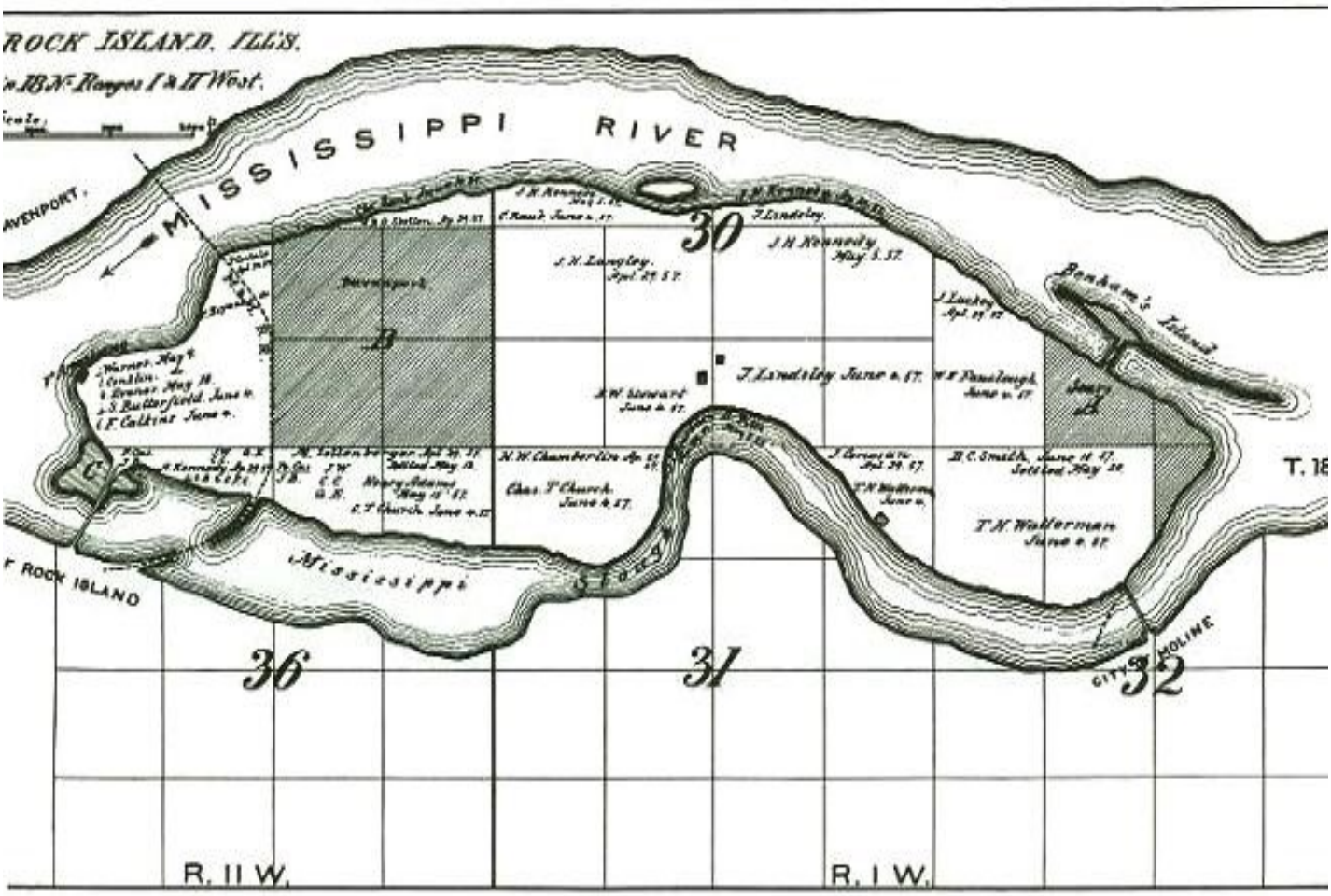


Ironically, in 1861 Major Kingsbury served as superintendant of the Harper's Ferry Armory in (West) Virginia for two days prior to the destruction of the armory's weapons and the abandonment of the installation in an effort to prevent Confederate sympathizers from seizing the supply when they arrived a few hours later to capture the armory.[108]

Construction of the first building on the island began in 1863, and in April 1864, the cornerstone of the initial permanent building, storehouse A, was laid. Builders using LeClaire limestone erected a five story tower, nearly 120 feet in height, which housed a clock with dials facing in four directions. The clock's four dials were twelve feet in diameter, with a minute hand six feet long and an hour hand approximately five feet long. Kingsbury's successor, Brevet Brigadier General Thomas J. Rodman, purchased the clock from its manufacture, A.S. Hotchkiss Company, New York, New York in 1867. Considered to be of the finest in the country, the clock may be the only timepiece of its kind still operating with its original parts. The massive weights which operate the clock hang the length of three floors, and its clock bell weighs about 3,500 pounds. The clock was purchased for $5,000.00. Constructed during President Abraham Lincoln's administration, the Clock Tower was the only building erected from the original arsenal plans. [109]

On 19 April 1864, Congress passed into law an act that authorized the army to reclaim the entire island and to settle all legal land claims held by others. This act, originally introduced as a bill on the floor of Congress by Illinois Representative Elihu B. Washburn, provided Major Kingsbury with the capability to build an arsenal equal to the Harper's Ferry Armory, and capable of manufacturing ordnance stores. Earlier legislation had only allowed the development of a depot.[110] General Ramsey's statements in his letter to

Below: *A map depicting the Rock Island land claims of Colonel Davenport, D.B. Sears, and others in 1857. Major Kingsbury sought the removal of these settlers and others from the island during his command.*

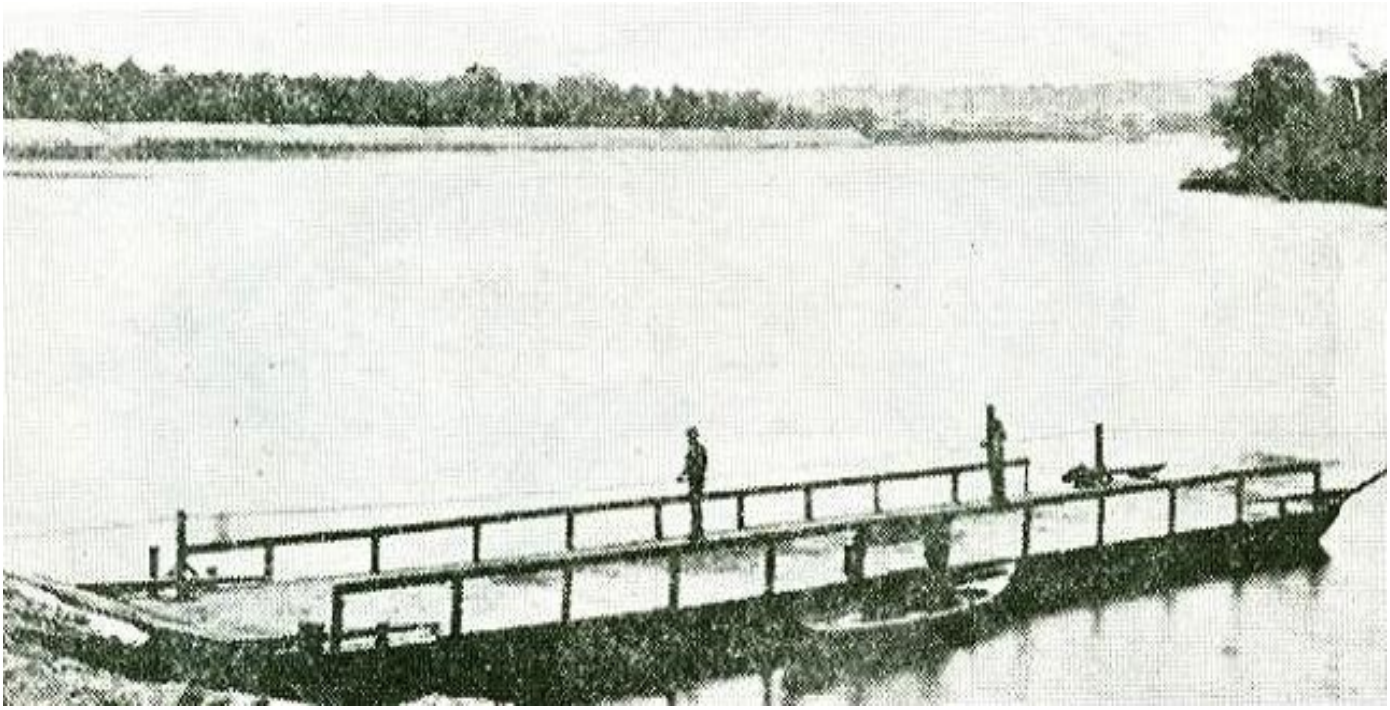


Secretary of War Stanton, confirmed the intention of the Act of 19 April 1864. Ramsey wrote that the act authorized the Secretary of War to take complete and permanent possession of the island on behalf of the United States. The act stipulated that the island was to be held as a military reserve by the War Department, and that an arsenal for the construction, deposit, and repair of arms and munitions be built and maintained on the island.[111] A prerequisite, however, to the creation of a large manufacturing arsenal was the removal of settlers and manufacturing establishments on the island. Between the two periods of military occupancy on Rock Island, portions of Rock Island had been settled by civilians. These individuals believed the government would eventually release the land for public sale. In the meantime, they had already staked-out or claimed the more valuable sites, such as those sections at the eastern end near the dam.

However, once Congress approved the Act of 11 July 1862, followed by the Act of 19 April 1864, civilian domicile of the island was short lived. A board of commissioners appointed by the president of the United States reviewed and settled the more legitimate claims. In 1865, President Andrew Johnson appointed Major General J.M. Schofield, Mr. James Barnes of Springfield, Massachusetts, and Mr. Sheldon M. Church of Rockford, Illinois, to this board.[112]

The commission conducted hearings in October of 1866, at which time witnesses testified and presented evidence as to the validity and value of their claims. The commission adjourned on 19 October 1866, and on 4 February 1867, submitted its final report to the Circuit Court of the Northern District of Illinois. Judge Drummond reviewed the compensation due to each claimant and awarded the sum of $237,429 as final payment to settle these claims.[113]

Below: *In 1868 a wooden bridge, built by the city of Rock Island, to the Arsenal Island was carried away by ice. The federal government had purchased the bridge and a sandbar known as Wilson's Island for $18,600 in 1866. Colonel Rodman ordered a rope-ferry to operate between the city and the island until a new iron bridge was completed.*

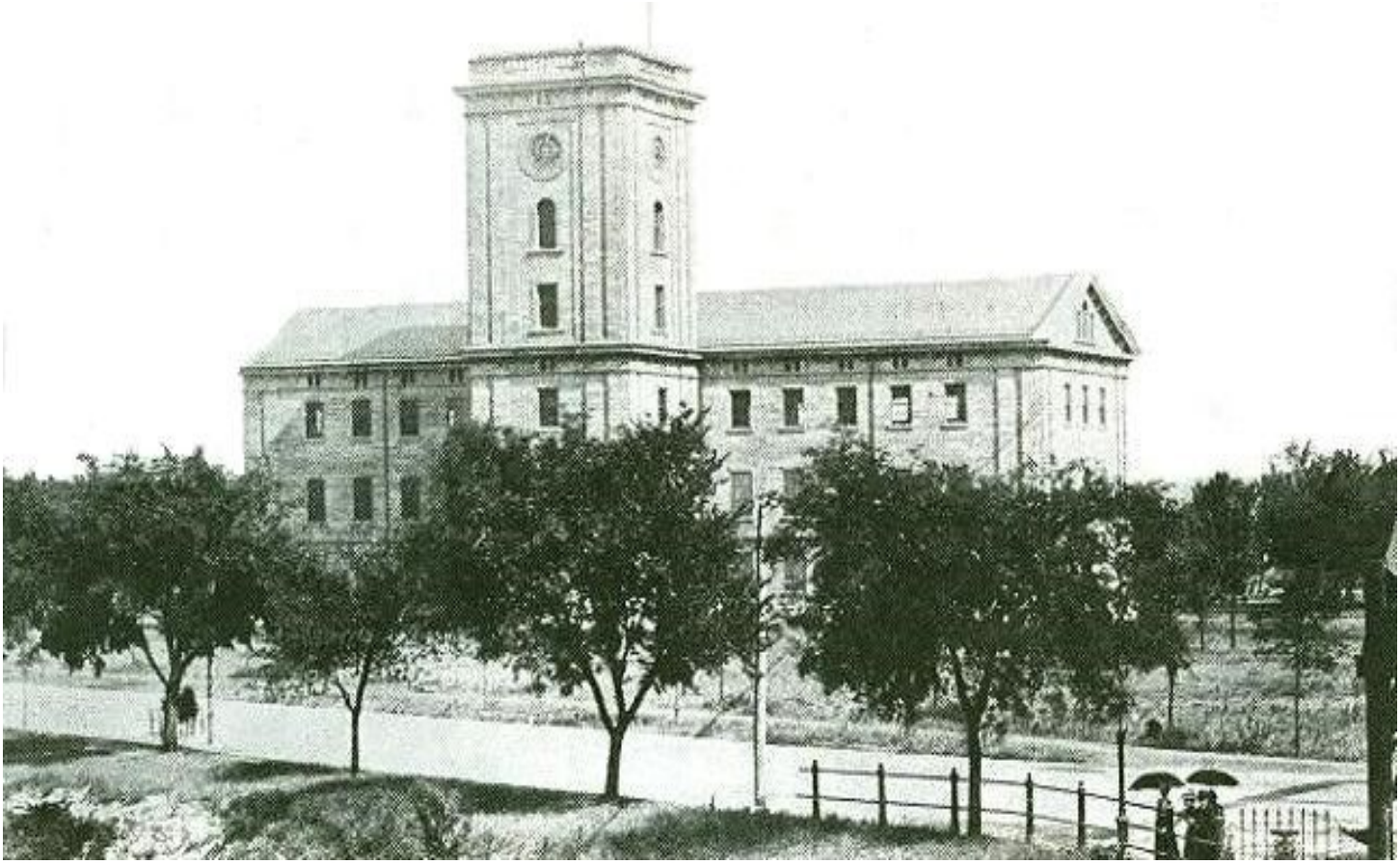


The Congressional Acts of 19 April 1864 and 22 June 1866 empowered the Secretary of War to take complete and permanent possession of Rock Island, including the island's access bridges and water power. In doing so, the city of Rock Island received $14,357 for its wooden wagon bridge and causeway over Wilson Island which connected the town with the island of Rock Island. The city of Rock Island had erected the bridge in 1863, but in 1868, a spring ice thaw destroyed it. Major Kingsbury, while commanding the construction of the Arsenal's Clock Tower Building, ordered a rope ferry installed as a substitute bridge until a new bridge could be constructed in its place in 1872.

The city of Moline, Illinois, received $2,000 for its bridge and the roadway that connected Mill Street in Moline with the island. Mill owner and land developer, David B. Sears, received $145,175 for 35.45 acres of land on Rock Island. His land was considered more valuable than others because it was developed and was located near water power from the wing dam at the east end of the island. Sears had surveyed, plotted, and lotted his island property in the hopes of developing an island city. However, only a few lots were sold by the time the government had repurchased the property from Sears.

The government also awarded Colonel George Davenport's family $40,740 for its 150 acre estate on Rock Island. The location of the Davenport property, which was near the original arsenal construction site, and the improvements made on its property, enhanced its monetary value and importance to the government. Government payments were especially generous considering both David B. Sears and Colonel Davenport had originally obtained their island properties for $1.25 per acre. With the exception of the claims of George Stephens, Jonathan Huntoon, and Timothy Woods, the remaining six claims were small. The government settled these smaller claims for approximately $1,000 each.[114]

Below: *A latter 19th century view of the Rock Island Arsenal approach to the government bridge to Davenport, Iowa, and Clock Tower Building.*

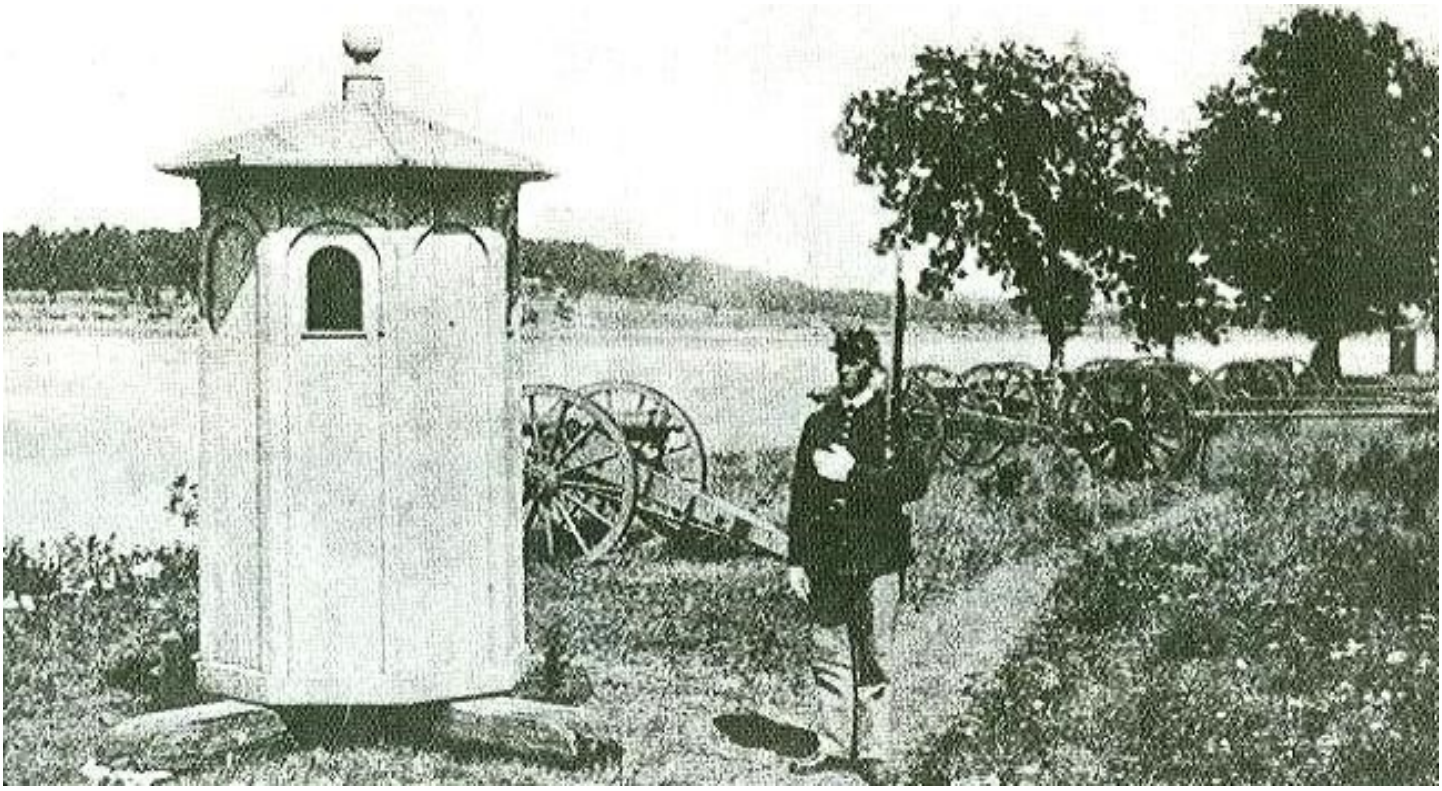


In letters to the Chief of Ordnance, Major Kingsbury approved the actions taken by the commission, however, he encountered difficulties with both the settlers on the island and with the soldiers who had been building the prison camp on Rock Island. Adding to these difficulties was the fact the city of Rock Island built a wagon bridge from that town to the island without Major Kingsbury's permission. To add insult to injury, the mayor of Rock Island, anxious to capitalize on business from the new prison barracks, now sought the major's permission to construct a road from the wagon bridge to the prison barracks on the north central portion of the island. Major Kingsbury ironically approved the request, but stipulated that the road be built away from his construction operations at the storehouse site near the ruins of Fort Armstrong. But once the road was completed, traffic between the prison camp and the town of Rock Island frequently left the road while taking a short-cut to the prison and encroached upon the arsenal building site. These annoyances, and those created by wandering horses, cattle, and other livestock owned by the squatters on the island, hindered Major Kingsbury's construction operations.

Major Kingsbury also had to deal with delays in the shipment of limestone to Rock Island. The contractor, Joseph Parkins, claimed he could not continue to provide the stone at the contract price of $7.50 a perch due to a sharp depreciation in the dollar in 1864. (A perch is a unit of measurement used in stone work, usually 16.5 feet (1 rod) by 1 foot by 1.5 feet, or 24.75 cubic feet.) Also, since the Mississippi River level had become so low, it was not possible to deliver the stone from the quarries by water.[115]

In addition to these difficulties, Major Kingsbury was often called from his duty as Arsenal Commander to personally attend to the receipt and delivery of arms and supplies to volunteer troops in Iowa and Wisconsin, and frequently had to travel to Milwaukee, and Madison, Wisconsin and to Des Moines, and Keokuk, Iowa to supervise the

Below: *Sentry station, guard path and guard of probably the Civil War era. This photo was taken from a stereopticon card that depicted the north shore of the island of Rock Island between the pump station and sun dial. The location shown here was approximately at the northwest corner of the Rock Island Prison Barracks. Note the guard is armed with a long*

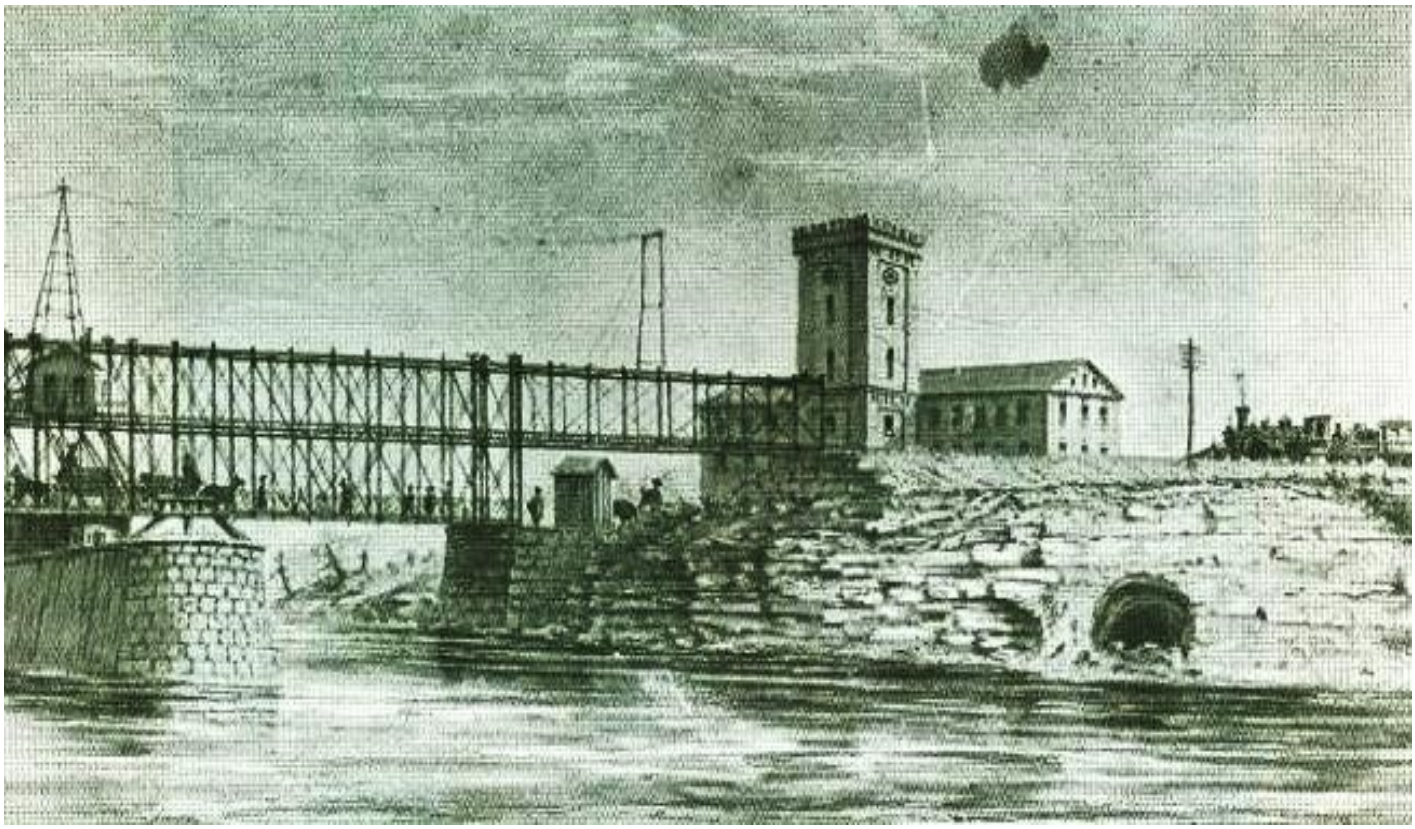


distribution of arms. A detachment of soldiers of the 4th Regiment, 186th Co., was assigned to guard Arsenal property and construction sites on the island in April 1864. Conflicts between the prison guards and the construction workmen were an ongoing problem until the end of the Civil War.

Soldiers of the Quartermaster Department, who were building the prison on the interior of Rock Island, also routinely encroached upon Major Kingsbury's construction site; and their actions caused friction between the two commands. On 26 February 1864, Major Kingsbury wrote to the prison barracks commandant, Colonel A.J. Johnson, to complain about teamsters hauling supplies and materials to the prison site and often leaving the road to trespass through arsenal grounds. Major Kingsbury notified the Chief of Army Ordnance that Colonel Johnson's men also had chopped down an excessive amount of timber. Major Kingsbury reminded the Chief of Ordnance that the entire island would soon be permanently reserved for ordnance purposes by congressional legislation, and that the prison barracks served only as a temporary purpose and should have been replaced on grounds which were already cleared.[116]

In further correspondence dated 17 March 1864, Major Kingsbury again complained to the Chief of Army Ordnance that the prison command had once more encroached on his building site. Colonel Johnson took control of the Colonel Davenport House after the government reacquired the property. The Arsenal Commander requested that the Chief of Army Ordnance immediately transfer possession of the Davenport House to the Ordnance Department. Major Kingsbury viewed Colonel Johnson's arbitrary action as another example of the prison's encroachment on Arsenal grounds, and argued that it was imperative the Davenport House be retained by the Arsenal as it would save the arsenal the expense of building an office and additional storage area. In accordance with instructions from the Chief of Ordnance, Colonel Johnson relinquished the house to the Ordnance Department.[117]

Below: *The relocation of the Chicago, Rock Island and Pacific Railroad tracks and bridge to the far western edge of the island was critical to the success of Rodman's plan for expansion of the Arsenal over the entire island. Rodman encouraged the building of a new bridge, a double deck bridge with a wagon deck beneath the railroad deck. William Lamback's sketch of this new iron bridge with the Clock Tower Building in background is shown below.*

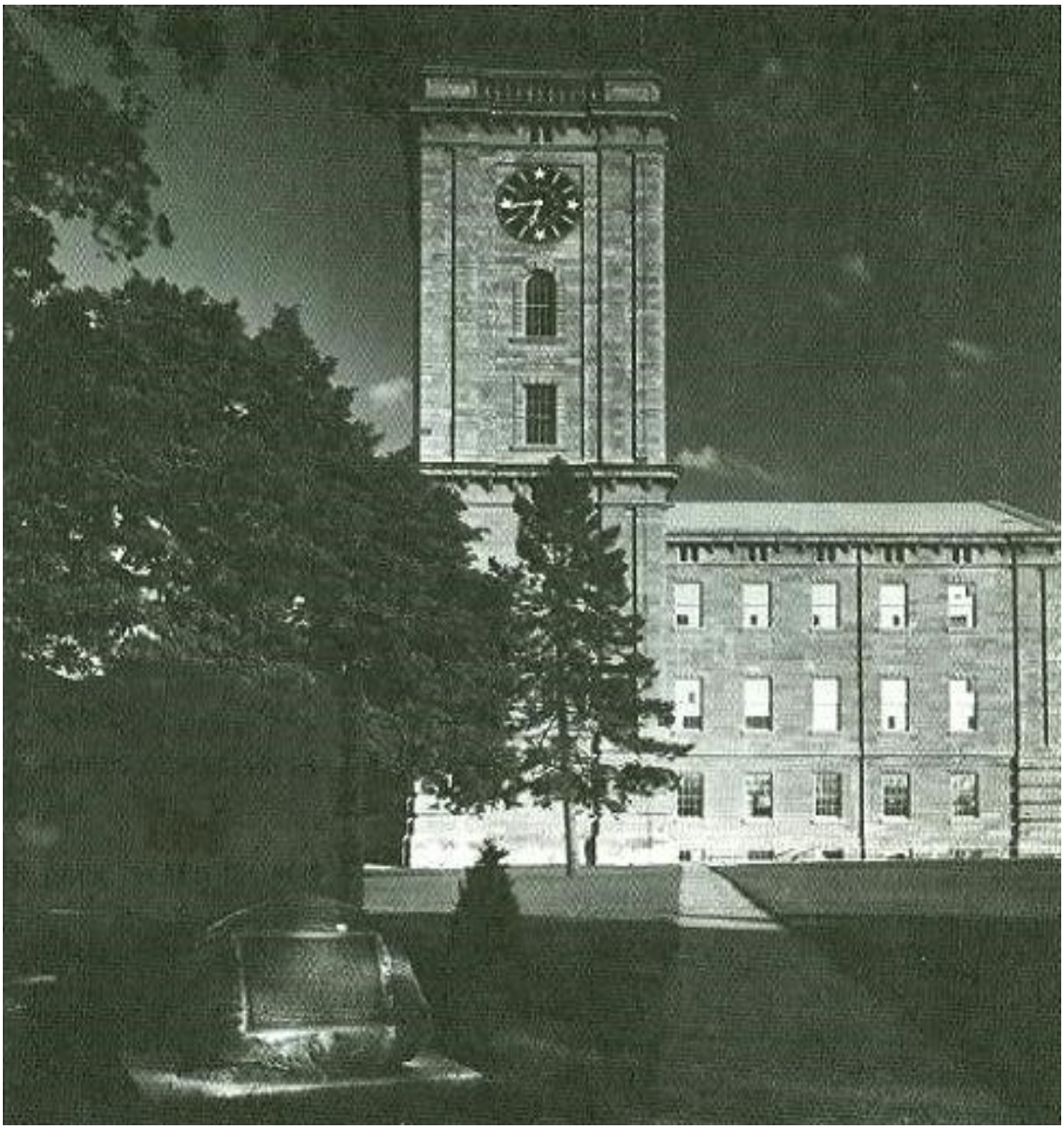


Conflict continued, however, between the two commands. On 10 June 1864, Major Kingsbury again wrote to Colonel Johnson regarding the activities and conduct of the commandant's men. He complained that men quarrying stone for the U.S. Government on the other side of the river were driven from their work by the musket fire of the prison guards, and that the quarry workers' lives were endangered by this practice. [118] Obstacles such as these, and the failure of the contractor, Joseph Parkins, to deliver the LeClaire limestone as scheduled, delayed the completion of the storehouse building.

These delays and difficulties frustrated and discouraged Major Kingsbury. He had already begun construction of "Storehouse A" prior to congressional legislation which authorized the army to reclaim the entire island. Less than a dozen firms and individuals continued to sue portions of Rock Island after the passage of this act. Reluctant to move, they persuaded Major Kingsbury and government authorities in Washington to allow them to remain as long as their operations did not interfere with the arsenal's construction plans.

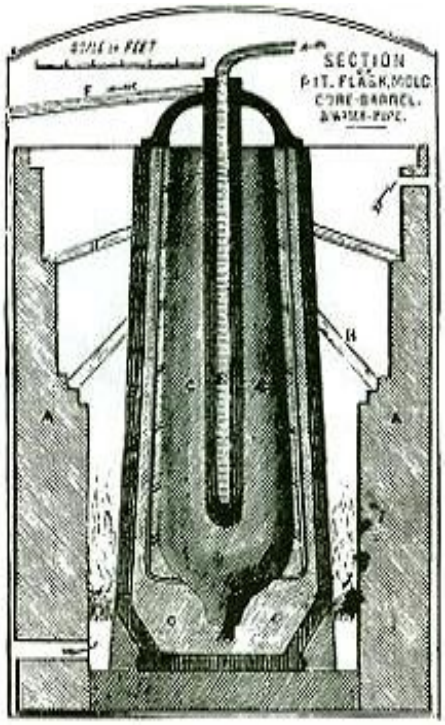
In May 1865, the new Chief of Ordnance, Alexander B. Dyer, visited Rock Island to inspect the construction site and to discuss several significant issues with Major Kingsbury which impacted on the future development of the arsenal. These issues were the removal of the squatters; future use of the prison barracks; plans for a greater arsenal; location of buildings; and water power development. Removal of the remaining private parties from Rock Island proved more difficult than imagined. Tired after two years of arguing with squatters, stone-cutters, and local authorities, Major Kingsbury finally gave up. In June 1865, he requested and received a release form his command at Rock Island. Left unfinished was the partially constructed Clock Tower Building, "Storehouse A". On 27 June 1866, a full year after Major Kingsbury's departure from Rock Island, the federal government acted upon the land claims.[119]

Below: *The U.S. Army Corps of Engineers, Rock Island District, has occupied the Clock Tower Building since the building of the lock and dam at Rock Island in 1934. Note: the dial is approximately 12 feet in diameter, and the hour and minute hands are approximately five and six feet long.*



Edwin M. Stanton, Secretary of War, acting upon Major Kingsbury's request for reassignment, switched the commanding officers of Rock Island Arsenal and Watertown Arsenal. Kingsbury's successor, General Thomas J. Rodman, obtained his superior's approval for design changes proposed in the Clock Tower Building, and in the overall plan for an arsenal at Rock Island. The two major changes approved were the placement of gables in the ends of the building with windows in each to light and ventilate the loft, and an increase in the height of the clock tower by twenty feet to accommodate the change in the height of the roof. The Clock Tower, completed in 1867, served as a support for the main hoist which lifted supplies to the floors of the main building. General Rodman's alterations in the design increased the usefulness of the building and created a more imposing structure. Since its construction, the Clock Tower Building has become one of the most visible and recognizable landmarks on the Rock Island Arsenal and of the upper Mississippi River. [120]

Right: *Historians credited Rodman's method of casting gun tubes, which produced the Rodman Gun, as being one of the most significant advancements in ordnance technology of the Civil War period.*
Below: *Rodman's revolutionary casting method reversed all previous methods by having the inside of the gun tube cooled by flowing water while the exterior side of the flask mould was heated by the casting fire. His method cooled the gun from the inside so the iron next to the bore solidified first, thereby increasing the strength of the gun tube.*



THE RODMAN GUN: Outline of Casting Process

A. Side of pit dug in the earth.
B. Flask holding in shape the earth mould.
C. Mould, a mixture of earth and sand.
D. Core barrel.
E. Water.
F. Escape flue.
G. Gun.

CHAPTER EIGHT

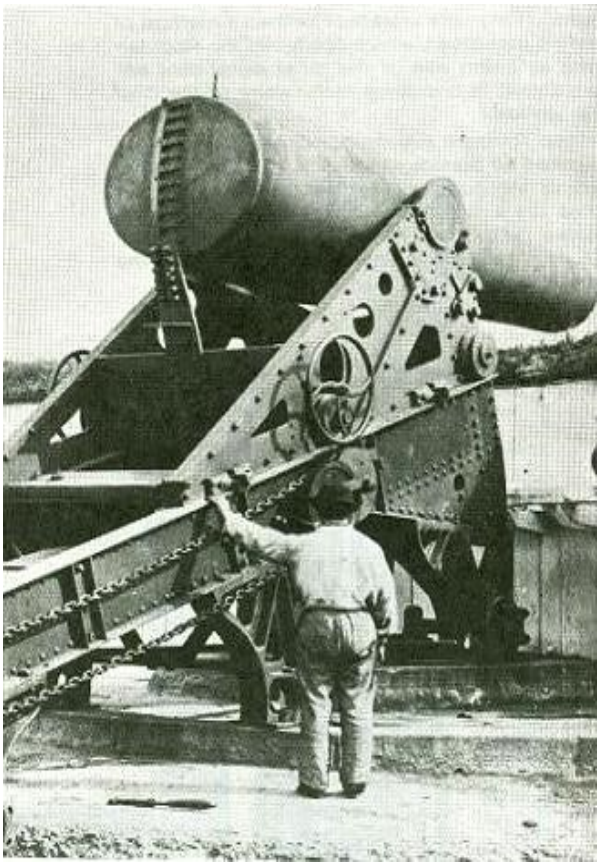
THE RODMAN YEARS AT RIA

The U.S. Army Ordnance Department decided to build a manufacturing arsenal at Rock Island and selected Brevet Brigadier General Thomas J. Rodman to command it in 1865. Rodman, a brilliant graduate of the U.S. Military Academy Class of 1841, had an impressive record of service prior to his assignment at Rock Island. He had investigated and developed new ordnance concepts in the field of metallurgy and propellants, and his rank of Brevet Brigadier General was bestowed on him for meritorious and distinguished service in the Ordnance Department during the Civil War. Rodman maintained this honorary commission until his death in 1871. However, his actual military rank was Lieutenant Colonel. Since a lieutenant colonel was referred to as a colonel, Rodman's rank will be referred to as such from this point on.

THE "RODMAN GUN"

One of Colonel Rodman's greatest achievements was the development of the "Rodman Casting Process", which revolutionized the art of casting cannons. His casting method cooled an air gun from the interiow, while keeping the exterior in a fluid state. The inner walls of the gun solidified first causing successive layers of metal to shrink one upon another. The result was a stronger, safer cannon that was more reliable, and

Right: *The Rodman Gun designed for seacoast protection was also used to arm the monitor-type Union vessels during the Civil War. Note: the notches at the rear of the tube were used to assist in elevating the weapon.*



longer lasting than other guns of the era. The life of a gun was increased 11 to 20 times when cast by the Rodman process. The army adopted the water-cooled, hollow casting of cannons in the year 1859, 14 years after Rodman had conceived the process.[121]

Colonel Rodman transformed the design of cannons into a science. He consolidated the ballistic knowledge of foreign military powers and applied the science of his day to cannon design. With the development of the steam engine, methods of calculating pressure were available to Colonel Rodman. Through his scientific research of internal ballistics, Rodman was able to determine the pressure curve for specific guns. Based on this information, he designed the Rodman Gun so that the gun tube was cast thickest at the point of greatest pressure and then narrowed as the pressure decreased. The new "coke bottle" shaped and the new casting process made the Rodman gun a major technological improvement over past designs and placed the Rodman gun among the most significant weapons advancements of the Civil War. In fact, historians credit Colonel Rodman and his gun with discouraging European naval intervention in the American Civil War. Installed as coastal artillery, the Rodman gun was vastly superior to the European naval weapons, and, therefore, served as a deterrent to any European nation which contemplated naval action against the American continent.

Rodman Gunpowder

Colonel Rodman's later work on gunpowder also proved significant. He developed a new gunpowder formula which laid the groundwork for the modern pellet powder. By 1860, he had begun to develop powder to fit the caliber of the gun by devising a formula whereby gunpowder could be compressed into disks. These disks, referred to as perforated cake powder, were approximately one or two inches thick and pierced with holes. The perforated powder burned slower than ordinary cannon powder. Rodman's perforated cake powder also provided more thrust and a more uniform pressure along the gun's bore, thereby reducing the strain on the gun and increasing its firing distance.

Earlier experiments with different types of powder led Rodman to the development of "prismatic" powder. This prism-shaped powder maintained chamber pressure at a greater level than other gunpowder without increasing the

Right: *Colonel Rodman earned the rank of Brevet Brigadier General for his distinguished work in the field of metallurgy and propellants during his command of Watertown Arsenal, in Massachusetts, during the Civil War.*

pressure or strain on the gun tube. The muzzle velocity of the projectile was also increased without an additional strain on the tube. This concept increased the surface area of powder by perforation and made angles on the outer surface of the gun thereby promoting rapid even burning. Rodman may well be called the Father of Scientific Study of Internal Ballistics as the result of his achievements in the field of ballistics at Watertown Arsenal, Massachusetts, during the Civil War.[122]

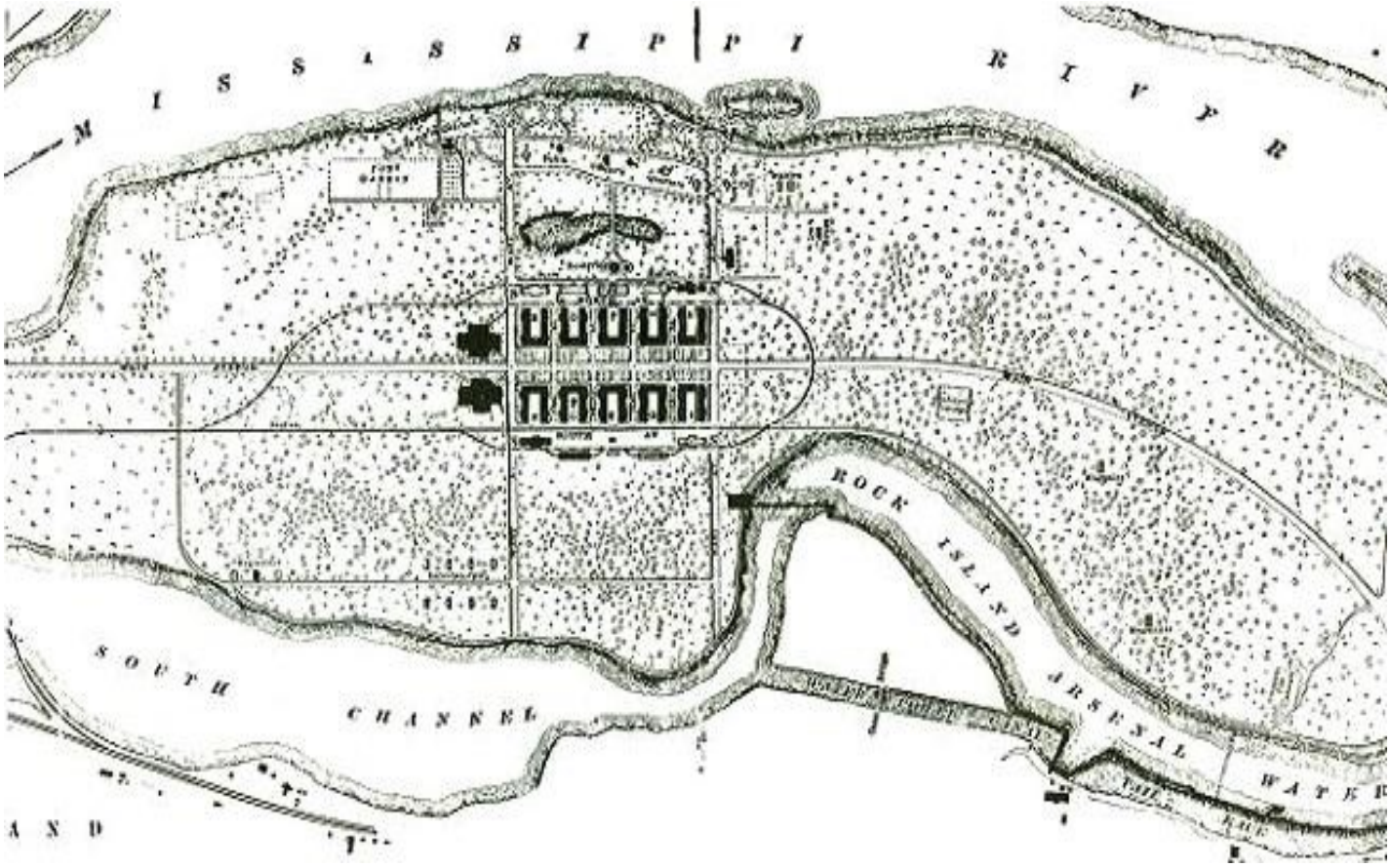
At the close of the Civil War, Colonel Rodman turned his engineering genius to the field of architecture and building construction at Rock Island Arsenal. As previously mentioned, in 1865, the secretary of war granted Major Kingsbury his request for reassignment by having Kingsbury and Rodman exchange commands. Under Major Kingsbury's command, Arsenal improvements were confined to the small quarter section of Rock Island which extended west of the Chicago and Rock Island Railroad tracks. The remaining three-fourths of the island, east of the railroad tracks, was not developed. The Chief of Ordnance instructed Rodman to examine the island thoroughly regarding future development of the Arsenal. Upon his arrival in August 1865, Colonel Rodman inspected the island, and immediately wrote to Washington, in his letter, he expressed his belief that ongoing expansion of the facilities would be necessary, and that the entire island would have to be reserved for that purpose.

Rodman's Master Plan

Rodman welcomed the opportunity to build a well-designed, National Arsenal at Rock Island. His plans called for the development of an arsenal larger in scale and scope than originally designed. The War Department endorsed Colonel Rodman's concept of a large arsenal at Rock Island, which was centrally located and easily accessible by rail and river. Though not its first Commanding Officer, Colonel Thomas J. Rodman is today considered the "Father of the Rock Island Arsenal" because of the critical role he played in the design and expansion of the arsenal.

Below: *Colonel Thomas J. Rodman, the second Rock Island Arsenal Commander, has historically received credit for the conceptual design of the 19th century Rock Island Arsenal. Rodman relocated the site of the Arsenal to the center of the island and initiated the relocation and improvement of access bridges to the island. While in the midst of supervising the building of the Rock Island Arsenal, Colonel Rodman died on 7 June 1871, and was buried adjacent to the National Cemetery on Arsenal Island.*

Below: *Diagram noting the location of the buildings which formed the 19th century Rock Island Arsenal. Note the bridge and artificial "lake" which served as a buffer between the Arsenal manufacturing complex and the officers' residential zone.*

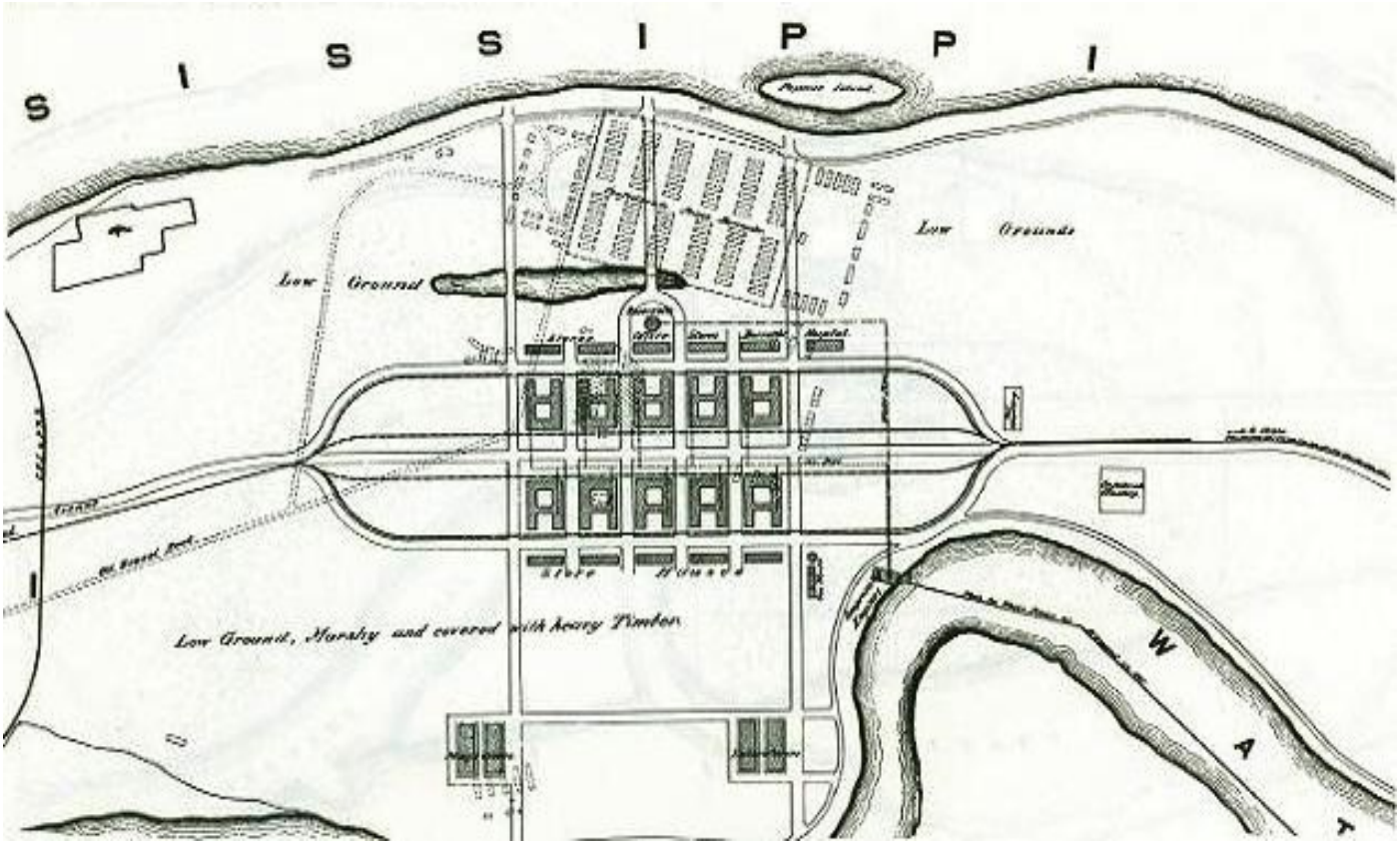


Two weeks after filing his report, Colonel Rodman met with Brigadier General Alexander R. Dyer, Chief of Ordnance, to discuss future plans for the Rock Island Arsenal. After careful scrutiny of Rodman's broad plans, General Dyer approved them. Rodman returned to RIA and from October 1865 until February 1866 developed more specific plans for the Arsenal. His plans and drawings for the Arsenal included designs for a manufacturing complex, an officer's residential zone, and a water power plant. Rodman's grand plan called for the complete use of the island for building purposes. He moved the site of the Arsenal's construction to the high ground in the center of the island to allow for future expansion, and to make better use of the potential waterpower of the Mississippi River.[123]

Rodman's master plan included the construction of ten great stone shop buildings, divided equally into two facing rows along the main east-west thoroughfare, and now designated Rodman Avenue. These stone shops formed the core of the Arsenal's 19th century manufacturing complex. Major ancillary buildings, such as the Post Headquarters, Fire Station, Barracks Building, and storehouse, bordered the manufacturing shops. North of the manufacturing complex Rodman placed the military residential zone which consisted of the RIA commanding officer's quarters and quarters for his subordinates. Rodman designed the Commanding Officer's quarters, known now as Quarters One, in an Italianate villa style. The assisting officer's quarters, built along Terrace Drive overlooking the Mississippi River, were constructed over the site of the Civil War Rock Island Arsenal Prison Barracks and were of more modest Italianate design than was Quarters One.

Colonel Rodman's plan also included the construction of an arsenal dam and powerhouse south of the manufacturing buildings on the southern channel of the Mississippi River, now known as Sylvan Slough. He conceived the use of the telodynamic system of cables and towers which mechanically transported power from the

Below: *Note: The Old Map of Rock Island Arsenal included manufacturing buildings with enclosed court yards. Contrast this map with the finalized master plan on page 104. Also note the outline of the Rock Island Prison Camp*



river to the southern row of shops along Rodman Avenue

Rodman initially planned to construct manufacturing buildings with enclosed court yards. However, before finalizing his plans, he revised the drawings and opened the court yards to provide additional natural light. Natural lighting was a major consideration in architectural design prior to the advent of electricity. Rodman also added protruding portico entrances to the sides of the manufacturing buildings which improved their appearance and strengthened their walls. He inserted a foot bridge and small artificial lake into the plans to serve as a buffer between the residential and manufacturing zones and to provide an attractive path by which the officers could pass to and from work.

Rodman's plans featured construction of a manufacturing complex which combines both arsenal and armory capabilities at one installation. The five shops built along the northern edge of Rodman Avenue, Buildings 60, 62, 64, 66, and 68, formed the Arsenal's small arms plant and were collectively known as Armory Row. The buildings housed manufacturing Shops B, D, F, H, and K, respectively, the five shops built along the southern edge of the avenue, Buildings 102, 104, 106, 108, and 110, formed Arsenal Row. These shops were designated for general ordnance manufacturing and included Shops A, C, E, G, and I. Each center shop was constructed on one story with a gables monitor roof. The middle shop in Armory Row, Building 64, functioned as a rolling mill and forge shop; the center shop in Arsenal Row, Building 106, functioned as the Arsenal's Foundry and Blacksmith Shop. The other eight shop buildings were uniformly constructed with three stories. The ten manufacturing buildings all had the same "U" – shaped floor-plan with 300-foot wings extending back from a 210-foot by sixty-foot base. Each of the eight three-story buildings covered slightly more than an acre of land, with a little more than three acres of floor space. The ten Rodman-planned, symmetrically-designed, stone shops still stand today along both sides of Rodman Avenue.

Below: *An 1878 view of Shops G and I (Buildings 108 and 110) under construction. All the stone shops were built basically with identical floor plans. Note stone yard in the foreground and wire-cable towers to the rear of the buildings at extreme left.*

A National Arsenal at Rock Island

Construction of the first manufacturing shop buildings began in 1866 and continued until the last stone shop, Building 68, was completed in 1893.

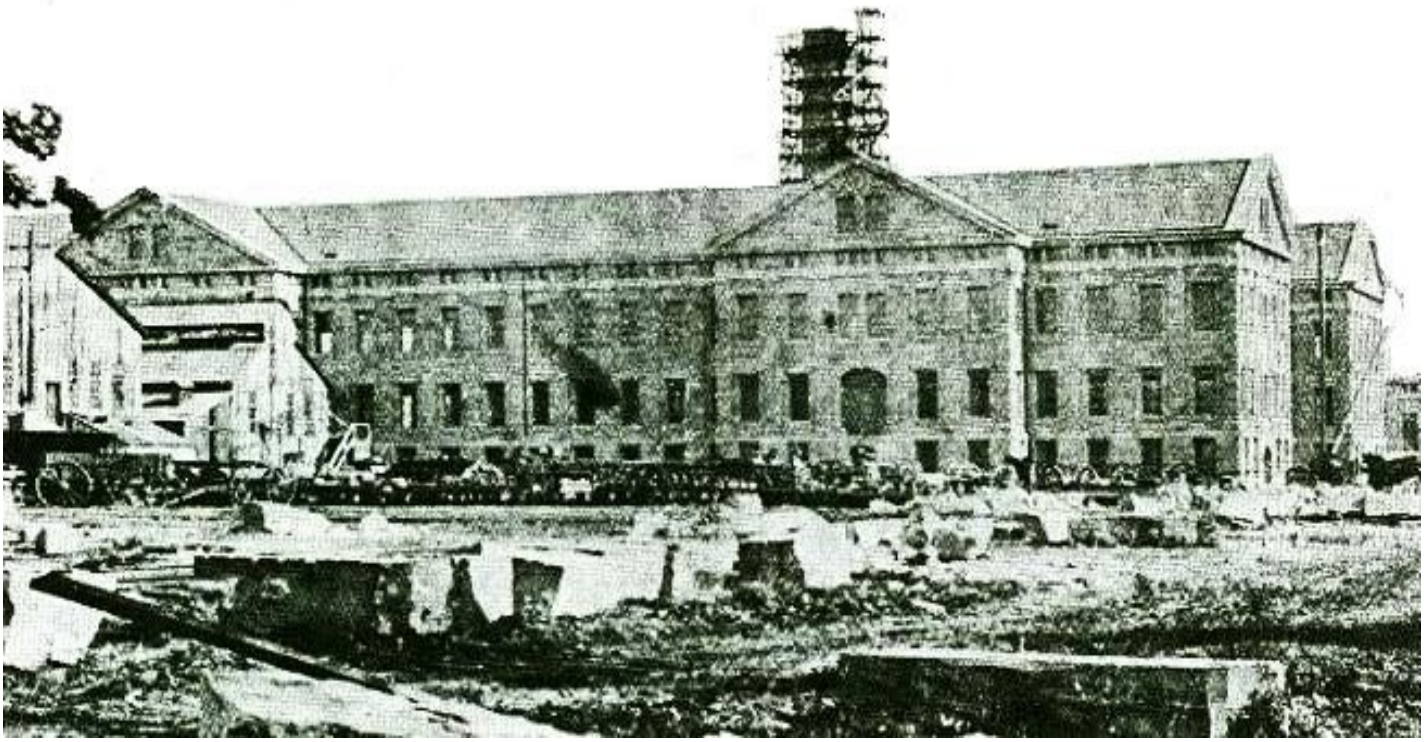
Erected over a nearly thirty-year period, the arsenal's stone buildings reflected the feeling of Manifest Destiny which swept Congress and the nation in the latter 19th century. This view was reflected in the comments of Brigadier General Stephen V. Benet, chief of army ordnance, in a letter to William W. Belknap, secretary of war,:

> The Rock Island Arsenal in its present incomplete state, now supplies all the militia of most states and territories drained by the great river (Mississippi River) and its tributaries, many of the fortresses that guard the coast line of the Gulf of New Mexico, and more than one-half of our Army, now scattered from the Mississippi River to the Rocky Mountains and beyond.
>
> When completed and fully equipped as a manufacturing arsenal, its capacity will equal the supplying of all the armies that may be organized in the Mississippi River Valley in any war of the greatest multitude.[124]

Earlier, Brigadier General Alexander B. Dyer had written the Secretary of War on 24 October 1871 that:

> (Rock Island Arsenal) should be made the great arsenal of deposit and construction for the Mississippi Valley, and that it should possess the manufacturing capacities of the national armory at Springfield, Massachusetts, and of one of our larges arsenals of construction, and it was planned with that end in view, and has been so built. [125]

Below: *A rare 1872 view of Shop C (Building 104) near completion. Note the industrial tower under construction and the temporary factory buildings with monitored roofs to the left. The Arsenal produced buildings hardware and ordnance stores for troops stationed in the American West from these temporary buildings. Once Shop C (Building 104) and Shop E (Building 106) were completed, the temporary shops were razed.*



Built-of-Stone: The Construction of 19th Century RIA

The story of the construction of the Rock Island Arsenal shop buildings is one of the more fascinating tales in the history of Arsenal Island. The inception and growth of the Arsenal stone buildings occurred during the commands of Major Charles P. Kingsbury (July 1863- July 1865), Brevet Brigadier General Thomas J. Rodman (August 1865- June 1871), and Brevet Lieutenant Colonel David W. Flagler (June 1871- April 1886). By the conclusion of Flagler's command in 1866, the Arsenal's direction of development already was so firmly established that it continued on for an additional decade or so without significant change.

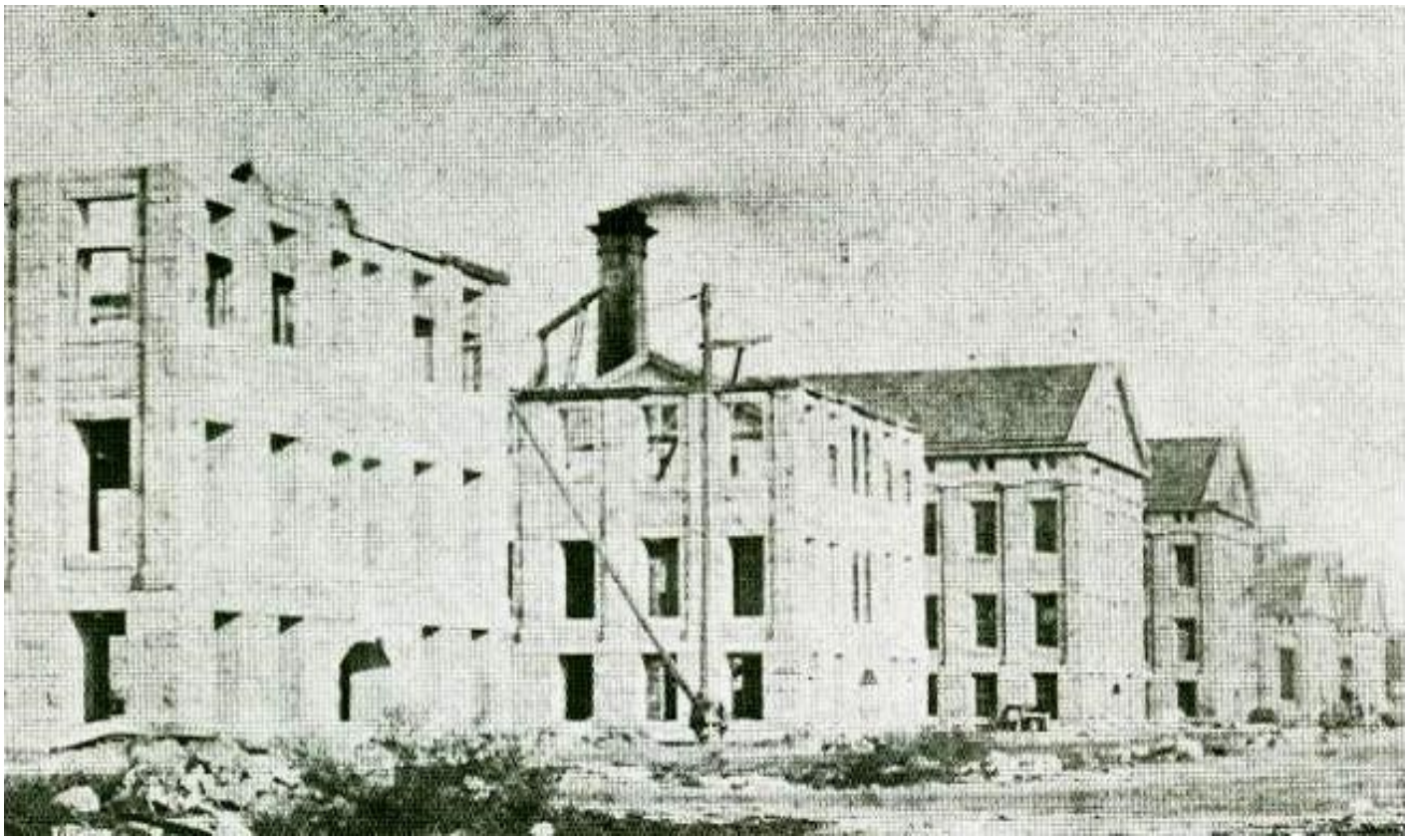
In 1866, Rodman ordered cheap temporary shops with gabled monitor roofs be constructed on the future site of Shop A (Building 102). He also temporarily converted prison barracks along Gillespie Avenue to serve as a make-shift headquarters and officers' quarters. From these inexpensive, temporary wooden buildings, the Arsenal began initial construction work for the permanent stone buildings.

19th Century Greek Revival Architecture of the Arsenal Stone Shops

For nearly the first three decades, the Arsenal primarily concentrated on the completion of Rodman's ambitious construction program. Shops B (Building 60) and C (Building 106) were the first of the ten stone shops under construction. The 19th century Greek Revival architectural style of these and the eight future buildings featured pillowed or rock-faced limestone accented by pilasters, architraves, and pedimented gable ends. The ten original shop buildings were built of massive rock-faced limestone.

Unlike his predecessor, Colonel Rodman did not procure stone quarried from LeClaire, Iowa; instead he acquired stone from Sangers and Steel of Joliet, Illinois.[126] Since the stone derived its name from the region in which it was quarried, Shops B and C, and several of the other stone

Below: *A rear view of Arsenal Row with Shop A (Building 102) under construction in foreground. Shop A was built 1873-1876. The last building visible in the photograph is one-story and has small windows in entablature of structure which indicates the building is Shop E (Building 106), the Rock Island Arsenal Foundry. Note the typical derrick or crane in the courtyard of Shop A.*

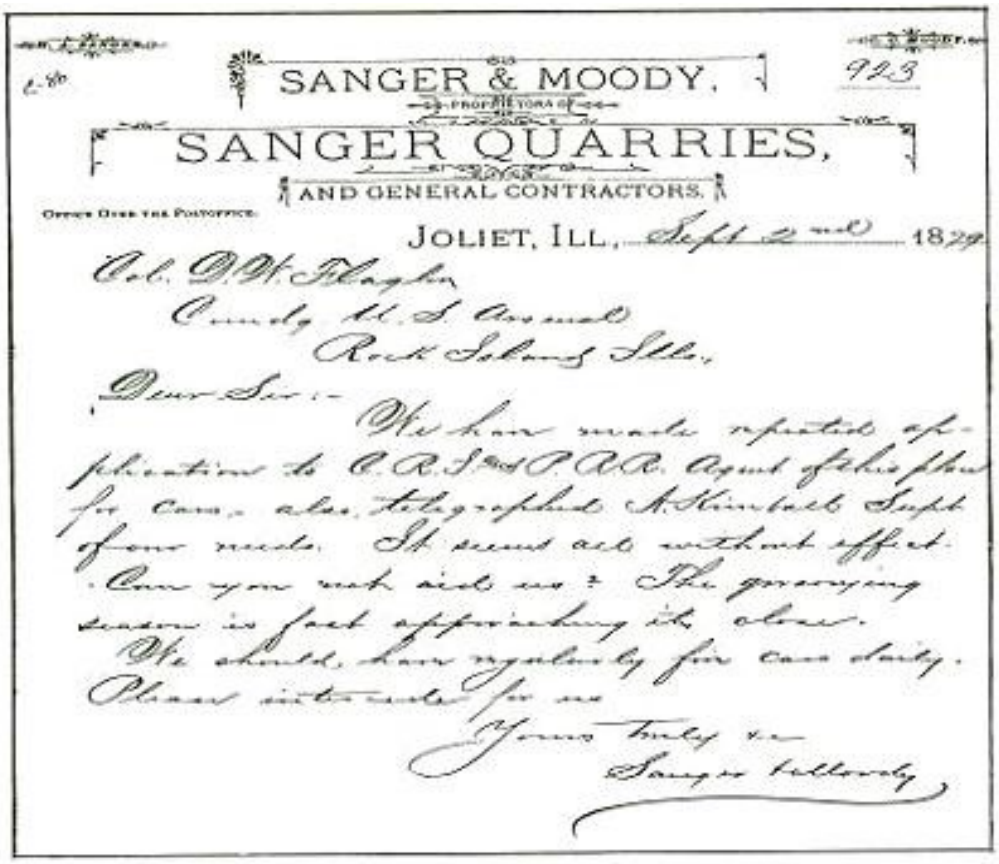


buildings, were said to be built of Joliet Limestone.

An immense project such as this required enormous quantities of stone and the manufacture of considerable amounts of construction hardware. In the year 1869 alone, 2,925 railroad cars of stone were received for use in building the shops, damns, and bridge. Stone masons laid 5,510 cubic yards of stone in new shop buildings, while an additional 6,100 cubic yards of stone were laid in the dam wall project. The stone work required the repair of 92,321 stone cutter's tools during the year. The Chief of Ordnance, in 1869, approved the building plans for the Commanding Officer's quarters. Also during that year, workmen erected the first Rodman-planned Arsenal building which was a circular limestone reservoir, that exists today only as a ruins. [127]

Generally speaking, the limestone was shipped by train to the Rock Island Arsenal from the various quarries. Early maps of the island showed a single railroad track that extended from the main line at the western tip of the island to the construction site of the manufacturing buildings. The stone was unloaded from rail cars and placed in a centrally located stone yard. Workmen used tramways and derricks to transport the stone from the yard to the actual building site. A tramway, an open box-shaped street car pulled by horses, operated on tracks in single units. Derricks also operated on tracks which ran the length of the construction site. These large cranes, consisting of movable booms equipped with cables and pulleys connected to an upright beam, hoisted and moved the heavy stones into place. The small circular marks made by the ice-prong-like clamps, which were embedded into the stone prior to it being hoisted into place, are still visible a century later.

Below: *Letter from Sanger to RIA Commander Colonel D.W. Flagler requesting assistance in obtaining railroad cars for shipment of stone to the Arsenal. Mr. Sanger, who earlier defaulted on delivery of stone to the Rock Island Arsenal, formed Sangers Quarries with a partner named Moody and again received the contract to provide stone for the Ar-*



SANGER & MOODY,

PROPRIETORS OF

SANGER QUARRIES,

AND GENERAL CONTRACTORS.

OFFICE OVER THE POSTOFFICE.

JOLIET, ILL., Sept 2nd 1870

Col. D.W. Flagler

Comdg U.S. Arsenal

Rock Island Ills.

Dear Sir:-

We have made repeated applications to C.R.I. & P.R.R. Agent for cars, also telegraphed A. Kimball Supt of our needs. It seems all without effect. Can you not aid us? The quarrying season is fast approaching its close. We should have regularly for cars daily. Please interest for us

Yours truly &c

Sanger & Moody

Difficulties Procuring Stone

Delays in delivery of stone hindered the construction progress of the Arsenal and, on occasions, resulted in stone-cutters and masons being laid off until the next shipment arrived. Rodman periodically stationed an officer at the quarries to oversee the government's interests.

These delays in particular affected the construction of Shops B and C, and the building of the Commanding Officer's quarters. Discontented with their contract, Sangers and Steel sold stone originally quarried for the Arsenal to customers willing to pay a premium price. The Joliet firm demanded an increase in government payments and refused to ship any more stone to the arsenal until its demands were met. Sangers and Steel halted its stone deliveries to the Rock Island Arsenal for the last time in August 1870. Colonel Rodman eventually purchased stone from Mr. Edwin Walker of Lamont, Illinois, at an average price of thirty-eight ½ cents per cubic foot, which was one ½ cents less than the price demanded by Sangers and Steel. Sangers, however, formed a partnership with a Mr. Moody, and again received contracts to provide limestone for the construction of the Arsenal buildings. This stone was nearly identical in color, texture, and quality to the Joliet stone.[128]

A local newspaper article of the period provided insight into the size of the labor force engaged in the construction. The Davenport *Daily Democrat* issue of November 10, 1870, noted the federal government employed about 1,000 men to work on various Arsenal construction projects including Shops B and C, and the Commanding Officer' s quarters. The article further stated that the Commanding Officer of the Rock Island Arsenal was assisted by an efficient staff of officers and civilian supervisors. The newspaper article specifically cited Mr. A.T. Fleming, master armorer; Mr. William Channon, master carpenter; Mr. R. Lloyd, master mason; and Mr. George Downs, foreman; as holding these supervisory positions at the time the article was printed. In

Below: *One of the earliest group photographs of Rock Island Arsenal shop personnel dated 1873.*

addition to the workmen, a large number of horse and mule teams were engaged in the construction activities.[129]

Labor Disputes

A labor force of this size did not operate without some problems, and on occasion labor disputes slowed construction of the arsenal. Events happening elsewhere also had an impact on Colonel Rodman's progress at Rock Island. For example, congressional legislation passed during the construction of Shops B and C established an eight hour work day for all laborers, workmen, and mechanics employed by, or on behalf of, the government of the United States. The wages paid under the old and new work plan were:

	10-hour day	8-hour day
Laborers	$1.80	$1.44
Masons	$4.50	$3.60
Carpenters	$3.00	$2.40
Machinists	$3.00	$2.40
Teamsters	$3.50	$2.80

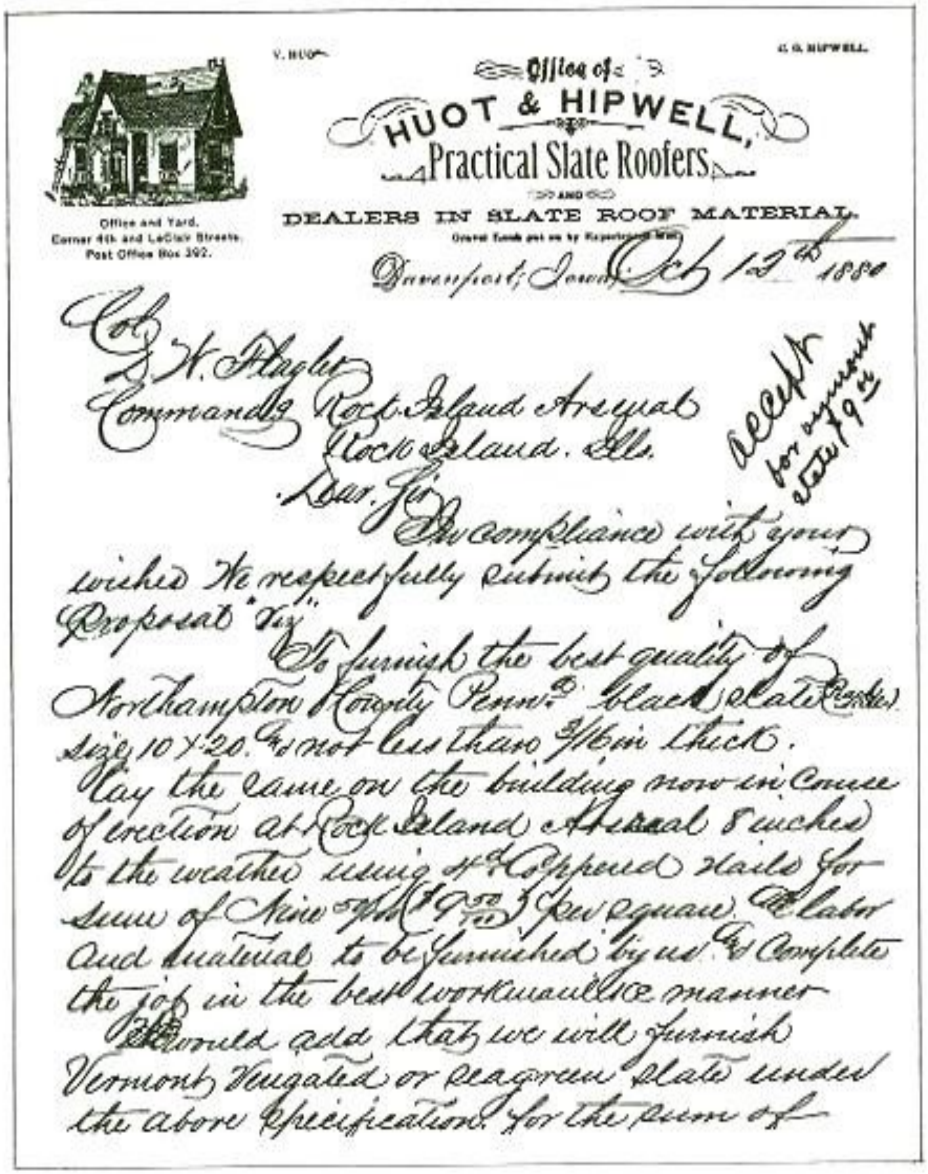
The daily wages of master workmen, which ranged from $4.00 to $6.00, were not affected by the new law. After being paid according to the new wage plan, many laborers refused to continue to work on the building projects. The island temporarily became nearly deserted. The Rock Island *Union* newspaper expressed the opinion that:

> The government pays pretty liberal wages, and if the old employees refuse to work under the rulings of the Secretary of War, it is probable that their places will soon be supplied by others.[131]

However, Colonel Rodman met with the stone-cutters and raised their wages so that they would be compatible to those offered stone-cutters for an eight hour work day in Chicago, Illinois, and St. Louis, Missouri.[132]

The rebuilding of Chicago after the great fire of 1871 drastically increased the demand for stone and stone craftsmen. The Arsenal, therefore, was forced to increase its pay to skilled labors due to the flight of Arsenal workers to Chicago.

Below: *Local contractors responded to advertisements requesting bids for various building materials such as stone, iron, wood, and slate. The letter by Charles G. Hipwell, slate roofer, addressed to RIA Commander Lt. Col. D.W. Flagler contained his bid to slate the roof of Arsenal Shop H. Note: The bid dated 6 July 1883 was accepted.*



V. HUOT   C. G. HIPWELL.

Office of

HUOT & HIPWELL,

Practical Slate Roofers

AND

DEALERS IN SLATE ROOF MATERIAL.

Office and Yard, Corner 4th and LeClair Streets. Post Office Box 392.

Davenport, Iowa Oct 12th 1880

Col. D. W. Flagler
Commandg Rock Island Arsenal
Rock Island, Ills.

Dear Sir

In compliance with your wishes We respectfully submit the following Proposal "Viz"

To furnish the best quality of Northampton County Penna black Slate [illegible] size 10 x 20 & not less than 3/16 in thick. Lay the same on the building now in Course of erection at Rock Island Arsenal 8 inches to the weather using 4d Coppered Nails for sum of Nine 90/100 ($9.90) per square. All labor and material to be furnished by us & Complete the job in the best workmanlike manner

We would add that we will furnish Vermont Variegated or Sea green Slate under the above Specification for the sum of

Procuring Building Materials from the East

Initially a large portion of the building materials for shops, such as B and C, were produced by private firms situated in the east. The New York firm of Cooper & Hewitt furnished most of the fifteen inch iron "I" beams used in the construction of the first and second floors of Shops B and C. Union iron Mills of Pittsburgh, Pennsylvania, provided eleven inch "I" beams that were also used in the building of the first floors. The Phoenix Iron Company of Philadelphia, Pennsylvania, furnished nine inch and eleven inch beams, wrought iron columns, and cast iron columns. It also manufactured caps and cases for both shops, plus the wrought iron frames for their roofs. Contractors shipped these purchased columns in sections which were riveted together by arsenal workmen.[133]

Local Tri-Cities Firms Awarded Contracts

Gradually, local and regional private contractors received an increasing number of Arsenal contracts. The Arsenal awarded James Clark & Sons, of Utica, Illinois, the cement contract at $1.55 per 300-pound barrel; W. B. Barnes, of

Right: *Charlie Hipwell arrived at Rock Island Arsenal in the early 1870s as a foreman of an east coast roofing firm. Recognizing the opportunity at the arsenal, Hipwell formed his own business in Davenport, Iowa, and prospered as a slate roofer and dealer.*

Rock Island, Illinois, received the lime contract for ninety cents per 200-pound barrel delivered; F. Hass, also of Rock Island, provided copper material at $13,000 per shop building; Atkinson & Murdock, Rock Island, Illinois, laid the fire-proof brick arches in Shops B and C for $15.50 per 1,000 bricks; and Mr. J.S. Keator, Moline, Illinois, supplied pine lumber for $17.00 to $22.00 per 1000 board feet. In addition, several private firms, beginning with Sanger & Steel, provided limestone from the quarries near Joliet, Illinois for the construction of the Rock Island Arsenal.[134]

Colonel Rodman, and his successor Major Flagler, also awarded contracts for building to private firms in Iowa. The firm of French & Davies, Davenport, Iowa provided the oak flooring for Shops B and C at $41.00 per 1000 board feet. Mr. Charles C. Hipwell, foreman of Aiken and Company, Pittsburgh, Pennsylvania, after supervising the slate work of these first two shop buildings, left that firm to establish his own business in Davenport, Iowa. His Davenport firm slated practically all the stone shop buildings and officers' quarters. Initially the slate contract was awarded to Lyman Bridges of Chicago, Illinois, but within a short time the roofing company of Knox, Kine, and Company of Pittsburgh, Pennsylvania, had replaced Bridges. Mr. Bridges had his contract with the Arsenal canceled after he failed to comply with the terms of the agreement in regard to quality of material or timeliness.

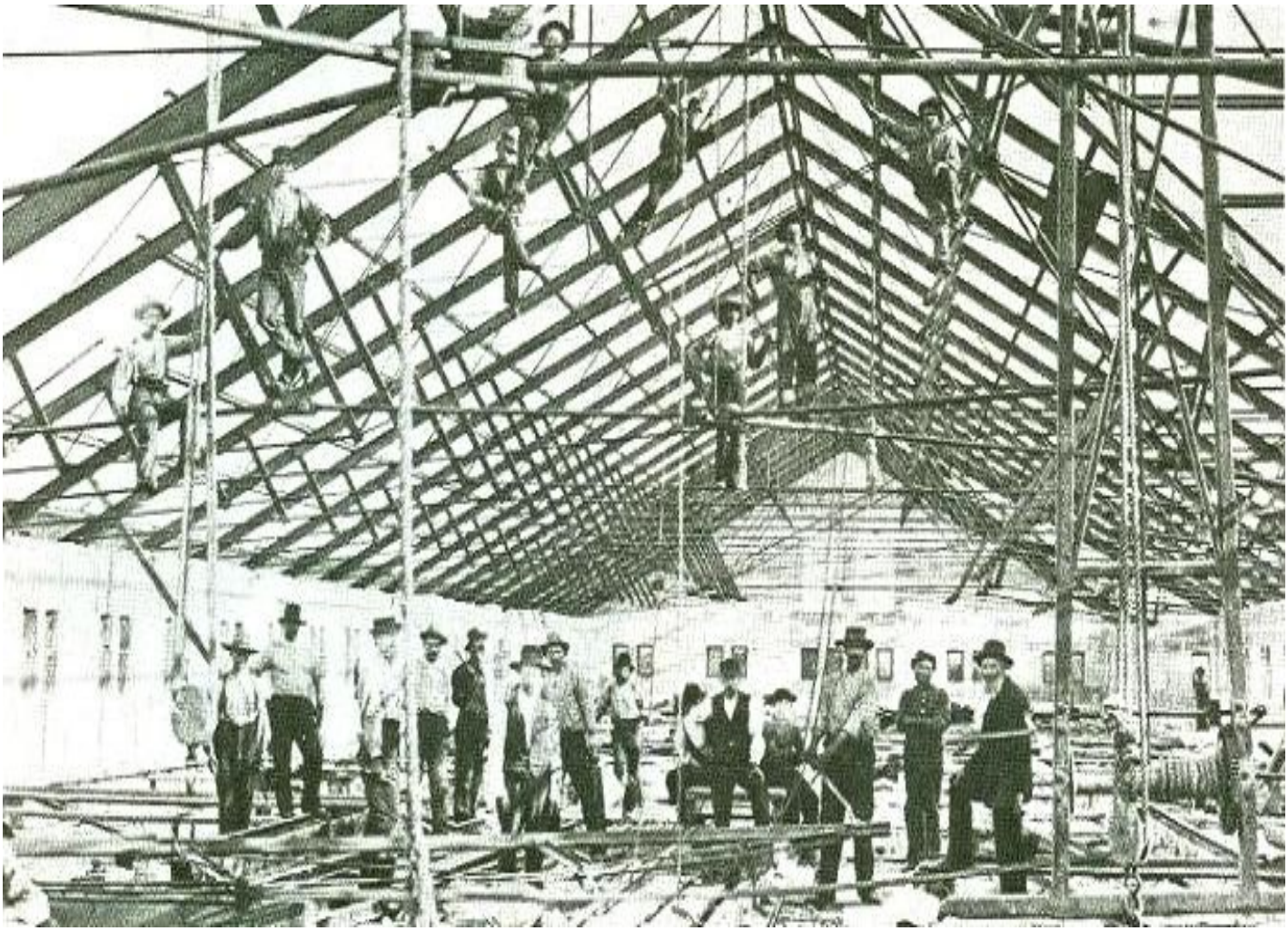
Aiken and Company eventually replaced Knox, Kine, and Company and completed the slate roofing of Shops B and C for $15.25 per square of slate. This represented a savings of $5.75 per square over the canceled contract price. Mr. Hipwell received the remaining slate contracts with bids under $10.00 per square.[135]

The Arsenal also purchased all the lumber required for building a particular structure in advance so that the wood could be stacked for seasoning before being used to make doors, door frames, window sashes, and window frames in the arsenal shops. The Arsenal saved money and time by manufacturing these items and their accompanying hardware.

Rodman Tensile Test Machine

Acquisitioning quality building material to construct the Arsenal was a concern of Colonel Rodman and his successor, Major Flagler. Colonel Rodman, determined to procure high grade iron for his Arsenal, built a tensile test machine which he used to test iron samples of private contractors to determine if their samples met government specifications.

Below: *A rare view of Arsenal workmen constructing the roof of one of the 19th century stone buildings. Note the iron, Fink trusses being assembled which eliminated the need for columns as support and created an open bay-effect in the attic.*



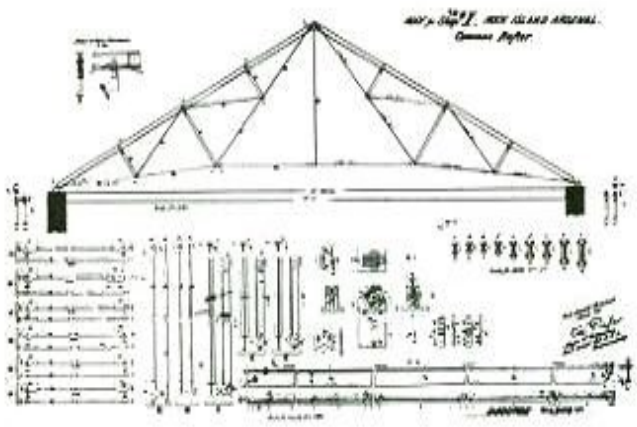
Iron, Copper, Slate, and Other Building Materials

Besides limestone, Arsenal builders used an enormous amount of other material in the construction of the stone buildings. For example, Shop B (Building 60) alone was built with more than 780 tons of wrought iron supplied by eastern mills. Roofers originally covered the building with a slate roof of 51,500 feet, with heavy sheet copper gutters and iron snow guards an inch thick. Stone-cutters formed the upper tier of the shop building, and then lined the gutters with copper. Shop B was furnished with more than 1,000 feet of such guttering. Wrought iron trusses were used to support the roof. Builders fastened the rafters of the shops securely on one end by mortising them into the stone, and dowelled the opposite end upon iron ball bearings which rested in grooves carved into the stone. A corresponding groove in the foot of the rafters covered the ball bearings; this allowed for seasonal expansion and contraction caused by the heat of summer and the cold of winter without damaging the wall of the shops. Carpenters covered all but the third floor of the shops with one ½ inch thick oak. The third or attic flooring was covered with pine of the same thickness.[136]

Workmen constructed the shop buildings of massive rock-faced limestone with approximately three foot thick walls starting at the base of the building and tapering about six-inches with each additional story. This tapering created a step effect which provided a shelf or lip upon

Below: *Drawing of rafters for Shops G and I (Buildings 108 and 110) signed by the RIA Commander Brevet Lieutenant Colonel D.W. Flagler and dated June 1861.*

Right: *Ornate cast-iron staircases were a product of the 19th century RIA foundry and are still in use in the stone shop*



which iron beams rested. The exterior walls rested on a foundation built upon bedrock. The seventy-six piers of masonry and cement anchored in the basement of the stone shops supported the columns and floors of the above stories. Each pier was partially imbedded beneath the surface flooring of the basement and rested on bedrock. Layers were constructed of fire-proof brick with vaulted ceilings beneath each floor of the manufacturing shops, among the lattice of "I" beams. The brick arches were then covered with plaster. These fire-proof brick, vaulted or arched, ceilings were designed to prevent fire from spreading to the wood flooring of the next story. Beneath each ceiling lay the open bay of the machine shop.

The open bay interior of the shops provided light and space for manufacturing operations. The shop interior featured cast-iron, a few wrought iron columns, and ornate cast-iron stairways which are still in use today.

Improvements During Rodman's Command

Colonel Rodman supervised the completion of the Clock Tower and had three of the large stone buildings near completion at the time of his death in 1871. These three structures were: Shop B (Building 60), Shop C (Building 104), and the Commanding Officer's quarters, now known as Quarters One (Building 301). The Greek revival architecture of Shops B and C provided the style for subsequent industrial and administrative buildings constructed at the Arsenal during the 19th century.

Other improvements during Colonel Rodman's tenure as Commanding Officer of the Rock Island Arsenal, 1865-1871, included the settlement of civil property claims on Rock Island and the approval of his plans for a combined armory and arsenal at the island. Colonel Rodman enhanced access to the island by having a wagon bridge to the city of Rock Island erected. In addition, by having the Chicago, Rock Island and Pacific Railroad tracks relocated to the

Below: *Monument marking Rodman's grave adjacent to the National Cemetery at the far eastern edge of the island. Note the two Rodman-type guns protecting the site.*

western edge of Arsenal Island. He initiated the construction of a double deck bridge from Rock Island to Davenport, which was completed a year after his death. He also contracted for water power, had the Arsenal grounds cleared for new buildings, and laid a network of roads throughout the island.

Rodman's Funeral

Colonel Rodman's habit of working long hours as RIA commander took its toll on his health. Ignoring his doctor's warnings, he continued his demanding daily routine which led to his death at the age of 56 on 7 June 1871. His funeral service was conducted inside the nearly completed Commanding Officer's quarters which he designed. Rodman was buried on Arsenal Island, as he requested. His gravesite today is adjacent to the National Cemetery, which was once the old post cemetery.

The respect bestowed upon Colonel Rodman by the Arsenal and surrounding communities were reflected in the size of his funeral procession. The funeral was conducted in elaborate style. An army band led the funeral cortege, followed in succession by a military escort, the horse drawn carriage on which lay the coffin, a number of carriages containing the Rodman family, and more than 1,000 civilian mourners – many of whom had worked for Colonel Rodman. Before Rodman's death the army had assigned a young captain named Daniel W. Flagler as his assisting officer. Flagler succeeded Rodman as the Arsenal's third Commanding Officer and proceeded with Rodman's plans for the construction of a grand arsenal.[137]

Right: *Lieutenant Colonel Daniel W. Flagler succeeded Rodman as Rock Island Arsenal Commander and was largely responsible for implementing Rodman's conceptual plan of the Arsenal. He served as Arsenal Commander from 1871 to 1886. During the Spanish-American War Flagler held the position of Chief of Ordnance.*

CHAPTER NINE
THE FLAGLER YEARS AT RIA

The Commanding Officer's Quarters

Among Flagler's first tasks as Rock Island Arsenal Commander was the completion of the commanding officer's quarters begun by Rodman. Although begun in May 1870, the Commanding Officer's quarters was not completed until October 1871, nor was it landscaped until the spring of 1872. Delays in procuring stone slowed work on the quarters during the summer months and forced work to be continued into the winter season. Fire, hot water, and salt were used to prepare the mortar. The building walls were finally completed in January 1871.[138]

Day workers were hired to complete the remainder of the structure. Army Ordnance officers supervised these workmen who were hired primarily by the day, due to the shortage of building stone caused by delays in procurement and delivery of quarried stone from the contractor. The officers also conducted the necessary engineering work which included tests, experiments, and calculations for the project.

Once completed, the Commanding Officer's quarter's features included a massive I-shaped main core, a west wing, and an observation tower above the east side of the main block. The building's foundation was constructed of two foot thick limestone masonry. Its exterior walls were built of Joliet limestone, and its interior load-bearing walls were made of plaster brick masonry. Large wrap-around piazzas, or porches, which stretched around the east and north sides of the building, featured girded iron grillwork forged at the Rock Island Arsenal. Also, most of the building's brass fixtures, including door knobs, hinges, and other metal hardware, were produced in the Arsenal shops. The structure was covered with a hipped roof which contained skylights and a tall square observation tower. The nearly 20,000 square feet of floor space within Quarters One was

Below: *The Rock Island Arsenal Commanding Officer's quarters, now designated Quarters One, was completed in 1871. This structure, built of Joliet limestone approximately two feet thick, contains over 50 rooms and is today considered the largest family residence owned by the U.S. Army.*

Below: *Quarters Four, circa 1880s. Subaltern Officer's Quarters 2, 3, and 4 built 1872-1874, east of Quarters One, along Terrace Drive overlooking the Mississippi River. These quarters were scaled-down Italianate villas modeled after the Commanding Officer's quarters.*

Right: *The Rock Island Arsenal iron-melting furnaces situated in Shop E (Building 106) during the late 19th century. The Foundry initially poured castings of hardware used in the construction of Rock Island Arsenal buildings.*
Below: *Constructed in 1874, Shop E continuously functioned as the Rock Island Arsenal Foundry until 1988, when the operations were relocated in the new Kingsbury Manufacturing Complex.*

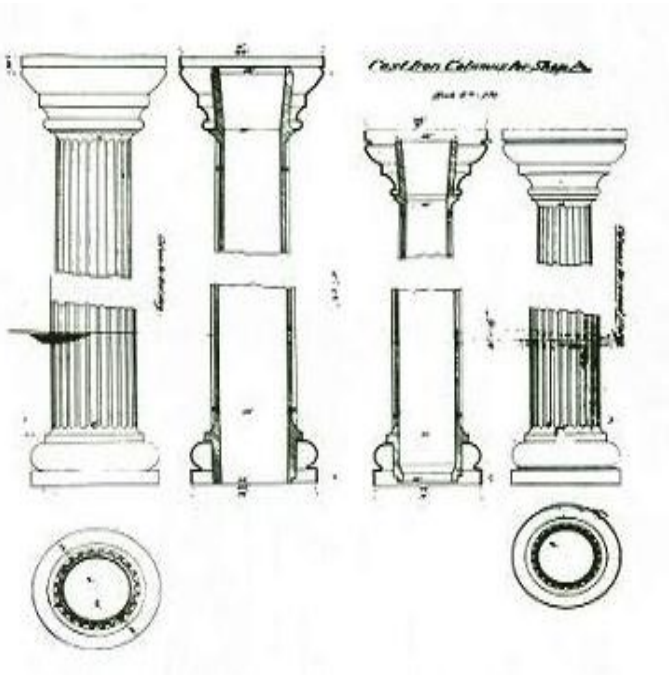
divided into over fifty rooms which explains why the quarters is today considered the largest government residence next to the White House. The Commanding Officer's quarters became the architectural model for the scaled-down Italianate design of the subaltern officer's quarters built east of Quarters One. These subaltern officer's quarters consisted of Quarters Two, Three, and Four.[139]

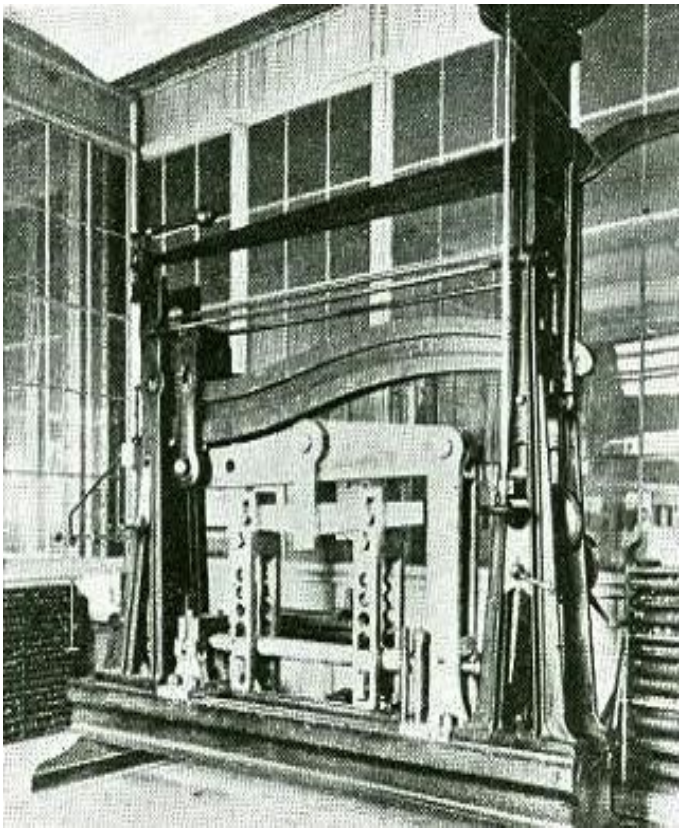
Workmen began erecting Shop E (Building 106) and the RIA blacksmith shop in 1871, and finished shortly after the completion of Shops B and C in 1873. After the completion of Shop E, workers transferred the machinery in the temporary structures to the recently finished Shops C and E, and then razed the temporary structures. In 1871, Colonel Rodman ordered cupolas (cylindrical shaft type blast furnaces used for re-melting metals such as iron before casting) for the Foundry. These new furnaces allowed the Arsenal to produce iron columns, angles, and other necessary parts for the construction of buildings. From that time on, the Arsenal Foundry and Blacksmith Shop were actively engaged in the Blacksmith Shop were actively engaged in the production of building materials or ordnance supplies.

The continued acquisition of commercially-produced iron which repeatedly failed to meet specifications of the contract frustrated Major Flagler. As a result, he instructed Lieutenant W. P. Butler to test iron samples sent to Rock Island by N.S. Bouton and Company of Chicago.

The tests provided the iron samples to be inferior in strength, weight, and character. The arsenal sent a record of the testing results to N.S. Bouton and Company. The Chicago firm proceeded to have its iron retested by another firm: the American Bridge Company. Lieutenant Butler traveled to Chicago to inspect the testing procedures after the American Bridge Company had asserted that N.S. Bouton and Company's iron tested satisfactorily. He found their methods questionable and stated in his report that:

Below: *Drawing of cast iron columns for Shop A cast in RIA Foundry. Columns such as these were made of iron recycled from Civil War era horseshoes, cannonballs, and gun tubes. The Doric columns which are visible in the old manufacturing shops were forged at the RIA. The riveted columns visible in Buildings 60 and 104 were purchased from private eastern firms and shipped unassembled to Rock Island.*





> … On examination, the machine of the American Bridge Company was found to be a heavy hydraulic cylinder, using glycerin instead of water. The piston is 17 inches in diameter. The gauge is the ordinary mercury gauge, very carelessly used. No allowance was made for friction. Its results should not, therefore, shake confidence in the machine (Rodman's tensile testing machine) at Rock Island Arsenal. All measurements were made roughly, by an ordinary two foot rule, in the tests of the American Bridge Company while those at the Arsenal were to within 0.0001 inch.[140]

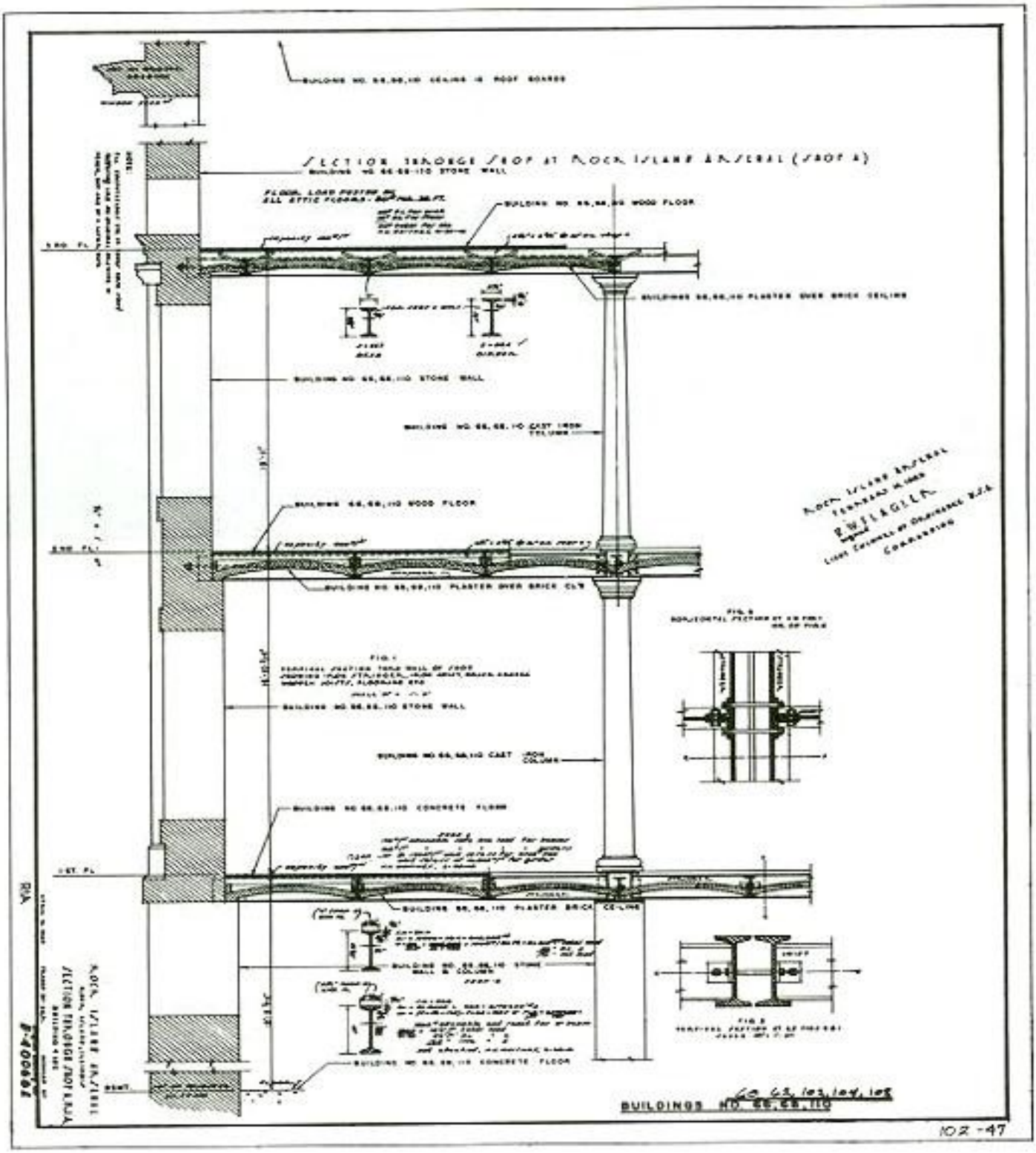
The Rodman tensile test machine measured the capacity of a metal to resist force, whether tensile, transverse, torsional, or crushing. Internal force could also be applied by the machine to test strength of cylinders. The machine had a testing range of 50 to 100,000 pounds. In 1899, the Rodman tensile machine was still in operation, and was being set up in Shop D, in anticipation of the establishment of an armory at Rock Island to manufacture rifles.[141]

Scrapped Civil War Relics Recycled Into Iron Columns

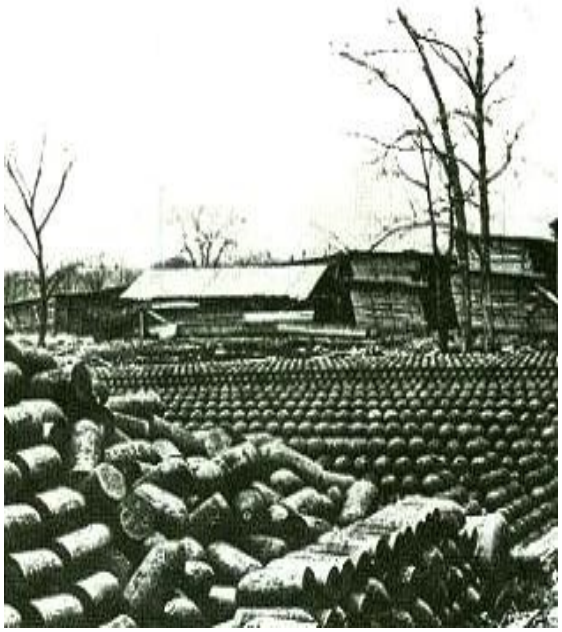
Major Flagler, anxious to reduce construction costs and eliminate delays caused by delinquent deliveries, decided the columns could be produced in the Arsenal shops. He wrote the Chief of Ordnance for approval of his idea to convert tons of old horse shoes, cannons, and other accumulated Civil War scrapped metal into wrought iron bars. These bars could then be cast into the iron needed for construction of the stone shops. Previously, it was the government's policy to sell all scrap metal to dealers. Once approved, the salvage operation proved successful. Flagler boasted that the metal produced by his Arsenal's Blacksmiths and Foundry masters was of superior

Below: *A late 19th century view of machinists at work in Shop C (Building 104). The commercially made, riveted columns, and the machines being driven by a center source of power indicate that this is an interior view of Shop C. Note: the fire-proof brick-vaulted ceilings typical of all the 19th century RIA shops .*

Below: *Cross section drawing of ceiling and floor construction of Shop A, date 1885, and traced in 1944. Note: Tapering of the exterior wall by six inches at each story furnished a lip or shelf upon which the beams rested. Also note the fire-proof brick-vaulted ceilings which were plastered over, and the position of the columns placed directly above each other to support the ceiling and floor above.*



Right: *Arsenal Gun Yard #1, situated along Main (Rodman) Avenue, at the present site of the Headquarters Building (Building 390). A collection of United States guns and foreign guns captured during the Mexican War, 1846-1848; the Civil War, 1861-1865; and the Spanish-American War, 1898 were placed on display in two Arsenal gun yards.*
Below: *RIA Shot Yard. After the Civil War the U.S. Army closed several of its depot and transferred their ordnance*



quality compared with the metal available commercially.[142]

The Foundry only made castings, which resulted in savings that paid for the pattern forms, thereby contributing to the uniformity and symmetry of the original stone buildings. By recycling the island's supply of scrapped metal into iron columns, the arsenal saved the government approximately fifty percent or more of a private contractor's price. Iron pipes for sewers mains, fences, roof trusses, and various other fixtures were produced from this recycled metal. Arsenal workers also salvaged brass saved from artillery projectiles, along with other metals. Brass rotating bands from these projectiles were turned into hinges, locks, and other hardware used in the building of the stone shops.[143]

The Moline Review newspaper of 1 November 1879 printed a descriptive paragraph about the work being accomplished at the Rock Island Arsenal during late 1879:

> Col (Brevet) D.W. Flagler, the commandant of Rock Island Arsenal, is pushing his vast building operations with commendable energy. Acres of huge stones are scattered over the grounds and the click of the hammer and chisel is heard from hundreds of busy mechanics. In the foundries the serviceable shot and shell accumulated and captured during the war are being worked up into iron railings and stairways, bronze doorknobs, sash weights and pulleys and the hundreds of other metal appliances required in the erection of the immense shops. The closest economy is practiced and every available piece of metal is applied to some use. The machinery of the shops is all run by the water power and the longer it is used the more its usefulness is demonstrated.[144]

Below: *Arsenal workmen removing scrapped canteens, cups, and other metal items from courtyard of Shop C (Building 104). The Arsenal initially sold the scrap metal to salvage dealers until RIA Commander Flagler received per-*

Difficulty Securing Bedrock for Shop D, 1871-1872

Shop D's (Building 62) excavation in 1871-72 had uncovered a pocket or cavern beneath the surface of the building site. Lieutenant Charles Shaler, Jr., ordnance officer in charge of the excavation, submitted in his report a description of the character of the pocket and the method used to secure the foundation. He states that the excavation began in early May 1871.

The foundation was laid with considerable difficulty and at great expense. According to Lieutenant Shaler, what had initially appeared to be solid rock often turned out to be a thin sheet of clay. A seam of clay ran through the north end of each wing which, when moist, was very loose, but when dry was so hard that a pick was required for its removal. The seam of clay was about thirty feet in width. As the excavation reached thirty-four feet beneath the surface, water poured into the excavation. Lieutenant Shaler wrote that:

> A sewer, built to carry off water from the roof of Shop B, burst one evening after a heavy rain and by morning had flooded the excavation. The water seeped into the ground and was carried off by a subterraneous passage not apparent before the incident. Continuing rain halted work for that day, and by the next morning a large area of ground had sunk into the opening. Arsenal workmen cleared out the opening and used sheathing boards to support the walls against future collapse. Again, heavy rains interfered with work, making the clay too plastic-like causing large limestone boulders, some weighing over three tons, to slide toward the excavation, caving in the sheathing. It was necessary for the third time to remove the material, and the broken sheathing boards and beams which considerably slowed the operation. [145]

Left: *The Post Building (Building 225) built in 1874 of Stone City limestone, quarried near Anamosa, Iowa by convicts imprisoned at the Iowa State Penitentiary. The building still functions today as the RIA's police and fire station.*
Right: *A copy of a stereoscopic photograph showing a typical 19th century quarry operation at Stone City, Iowa.*

Lieutenant Shaler went on to report that this third attempt at excavating the site was successful down to the water level. Further excavation, however, revealed a wide cavern or pocket that passed through the center of the west wing across the foundation site in a southeasterly direction. The floor of the cavern was covered with sand, and according to Shaler, "ripple marks were found that showed it to have been a water course." To obtain a sound footing for the walls of Shop D, a "core of belton," concrete mixture containing round pebbles, was laid in a convex arch of seven consecutive layers that abutted the side walls of solid rock. In this pocket alone, 270 cubic yards of stone were laid. Lieutenant Shaler also found it necessary to conduct arches of this type in five different places. The actual foundation for Shop D was made of stone from a quarry on Arsenal Island located near the ferry boat landing. [146]

1873, Iowa Convict Labor Quarry Stone for RIA

In 1873, the Rock Island Arsenal procured stone for the construction of the Post Building (Building 225), in addition to the subaltern officer's quarters (Quarters 3), from quarries in Stone City, Iowa. Convicts from the Iowa State Penitentiary in Anamosa, Iowa, quarried the limestone. The price paid for the stone, which was delivered by railroad car to the Arsenal, was $48.00 per cubic yard. Martin Heisey and J.A. Green, both of Anamosa, Iowa, received contracts to provide rubble stone (irregular fragments or pieces of rock used in masonry); pilaster blocks of stone (used in rectangular columns with capital and base that were set into walls as an ornamental motif); and dimension stone priced at $12.50 per cubic yard delivered on rail cars to the Arsenal. On one occasion, the delivery of stone was slow due to the difficulty experienced by contractors in securing transportation. Railroad companies originally arranged to deliver the stone, but the agreement did not last. Trains from Anamosa ran only to the Duck Creek Rail

Below: *The Old Barracks Building built in 1873, now designated Building 90. The building was designed to quarter 200 soldiers and functioned as a barracks through World War I.*

Duck Creek station was unloaded and transported by wagon teams over five miles to the Arsenal. [147]

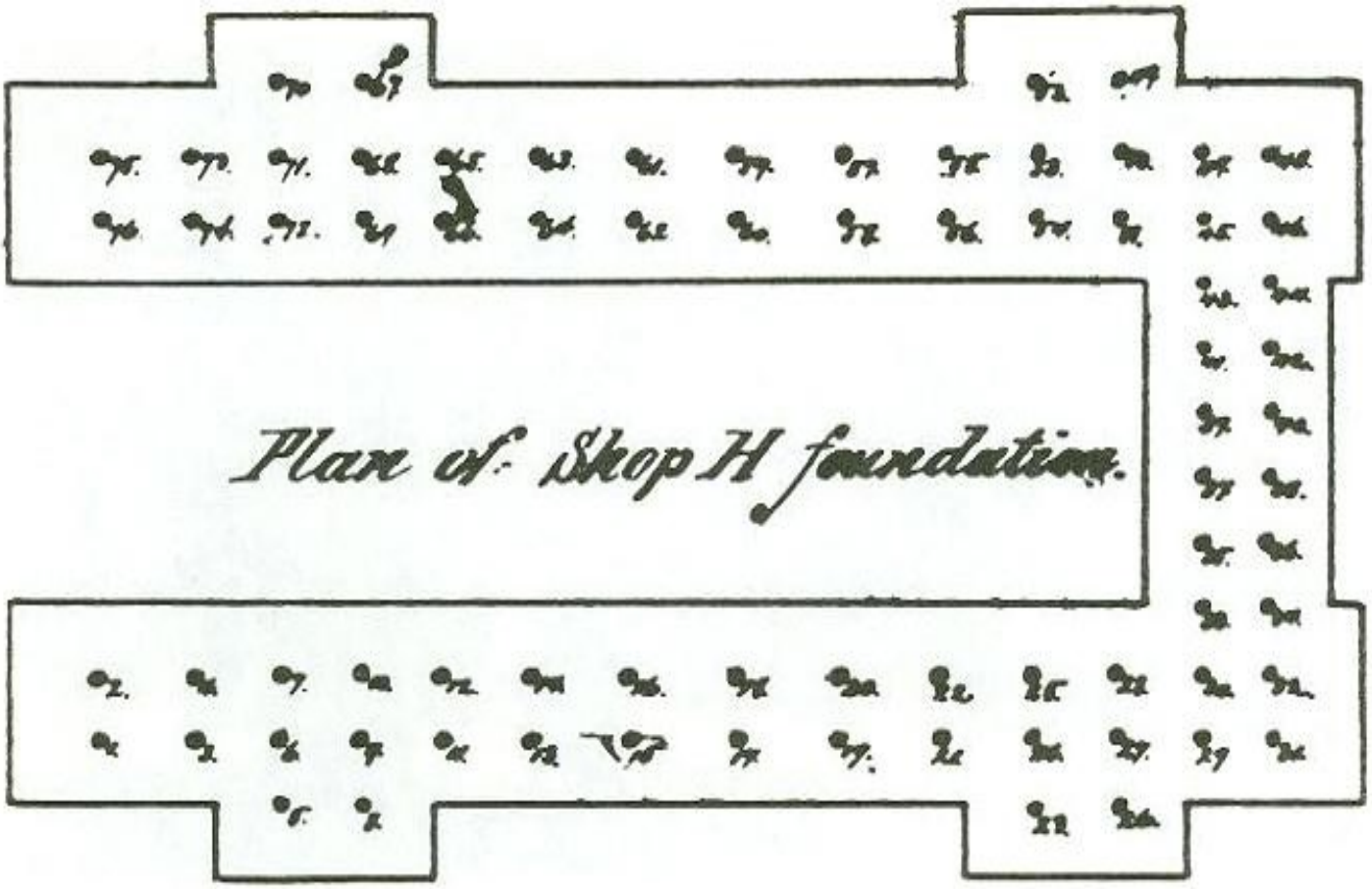
Construction of Barracks Building

In addition to the shop buildings, plans called for the construction of ancillary structures such as the Barracks Building (Building 90). Though originally designed similar to the architecture of the shops, design changes in the barracks were made to reduce construction costs. The walls were built of range rubble, without the tool marks characteristic of the heavy ashlar stone used in the construction of the shop buildings. Even with these alterations the cost of the building exceeded its original estimate. The labor situation at Rock Island Arsenal and the subsequent cost of construction was also greatly affected by the irregularities in the procurement of stone. Because of the unsettled labor picture, it became necessary to leave the third floor of the Barracks Building, designed to accommodate 200 soldiers, partially unfinished for a time. As an aside, its floor plan included a kitchen, mess rooms, sewerage, water supply, heating, pantries, storerooms, and water closets in addition to sleeping bays. Nearby an additional mess, a bakery, and laundry buildings were constructed as auxiliary structures to the Barracks Building.148

1879-1880, Difficulties in Finding Bed-rock for Shop H

Other problems hindered and delayed construction of the Rock Island Arsenal. Major Flagler considered the excavation of building foundations among the most difficult work encountered in his tenure as Arsenal Commander. He cited the excavation of the foundation for Shop H (Building 66), which occurred in 1879-1880, as the most troublesome.149 To support the immense weight of the stone buildings, each shop structure's foundation was constructed upon solid bedrock. The foundation supported the stone walls preventing the building from sinking under such tremendous weight. Furthermore, in each building,

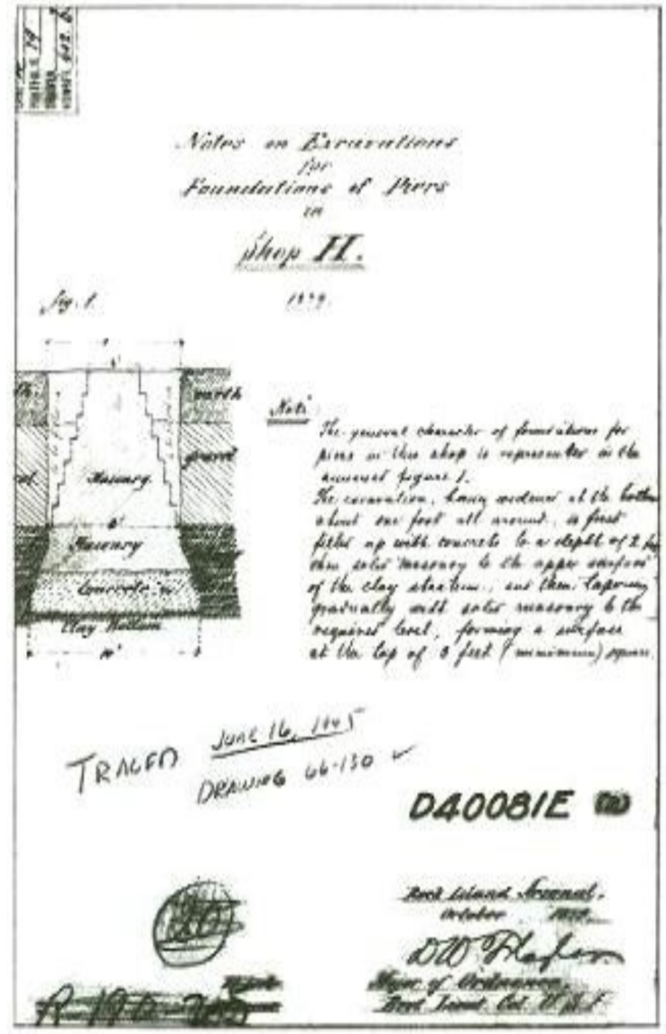
Below: *Each of the stone shop buildings were anchored by 76 piers partially embedded in the basement floor on solid bedrock to provide support for the upper floors and columns directly above.*



seventy-six stone piers were constructed to support the interior floors. The columns that secured the upper stories of the buildings were placed directly in line with the stone piers below.

The difficulties that had to be overcome in order to obtain a secure foundation for Pier #26 of Shop H were drastically more serious than any of the other similar cases. Workmen on Pier #26 excavated to a depth of seventy-four feet while operating in a space only ten by twelve feet wide. This excavation was considerably deeper than those dug for other shop buildings. A network of sheathing timbers, irregularly wedged into place to prevent the pit walls from collapsing, consumed even more space. The timbers had to be especially strong to resist pressure from loose sliding boulders. Steam pumps, pipes, and plank tubes further cluttered the floor of the excavation trench, and workmen had to hoist material through the plank tubes. [151]

Major Flagler ordered that deep vertical soundings be conducted from the bottom of Pier #26's excavation pit. Workmen used sledge-hammers to drive steel-pointed, jointed iron bars and drills into the floor of the excavation in search of solid rock. The drills passed through layers of soft clay that alternated with loose rock, sand, and gravel. According to Flagler, "the ooze or wash of the soft clay through the sheathing sometimes left vacant places behind the sheathing till caving in filled them up." The loosely-filled, clay mixed with stone was so soft in places that workers and tools were in danger of suddenly sinking out of sight. Sounding rods striking these isolated large boulders produced false surroundings, thereby adversely affecting the trained ear of the workmen. In addition, the workers discovered irregularly-shaped crevices or pockets that had been formed by underground water pressure. It appeared a ravine, carved by an ancient waterway, ran diagonally in a southeast to northwest direction through the construction site of the shop buildings. This ravine affected the



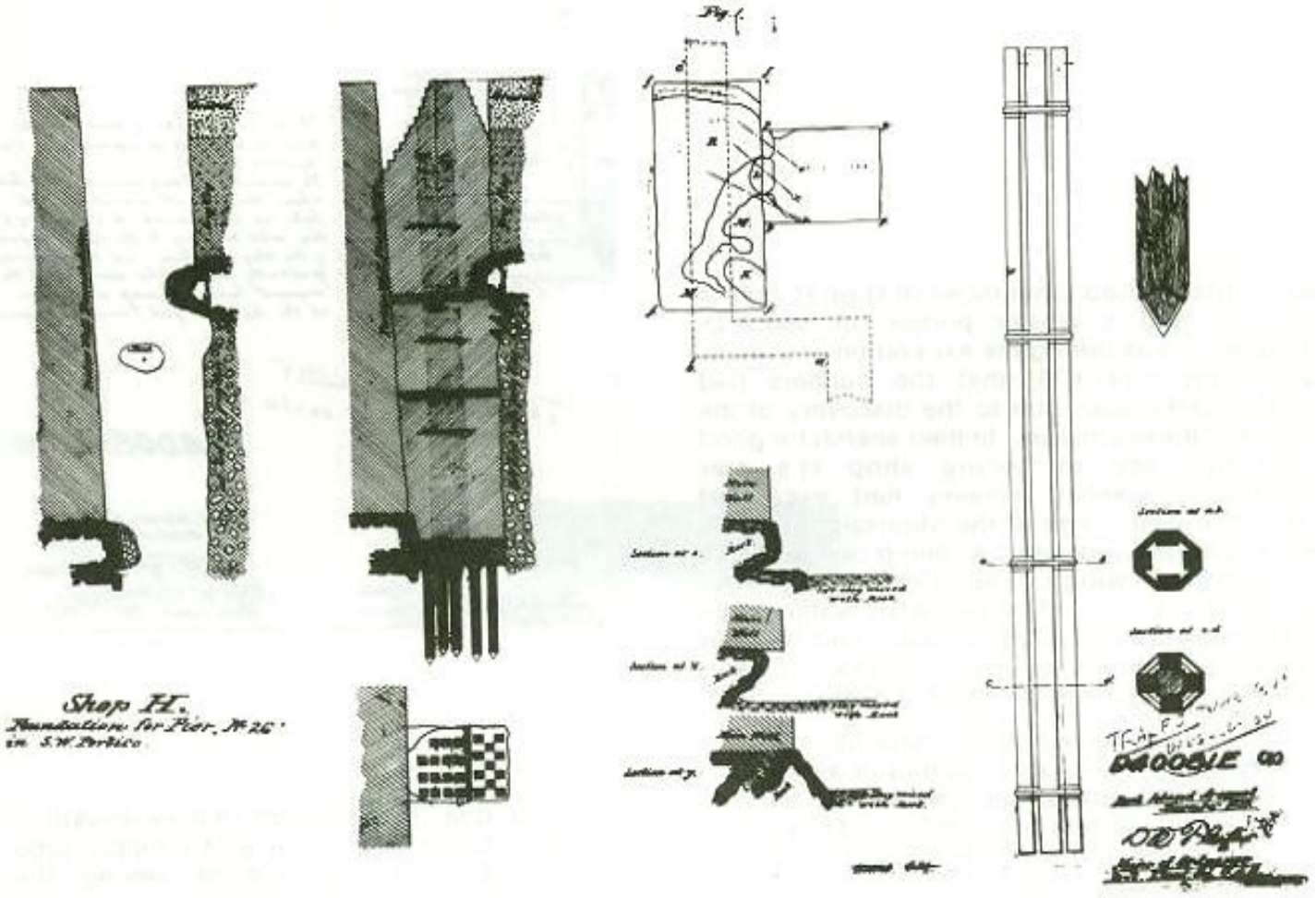
***Right:** RIA Commander Colonel D.W. Flagler's notes of excavations for foundations of piers in Shop H, dated October 1879.*

excavation of several shops, in particular, two-thirds of shop I, nearly all of Shop H, half of Shop K, and a corner portion of Shop D. However, it was during the excavation of Shop H, specifically Pier #26, that the builders had greatest difficulties due to the discovery of the largest of these crevices. In their search for good solid bedrock to secure Shop H's pier foundation, arsenal workers had excavated below the water level of the Mississippi River.[152] Steam pumps were used to pump out water by the gallons which had flowed into the excavation trench. The inflow of water made deeper excavation impractical, and further sounding attempts seemed useless. Flagler stated in his report to the Chief of Ordnance that:

> …I (Flagler) would then have filled up the hole, abandoned putting in a pier, and have substituted therefor (e) the iron column and truss described a few pages back, had not the careful soundings made at this point led me to fear that the foundations of the adjacent main wall of the building, put in the previous year, were not as secure as I had supposed .[153]

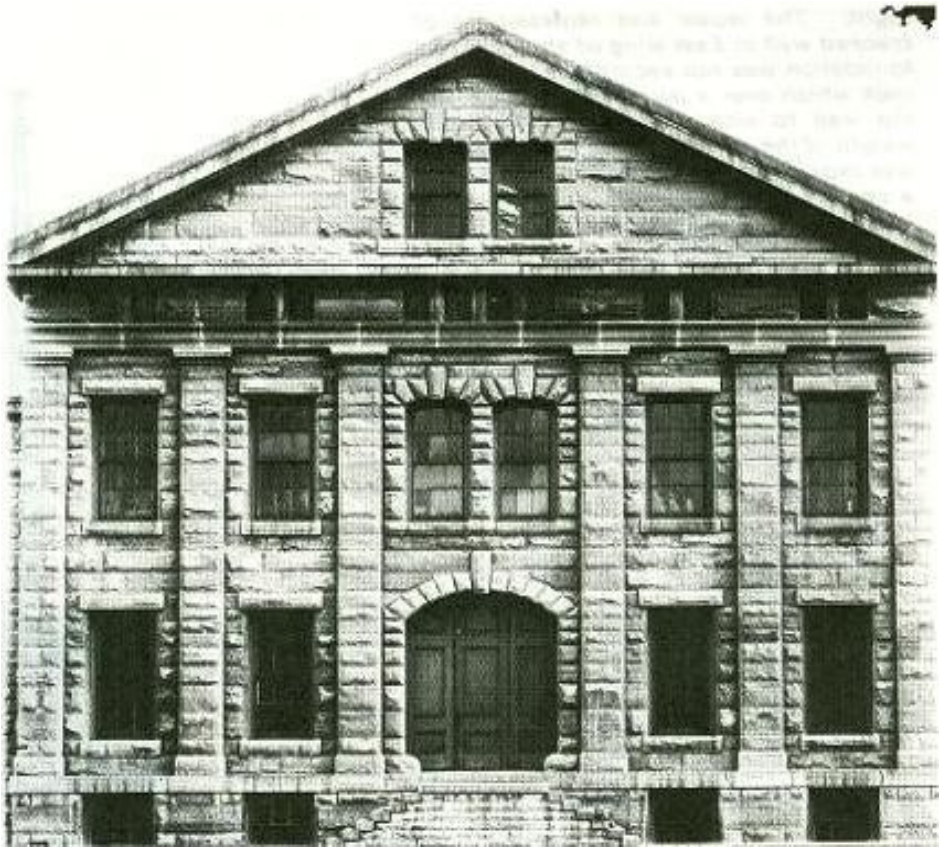
Major Flagler realized that the foundations work done this previous year, in 1879, was not built upon solid bedrock as he had earlier thought. Flagler decided to excavate as far as possible and do whatever was necessary to secure and strengthen the "old foundation". Unsuccessful in attempts to find solid rock to support the foundation of Pier #26, Flagler ordered that heavy beams of timber, called piles be, driven into the earth as a substitute bedrock for the pier foundation. At the bottom of the excavation, piles were driven with the use of a timber tube which guided the drop-weight among the sheathing timbers, and prevented accidents to workmen. The drop operated within the thirty foot tube and protected the men working in the excavation trench from being struck by the drop-weight as it hammered down on the piles. The 900 pound drop-weight, powered by steam, continued to strike the pile until its drop of twenty-seven feet could no longer move the pile. The loose, water-saturated clay was a poor material to sustain piles. The bottom end of the piles were shod with heavy sharp-pointed iron shoes to split, break, or push aside boulders embedded in the clay. Twenty-six twelve-inch square piles were driven to depths varying from fourteen to seventeen feet.[154]

Below: *Rock Island Arsenal Commander D.W. Flagler's notes pertaining to the excavations of foundations and piers for Shop H (Building 66), dated October 1879. Note the cross-section view of excavation of Pier #26, showing the depth of the excavation to the left and the cross-section of the pier's foundation to the right. Also note the 26 pilings used to prove footing for the foundation at the bottom of the excavation. Published originally in the RIA Commander Annual Report to the Chief of Ordnance for the years 1879-1880.*



The flow of water into the trench increased the difficulties of finding a footing for the piers and created serious problems which hampered the excavation of the foundations for Shop H. Steam pumps were placed at low places in the trench to drain and discharge water through pipes and troughs into sewers. Numerous hand pumps were used to reduce the cost of exclusively using steam pumps. The removal of water from so many pits over such a large area was a difficult task. After excavating, it was necessary to operate the pumps until the masonry was raised above water level. The workmen doing the digging had to stand in one to two feet of water, especially after the excavation passed below the water level of the Mississippi River. A couple of small pumps operated around-the-clock discharging approximately 180 gallons of water from the pits.[155]

Right: *The façade of the entrance to Shop H. Note the massive rock-faced limestone blocks accented by pilasters (columns partially embedded into the wall), keystone arches, and small windows encased in the entablature.*



Major Flagler described the procedures followed by the workmen in securing the footing for the (old) foundation of Shop H in his report to the chief of ordnance ending 30 June 1880. He stated that:

> Arsenal workmen cleaned the loose rock and mud from the crevice which ran beneath the old foundation, before they drove in the piles. Workmen used long hoses and other devices to clear the space and to re-fill it with well-rammed concrete. A pump operated continuously, keeping the water low enough so that the piles could be driven with an inclination under the old foundation. Using this method, the bed of concrete and loose fragments of rock were jammed more firmly into the crevice.
>
> Once the workmen finished driving the piles, they evenly sawed the tops off. The interstices of spaces between the piles were cleaned out to a depth of four feet and then refilled with concrete, well-rammed with iron tamping bars. On top of the concrete, workmen placed footing stones, twelve feet thick. Upon the footing stones, laborers laid ordinary masonry with occasional courses of footing stones, till the surface of the ground was reached. The work continued until heavy frost set in. Hot water was used at times for mixing the mortar and keeping it warm till it could be lowered in the pit below the frost line. Workmen brought the masonry up to within seven feet of the surface. Then laborers filled the hole with clay till warm weather arrived. In the spring, workers removed the clay and completed the pier. The workmen commenced the excavation on August 1, and completed it on November 4, 1879. The arsenal finished the pile driving on November 16, and the masonry work on December 4 of that same year.[156]

Right: *The repair and replacement of cracked wall in East wing of Shop H. The foundation was not secured on solid bed-rock which over a period of years caused the wall to sink under the tremendous weight of the massive stone wall. The wall was repaired and secured 35 years later at a cost of $65,000.*

Alternative layers of concrete and Joliet rubble-stone masonry were laid and held in place by large footing stones. Major Flagler cited in his report to the Chief of Ordnance that it took seven weeks to excavate and fill the crevice, during which time 402 cubic yards of masonry, including concrete and stone rubble, were used. Despite the use of pumps while putting in the masonry, much of the concrete had to be laid in water. Flagler reported that: "gangs of men" were employed at night and during the weekends a portion of the time. He credited Mr. W.A.P. Totten, foreman of laborers, in charge of the masonry work, for their efforts in supervising the project. [157]

By the end of June 1800, a total of 4,292 cubic yards of masonry had been put into the foundations of Shop H (Building 66), followed by an additional 4,647 cubic yards used for the foundations of Shop H the next fiscal year. The two year total amounted to 8,939 cubic yards which measured over a 1,000 more yards of masonry than would be later used in the walls.[158]

In 1880, Major Flagler wrote a final report to the Chief of Ordnance pertaining to the difficulties that his workmen had encountered in securing foundations for shop buildings, in particular, shop H. He concluded the report with his opinion as to the worst foreseeable scenario that could possibly happen in regard to these foundations. He stated that the foundation of Shop H would settle only a little and would occur very slowly. He felt that since the foundations could not give way to endanger the structure the worst that could possibly happen would be sufficient settling of the wall foundation to cause serious cracks in the wall. If that occurred, Flagler believed the only remedy would be to disassemble and rebuild the wall.

Thirty-five years later, Major Flagler's prediction as to "the worst that could ever happen" occurred. By 1912, Arsenal photographers had begun to document cracks in the wall of Shop H. By 1915, the east wall of each wing of Shop H was dismantled and rebuilt.

Below: *The Rock Island Arsenal manufactured artillery battery wagons from the early 1890s through 1918. In the photo below a turn-of-the-century battery wagon drawn by Arsenal horses stands ready for road test, during the midst of winter.*

1880, Appropriation Law Changed

Another major hindrance to the building of the Arsenal had nothing to do with procuring stone; maintaining skilled laborers; or finding bedrock to build upon. Rather, it had to do with federal law which required that appropriations made in June of one year had to be used before June of the following year. In essence, the funds had to be used within the same fiscal year that they were appropriated. Any unspent balance had to be returned to the U.S. Treasury Department. This law caused extreme difficulties because it was hard to finish a building in one year. Little outside work could be accomplished during the long winter months; therefore, work was often suspended during cold weather, and was further delayed while waiting for new appropriations from Congress. Colonel Rodman and Major Flagler both complained to their superiors regarding this method of funding. Not until 1880 did the government finally exempt buildings at Rock Island Arsenal from this legal restriction. Before this the Arsenal lost several of the best working months of the year while waiting for congressional appropriations to be passed and made available on the first of July of each fiscal year.[159]

1880, Announcement for Bids for Building Material

With the use of local newspapers, such as *The Moline Review*, announcements that the Rock Island Arsenal was accepting bids for building material were widely disseminated. On the following page is an announcement of this nature which ran on 16 July 1880.[160]

Below: *The Rock Island Arsenal Commander placed notices in local newspapers announcing that the Arsenal was accepting bids for specific building materials.* The Moline Review *carried the announcement below on 16 July 1880.*

Proposals for Wrought Iron I Beams.

Rock Island Arsenal, Ill., June 24, 1800.

SEALED PROPOSALS are invited to furnish, delivered on cars at this Arsenal, about -- 830 pounds 15 in. I Beams, 200 lbs. per yard.

430,000 pounds 12 in. I Beams, 200 lbs. per yard.

480,000 pounds 12 in. I Beams, 125 lbs. per yard.

480 pounds 12 in. I Beams, 125 lbs. per yard.

127,000 pounds 4 in. I Beams, 30 lbs. per yard.

90,000 pounds 7 in. Deck Beams, 58 lbs. per yard.

20,000 pounds Angle and T irons.

Full bills and specifications can be obtained from the undersigned. All the Iron must be delivered within five months after date of contract, but the contractor may deliver it as much sooner as he pleases.

The successful bidder will have to enter into contract, and give good and sufficient bonds.

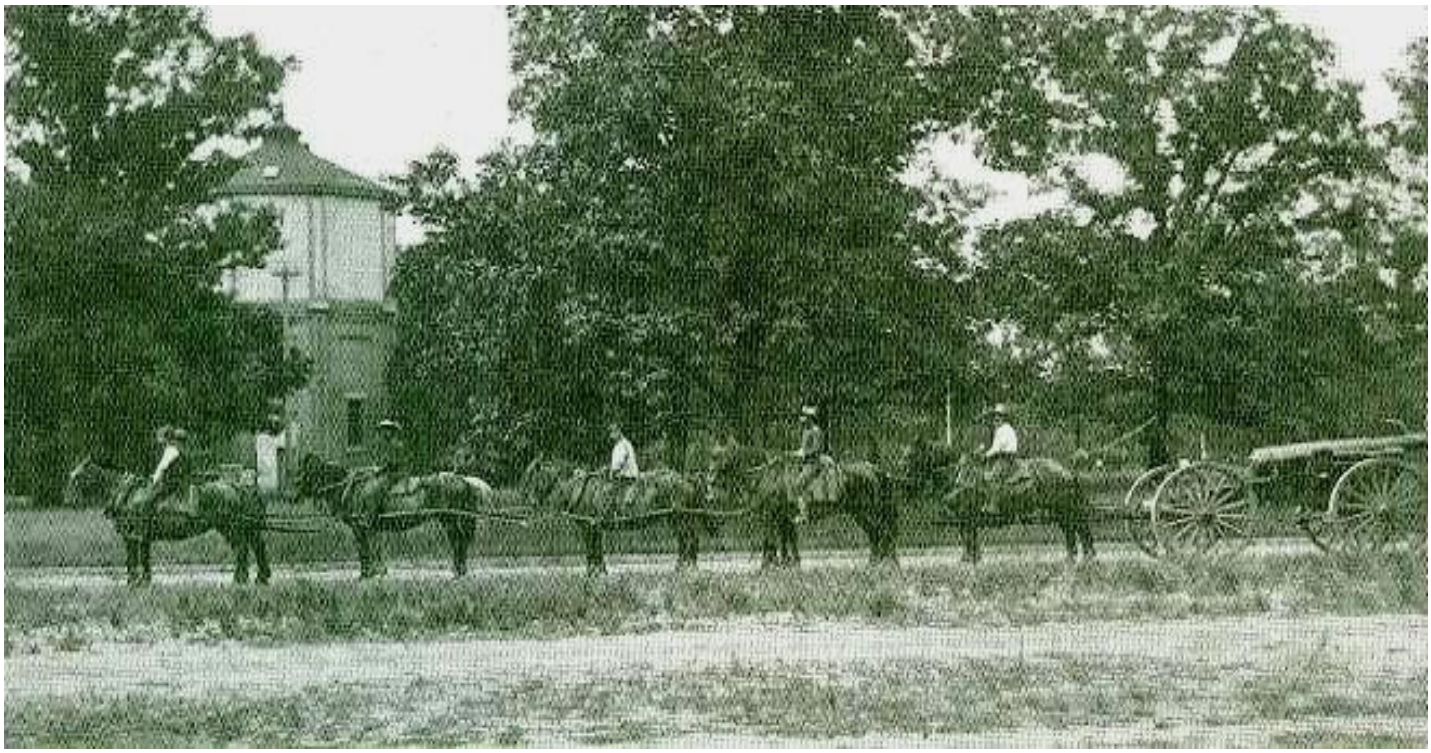
The Government reserves the right to reject any or all bids, and if necessary, bidders must show that they are able to perform the contract.

Bids from irresponsible parties who are not members or agents of firms competent to perform the contract, will not be considered.

Bids will be opened at 10 a.m. July 14th, 1880, and bidders are invited to be present.

D. W. FLAGLER
Major of Ordnance
Commanding

Below: *A late 1800s photograph of 7-inch siege howitzer and RIA made carriage. Probably the artillery harness equipment on the horses was manufactured at the Rock Island Arsenal. Note the high water tower which once stood just south of the multiple-sided water reservoir. Possibly a road test on a newly completed carriage model documented by the photograph.*



To further illustrate the difficulty the Arsenal encountered in obtaining stone during its major construction period of the latter 19th century, the Arsenal made announcements in local newspapers stating that it was again seeking to procure building stone. One such advertisement soliciting bidders appeared in the 15 August 1881 issue of the Moline *Review-Dispatch*. It explained the bidding procedure in the following manner:

PROPSAL FOR STONE

Rock Island Arsenal Ill., Aug. 15, 1882. SEALED PROPOSALS are invited to enter into contract to furnish, delivered at this arsenal, about 1800 cubic yards of Dimension, Ashlar, Rubble and Footing Stone for the construction of one store-house.

The architecture of this building is to be similar to the barracks already built at this arsenal. Bidders should not make bids until after examining drawings and specifications, and obtaining full should information at my office, and also examine the work of the building mentioned above.

Bidders must state the name and location of the quarries from which they will furnish stone; be prepared to show that they have such control over quarries as to insure their ability to furnish the stone, and the quarries must be opened sufficiently to show that the required amount of stone can be obtained from them, the stone must be of known good quality and endurance, and not differ greatly in appearance from that in the shops and adjoining buildings.

The successful bidder must give good and sufficient bonds for a faithful performance of his contract. The U.S. reserves the right to reject any or all bids. Proposals must be in triplicate, and will be opened Sept. 20, 1882. Bidders are invited to be present.

D.W. Flagler,
Lt. Col, of Ord, Comd.

Right: *A U.S. Army corporal standing guard possibly at an entrance to Post Headquarters Building (Building 360). The belt and bayonet worn by the guard indicates the photograph was taken in the late 1880s. Cheveron strips remained "V" shaped until 1902, when they were officially inverted*

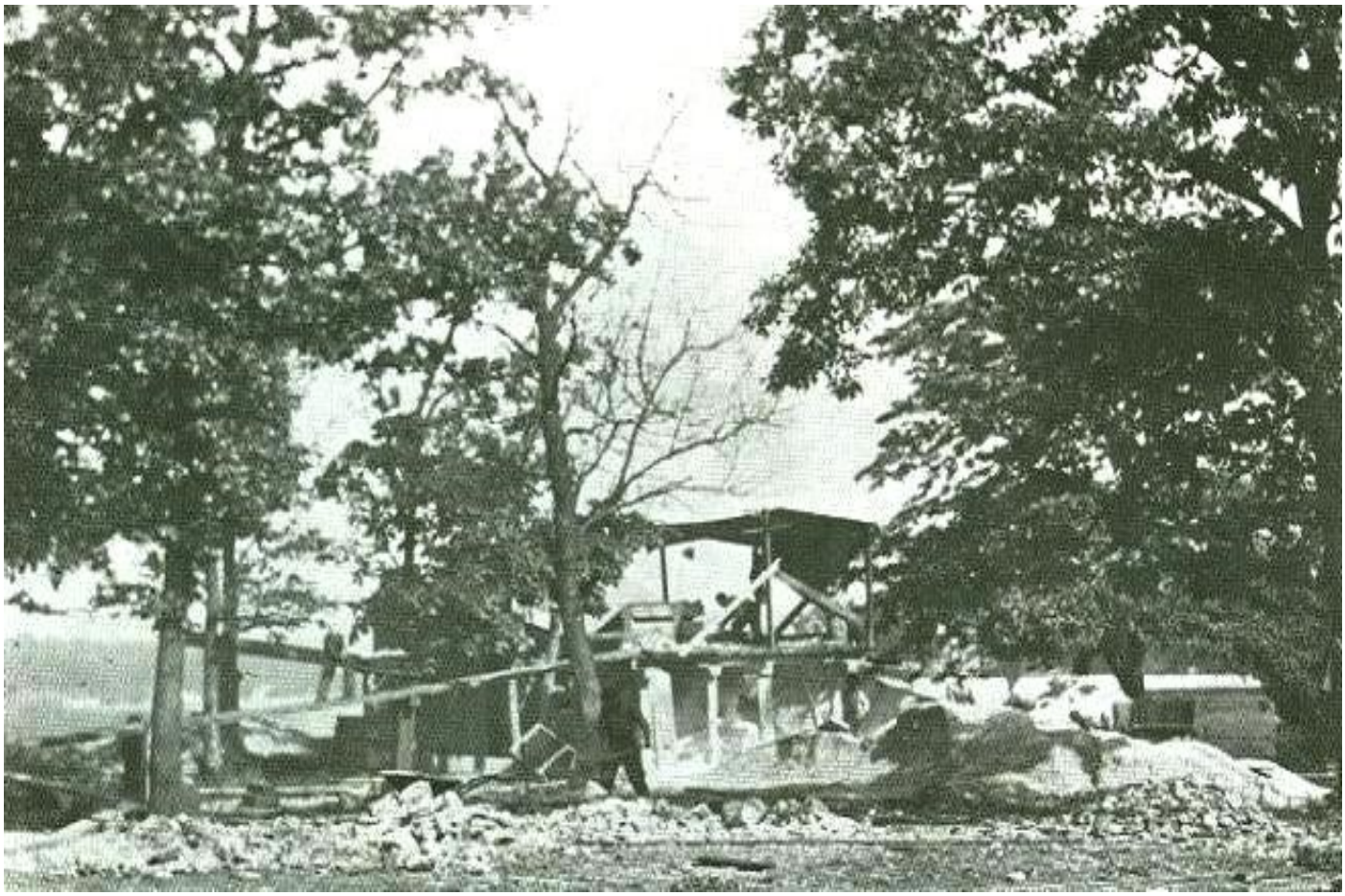
Innovations in Construction of Arsenal Buildings

During the course of a building project that took 30 years to complete, some innovations appeared in the construction of the arsenal stone buildings. As early as 1872, Major Flagler had experimented with the use of concrete for paving and construction. He reasoned that if a mixed concrete with the proper toughness and hardness could be produced at the arsenal, it would be more economical and more durable than stone. Major Flagler's early tests, however, failed to produce a consistently hard concrete. To be noted is the fact that Flagler was promoted to the rank of Lieutenant Colonel in 1881.

It was not until 1883 that Flagler's investigations and experiments in producing suitable concrete proved satisfactory. The successful concrete mixture was initially used in the construction of Storehouse "A". Storehouse "A" was the first of a series of storehouses originally planned to be erected behind each of the manufacturing shop buildings. Storehouse "A", located to the rear of Shop A (Building 102), measured 254 feet by sixty feet, with two porticos fifteen feet by sixty feet. The four-story building had a total area of 63,600 square feet. This storehouse was the first Rock Island Arsenal building built with an all-concrete foundation. From this time on, all Arsenal foundations, basement floors, and most sidewalks were constructed in concrete. The concrete replaced the more costly flag-stones used in earlier construction.[162]

Flagler's experiments with different types of cement led him to recommend the use of "South Bend" Portland cement produced in South Bend, Indiana. He found it superior to the best English cements available. Not only was the quality superior, but the cost of the South Bend cement was more economical at $2.85 per barrel of 400 pounds delivered. Flagler, in describing the methods employed by his workmen, provided some insight into how the stone buildings were constructed. He reported that:

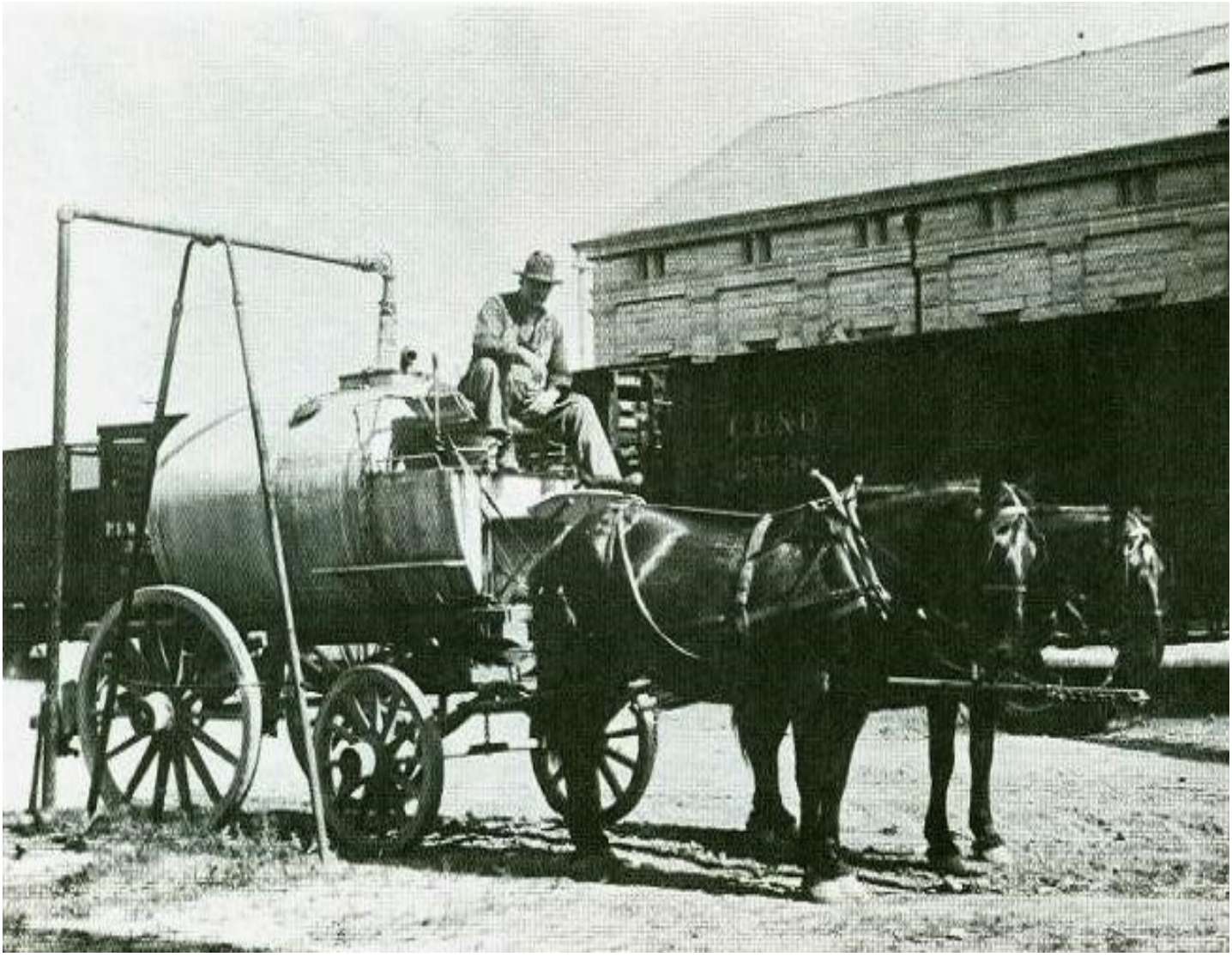
Below: *Rock crusher in operation on Arsenal Island pulverizing stone possibly for mixing with cement and paving roads.*



… The arsenal obtained sand, of good quality, from local contractors for 63 cents per cubic yard delivered by wagons at the work site. The rock, a very hard limestone containing large quantities of flint, which had been excavated from the water power canal project in the south channel of the Mississippi river, was hauled across the river on ice during the winter. The limestone cost, delivered at the work site, .50 cents per cubic yard. Workmen used a Totten crusher to pulverize the stone. For foundation work, the crusher was placed at the edge of the basement excavation and the rock was poured from the crusher onto a plank at the edge of the basement, a drop of seven and a half feet. A sprinkler kept the pile of broken rock thoroughly wet. Workmen then shoveled the rock into barrows and dump boxes for thorough mixing with sand and cement. Eventually the workmen became expert enough to measure the ingredients with their shovels.

Wheelbarrows were used to transport concrete to foundation work nearby. When transporting the concrete over distance, workmen pushed it in dump boxes of one cubic yard capacity, on tramway cars. These cars were afterwards used for delivering stone and mortar to the derricks for building walls of the stone shops. Workmen did not wet the concrete until it arrived at the place of use, and just prior to dumping it, water was added. A layer of concrete was thoroughly rammed and tamped until its surface was just covered with water. [163]

Below: *Water sprinkler (appears to be in back of Shop A, Building 102) used to water down the road to keep the dust down.*



CONSTRUCTION COSTS

Flagler included the following breakdown of material and cost in his report so that in the future, the Army Ordnance Department would use it as a guideline in determining construction costs.[164]

INGREDIENTS AND COST

1 cu. yd. crushed rock-cost before crushing $0.50

1 cu. yd. sand at 63 cents $0.21

1 cu. yd. cement (1 barrel) 400 lbs $2.85

Cost of material per yd. $3.56

Capacity of crusher 33 yds. per day.

Labor to lay 33 cu. yds. of concrete: 2 men at crusher; 2 mixing sand/cement and bringing to crusher; 2 mixers; 2 wheelbarrow men; 2 tampers 10 men in all, at $1.50 per day each… $15.00

Cost of running crusher $2.75

1 mason superintending $2.75

Miscellaneous expenses $2.00

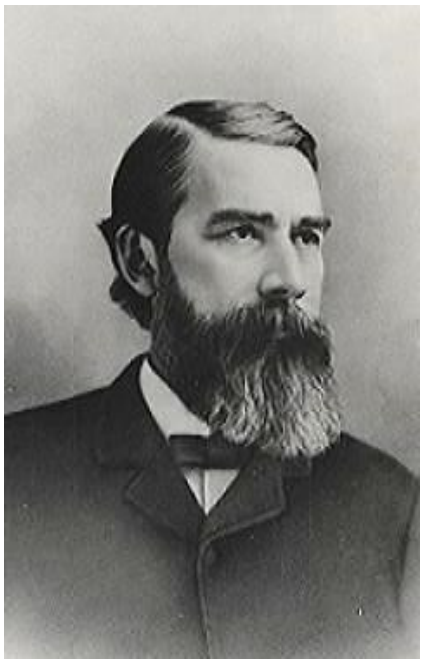
Total for 33 yds. $22.50

Labor for 1 yd. $0.68

Material for 1 yd. $3.56

Cost per yd. $4.24

Below: *Three different Arsenal Commanders closed out the 19th century following Flagler's departure in 1886.*
Left: *Colonel Thomas G. Baylor, RIA Commander, 1886-1888.*
Middle: *Colonel James M. Whittemore, RIA Commander, 1888-1891.*
Right: *Colonel Adelbert R. Buffington, RIA Commander, 1892-1897.*



Improvements During Flagler's Command

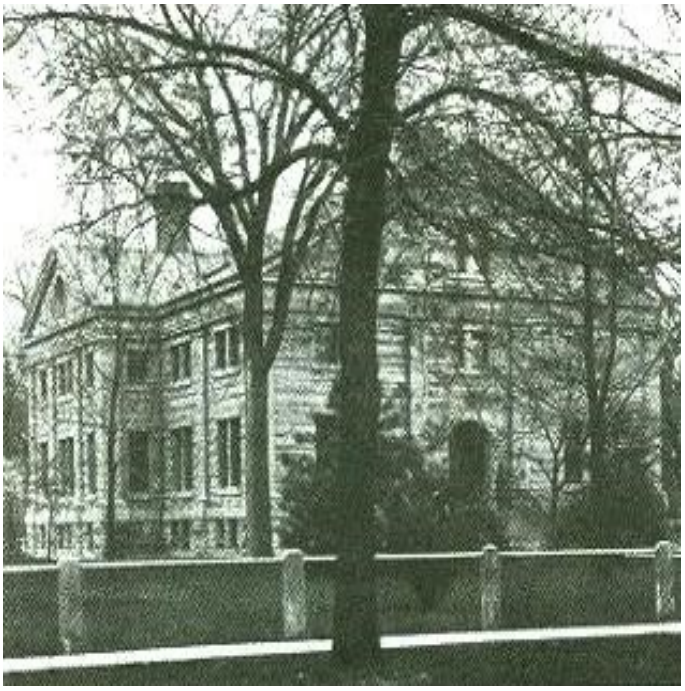
Following Rodman's master plan, Flagler supervised completion of the Commanding Officer's quarters in 1871, Shop C in 1872, and Shop B in 1873. Between 1874 and 1886, Flagler built seven stone buildings on Main Avenue: Shops A, B, E, F, G, H, and I. Also, Flagler added to the manufacturing core several ancillary buildings, including a magazine, barracks, fire station, lumber shed, storehouse for Shop A, Gate House, and Officer's Quarters 2, 3, and 4 during his command of the Rock Island Arsenal. After Flagler's departure in April 1886, Colonel Thomas G. Baylor, (1886-1888); Colonel James M. Wittemore, (1888-1891); and Colonel Adelbert R. Buffington, (1892-1897) commanded the Rock Island Arsenal. The Arsenal's last stone buildings were completed during the tenure of these three Arsenal Commanders.

Construction After Flagler Departs RIA

The close of Lieutenant Colonel Daniel W. Flagler's term as Commanding Officer in 1886 virtually brought to an end the first great construction period of the Rock Island Arsenal. Flagler had essentially completed the original plan of General Rodman. Few important construction projects were concluded at the Arsenal after his departure and before the turn-of-the-century. However, the following projects from the late 19th century do merit recognition.

Following Flagler's term as Commander, the construction of the final Rodman-plan buildings, Shop K (Building 68) and Storehouse K (Building 56) lagged and continued to drag on slowly through the commands of Colonels Baylor, Whittemore, and Buffington. Arsenal workmen had completed the storehouse for Shop K in 1893; seven years after its foundation had been laid. In that same year, skilled laborers applied the finishing touches to Shop K, a good 12 years after its initial construction.

Below: *The Rock Island Arsenal Commander's office and desk situated in the Old Post Headquarters (Building 360). This 1898 view of Colonel Stanhope Blunt's office reveals an assortment of RIA-made ordnance stores such as saddles, saddlebags, haversacks, tin cups, ammunition belts, horse curry brushes, and fencing mask displayed in front of, on, and around the Commander's desk.*



Building 360, The Old Post Headquarters 1889-1922

In 1888, Congress appropriated funds for the construction of a new headquarters building, later designated Building 360. The Rock Island Arsenal maintained its headquarters in this building until after World War I. In 1922, Arsenal operations were reduced and consolidated into fewer buildings. As part of this return to peacetime status, the Arsenal Headquarters was transferred to Shop B (Building 60).[165] Though not an Arsenal structure, the rebuilding of the Government Bridge from Davenport in 1895-1896 should be included as a major construction project on Arsenal transportation. One project that Rock Island Arsenal Commanders repeatedly requested appropriations for, during the last decade and a half of the 19th century, was the building of a new post hospital.

Quarters 34, The Old Post Hospital

The building then used as a hospital was a drafty old frame confederate prison building. Colonel Buffington expressed his frustration and defended the necessity of replacing the Arsenal's old hospital building in his report to the Chief of Ordnance dated 1896. He argued that

> …Previous reports have been made as to the inadequacy of the post hospital. It is an old frame structure, erected during the Civil War, about thirty-five years ago (for prison purposes). It is drafty and leaky, and the timbers are decayed. Patients placed in this building for treatment must have blankets hung around their beds in cold weather to keep off the draft, and the beds must be

Below: *The Old Post Hospital, a drafty old wood frame Rock Island Prison Barracks building functioned as the Rock Island Arsenal Hospital through the close of the century. Congress finally approved a request for a replacement building in 1907.*

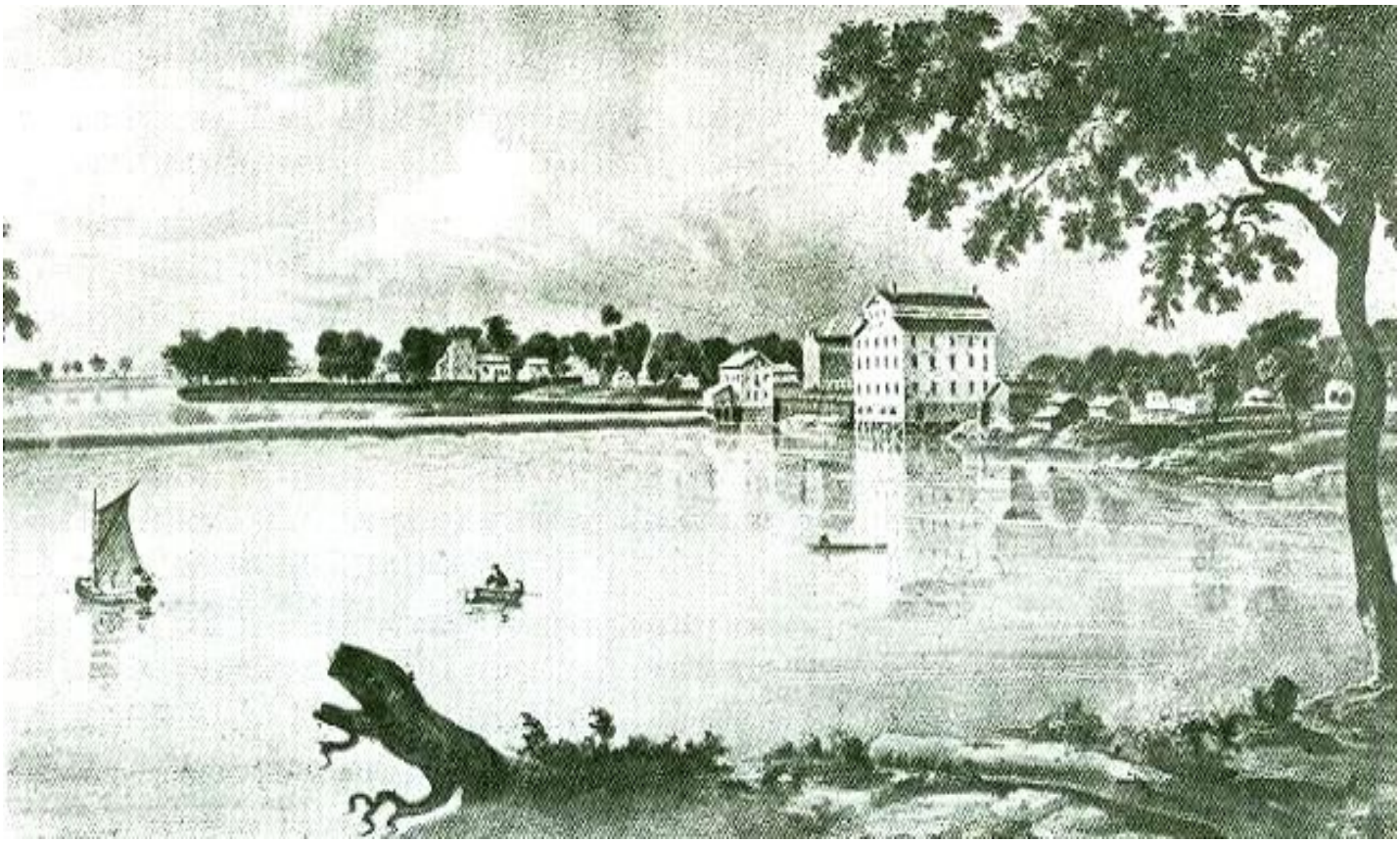
> moved from place to place in wet weather to avoid the rain. The Inspector General had reported that this building is utterly unfit for hospital purposes and not worth repairing. Estimates have been repeatedly submitted, and are again included this year. It is really a cruelty to place a sick man in this structure. [166]

Unfortunately this project did not receive congressional approval until after the turn-of-the-century. In 1907, a brick building was constructed as the new hospital. Today this building functions as officer's quarters (Building 81) for the Rock Island Arsenal.

The RIA's First Great Period of Constructions Comes to a Close

A decline in appropriations for construction at Rock Island coincided earlier with Flagler's departure from the Arsenal. Essentially, the arsenal's building phase had been completed, and the conclusion of Colonel Rodman's original plan was in sight. Congressional priorities turned to providing appropriations that would furnish shop machinery; provide adequate sources of power to the shops; maintain Arsenal roads and grounds; and improve the access bridge from Davenport, Iowa. The first great construction period of the Rock Island Arsenal was brought to a close in the decade and a half prior to the turn-of-the-century.

Below: *The first dam built on Mississippi River in 1841; it stretched from Moline across the south channel of the Mississippi River to Arsenal Island.*



CHAPTER TEN
WATER POWER AT ROCK ISLAND

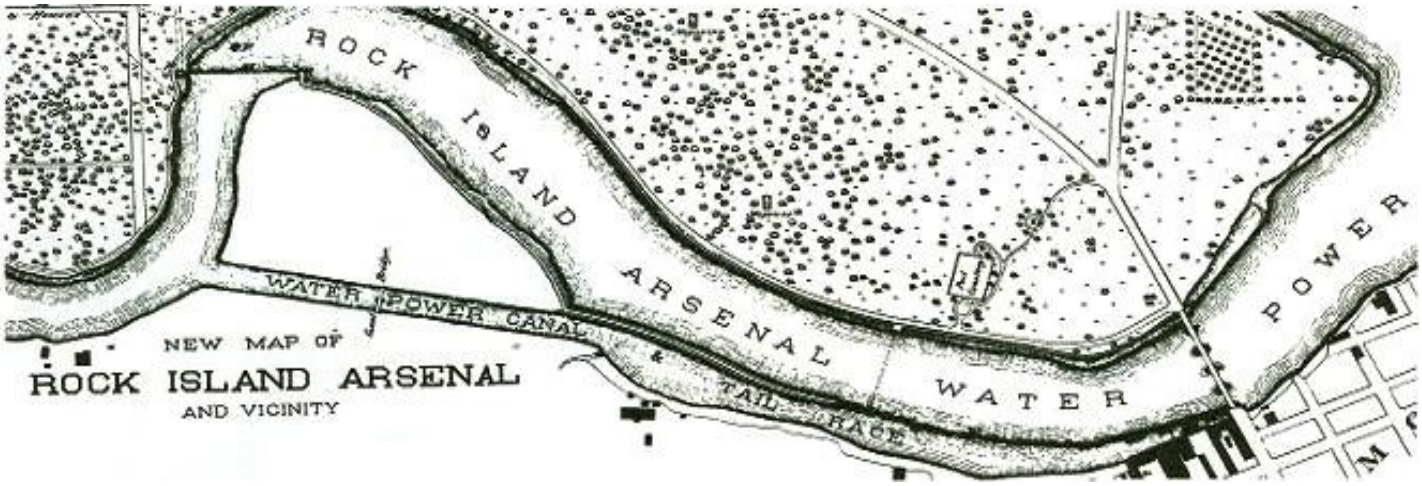
The Mississippi River's potential water power at Rock Island and the island's access to water and rail routes made Rock Island a choice western site for an armory or arsenal for manufacturing of supplies. These natural attributes also made Rock Island an attractive plum for commercial development.

In the late 1830s, long before the construction of the Arsenal, private enterprise began developing water power in the south channel of the Mississippi River, now known as Sylvan Slough. In February 1837, the legislature of Illinois granted to David B. Sears and John W. Spencer a charter to build a dam across the south channel of the Mississippi River near the head of Rock Island, across from Moline, Illinois. Mr. Sears and associates controlled the water power for several years. In 1851, the firm of Pitts, Gilbert, and Pitts from New York acquired the dam and remained in control of its water power until 1859. After a scheme to raise money for improvements and repairs through the sale of bonds failed, the entire property was turned over to the stockholders. Horace K. White and his New York associates then purchased bonds for improvements and repair of the dam, which eventually led to White's acquisition of the property on 25 April 1864.

As previously mentioned, on 19 April 1864, Congress approved an act which authorized the Rock Island Arsenal Commander to clear the island of all property claims made by private parties and local communities. This act provided for establishment of a board of commissioners, appointed by the President of the United States. The board reviewed the legitimate claims and made recommendations as to their settlement.

In February 1865, Charles Atkinson and associates obtained a charter from the state of Illinois for the Moline Water Power Company, and by December of that same year they purchased

Below: *Portion of Rock Island Arsenal map which shows the plans and development of water power at Rock Island, signed by Brevet Lieutenant Colonel D.W. Flagler, RIA commander.*



the water power franchise at Rock Island.[167]

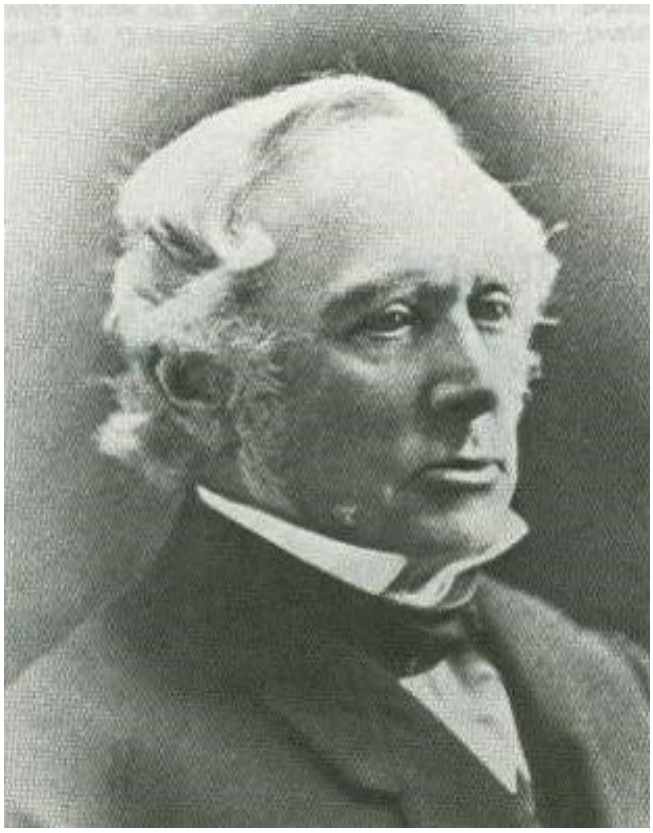
Rock Island Arsenal's water power history spanned more than 50 years, from 1865 to after the turn-of-the-century, and during those years at least eight major water power-related projects were completed by the Rock Island Arsenal. The eight projects included: construction of a stone lateral dam wall in the south channel of the Mississippi River; excavation of a tail race canal through solid rock; building of a stone dike along Sylvan Island; construction of the Arsenal dam; building of an Arsenal power house; digging of tunnels and erecting of towers to transmit the power to the shops by wire cable; building a stone dike at the edge of the island's shore to the head of the island along the south channel; and extending a wing dam off the main channel of the Mississippi River from Benham's Island. Flagler wrote in his *History of the Rock Island Arsenal* that:

> Work on the upper (dam) wall, the island earth dike, the stone dike, the canal, and wing dam were carried on simultaneously and although an account of expenditures on the water power was carefully kept, the cost of the different parts of the work was not kept separately.[168]

Colonel Rodman initially planned to use condensed air to power the machines in his Arsenal shops. His plan called for transmitting condensed air from Benham's Island dam on the north channel and from the old Moline dam on the south channel of the Mississippi River to the Arsenal shops. He quickly abandoned this idea, and developed a new plan to mechanically transfer power from a dam on the south channel of the Mississippi River, which was near the construction site of the Arsenal manufacturing buildings.

As early as 1865, Colonel Rodman proposed using water power derived from the Moline Water Power Company to drive the

Right: *Charles Atkinson, president of Moline Water Power Company.*



machinery in his Arsenal shops. He suggested building a masonry dam and allowing Moline Water Power Company to use its water at the east end of the dam, while the Rock Island Arsenal used its water downstream at the west end of the dam.

As earlier stated, Congress passed another act on 22 June 1866, which further empowered the Arsenal Commander to take complete and permanent possession of Rock Island, including the island's access bridges and water power. On 27 June 1866, Congress appropriated $100,000 to secure water power at Rock Island. [169]

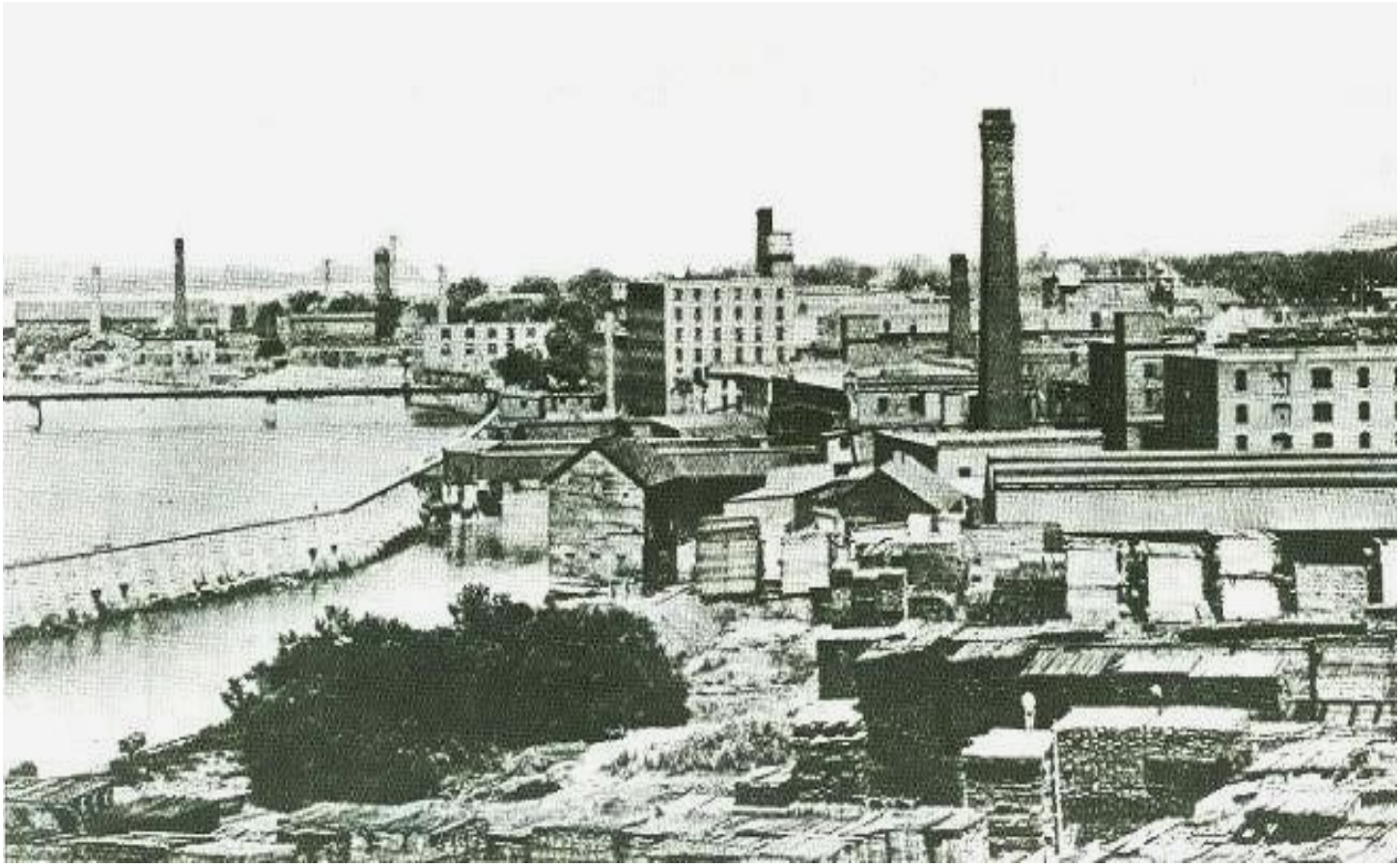
Authorized by the above congressional legislation, Colonel Rodman notified the Moline Water Power Company to vacate by 1 September 1866 all portions of the south channel that separated Rock Island from the Illinois short. After lengthy negotiations, Charles Atkinson, president of the Moline Water Power Company, agreed to relinquish to the federal government his company's rights to the water power and property, north of the south channel's mid-line. This included sandbars (deposits of sand), stone, or other materials adjacent to Rock Island. In exchange, the government agreed to provide in perpetuity, free of cost, one-fourth of the water power derived from existing of subsequent plants to the Moline Water Power Company. In addition to the above agreement, the Moline Water Power Company reserved the privilege of renting to customers any surplus power not needed by the arsenal.

On 22 September 1866, the Moline Water Power company received authority from the Chief of Ordnance to collect rent or fees from nearby factories using their water power.[170]
Flagler reflected in his *History of Rock Island Arsenal,* that the one-fourth agreement, in exchange for the Arsenal's use of the three-fourths of the water power was the key to the government's difficulties with the Moline Water Power Company. Flagler wrote:

> …It is presumable that the right of the company could have been purchased for less sum than this ($500,000) and the United States would have been left sole owners of all the power, and would have been free form a troublesome, 'entangling alliance' with a private corporation.[171]

Congress passed a joint resolution empowering the Secretary of War to administer the recommendations of the 1864 and 1866 commissions to adjust claims stemming from

Below: *Moline lateral dam and water power pool, looking northeast. The development of water power by the Rock Island Arsenal attracted businesses to the area. John Deere and others relocated their businesses in Moline, Illinois.*



actions taken by the government to regain complete possession of the island.

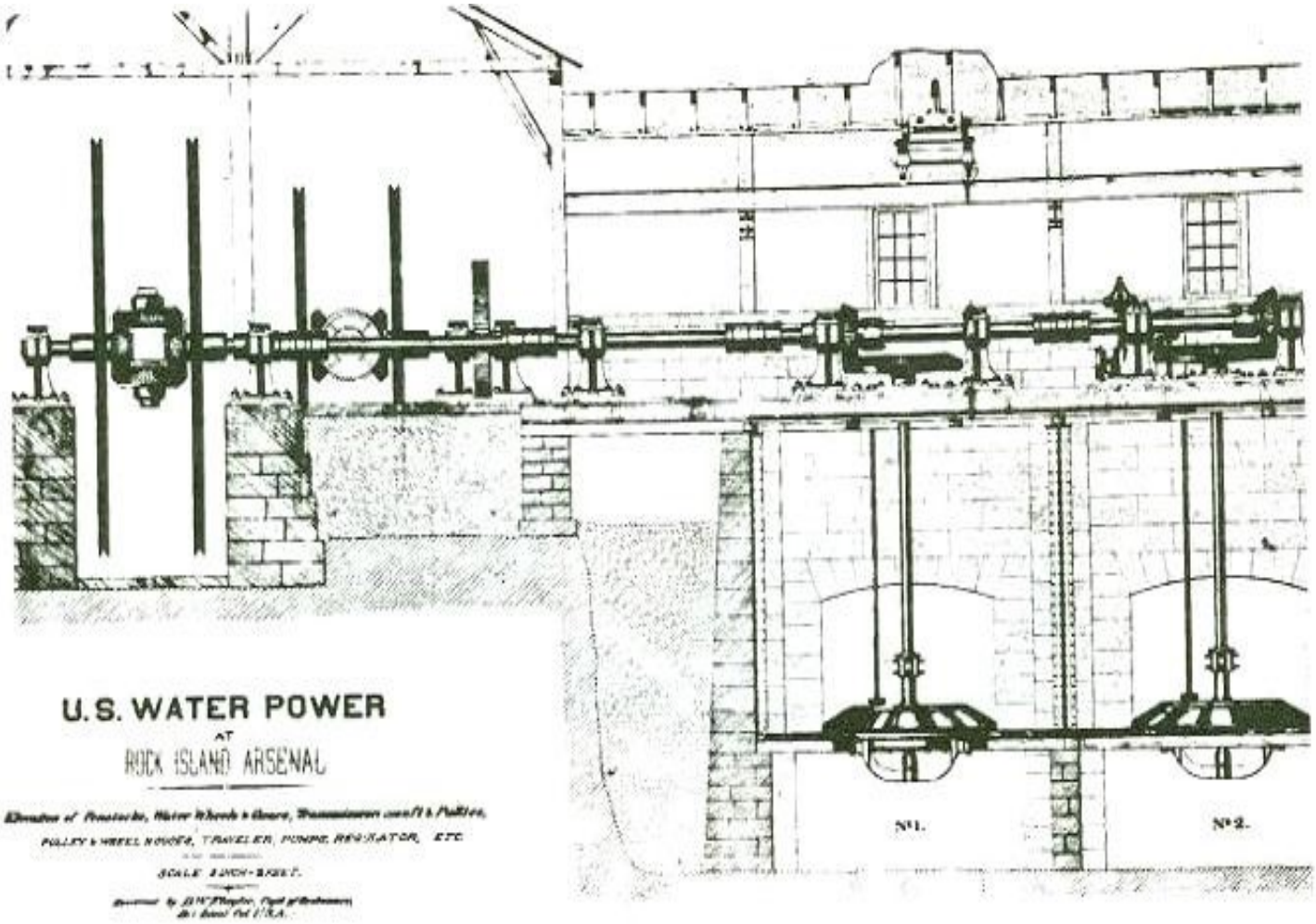
The joint resolution enabled the acting Secretary of War General Ulysses S. Grant to enter into an agreement regarding water power for the Arsenal at Rock Island. In accordance with this resolution, the United States and the Moline Water Power Company signed a contract, dated 18 June and 20 August 1867. The contract, which included the recommendations of the commissioners, became the basic agreement between the federal government and the Moline Water Power Company. The Moline Water Power Company later, however, filed several complaints against the United States Government for not fulfilling the terms of this contract. In 1869, the plan for water power development at Rock Island was modified to include the construction of two dams: the Moline (lateral) dam and the Rock Island Arsenal dam.[173]

The lateral dam stretched from the Moline shore, at the point where the buildings of the Moline Water Power Company were situated, downstream approximately one mile to a portion of the Moline mainland which jutted out into the slough. Colonel Rodman selected the narrowest point in the slough for construction of the Arsenal dam across the south channel.

Before the use of electricity, power had not been transmitted over a great distance very successfully. The crude technology of the 1860s and 1870s precluded the long distance use of electricity. Only those buildings and factories situated in the immediate vicinity received adequate power. For this reason two dams were necessary, the lateral dam at Rock Island was constructed parallel to the Moline shore so that private factories along the slough could directly receive water power.

Likewise, the Rock Island Arsenal needed its dam constructed nearer to the Arsenal shops.

Below: *A rear sectional view of the complete power assembly with power house as designed by RIA Commander Lieutenant Colonel D.W. Flagler. Note the two water wheels at the bottom right of photograph. When the gates were opened, water rotated the vertical shaft from the wheel to power house which, through the use of gears, rotated the horizontal main drive shaft which turned the large 15-foot drive wheel. A series of pulley-like cables operating on towers mechanically transferred the power from the station to the southern row of shops on Rodman Avenue.*



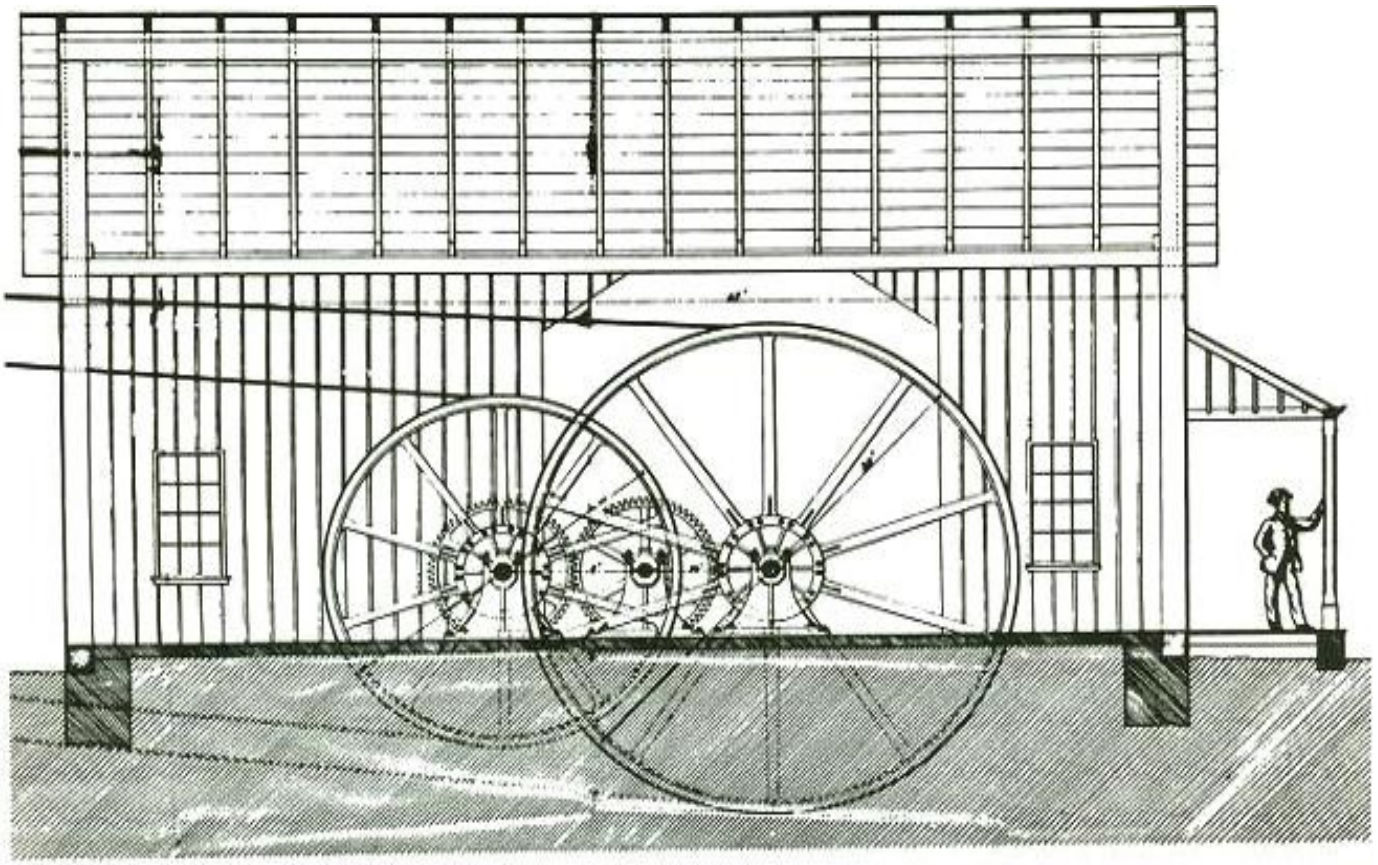
The Moline and Benham's Island dam sites were too far from where the Arsenal shops were being built to be considered adequate sources of power for these shops.

John Deere, DeWitt Dimock, John Gould, and Charles Atkinson were among the investors that had an interest in the development of Moline's river front property. The government's drive to regain possession of the entire island of Rock Island included the accesses and water power to the island which forced several private firms operating on Rock Island to relocate. Dimock & Gould, and Company, a woodenware and lumber firm, moved its business from the island and re-established it along the Moline shore to take advantage of the water power under development.

The spring flood of 1868 partially washed away the old Moline dam. The Moline Water Power Company urged the Rock Island Arsenal to remove the damaged dam and to construct the propped lateral dam. The remaining portion of the old Moline dam accumulated dirt, timber, rock, brush, garbage, and silt deposited around the dam.

In addition to developing water power, another objective of the parties involved was to control the flood waters of the Mississippi River. Besides carrying away portions of the old Sears Dam, the flood of 1868 also washed away the old wooden bridges which connected Moline to the island, and connected the city of Rock Island to the island. Moline investors viewed the results of the flood as an opportunity to replace the crudely

Below: *Sketch of power house and drive wheels of the power assembly as designed by Brevet Lieutenant Colonel D.W. Flagler.*



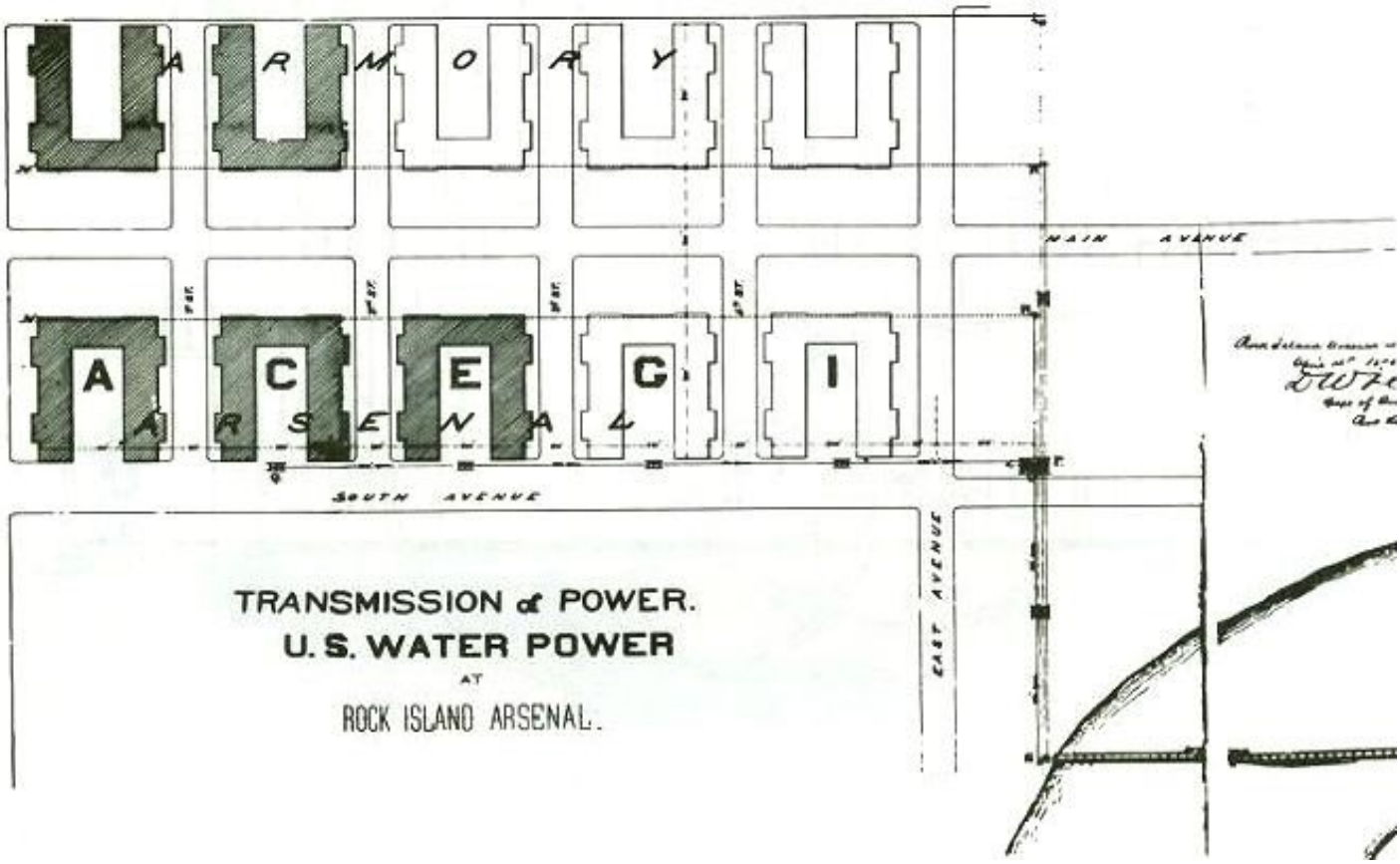
constructed old Moline dam with a new federally built one, which would increase the value of Moline's river front property.

After the spring flood of 1868, the work of removing the old dam and building the new Moline (lateral) dam was done simultaneously. Unfortunately, flood waters struck again in the fall of 1869 and carried away portions of the coffer dam walls being erected. Moline Water Power Company, anxious to have the water power project advanced to the point where it could begin using the power, offered to share in the repair of the dam. Colonel Rodman, representing the government, reached an agreement with the Moline Water Power Company on 28 October 1869. Under the terms of the agreement Moline Water Power Company replaced the coffer dam walls, and the Arsenal agreed to remove the old Moline dam and begin work on the new lateral dam wall. In order for these projects to proceed, portions of the slough were drained of water at the work sites. Coffer dams made this work possible by creating a temporary watertight enclosure. The enclosed area then was pumped dry exposing the river channel bottom so that the work could proceed at the old and the new dam sites. Mr. S.W. Wheelock, Moline Water Power Company, supervised the Moline firm's part of the project, and Captain Morris Schaff of the Rock Island Arsenal was in charge of the government's work at that time.

The dam wall was completed in December 1869, with the exception of 100 or so feet at the wall's lower end, which was not built until 1871-1872. The coffer dams were removed in the spring of 1870, and Moline Water Power Company began using the water power in August 1870.[175]

Moline's lateral dam contained a series of flume openings or chutes, each with its own gate house. Each gate house contained an individual turbine or wheel which transmitted power mechanically by turning a shaft or cable that led directly to the factory. In a sense, each

Below: *The 1874 plan of the Telodynamic Power System at Rock Island Arsenal. Lines "MR" in front of each row of shops depict proposed underground shafts whereas lines designated "QPS" represented the reduced system which was eventually installed. Under this plan lines of wire rope were used to transmit 300 horse power to the shops.*

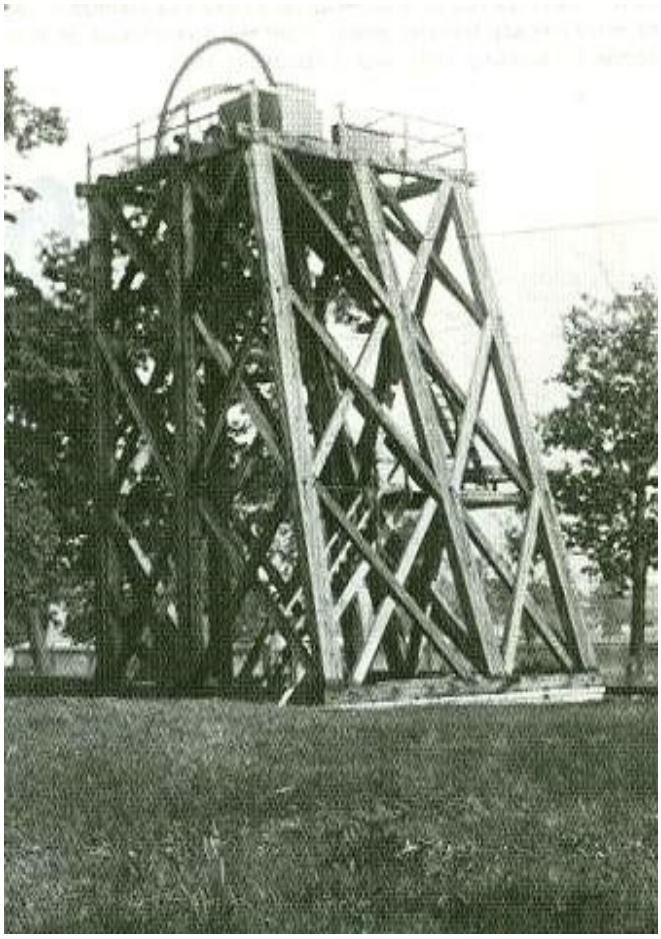


factory had its "own miniature" water power plant. Unfortunately for Moline, the south channel was lower towards the Moline shore than towards the Arsenal Island's side of the channel, and this low water area behind the lateral dam became a stagnant collection point for debris and dead animals which caused sanitation hazards. [176]

In 1869, the original plan was revised to include the excavation of a tail race canal constructed by the Rock Island Arsenal to carry-off the stagnant water and debris that had collected behind the dam wall. Under this agreement, the government was required to dig a canal through that portion of Moline which jutted into the slough. In addition to the canal, the government had to construct dikes along the Moline shore to protect against high water. The digging of the canal turned out to be a major undertaking for Arsenal Commanders, Rodman and Flagler. In June 1871, Colonel Rodman died, and his successor, Major Daniel W. Flagler, inherited the unfinished water power project. The project included blasting a canal 2,000 feet long and 200 feet wide through solid rock to the depth of the river bed. Once completed, that portion of the land cut off from the canal formed an island known as Sylvan Island. Major Flagler later wrote that: "Rock was found generally two feet underground, and nearly the whole excavation (of the canal) was through limestone containing flint, and difficult to work."[177] Flagler provided the following details pertaining to the work performed in the slough. He recalled that:

> …The rock taken from the canal and not used in the dike was deposited in large mounds or "dumps" on the Moline Company's land near the canal, and has been used very

Right: *Telodynamic tower and wheels used to transmit power over wire cables to the rear of shops on south side of Rodman Avenue. This tower was situated east of East Avenue and south of Rodman Avenue.*



> considerably since in building roads, foundations etc., for the arsenal. Large quantities of it have also been used in the same way in (cities of) Moline and Rock Island.
>
> The rock had to be blasted throughout, and was hauled in wagons both to the "dumps" and the dike. A good deal of expense was incurred in maintaining roads for hauling over the rough deposited rock on the dike, movable plank ramps were required to enable the teams to get down off the dike and another road along the foot of the dike was required for returning teams.[178]

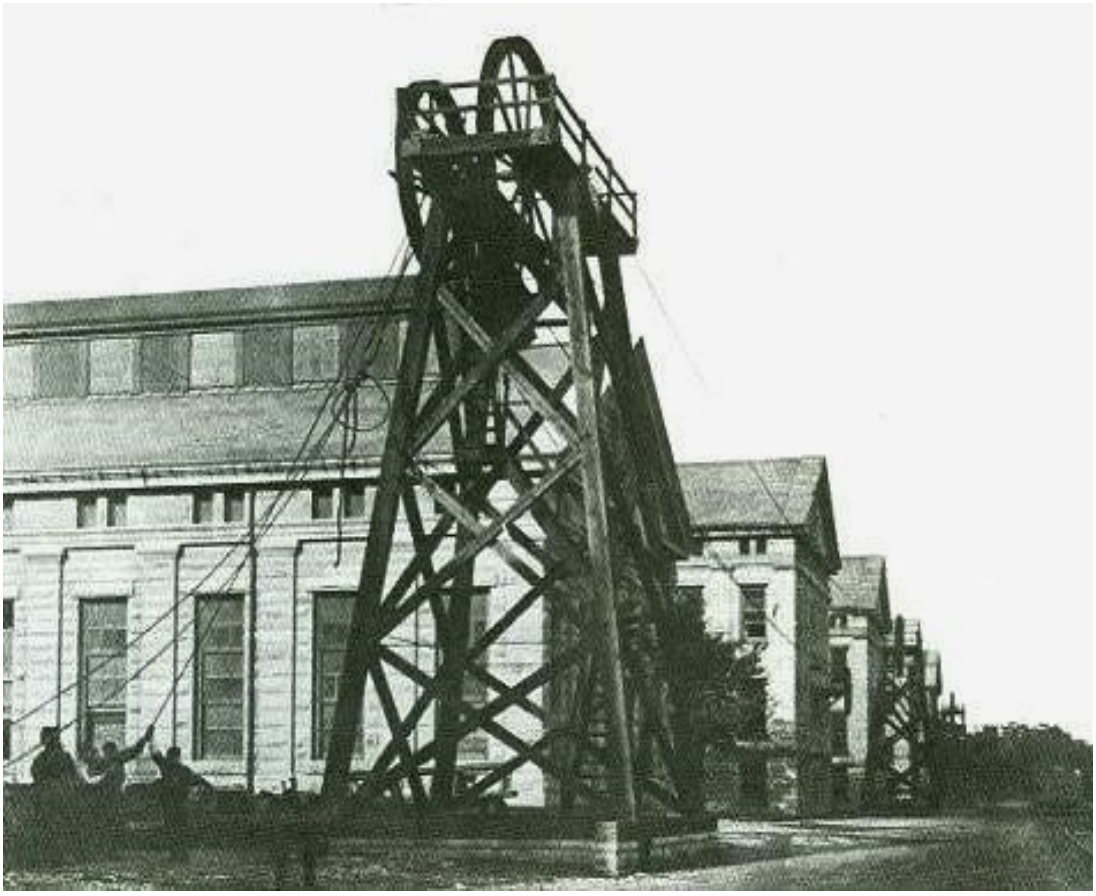
Captain Morris Schaff and A. Mordecai were in charge of the excavation and dike work. They were assisted by Captain M.L. Poland, Lieutenant Charles Shaler, and Lieutenant Wright.

The federal government undertook the expense of excavating a canal and building dikes in such a manner as to meet the terms of its agreement with the Moline Water Power Company. The cost of building the 4,000 foot long dam wall and excavating the 2,000 foot long canal was nearly $500,000 in 1872. The workforce building the dam and dikes, and excavating the canal increased to 900 workmen and 75 teams during the fiscal year ending 30 June 1872.[179]

Work on deepening the canal continued into the latter months of 1871. Heavy rains and cold weather delayed the progress of the Arsenal workmen. On 23 December 1871, high water broke the coffer dam, and a few days later the temperature plunged to 16 degrees below zero Fahrenheit. The pumps stopped operating due to the cold weather and work was abandoned until the next spring.[180]

The canal was finally completed in the autumn of 1872, but not without strained relations. Mill owners whose businesses were interrupted by the loss of power caused by the closing of their chute openings during the excavation of the canal challenged the Arsenal Commander's permission and discharged water through the canal. As incoming water forced Major Flagler's workmen to suspend their work and as the water threatened to collapse the coffer dams, the situation became

Below: *Arsenal workmen installing cable to towers which stood behind the south row of shops, known as Arsenal Row. The Rock Island Arsenal initially used this method of cables and towers, known as the telodynamic system, to mechanically transfer power from the power house adjacent to the Arsenal dam to these shops, particularly Shops C (Building 104), and E (Building106).*



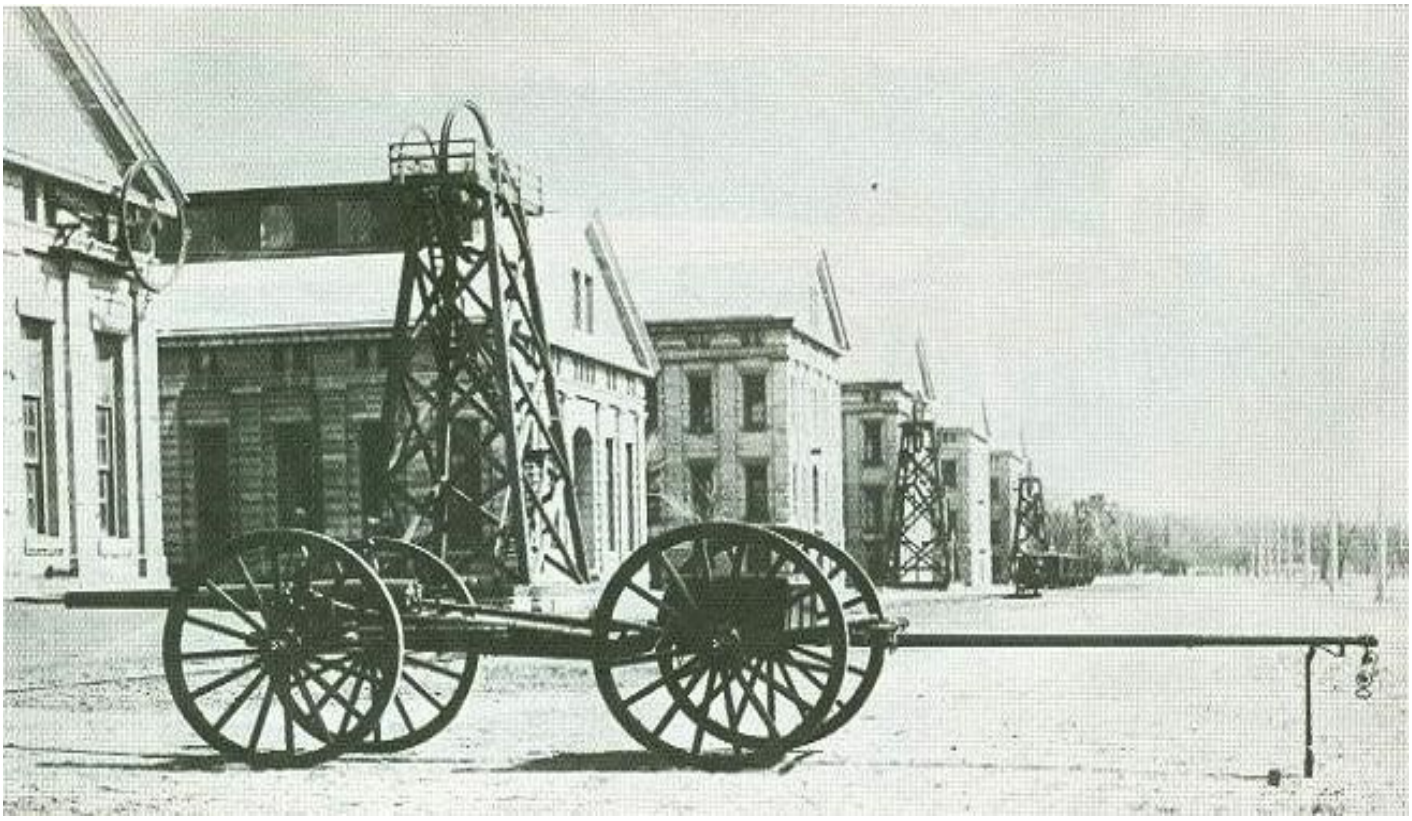
volatile. Mill owners threatened to shoot anyone who tried to close the gates. In turn, Major Flagler resorted to using soldiers to secure the gates. Considering the expense and difficulties encountered by the Arsenal in its efforts to meet the terms of the agreement, it might have been more economical for the government to have purchased the complete rights of the Moline Water Power Company, than to have entered into a joint enterprise with them.[181]

Arsenal Dam and Power Systems

In July 1872, the Secretary of War approved construction drawings of an Arsenal dam between Rock Island and Sylvan Island. A board consisting of three ordnance officers, appointed by the Chief of Ordnance, visited the Rock Island Arsenal to examine plans for the Arsenal dam and water power system. A major obstacle in devising a transmission system was the distance between the source of power and the buildings where the power was to be used. Electrical power was not yet feasible and steam was too expensive to use on such a large scale. The Arsenal, therefore, devised a system by which power could be transmitted mechanically from the dam to the arsenal shops.

Initially, four methods of transmitting power to the Arsenal manufacturing buildings were considered: compressed or condensed air; a rigid covered shaft system using tunnels to connect to the shops; a telodynamic or wire-rope (cable) system; and a combination wire-cable and shaft arrangement. After four days of review, the board of officers approved combining the telodynamic wire -cable system with the shaft method. By combining the two systems, the Rock Island Arsenal could temporarily set up a wire-rope or

Below: *Rear view of Arsenal Row, showing the telodynamic system. Shop E (Building 106) had a cable stretched from the tower to a large wheel attached to the rear of the building. Note the small RIA produced 3.2-inch gun carriage in foreground.*



telodynamic system that would be economical to install and would allow time to further develop the more complicated rigid shaft system.

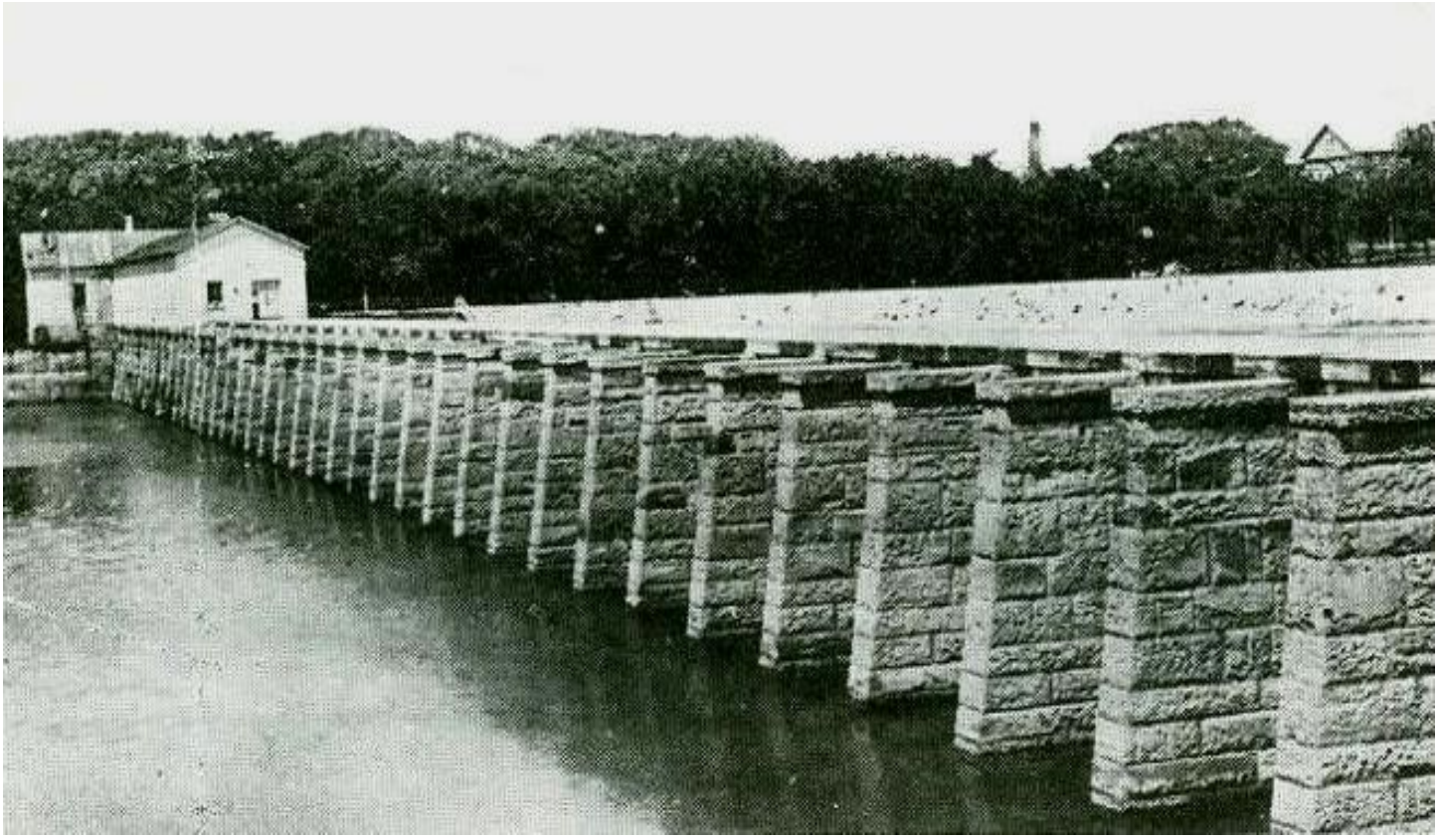
Using the telodynamic system to transmit power over a great distance had yet to be tried in America. Major Flagler corresponded with several European firms that had manufactured wire-rope and had built telodynamic systems in Germany and other European countries.

The telodynamic system mechanically transmitted power to the Arsenal shops by using water, which passed through openings at the dam, to rotate turbines. The rotation of the turbines was transferred through gears which, in turn, rotated a large drive wheel. This wheel, fifteen feet in diameter, functioned as a large drive pulley from its location inside a power house adjacent to the dam. An endless cable loop extended from this ground station northward along First Avenue to a pulley at the top of a tower. From there, wire-cables, one-inch in diameter, formed loops which turned additional elevated wheels at the rear of the shop buildings situated south of Rodman Avenue. Long main drive shafts ran just below the ceilings of each shop area, constantly rotating when the telodynamic system was activated. Individual machines were powered by engaging a clutch drive belt connected to the overhead shaft.

Beginning in 1874, Major Flagler had all gear work and shafting for the power system manufactured at Rock Island Arsenal's foundry and shops, and in conjunction with the power system, Major Flagler ordered metal to produce the castings needed for the power system.

In the mid 1870s, another controversy between the federal government and Moline Water Power Company occurred. Brigadier General Stephen V. Benet, Chief of Ordnance, visited Rock Island Arsenal in May 1875, and made a complete inspection of the water power projects at Rock Island. The following February, Major Flagler traveled to Washington DC, to participate in discussions with officials of the Moline Water Power Company, their attorneys, the Secretary of War, and the Army's Chief of Ordnance. No solutions to the conflicts between the government

Below: *Rock Island Arsenal dam, circa 1879. Note location of shops in background of dam.*



and the Moline Water Power Company were arrived at as a result of these discussions. The Moline Water Power Company was anxious about the completion of a variety of water power related improvement projects.

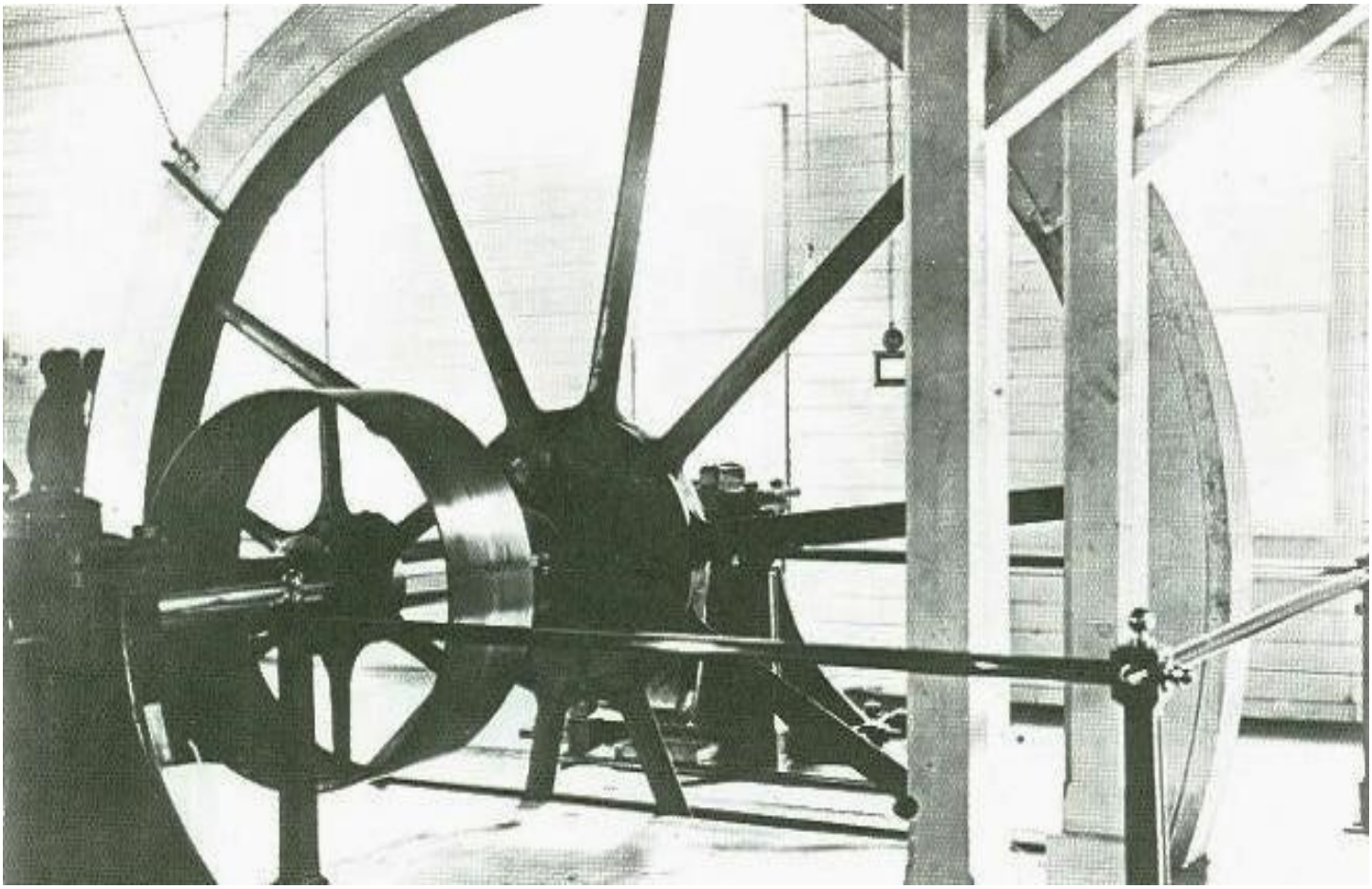
During Major Flagler's term of command the following water power related projects were completed:

1. A stone dam wall 2,307 feet long, 18 ½ feet high above the river bed; 8 feet thick at the bottom, 3 ¾ feet at the top, strengthened by buttresses 3 feet wide and 3 feet thick at the bottom and placed 13 feet apart. The wall had at least 37 openings or chutes for use by the Moline Water Power Company.
2. A tail race canal carved through solid limestone 2,000 feet long and 200 feet wide.
3. A stone dam dike along Sylvan Island which connected the lateral dam wall with the government dam.
4. A masonry dam wall, laid with dressed stone, extending from the end of the dike to the shore of the island of Rock Island, near the shops. This dam wall had 40 openings for water wheels.
5. A power house and line of towers to transmit the power from the dam to the shops by means of wire-cables.
6. A stone dike about one-and-a half miles long, edging the shore of the island to its head to protect against flooding in low places.
7. A wing dam extending up the Mississippi River approximately 2,000 feet.

However, Major Flagler's achievements did not escape criticism from the Moline Water Power Company. Throughout Major Flagler's and his predecessor, Colonel Rodman's terms as Commanding Officers of the Rock Island Arsenal, the Moline Water Power Company contended that the government had not fulfilled its contractual obligations.

In an effort to resolve these differences, Congress passed a resolution on 3 March 1877 that formed yet another commission. This commission reviewed all contracts entered into between the United States Government and the Moline Water

Below: *A close-up view of the 15 foot high drive wheel inside the Rock Island Arsenal Power House.*



Power Company. George W. McCravey, Secretary of War, appointed three officers to the commission: Brigadier General A. A. Humphries, Chief of Engineering, U.S. Army: Lieutenant Colonel H. G. Wright, U.S. Army, Corps of Engineers; and Major Henry L. Abbot, U.S. Army, Corps of Engineers. They were appointed by Special Order No. 72, dated 5 April 1877. After concluding its study, the commission submitted its report to Congress in June 1877. The report essentially stated that the allegation by the Moline Water Power Company that the United States Government had not complied with the terms of its agreement of 1867 could not be supported. The Moline Water Power Company countered the decision of the commission by filing a lawsuit in the U.S. Court of Claims against the United States Government. The case was eventually dropped by the court due to lack of prosecution on behalf of the Moline Water Power Company. The telodynamic system was installed in 1878, and the first use of Arsenal water power in the shops occurred in February 1879. All the shops that comprised Arsenal Row on the south side of Rodman (Main) Avenue, with the exception of Shop A, had access to the power carried by the telodynamic system. However, only Shops C and E actually received power from the wire cable and tower arrangement. Of the two, Shop C consumed the greater amount of the power since the Arsenal's early manufacturing operations took place in that building. Shop E, being the foundry, did not require as much power. The U.S. Government and the Moline Water Power Company negotiated a new contract which was signed by the president of the water power company and the Secretary of War on 28 August 1882. The new agreement listed work yet to be performed by the government and the funds necessary for those projects. The work included improving the water power pool; deepening the canal; placing six new openings or chutes for water wheels in the wall or dike; and reserving any

Below: *A view of the Rock Island Arsenal water power dam under construction, dated 19 October 1889. Note: The crew in the right foreground operated in teams of three while "double jacking" or driving the iron spike into the bed-rock. One workman held the spike and rotated it as the other two drove it in the rock with sledge hammers. Also note the Arsenal stone shops and power tower visible among the trees in the background.*

unused balance of funds for future development and maintenance of the water power system. According to the Moline Water Power Company, once this was accomplished, the company would fully discharge the United States Government of any further obligations to develop water power.[186]

Water Power Related Projects Provided Jobs for Tri-Cities

Practically on an annual basis, from 1867 to well past the turn-of-the-century, Congress appropriated funds for the construction of water power related projects at Rock Island. The tri-cities communities which then surrounded Arsenal Island benefited economically from the federally-financed projects. For over a forty year period, Congress had appropriated more than a million dollars for development of water related improvement projects at Rock Island. A large share of that sum went to local tri-cities firms and laborers hired as day workers or contracted for longer periods of time on these projects. At times, close to a 1000 workmen were employed by the Rock Island Arsenal to work on the various improvement projects being completed in the south channel of the Mississippi River and above Benham's Island in the Main Channel.

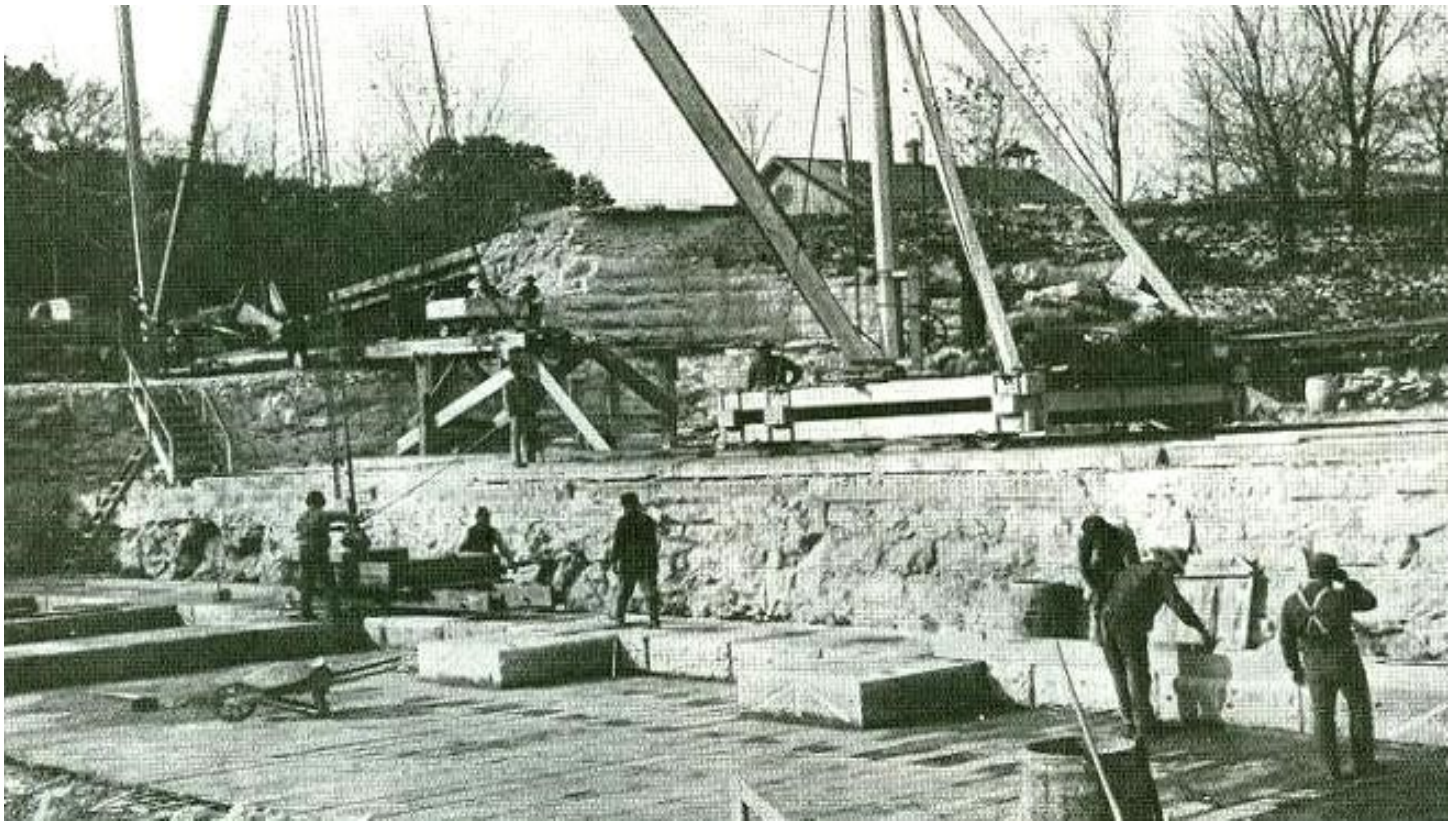
Advertisements soliciting sealed bids for a variety of labor appeared routinely in local newspapers. As an example, the Moline *Review-Dispatch* printed the following announcement inviting bids for blasting and hauling rock from the water power pool at the Rock Island Arsenal.[187]

PROPOSALS FOR BLASTING
AND HAULING ROCK

ROCK ISLAND ARSENAL, IL,
May 14, 1881

Sealed proposals are invited for blasting and hauling in wagons, about 20,000 cubic yards of rock, from the water power pool at this Arsenal Between August and

Below: *Workmen laying first course of stone at the east end of construction for the Arsenal Dam, dated 28 October 1889. Note the roof of the main pulley house in background.*



November 1881. Plans and drawings can be seen and specifications and forms for bids can be obtained at this office.

The successful bidder will be required to give good and sufficient bonds for a faithful performance of the work.

The United States reserves the right to reject any and all bids. Bids will be opened at 10 A.M., May 31, 1881, and bidders are invited to be present.

D.W. Flagler,
Major of Ordnance
Commanding

By 1890, the combination of wire-cable and rigid shafting to generate power was inefficient and obsolete. The Arsenal's makeshift arrangement, at best, provided only limited power to a portion of the Arsenal shops. Frequently power failures occurred due to friction which jammed the shafts; and at times, due to cables which snapped or developed too much slack.

Also by 1890, technology in the transmission of power had advanced to such a degree that it became feasible to update the Rock Island power system. Arsenal Commander Colonel James Whittemore in 1890 recommended to the Chief of Ordnance that the Arsenal's geodynamic and shaft system be abandoned in favor of electricity. His recommendation did not receive immediate action by the chief of ordnance other than ordering additional studies be done of the arsenal's water power system. The Arsenal's wire-cable and rigid shaft system had at that time provided enough energy for the relative light Arsenal workload being done in Shops C and E. Despite improvement to the dam and construction of a frame power house in 1892, it became apparent the Arsenal's water power was no longer adequate. In 1899, a fire destroyed the Arsenal's wooden frame power house, thereby placing the installation's power plant out of commission. The

Right: *A copy of a photograph included in the Annual Report of Chief of Ordnance, 1892, depicting workmen operating electric drills to break up the solid rock portions of the river bed and deepen the water power pool.*
Below: *Workmen building coffer dam during winter of 1891. Coffer dams were used to hold back the water so that construction of the dam and deepening of the water power pool could be accomplished*

army, not wishing to expand an inadequate, obsolete power system, decided instead to modernize the Rock Island Arsenal's entire power system by switching to hydroelectricity.

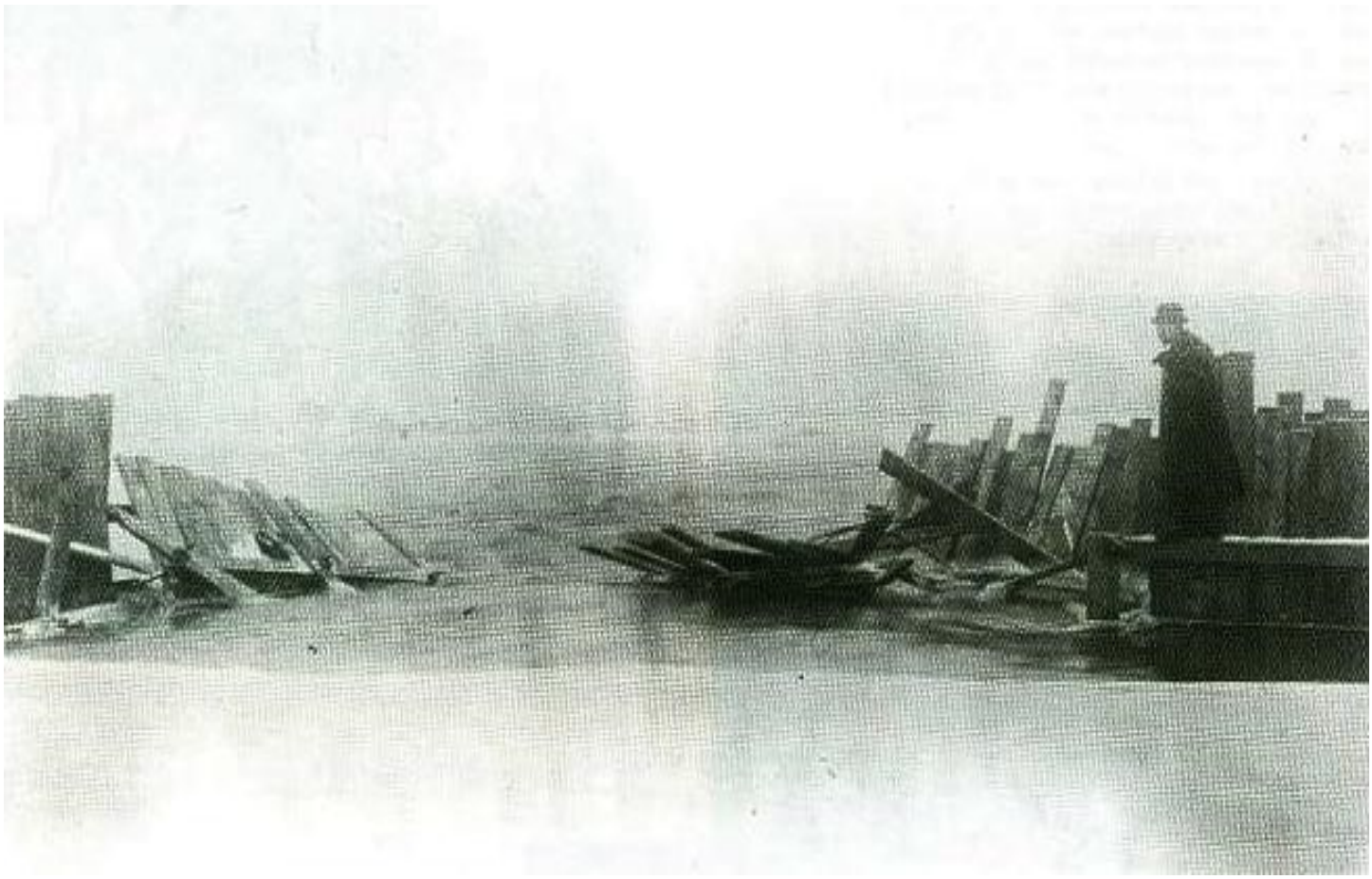
Additional Water Power Related Projects

In 1896, a new concrete dam was constructed for the Moline Water Power Company between Sylvan Island and the Moline mainland. The old Moline dam tail race, no longer needed, was filled in and was used as a railroad bed. All that remains today of the Moline's lateral dam are a few gate houses. The extension of the wing dam up river nearly two miles to the Duck Creek chain of rapids in the Mississippi River's main channel was completed in 1899. [188]

At times, the annual appropriation for water power related projects was greater than that appropriated for the construction of the Arsenal itself. Congress passed the following acts for the development of water power at Rock Island Arsenal:[189]

ACT	APPROPRIATION
Act of June 27, 1866	$100,000
Act of June 8, 1868	80,000
Act of March 3, 1869	150,000
Act of July 15, 1870	20,000
Act of March 3, 1871	20,000
Act of June 10, 1872	110,000
Act of March 3, 1873	18,000
Act of June 23, 1874	5,400

Below: *In 1892, the coffer dam collapsed under the pressure of high water caused by an ice gorge; repairs delayed the completion of the water development project.*



CONTINUED:

ACT	APPROPRITION
Act of March 3, 1881	50,000
Act of August 7, 1882	100,000
Act of March 3, 1883	20,000
Act of July 7, 1884	18,500
Act of October 2, 1888	275,000
Act of August 30, 1890	101,000
Act of July 1, 1898	45,000
Act of March 3, 1899	21,350
Act of March 3, 1901	130,000
Total	$1,624,750

Extraordinary repairs to the Rock Island Arsenal water power were provided by the following appropriations.[190]

ACT	APPROPRIATION
Act of October 2, 1888	$25,000
Act of August 18, 1894	30,000
Act of March 2, 1895	37,500
Act of June 4, 1897	28,150
Act of June 6, 1900	97,000
Act of May 27, 1908	28,500
Total	$246,150

Right: *The Rock Island Arsenal provided ordnance stores to troops stationed along the Western Frontier. From the Battle of the Little Big Horn in 1876 through the Battle of Wounded Knee in 1891, the RIA manufactured and supplied weapons and equipment used by frontier soldiers, such as those pictured guarding captured hostile Sioux Indians who had participated in the massacre of Custer and a portion of his 7th Cavalry at the Little Big Horn, in Montana.*
Below: *A late 19th century view of RIA gun yard, probably taken on a Sunday afternoon outing on Arsenal Island.*

CHAPTER ELEVEN
19th Century RIA Operations

During its first decades from 1863 to 1893, Rock Island Arsenal's activities consisted primarily of building construction; water power development; and organization of a storage depot. However, as early as 1869, with barley more than the Clock Tower Building completed, Colonel Rodman had Arsenal workmen cleaning, repairing, and packing breech-loading rifles, infantry accouterments, and artillery equipment. In his report to the Chief of ordnance for fiscal year 1869, Rodman alluded to the fact that Rock Island Arsenal workmen cleaned and repaired 55,361 pieces of infantry equipment and 503 sets of artillery harnesses. Practically all this work was completed by hand.[191]

Noteworthy was the fact that Rock Island Arsenal depot operations developed earlier than the Arsenal's manufacturing operations. The Union Army began storing military equipment on Rock Island at the end of the Civil War the army reorganized and closed several storage depots in different states. The Army's Ordnance Department then transferred the holdings of those closed depots to Rock Island. Because of its strategic location, the Arsenal served as a repository for ordnance stores which, in turn, could easily be shipped by river or train to western military posts during times of Indian hostilities. After 1875, the Rock Island Arsenal supplied practically all the ordnance stores required by the army in the west.

While depot activities expanded during the 1870s, construction of the Rock Island Arsenal continued. By 1875, manufacturing Shops B (Building 60), C (Building 104), D (Building 62), and E (Building 106) had been completed. In addition, Shop A (Building 102) and Shop F (Building 64) were under construction. In May

Right: *A still life of the leather accouterments produced by the RIA Harness and Accouterments Shop. The Rock Island Arsenal manufactured harness and cavalry leather equipment from 1875 to 1921 when the mission was transferred to Jefferson Depot in Indiana.*

1875, Brigadier General Stephen V. Benet, Chief of Ordnance, arrived at Rock Island to inspect the construction at the island and was impressed with the progress. He then instructed Major Flagler, the Arsenal Commander, to begin manufacturing operation.[192]

At first, items such as waist-belt plates were produced at the Arsenal in limited quantities. Eventually, orders for other military equipment increased in volume and in importance. New missions or functions were also awarded to the Rock Island Arsenal and some of the Arsenal's current functions were expanded.

In November 1875, General Benet sent the Rock Island Arsenal Commander an order for 3,000 sets of infantry equipment and 3,000 saddles.[193] On 7 December 1875, an article appeared in the Rock Island *Argus* newspaper announcing that:

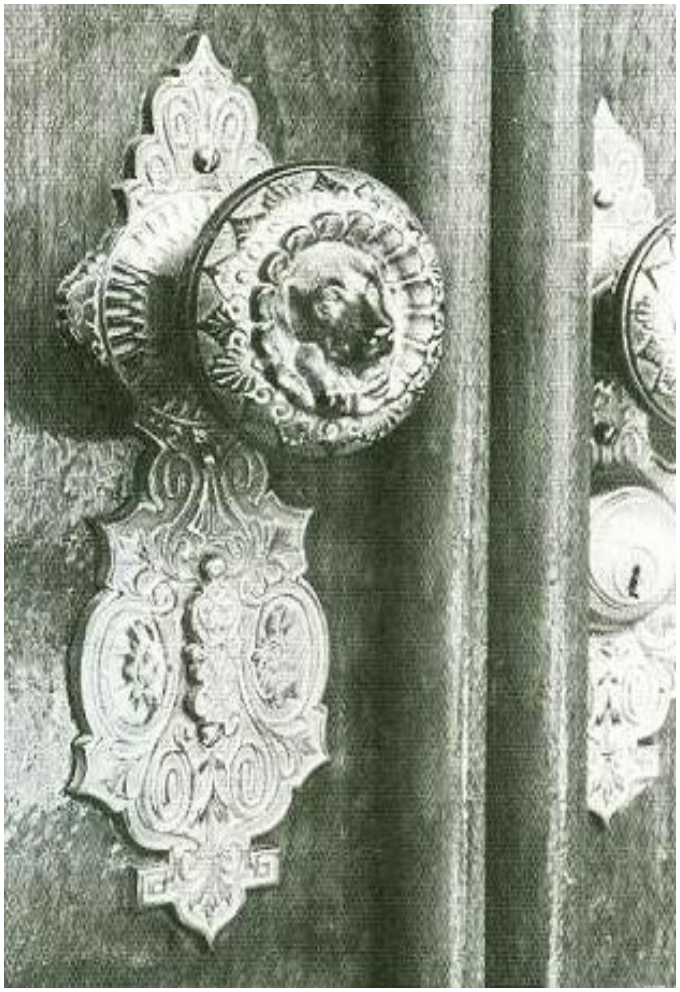
> …Some 50 to 60 men are employed at Rock Island Arsenal manufacturing infantry equipment, covering saddles and doing miscellaneous leather work for the cavalry army of the service. This is the first manufacturing ever done in the way of equipments for the Army and this Arsenal.[194]

In 1875, Brigadier General Montgomery Meigs, Quartermaster General, directed a board of officers to develop army standards for heating buildings, and at the same time established general specifications for size and construction of army stoves. In November 1875, officers completed their design of army issue stoves which included cast-iron and wrought-iron wood and coal heaters and cooking ranges.

On 28 August 1876, the Quartermaster Department solicited bids for the production of 160 heating stoves and forty cooking ranges. The Ordnance Department submitted the low bid on the cast-iron heaters, and received a contract to produce 100 stoves at the Rock Island Arsenal. The Arsenal also received production orders for sixty wood and forty coal heaters. In addition to the Rock Island Arsenal, two private contractors

Right: *Ornate brass door hinges and knob sets cast by the RIA foundry still accent the Commanding Officer's Quarters. Note the key hold cover below the knob in the photo.*

Below: *Mr. David C. Thompson was the Rock Island Arsenal's first Foundry Foreman. He started supervising the shop in 1871, and retired at the age of 81 in 1910. He had a fine reputation as a molder.*



were awarded contracts to manufacture stoves to army specifications.

In 1878, the Rock Island Arsenal produced 201 heating stoves and became the army's primary producer of stoves. Two years later, in 1880, the Arsenal delivered 256 stoves to be completed in 1881. By the mid-1880s, many Army barracks were heated by general issue stoves manufactured at the Rock Island Arsenal.[195]

Earlier, in 1875, the Rock Island Arsenal's manufacturing operations included a Harness Shop, a Carpenter's Woodworking Shop, a Cloth and Canvas Shop, and an Equipment Shop. The Arsenal also had a Machine Shop, Blacksmith Shop, Foundry, and Polishing and Plating Departments. Prior to the Spanish-American War, Rock Island Arsenal manufacturing focused primarily on the construction of Arsenal buildings. The Arsenal's Carpenter Shop produced doors and window frames for the buildings under construction. Arsenal carpenters also made furniture for the officers' quarters and desks for the offices.

The Rock Island Arsenal Foundry fabricated construction material and shop equipment during the latter part of the 1880s. Castings of brass hardware, such as hinges, roof straps, and pulleys, had been initially produced in the old temporary wooden forge shop during the late 1860s. Once Building 106 (Shop E) was completed in 1873, the casting of iron trusses, columns, beams, and staircases were also produced at the island. From 1873 to 1988, Building 106 was in continuous operation as the Rock Island Arsenal's Blacksmith Shop and Foundry.

Harnesses were produced at the Arsenal from 1875 until the Harness Department was transferred to Jeffersonville, Indiana in 1921.[196] In addition to harnesses, Rock Island Arsenal leather workers covered wooden saddle trees and hooded stirrups with leather. Arsenal workmen also

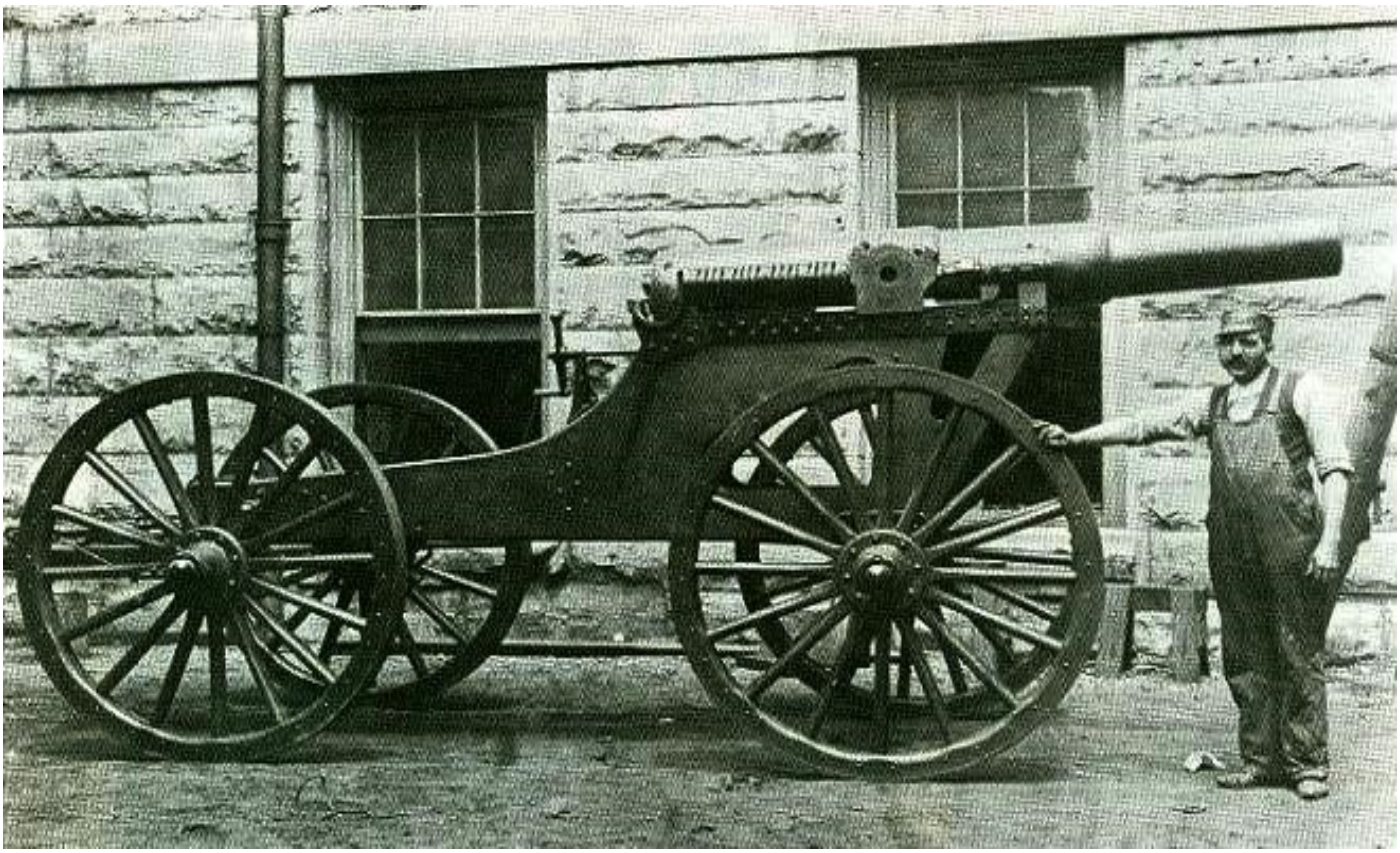
Below: *An old-timer engaged in the die-cutting of leather used in saddle construction. The worker positioned the leather so that the best possible cut could be made. One of two safety handles which the worker must lower to operate the drop press is visible just to the right of machine.*

manufactured army leather gun belts, straps, cartridge pouches, saddle bags, gun slings, rifle scabbards, and revolver holsters. The number of harness makers employed at the Rock Island Arsenal prior to the Spanish-American War fluctuated from twelve to forty with the size of orders received by the Arsenal Commander. However, the work force of the Arsenal Harness Shop rose to slightly over 1,000 employees during the Arsenal's peak manufacturing period of the Spanish-American War.[197]

Because of the demand for harness hardware and repaired rifles, a Metal Polishing and Plating Department was established at the Rock Island Arsenal. Workmen in this department polished all sizes of buckles, hooks, buttons, hinges, bites, handles, and scabbards. In addition, rifle barrels, swords, and bayonets were plated and polished by workers in the department. By 1876, Arsenal workmen had begun to fabricate and repair haversacks and other canvas cloth-made accouterments for army-issue. During the late 19th century, the Woodworking Shop produced wooden saddle trees and arms chests. Besides parts for harness and saddler repairs, Arsenal workmen made buttons for McKeever cartridge boxes, and casts for an order of 1,000 spurs in 1881.[198] In 1882, a power press for manufacturing metal meat-can handles was installed in the tin shop. As early as 1882, the Arsenal was engaged in experimental research and development. The Arsenal Commander's report to the Chief of Ordnance for that year included details of an experimental entrenching tool (a spade) manufactured at the Rock Island Arsenal. [199]

In 1885, a Jewelry Department was added to the Equipment Shop. Arsenal jewelers produced pins, badges, trophies, and insignias for saddle gear. A total of 5,000 silver marksmen's pins, and 2,000 sharpshooter's badges were manufactured by the Jewelry Department in 1885.[200] Also in 1885, the first electroplating at the Rock Island Arsenal was performed in Shop C. the shop had a small electroplating machine with a wash tub

Below: *A view of a 7" siege howitzer and metal carriage assembled at the Rock Island Arsenal. The all metal carriages for this weapon and the extra strength artillery carriage wheels were manufactured at the Arsenal.*



and pumice stone tray, plus stones jars for cleaning and dipping metal. In this shop, officer saber scabbards and metal parts to sabers belts were repaired and re-plated. Other manufacturing worthy of mentioning during the 1880s included the production of metal skirmish targets and the fabrication of gun carriages. By 1884, steam hammers, heavy punch presses, and shear forging and machine shop equipment for heavier manufacturing were being produced in Shop C. In 1886, the Arsenal produced harness pack outfits for the Hotchkiss mountain gun carriage.[201]

During 1886, the infantry equipment, cavalry accouterments, horse equipment, material for target practice, artillery harness, field and siege carriages, caissons, battery wagons and forges, and many other articles required by the army, were manufactured at this arsenal.

In the 1890s, the Rock Island Arsenal received additional responsibilities as a result of reorganization in the army's manufacturing program. The reorganization was spurred by technology developed during the Civil War. In the1880s, the Army Ordnance Department designated Watervliet Arsenal near Albany, New York, as the site of the Army's new gun tube factory for heavy-caliber seacoast defense cannons. Watertown Arsenal near Boston, Massachusetts, did not have the capacity to produce the heavy carriages for the new seacoast guns and maintain its old production schedules. To expedite work on the heavy carriages, the Army selected Rock Island Arsenal to manufacture a portion of the carriages formerly produced at Watertown Arsenal. The RIA began to manufacture field and siege artillery carriages in 1892. In 1893, the RIA completed the last Rodman planned stone shop, Shop K, Building 68. By 1894, the RIA was producing machine gun carriages; limber caissons, batter wagons, and carriages for siege guns. Initially, RIA's Machine Shop and Field Gun Carriage Shop were established in Shop C, Building 104. However, this peacetime arrangement of equipment and operations were inadequate for the sudden demand caused by the

Below: *The Rock Island Arsenal Machine Shop crew, in 1896. Note the "old world" appearance of several of the workmen. The number of employees in the machine shop totaled only a few hundred prior to 1898. During the Spanish-American War RIA employment reached a pre-WWI peak of nearly 3,000.*

Below: *A gathering of Rock Island Arsenal day foremen a few of which, like George Patterson (first on the right, front row) transferred from Springfield Armory and helped establish the RIA's small arms plant after the Spanish-American War.*

Spanish-American War. To accommodate the increased quantity of production orders for leather, tin, cloth accouterments, and gun carriages, the Arsenal's Machine and Field Gun Carriage Shops were moved to Shop G, Building 108. Mr. George Patterson, master machinist, was credited with organizing the gun carriage operation once it was moved to Building 108. Colonel Stanhope Blunt, RIA Commander, requested that Mr. Patterson be transferred to RIA from Watervliet Arsenal for precisely that mission. The production of artillery carriages remains one of the RIA's primary areas of specialization to the present time.[202]

The Spanish-American War's Impact on the RIA

On 15 February 1898, the U.S. battleship *Maine* blew up in the harbor of Havana, Cuba. Many Americans believed that Spain, to whom Cuba belonged, blew up the *Maine.* Congress on 19 April 1898 passed a resolution declaring that the people of Cuba should be free and independent from Spanish rule. It also authorized the president to use military force to carry out the resolution. On 24 April 1898, Spain retaliated by declaring war on the United States: 24 hours later the United States Congress reciprocated with its declaration of war against Spain.

Demand for War Materials and Supplies

Subsequent to the sinking of the *Maine,* the Army discovered it did not have sufficient carriages and harnesses for the field guns it had on hand. Moreover, production of field and siege guns, along with their carriages, needed to be drastically increased. On 9 March 1898, the Chief of Ordnance sent an urgent message to RIA. The telegram read, "work (should) be pushed (at RIA) on all existing orders as rapidly as possible, and extra shifts of workmen (should) be employed."[203] As the job orders increased, so did the Arsenal's employment, and by the end of March 1898 the Arsenal's manpower increased to 608 employees. In early spring of 1898, the RIA commander hosted a conference attended by the commanding

Below: *The Rock Island Arsenal Tin Shop, circa 1898. One of the Arsenal's earlier missions was the manufacturing of metal accouterments such as tin cups, meat cans, and eating utensils for use by the army.*

officers of Alleghany, Indianapolis, and Columbia Arsenals. The purpose of the meeting was to organize the war effort, and as the result of this conference, each arsenal was assigned parts to manufacture. Many of these parts were then shipped to RIA for assembly.

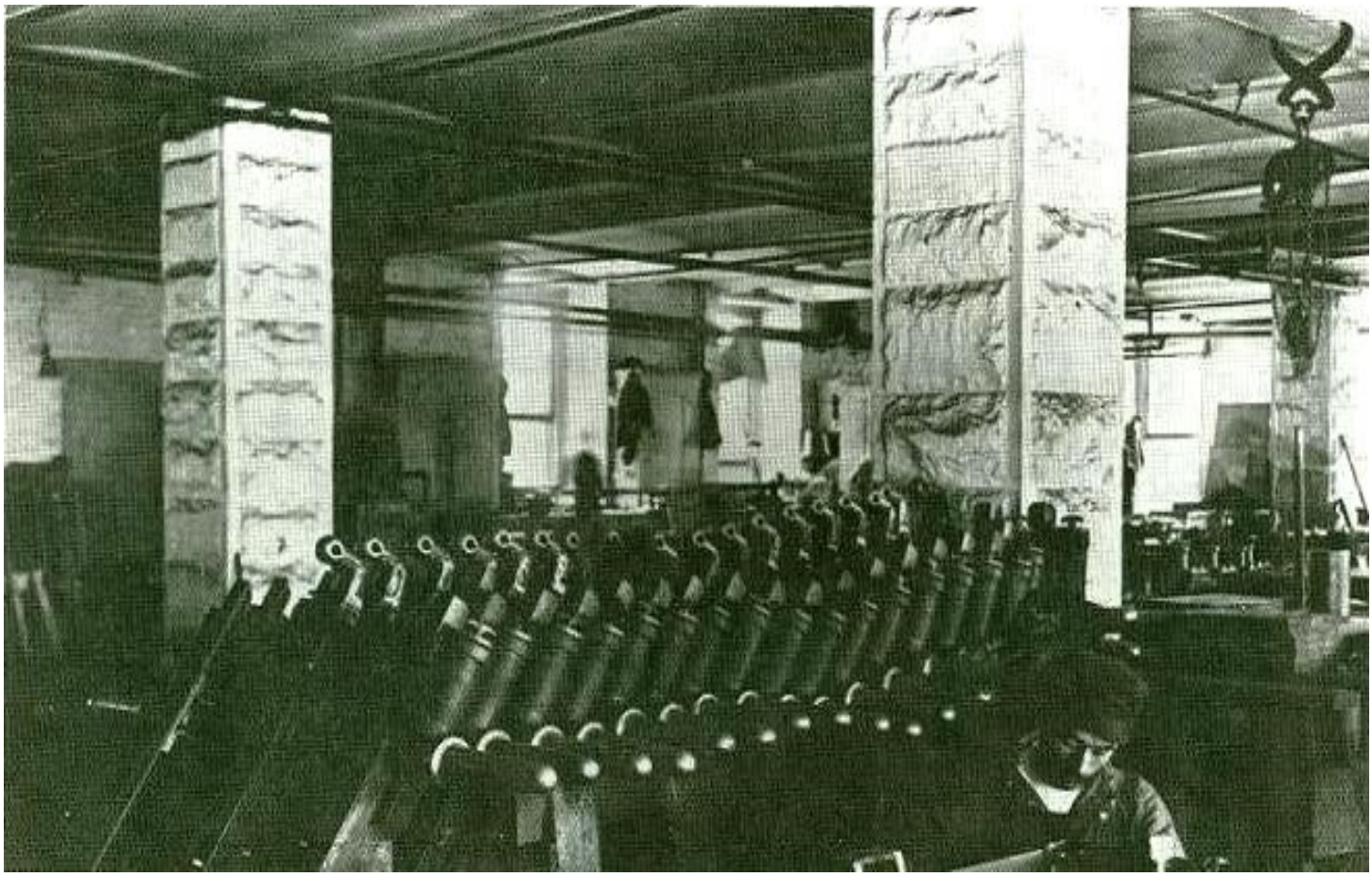
On 26 March 1898, RIA received orders to produce 25,000 complete units of infantry equipment. Within two weeks after receiving this order the RIA Commander was sent a directive to "press work on all field gun and siege gun carriages as rapidly as possible, employing extra shifts of men as far as economical."

On 21 April 1898, four days before the United States declared war against Spain, RIA received instructions to increase its output of infantry equipment to 75,000 units and to begin producing 10,000 sets of horse equipment. The next day, the RIA Equipment Department began working day and night on two ten-hour shifts. On 5 May 1898, the Chief of Ordnance ordered an additional 54,000 units of infantry equipment; 5,000 units of cavalry accouterments; and 5,000 units of horse equipment. Thereafter, the RIA continued to receive orders, practically on a weekly basis. Some were for major items of production such as the 9 May order for the manufacture of 102 field carriages and limbers; 150 caissons and limbers; seventeen battery wagons and forges; in addition to the production of f carriages for siege guns. [205]

By 16 June 1898, the demand for equipment became so critical that the army had to order RIA to procure from private contractors, an additional 10,000 complete outfits of cavalry and horse equipment. As the demand for orders grew, so did the number of items procured from private firms. By July 1898, 46 private contractors were delivering finished ordnance products to RIA during the Spanish-American War. A total of 131 private contractors delivered the following principal stores to the RIA: 351,400 yards of dyed duck material for covering canteens; 1,000 yards

Below: *Rock Island Arsenal Tin Shop, showing a workman making metal meat-can handles during the 1898 Spanish-American War period. Accouterments such as meat cans, forks, knives, and canteens were produced by the Arsenal during the war with Spain and later during World War I.*

Below: *Artillery carriage assembly during the late 19th century in possibly the basement of Shop C (Building 104) of Shop G (108). Note the stone piers, fire proof brick vaulted ceilings, and hoist to lift and move heavy objects, visible in*



of cotton webbing for haversacks, blanket bags, etc.; 654,000 pounds of tin plate for meat cans, canteens and tin cups; 79,900 pounds of brass wire for buckles, rings, hooks, etc.; 89,500 pounds of sheet brass for buckles, rings, hooks, etc,; 954,000 feet of linen rope for lariats; 205,300 pounds of harness-leather backs; 1,262,000 square feet of leather for collars, bridles, bars, and straps, saddles, carbine scabbards, saddlebags, etc.; 1,161,900 pounds of steel and iron for gun carriages; 133,000 feet of basswood and ash for saddletrees; and 690,000 feet of additional lumber for ammunition chests, packing boxes, work benches, etc. [206]

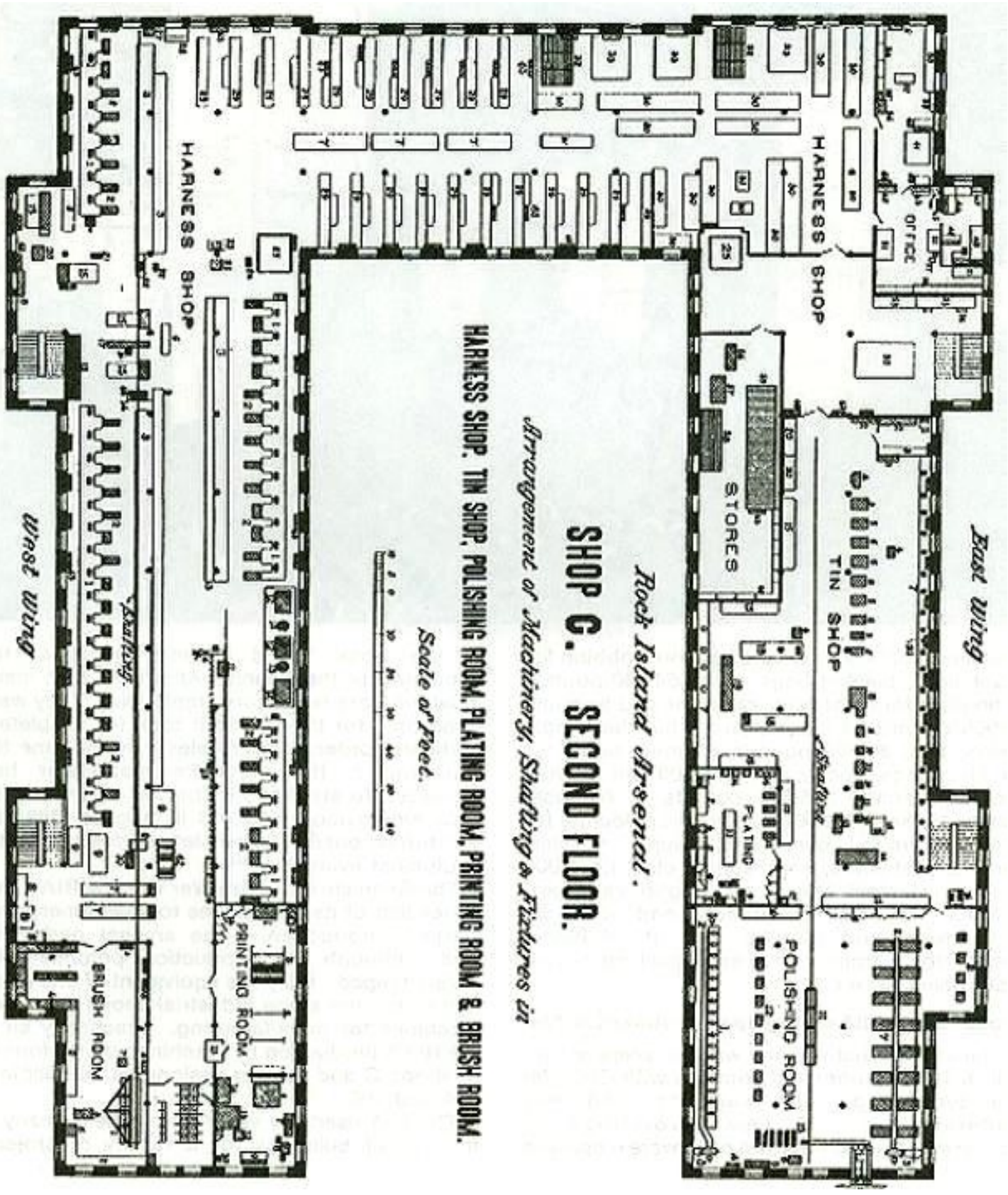
Production at RIA During Spanish-American War

The United States Army was not prepared for war in 1898. It operated primarily with Civil War era technology and supplies, and was undermanned. A small workforce of approximately 500 men and boys were employed in the Rock Island Arsenal shops at the beginning of the Spanish-American War, many of whom were temporary employees. They were hired only for the period it took to complete a particular order. Nevertheless, by the time the war ended, the Arsenal's manpower had increased to six times its prewar figure. At its peak employment of 2,900 in August 1898, the RIA turned out 6,000 complete outfits of infantry equipment every day. [207]

The Spanish-American War was the RIA's first major test of its capabilities to meet emergency wartime production. The Arsenal performed well, although the production potential was barely tapped. Only the equivalent of one and a half of the ten stone industrial shops contained machines for manufacturing. Practically all of the RIA's production by machine was performed in Shops C and E, now designated as Buildings 104 and 106.

The RIA used the vast floor space in many of the vacant buildings for a variety of projects

Below: *During the Spanish-American War practically all the RIA manufacturing occurred in Shop C (Building 104). Work that did not require machines and could be performed by hand was conducted in other buildings. Although the 1898 war with Spain was the RIA's first major test, only Shop C and E (Building 106) were heavily engaged in manufacturing. Not until World War I would all ten shop buildings be used in production of ordnance stores.*

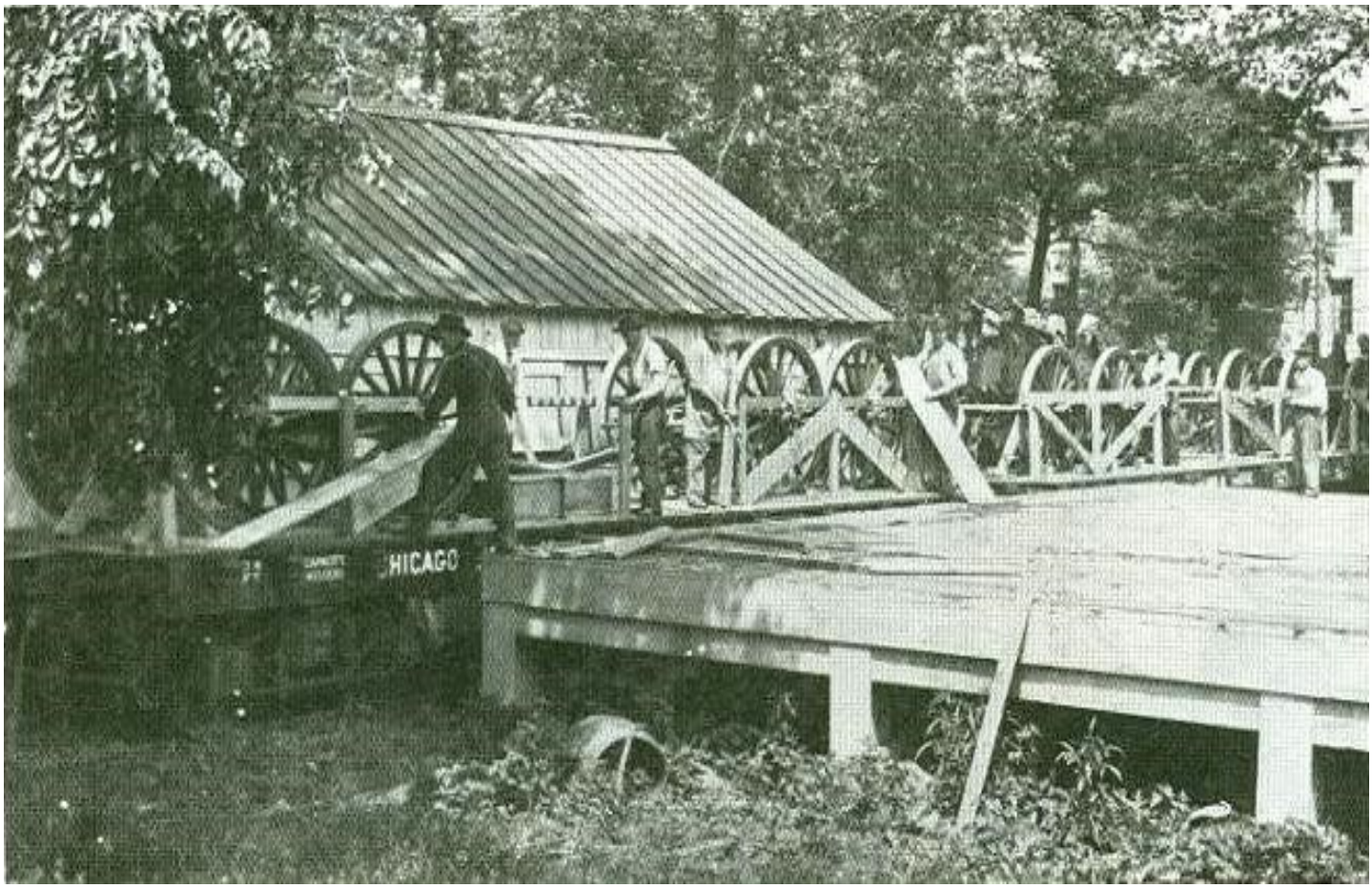


Below: *Arsenal workmen and boys covered canteens with felt and sewed duck cloth covers over them. When dipped in water, the felt would absorb water and keep the contents inside the canteen cool. The canteens piled on the table in the foreground have already been covered with felt.*

which could be performed by hand labor. The first floor of Shop A, Building 102, became the receiving and issuing center for masses of raw material shipped to the RIA. In the east wing of Shop A, carpenters built only the portions of ammunition chests which required no machine operations. Unserviceable stores, items needing repair, were mostly stored and repaired in Shop B, Building 60. In September 1898, the repair and cleaning of Springfield rifles initially took place in the east wing of Shop C, but as the work increased, the operation was transferred to the first floor of Shop D, building 62. A forty horse-power engine and boiler placed in the court of the shop furnished the steam power which operated a line of shafting with twenty polishing wheels and two lathes with wire brushes used to repair or refurbish parts of the rifles. In July 1898, eighty-five men and boys cleaned and repaired approximately 600 rifles per day. At the conclusion of this project, Arsenal workers completed work on nearly 50,000 rifles and carbines with a cost for this maintenance work of sixty-eight cents per weapon. The rifles received from the field were in bad condition, and most were very rusty with numerous broken parts. At peak output, the crew also completed approximately 7,000 bayonet scabbards per day. Harness makers occupied the second floor of Shop G, where nearly 700 men and boys made leather equipment and sewed felt and duck covers over canteens. Shop G was used for these activities because it had water and restroom facilities which the north row or armory row shops did not. In Shop H, Building 66, workers painted gun carriages, limbers, and caissons. However, not until World War I would all ten of the Arsenal 19th century century-built stone shops be equipped with machinery and used as industrial buildings. [208]

During the Spanish-American War, Rock Island Arsenal Commander Colonel Stanhope Blunt placed his subordinate officers directly in charge of specific operations. Captain O.B. Mitcham was responsible for the repair of

Below: *RIA employees loading artillery carriages, 1898, Shop A, (Building 102) in background, looking northeast. The carriages final destination was Cuba to be used in support of U.S. troops engaged in the Spanish-American War.*



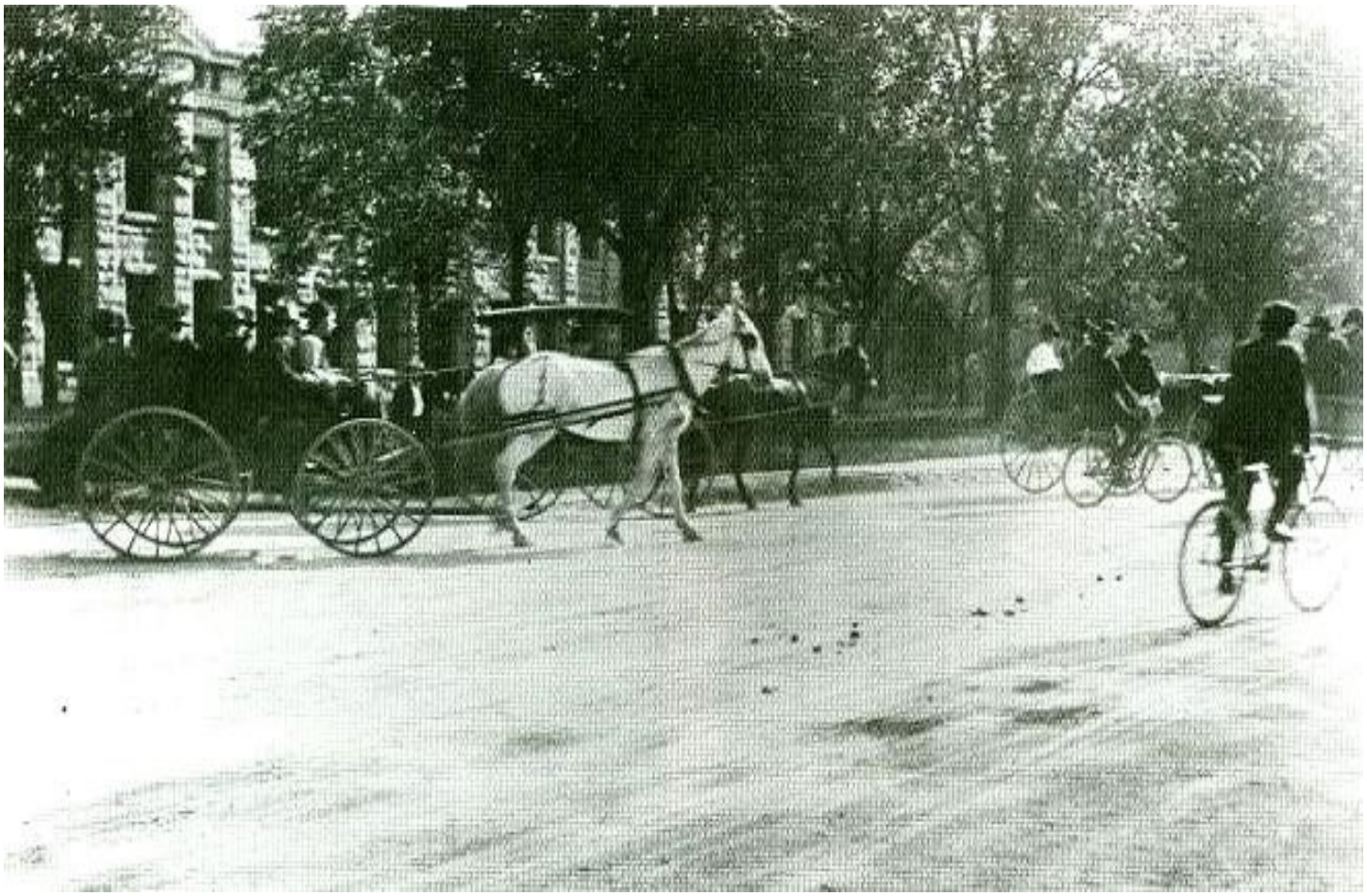
unserviceable stores, including the Springfield rifles. He also served as the installation's Quartermaster and Paymaster. Captain W.S. Peirce was in charge of the Blacksmith Shop and Foundry, plus all gun carriage and equipment work performed in the Machine Shop. Lieutenant O.C. Horney was the officer in charge of tin, polishing, carpentry, and harness shops. He also supervised the expansion of shop operations from Shop C to other shops. [209]

The RIA literally equipped the American soldiers who fought in the Spanish-American War. Blanket bags manufactured by RIA were used by soldiers as a type of duffel bag in which to carry personal belongings. Other items produced at the Arsenal for the soldiers' personal use were haversacks for carrying rations; canteens fashioned from sheet tin and covered with felt and a heavy thick duck cover; meat cans used by soldiers as frying pans; and plates, tin cups, eating utensils, and bayonet scabbards.

The Arsenal also produced a variety of cavalry and horse equipment. These included items such as wooden saddle frames of saddle trees, and assortment of rings, hooks, straps, and other paraphernalia used for carrying or holding cavalry articles. Other leather items included carbine scabbards, saddlebags, saddles, surcingles (a girth that binds a saddle, pack, or blanket to the body of the horse), bridles, halters, straps, and artillery harnesses. The RIA produced in large numbers other horse equipment such as picket pins, nose bags, horse brushes, curry combs; and pistol holsters, spurs, and saber belts.

In addition, the Arsenal functioned as a depot during the Spanish-American War. Much of the ammunition and small arms made elsewhere, along with articles produced by RIA, were held in reserve on the island before delivery to troops in the field. During the Spanish-American War the Arsenal's labor force operated two ten-hour shifts, six to seven days a week. Earlier, during the Indian uprisings of the later 1880s and early 1890s, the

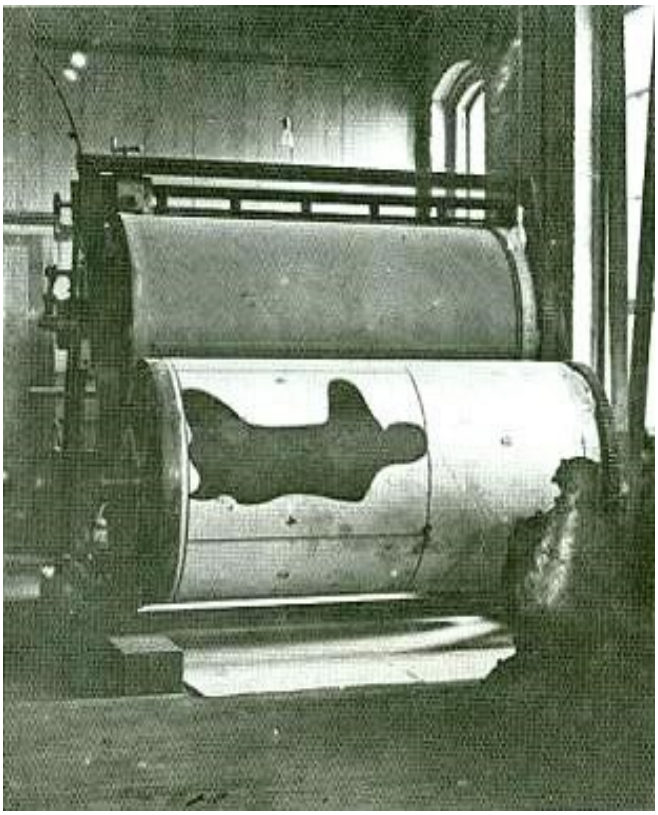
Below: *The RIA commander ordered the construction of a special route for bicycles, to reduce the rising number of accidents between horses and bicycles in 1899.*



RIA met urgent production demands for ordnance stores by running portions of the shop operations at night. Because the shops were not equipped for night work, Arsenal workmen functioned under inadequate, temporary lighting provided by candles and lamps. During the Spanish-American War, the RIA received a small appropriation for extension of the electric lighting beyond the limited lighting already available in one office and a shop. However, this lighting was not sufficient to provide direct lighting for the workers. Candles and lamps were still used as supplementary lighting for most night operations. The Arsenal Commander states in his annual reports to the Chief of Ordnance during the war that it was essential to extend the electric lighting to other shops, some other buildings, and to the principle roads of the Arsenal. [210]

Although the RIA devoted its energy toward the war effort, the Arsenal continued to maintain the island's ground and roads. In 1898, over 200 young trees were planted along Main Avenue, now designated Rodman Avenue, and along the side of Shop K, Building 68. Arsenal roads, especially Main Avenue from the manufacturing shops at the flagstaff to the principal western entrance, were damaged during the war due to the heavy increase of vehicular traffic. Bicycles and wagon teams transporting employees to and from the Arsenal by way of Main Avenue not only damaged the Arsenal's main thoroughfare but also accounted for the increase in accidents on the island. To lessen the traffic on Main Avenue, the RIA commander ordered the construction of a special route for bicycles just south of and parallel to Main Avenue. Arsenal employees signed a petition for an extension of a single track of the Tri-City Railway Company onto the island to a point just south of the RIA shops. Recognizing that the track would alleviate the Arsenal's traffic problems, Colonel Blunt sought and received approval from the Secretary of War for a revocable license granted to the company as long as it met specific

Below: *Rock Island Arsenal workmen cleaning and overhauling the standard army issue Krag-Jorgensen rifle used by U.S. troops during the Spanish-American War. In 1899 the RIA received appropriations to establish a small arms plant for the fabrication of rifles.*



Arsenal conditions. Also because of the heavy traffic, the RIA Commander recommended to the Chief of Ordnance that Fort Armstrong Avenue, located at the west end of the island and connecting the bridges leading from the island to the cities of Rock Island, Illinois and Davenport, Iowa, be covered with granite pavement rather than macadam.[211]

Impact of Spanish-American War on RIA

The Spanish-American War led to the permanent expansion of workforce operations and facilities at the RIA. During the war, the Arsenal rearranged its machinery and began to install automatic machines to improve production. After the war, the RIA constructed a brick water power plant which replaced the old small power house destroyed by fire. In 1901, the first electrical power generators used at the Arsenal were installed. Electric wires replaced the telodynamic system of towers and brought electrical power to the shops through underground passages.[212]

Additional lights were installed in the shops and offices to provide a safer work environment for the Arsenal's second work shift. Arsenal grounds and buildings were also improved during the war; and additional roads, bicycle paths, and trolleys were added to improve transportation.

RIA Begins to Make Rifles

As a result of the Spanish-American War, the Rock Island Arsenal performed valuable production work by manufacturing personal soldier accouterments; infantry, cavalry, and horse equipment; and field and siege artillery carriages. This experience provided the basis for technological achievements accomplished at the Arsenal in later years.

Largely due to its outstanding production record during the Spanish-American War, the Arsenal acquired a new mission which was to

Right: *Lieutenant Colonel Stanhope E. Blunt, Rock Island Arsenal Commander from 1897-1907. Blunt commanded the Arsenal during the Spanish-American War.*

Below: *In 1899, the United States Congress appropriated $500,000 for the establishment of a small arms plant at Rock Island Arsenal. A few years later machines such as these Pratt-Whitney lathes were installed in Shop B (Building 60). These machines were eventually Used to produce the U.S. Army standard issue rifle, the Springfield 1903.*

manufacture a new rifle. In the Spanish-American War, the U.S. Army became dissatisfied with its standard-issue Krag-Jorgensen Rifle. The weapon was obsolete and slow to reload. The army began a search for a replacement, one which could be clip or magazine loaded. To expedite the production of a new weapon, Congress, in 1899, appropriated funds to equip the nearly empty armory shops at Rock Island with small arms machinery. However, due to the army's delay in selecting a new rifle, it was not until December 1904 that the Rock Island Arsenal's small arms plant began producing the new standard-issue model Springfield 1903 Rifle.

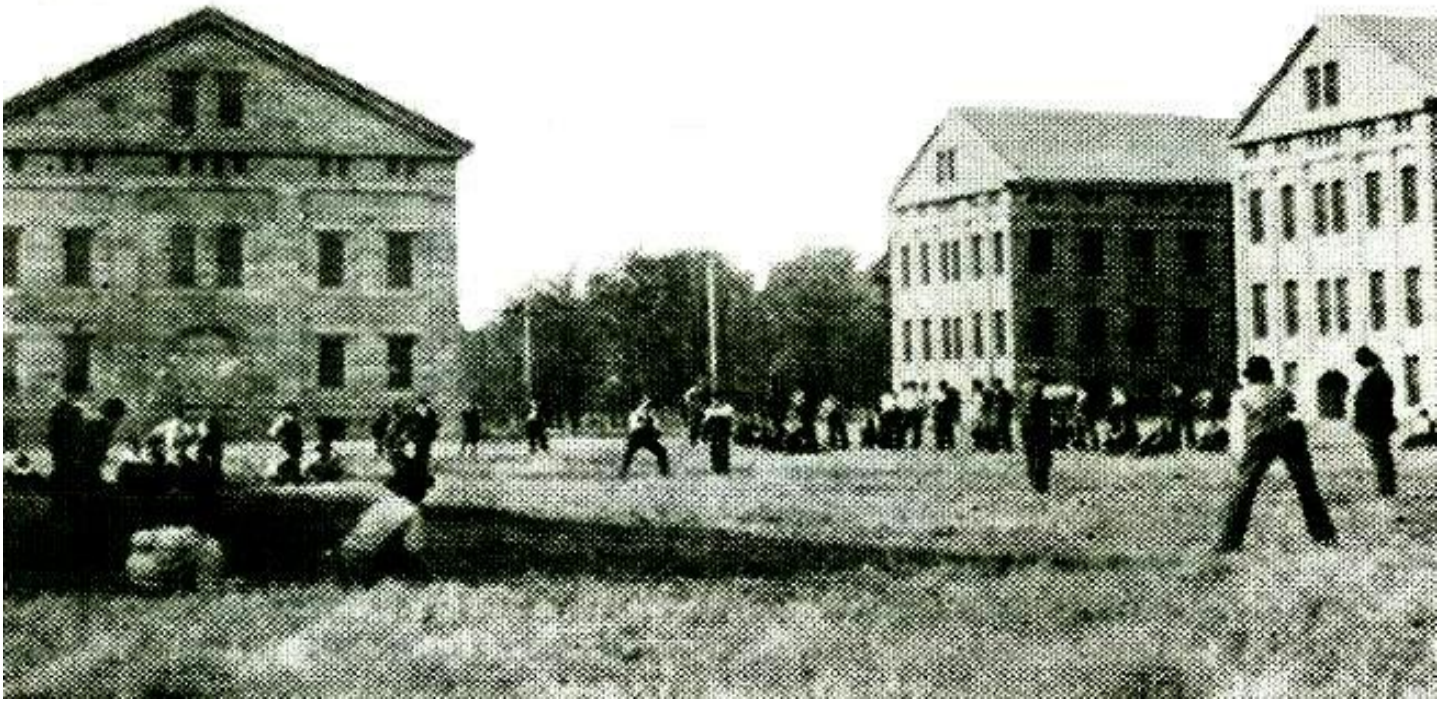
In 1897, Brigadier General Daniel W. Flagler, Chief of Ordnance, himself a former commanding officer of the Rock Island Arsenal, selected Major Stanhope Blunt to command the Arsenal at Rock Island and to direct the development of its new armory. General Flagler was well acquainted with the physical plant at Rock Island Arsenal and was aware of the original plan to combine armory and arsenal facilities at the Rock Island installation. In fact, as the third Rock Island Arsenal commander, General Flagler had earlier supervised the construction of the majority of the arsenal's stone manufacturing buildings that formed the arsenal's industrial core. When the need for an additional armory surfaced, he quickly persuaded Congress to appropriate funds to equip the empty buildings at Rock Island Arsenal's armory row.

The 19th century came to a close with the Rock Island Arsenal finally realizing the plan of Colonel Rodman, the first Arsenal Commander to propose a combined arsenal and armory at Rock Island. During the early 1900s, the United States Army's transformation from horse to auto drawn artillery occurred at the Rock Island Arsenal. Part three of *An Illustrated History of the Rock Island Arsenal and Arsenal Island* will chronicle that transformation and other key events.

Below: *Saddles made, tin cups formed, and gun carriages assembled; 19th century Arsenal employees board horse-drawn taxies during an evening rush hour before the turn-of-the-century.*

Below: *Main west entrance Gate House to Rock Island Arsenal. The Gate House, built in 1876, was used as a place of temporary confinement for persons arrested for infraction of government regulation on the bridges. Circa, 1898.*

Below: *Arsenal employees enjoying a noon-hour baseball game during the late 1800s. The building in the background to the left is Storehouse K (Building 56), behind Shop K (Building 68).*



… “The charming island of Rock Island, three miles long and a half a mile wide, belongs to the United States, and the government has turned it into a wonderful park, enhancing its natural attractions by art, and threading its fine forests with many miles of drives. Near the center of the island one catches glimpses, through the trees, of the vast stone four-story buildings, each of which covers an acre of ground. These are the government workshops; for the Rock Island establishment is a national armory and arsenal.”

Mark Twain (Samuel L. Clemens)
Life On The Mississippi River
First Published 1874.

An Illustrated History Of The Rock Island Arsenal And Arsenal Island

Part Three

National Historic Landmark

AN ILLUSTRATED HISTORY

OF THE

ROCK ISLAND ARSENAL AND ARSENAL ISLAND

PART THREE

By

Lisa Wallace

History Office
U.S. Army Sustainment Command

Rock Island, Illinois 61299
2010

PREFACE

When I first began working in the ASC Historian's Office in June 2010, it was immediately clear that both civilian and military personnel showed an interest in the history of the area. I was pleased to learn that my first major task in the ASC History Office was to update *An Illustrated History Of The Rock Island Arsenal and Arsenal Island* and bring the story forward through the Korean War era.

Even prior to my arrival, a widespread desire for more historical information has been evident. Hardly a day goes by when someone does not make the trip down to Building 390 Basement SW, calls, or e-mails to ask for more historical information on the Rock Island Arsenal. This interest is truly inspiring. A general thank you is deserved for all who show enthusiasm for the great historic past of this post. Of this interest, and the great historical significance of Rock Island and the surrounding area, we are proud.

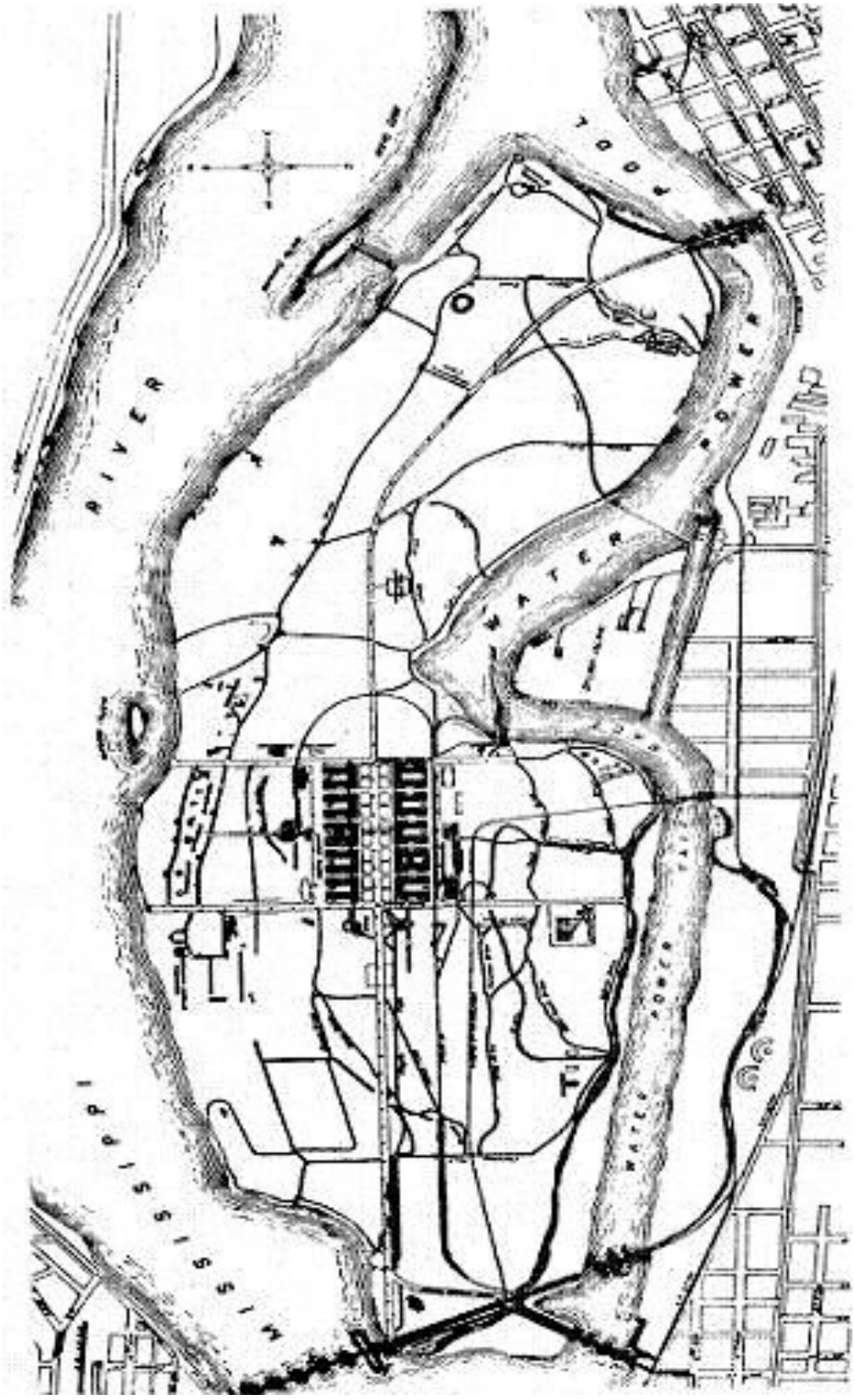
There are, of course, many people to thank for making the construction of *An Illustrated History Of The Rock Island Arsenal and Arsenal Island, Part Three* possible. First and foremost, thanks to the previous historian, Thomas Slattery, for his in-depth coverage and research of the area from the seventeenth century until 1908. He provided a rich bedrock of information, research, and education for others to build upon.

As for the actual writing of *Part Three,* I had help from many people. Many thanks go to Alex Cahill, who researched for and wrote Chapter Thirteen, The Interwar Period at the Rock Island Arsenal; Thomas Slattery, for writing his *50th Anniversary of WWII* commemoration piece in 1992 which we used to cover WWII in Chapter Fourteen; and to George Eaton, ASC Historian, for guiding me in both the research and writing processes, as well as for taking time out his schedule for answering my many questions and editing the final product. Thanks also go to Anna Turner-Scott, Nick Sly, and Rachel Bowling for their time spent towards editorial support.

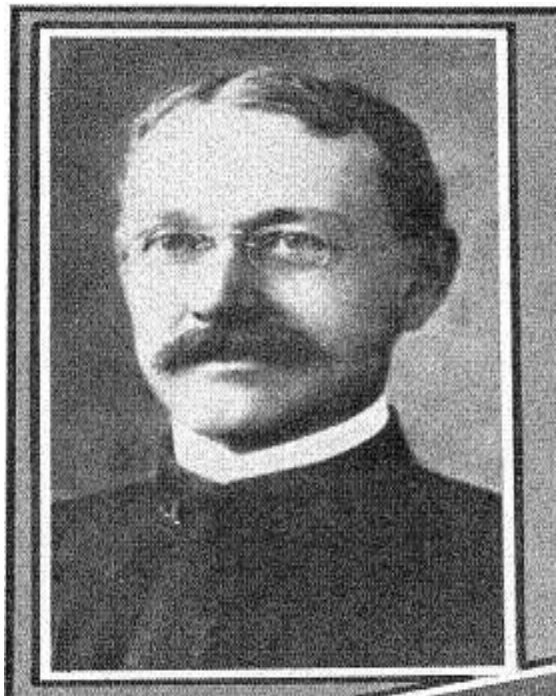
An Illustrated History Of The Rock Island Arsenal and Arsenal Island, Part Three, covers from 1908 until 1955 and focuses on Rock Island Arsenal's contributions in both the peacetime years and multiple war efforts of the first half of the 20th Century. The Rock Island Arsenal provided exemplary support whenever needed, whether it was the height of production during years of conflict or keeping up with overhaul, maintenance, and preparedness during peacetime years. The historical significance of the Rock Island Arsenal to not only our local area but to the greater United States Army is truly something of which to be proud. *Part Three shows* the increasing importance of Rock Island throughout these years of conflict, and the great impact the past has had on shaping the Rock Island Arsenal that we all know today.

Lisa R. Wallace
December 2010

Below: *Map of Rock Island Arsenal showing location of buildings at the beginning of the World War.*



Below Left: *Colonel F.E. Hobbs became Commander on 5 August 1907 during which time he oversaw the building and department expansion that took place prior to World War I. Colonel Hobbs introduced two training schools for soldiers and the establishment of a chemical laboratory. On 26 February 1911, Colonel Hobbs left his position as Commander of the Rock Island Arsenal to continue work in Hot Springs, Arkansas.*
Below Right: *Colonel George W. Burr was Commander of the Rock Island Arsenal from 7 July 1911 until 15 February 1918, and largely impacted the island during that time. Because of his personal appeal, Congress increased workers' rights and benefits. Colonel Burr increased worker safety on the island, and saved the government hundreds and thousands of dollars without decreasing employment or wages. He later moved to Washington where he continued his career with the Ordnance Department.*



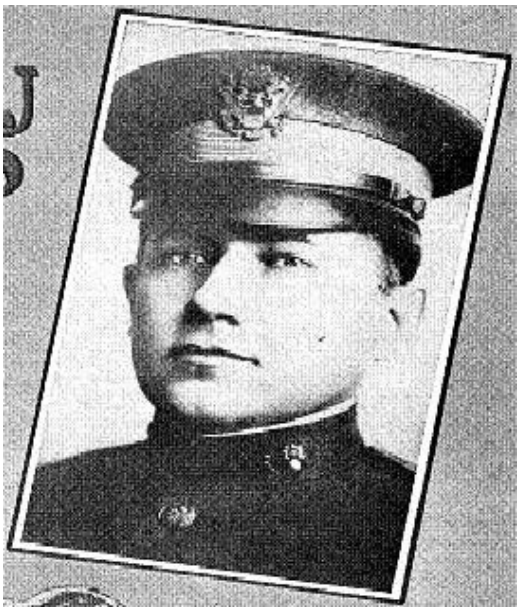
CHAPTER TWELVE
RIA and The Great War

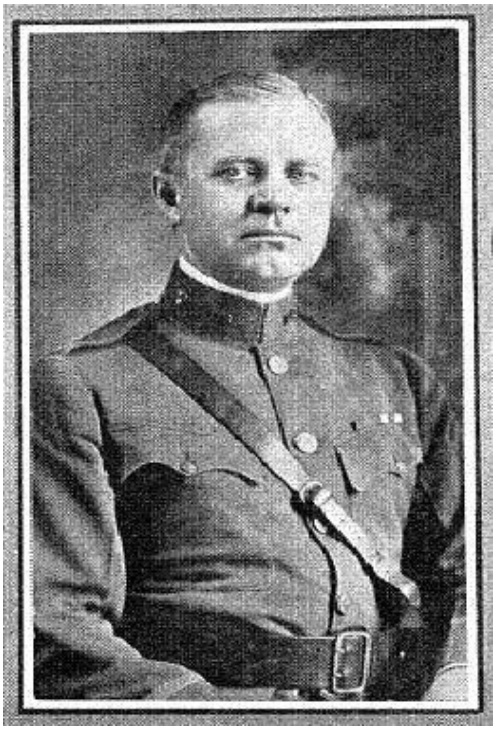
Pre-World War I

The Rock Island Arsenal experienced a transformation from horse drawn to auto drawn artillery following the Spanish-American War. This shift towards motorized artillery began by experimenting with heavier siege artillery and traction engines to replace horse drawn weapons and was accompanied by many other changes at the Arsenal. By the early 20th century it was evident that styles and methods of fighting were quickly changing and adaptation to accommodate the new fighting methods and vast activities required many different adjustments.

New fighting methods called for new machinery, new tools, new buildings, and new manufacturing specifications for everyone, even in peacetime, and the Rock Island Arsenal had no intention of falling behind.[215] This call for major adjustments in production and manufacturing kept the Arsenal and its employees fairly busy even during the years between the Spanish American War and World War I. Not only were things kept

Below Left: *Colonel Leroy T. Hillman assumed the position of Rock Island Commander on 4 March 1918 and held command only until 29 December 1918, making his term the shortest yet served. Colonel Hillman was highly involved with the Ordnance Department for most of his military career and was promoted to Colonel after spending time in France. He then returned to the United States and assumed Command of the Rock Island Arsenal, but tragically died just under 10 months later from a sudden illness, probably a victim of the Great Influenza Epidemic.*
Below Right: *Colonel Harry B. Jordan assumed the position of Rock Island Arsenal Commander on 20 January 1919 and held command until 1 June 1921. Prior to that time, Colonel Jordan had been sent to France to assume command of the construction of arsenals there. After leaving Rock Island he was assigned to duty as Chief Ordnance Officer, American Forces in Germany.*



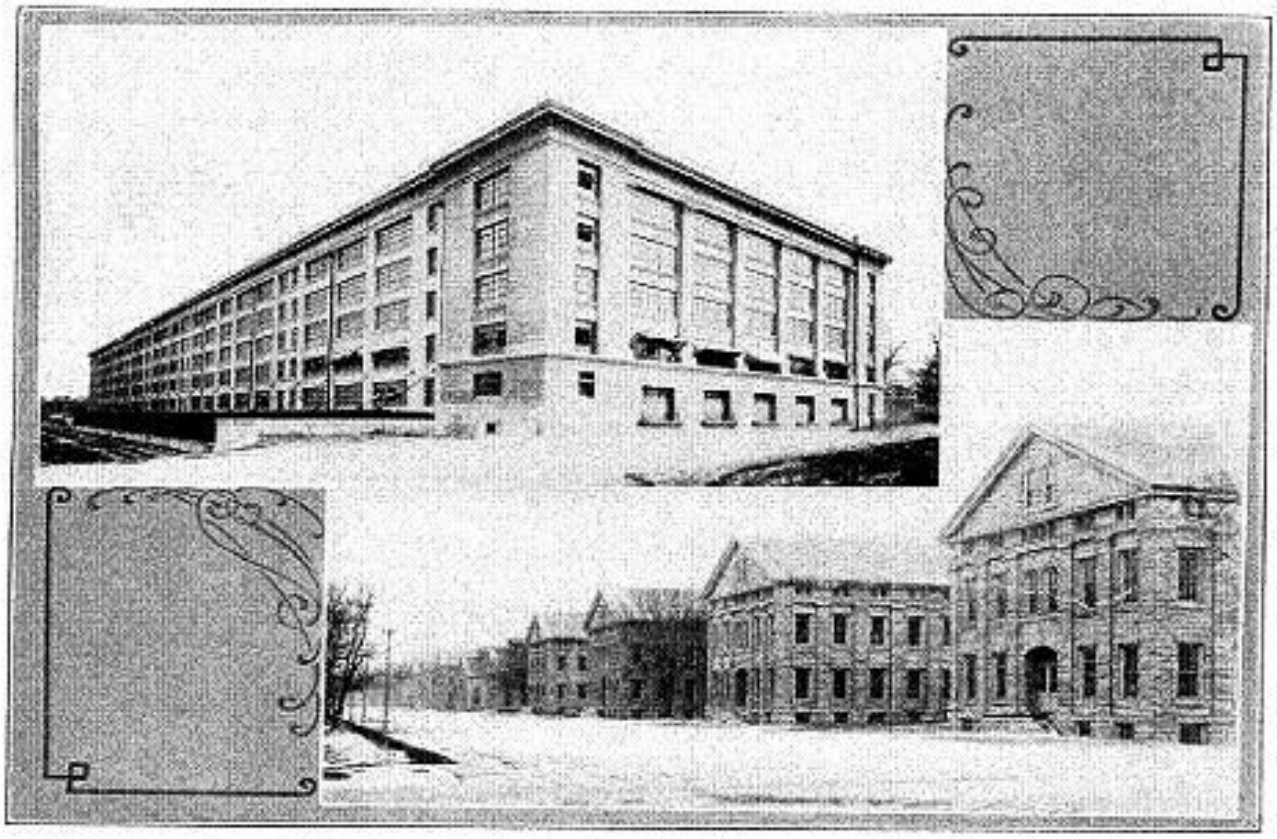


running at an almost war-time pace, but calls for expansion were considered and acted upon during these peaceful years. As early as 1913, the Field Artillery Plant and the Leather Goods Department were both enlarged and expanded.[216] In fact, these permanent expansion projects of the Arsenal's facilities and shop forces during the peaceful years would be more helpful than was anticipated at the time. [217]

Preparedness

Because production and expansion were kept at a fairly high level even after peace with Spain, the United States was ready to join in the conflict of World War I than we had been for previous conflict.[218] Prior to the Spanish-American War, 608 employees worked at the Arsenal with peak employment reaching 2,902 during the conflict.[219] Employment would decrease after 1898 but never reached the pre-war low, coming in at a still impressive 1,975 workers in 1914 before World War I. Although increases were still very necessary in just about every department, the Arsenal was already running at a fairly high pace, allowing us to provide war goods to our allies before the US actually entered the war.[220] Regardless, new innovations in technology and fighting styles left Rock Island mostly unprepared to join the war effort. Despite the high numbers of personnel, these innovations called for new buildings, new machinery, more employees, and new training efforts to educate personnel about the new unfamiliar weapons and production methods. Foreseeing this necessity to expand even further, the War Department specifically called for the Rock Island Arsenal to begin multiple expansion and construction projects several months before

Below: *Storehouse W-I, above, and group of original shops below, contrasting new and old types of construction.*

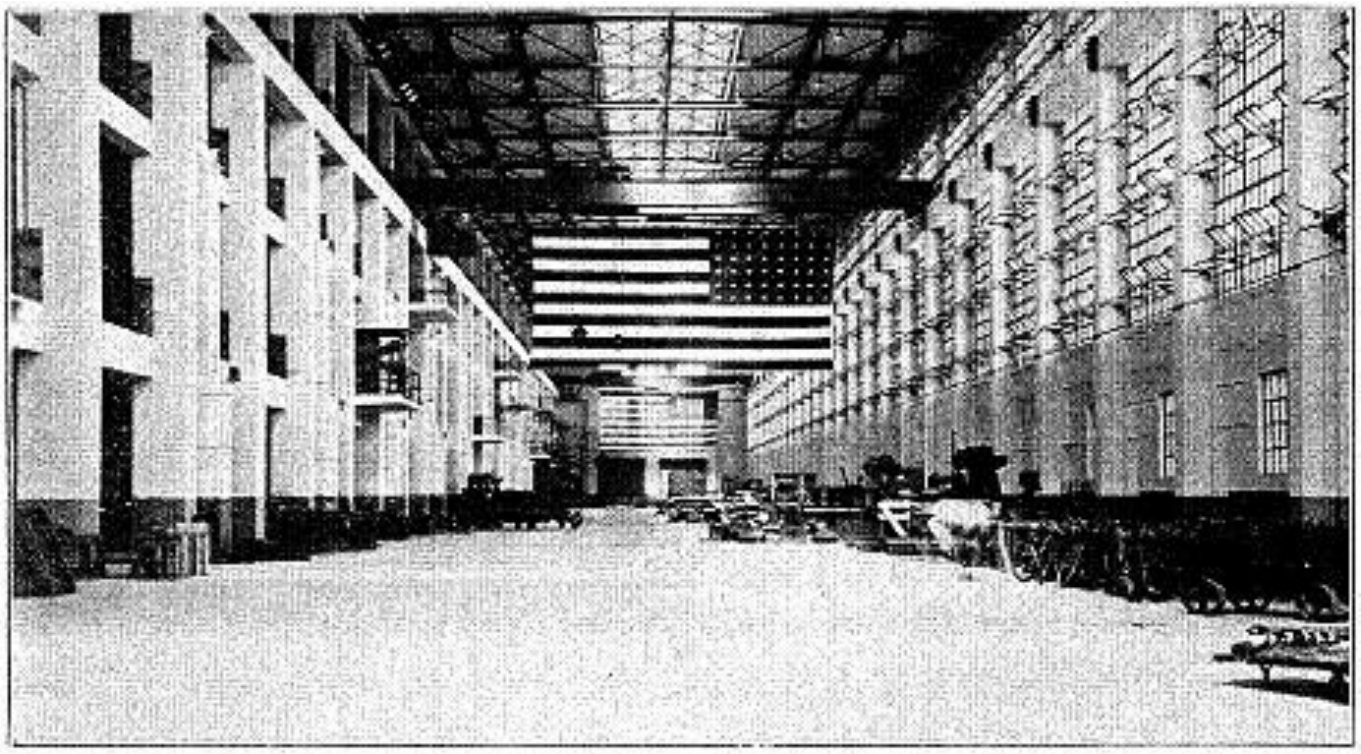


the United States' declaration of war in April of 1917.[221] In addition to these expansion construction projects, RIA unpreparedness was truly exemplified by the increase of employment. In just 16 months, from 1917 to 1918, 10,878 men and women were added to the Arsenal workforce in an attempt to keep up with the war effort.[222]

Commanders

Employee rates, production rates, and changes in production materiel were not the only things changing at the Arsenal during these inter-war years. Lieutenant Colonel F.E. Hobbs kicked off the start of this time of expansion and maintenance when the command was passed to him from the previous commander, Stanhope E. Blunt on 2 August 1907. Hobbs commanded and oversaw all of the changes for nearly four years, until he was followed by Lieutenant Colonel, later Colonel George W. Burr who served in the position from July 1911 until February 1918. It was under the command of Colonel Burr that the Arsenal would see its greatest expansion yet as the World War approached and the United States later entered the war. Following Colonel Burr, Colonel Leroy T. Hillman commanded from March 1918 until December 1918, making his term the shortest yet served. Colonel Harry B. Jordan followed Hillman as Commander for two years from

Below: *Typical shop interior, being the craneway, in the field and siege building.*



January 1919 until June of 1921, wrapping up the war years of great expansion at the Rock Island Arsenal. [223]

Production

Although the United States was slow to enter the war, our influence was sought early on. By offering aid to those already involved in the conflict, orders for war goods started arriving early in 1917 from other countries that were looking for desperately needed aid.[224] The Rock Island Arsenal was one such place where the manufacturing of these ordered items took place, and Rock Island, Illinois took part in providing multiple types of war goods. As a matter of fact, 1918 was considered by everyone to be the "super" year because business during that year peaked at a height that had never been reached before.[225] All ten of the original shop buildings were fully equipped and running for the first time ever because business was so high and demanding. Due to the unusually high amount of business demands and orders, the Arsenal was consequently forced to contract much of the work dealing with personal equipment and horse equipment out to private manufacturers.[227] This use of contractors, however, was an expected necessity and a part of Army doctrine on the use of arsenals even in the early twentieth century.[228] Much work, definitely more than during the Spanish American War, still took place on the island, however, with most of the work being the assembly of individual parts sent from multiple places to create a finished product.[229]

Mobile Field Artillery

Production of mobile field artillery was one of the Arsenals greatest demands at the beginning of the 20th Century. Even before U.S. entry into the Great War, the Rock Island Arsenal had already been employed in producing carriages for the 4.7 inch field artillery gun which had been

Below: *Bottling destruction in the form of molten trinitrotoluol, which is being poured into howitzer shells.*

further developed by experiments and testing in the early years of the war. Due to these improvements, production of these carriages only increased as U.S. involvement in the war likewise increased. In July of 1917, orders were placed for 183 of these carriages for the 4.7 inch gun. A little over a year later, in September of 1918, 120 more carriages were ordered.[230] Having been ordered so close to the 11 November 1918 Armistice, the Rock Island Arsenal was only able to produce 183 of the 303 carriages originally requested. No more of these orders were completed after the Armistice.[231]

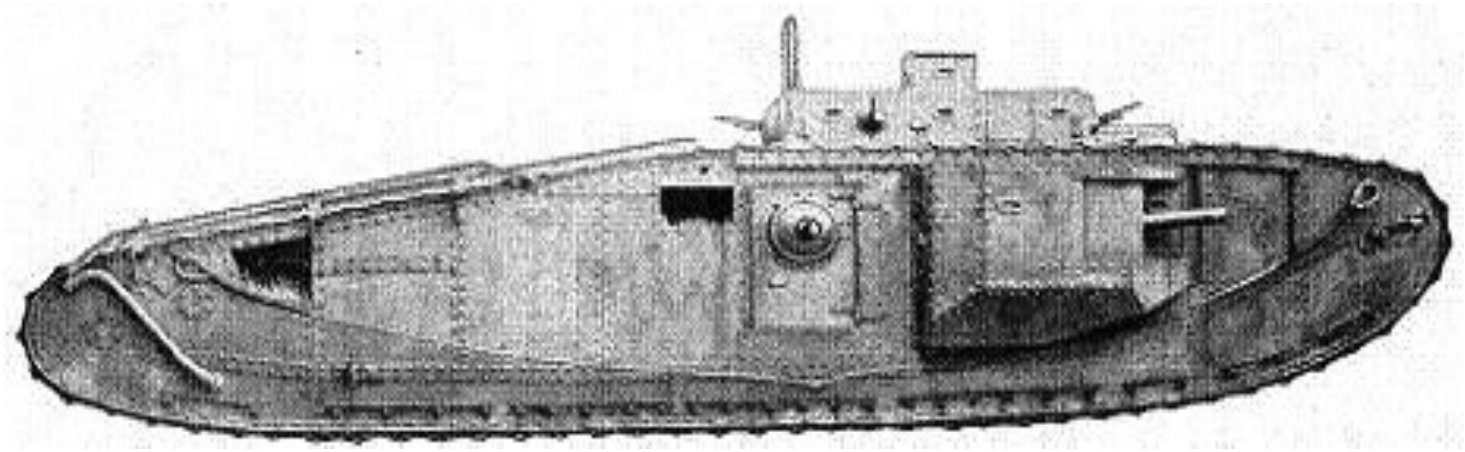
Another particular type of mobile field artillery produced at the Rock Island Arsenal was the split-trail type carriage, also known as the Model 1916. By the end of 1916, 204 of these carriages had already been ordered specifically from the Rock Island Arsenal.[232] Other types of carriages that were ordered and produced were the 1916 model 75-mm gun carriages, of which 185 were completed, and the 155-mm howitzer carriage.[233] Due to the short period of the war, the Rock Island Arsenal was not able to complete any of the 172 ordered 155-mm howitzer carriages.[234]

Both machining and finishing of a new mobile field artillery item, the 75-millimeter recuperator, was left solely in the hands of the Rock Island Arsenal and the Singer Manufacturing Company, Elizabethport, New Jersey The recuperator, more widely known as the recoil mechanism, was the part of the mobile field artillery gun that absorbed the retrograde shock of firing and kept the weapons from faltering out of aim when fired. The Rock Island Arsenal, however, ran into multiple problems with the recuperator and was only able to produce one by the end of 1918. After a couple months of research in which all the bumps were smoothed out and all of the production tests were passed, the number of finished products increased with each passing month. By January of 1919 two more were produced, as well as 13 more in February, twenty more in March, and twenty-three more in April, leaving the final production number at forty-eight 75-milimeter recuperators assembled in Rock Island.[236] In fact, as will be discussed in further detail later, the orders for manufacture of carriages and recuperators was so high that the Arsenal had to expand its facilities through construction of new buildings in order to meet the production demand.[237]

Items Manufactured

Although a large part of the Arsenal's production and contribution to the war effort, mobile field artillery was not the only war good that was assembled and manufactured there. The bulk of WWI production was devoted to manufacturing artillery vehicles (items on which the previously mentioned artillery pieces were

Below: *The Mark VIII Tank. The order to assemble one hundred of these ponderous fighting machines, received in the spring of 1919, was the largest ever undertaken at the Arsenal. The task was completed in 286 days.*



The Mark VIII Tank

transported), recoil cylinders, artillery wheels, spoke shoes and spoke shoe plates, artillery harnesses, army repair chests, rifles, loaded shells and personal equipment items.

Impressively, the Harness Manufacturing Shop on the island was the largest in the world, having expanded much during the war years considering the limited quantity of production before the war. The manufacture of Springfield rifles, also discussed earlier in the book, remained one of the top industries.[238] Due to government cuts in expenditures, production of the Springfield rifle was eventually cut from the agenda at Rock Island years prior to the conflict. When hostilities arose around 1917, not enough skilled craftsmen were still around who remembered how to construct the Springfield rifle causing the Arsenal to turn to private manufacturers.[239] Other rifles, mainly of the 1906 model, were stilled turned out in significant numbers.[240] As far as personal equipment, the Rock Island Arsenal also collaborated with six other companies in making a grand total of 4.5 million haversacks for soldiers' use.[241] Finally, focusing elsewhere, the production of artillery ammunition was not a main priority of the island, it being the smallest shell-loading plant in the Army. There were, however, about 1,000 shells turned out per day here as well all the other items of production discussed.[242]

The largest project to that point in time, on the other hand, did not even surface at the Arsenal until the spring of 1919. Even after the Armistice tanks were still in high demand, especially the new model Mark VIII. In the early half of 1919, the Arsenal received its largest order ever: 100 of the new Mark VIII Tanks. Weighing in at forty tons this tank was capable of holding up to eight men, and production was a joint British-American venture. Unfortunately, the order also brought about the largest number of problems.[244] While Britain was mainly occupied with armor production for the tank, the United States manufactured the engine and other mechanical items. Even though the Rock Island Arsenal's main contribution was assembly, most of the parts having been produced elsewhere and then shipped to Rock Island, the order took 286 days to complete after all of the problems were smoothed out. The Arsenal had to modify many parts to make everything fit together.[245]

A condensed list of items manufactured at the Arsenal during the war period but completed before the armistice follows:

French 75-mm gun carriages	159
Other gun carriages	202
Forge limbers	446
Battery and store wagons	255
4.7-inch recoil cylinders	264
Artillery wheels	9,718
Spoke shoes & plates	218,650

Below: *Photo of Henry W. Horst and A. E. Horst of the Henry W. Horst Company in Rock Island, Illinois. In the business of construction, this company contracted work from the Rock Island Arsenal during World War I and participated greatly in the large construction expansion projects that were taking place on the island. They were responsible for constructing multiple important buildings like Shop O and Shop Q, as well as Officer' Quarters, Barracks buildings, and sixteen miles of railroad on the Savannah Proving Ground.*

HENRY W. HORST

A. E. HORST

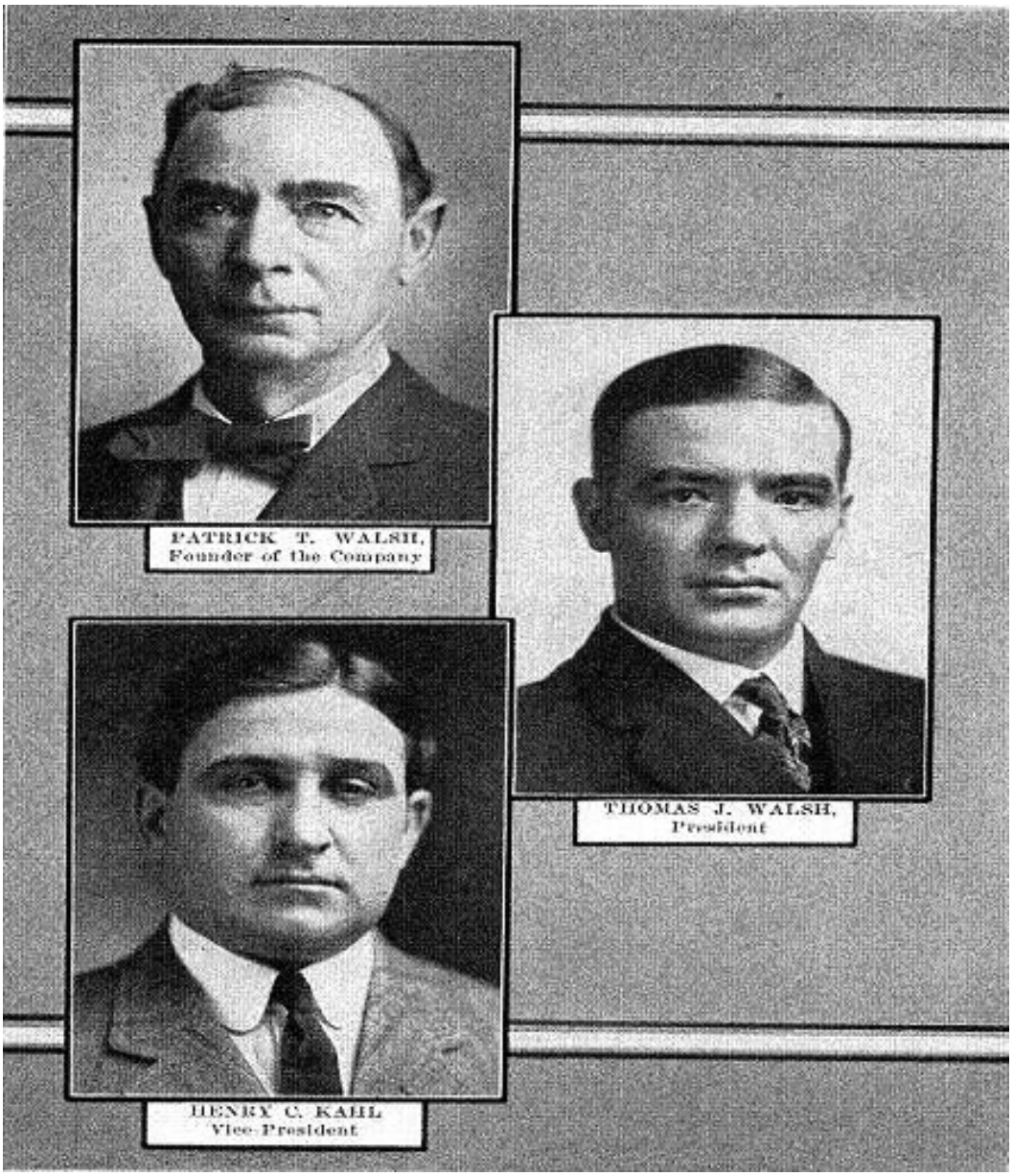
Artillery harness, sets	24,212
Artillery harness, assembled	74,207
Arm repair chests	13,241
Rifles, Model 1906	113,670
153-mm Howitzer shells loaded	167,195
Bacon cans	1,512,190
Knives	354,770
Canteen covers	649,457
Haversacks	858,344
Pack Carriers	400,256 [246]

Contractors

All of this work, however, could not be completed at the Arsenal alone. Many private manufacturers were contracted to temporarily stop their normal production and switch to the production of certain war goods. Success in the war effort would have been impossible without the assistance of these private manufacturers. Most of the work done by other companies, however, involved all of the construction projects happening on the island itself and included companies like Henry W. Horst Company, which built Shop O, Shop Q, eleven storage buildings, Officers' Quarters, Barracks, and sixteen miles of railroad. The R & V Motor Company was also highly involved and produced a large quantity of ammunition and ordnance, as well as machine tools for the Arsenal.[247]

One particular company that participated extensively in Rock Island Arsenal construction was The Walsh Construction Company. The founder of this company, Patrick T. Walsh, actually began his career working as a stone-cutter for the Arsenal itself, and many of the new shop facilities, storage buildings, and other buildings built during and after the war were products of the company that he founded after leaving his job at the Arsenal. During WWI at RIA, Walsh Construction Company oversaw the building of a general storage building, five vehicle storehouses, Office Building No. 2, civilian hospital, ward and isolation hospital, and bakery. Walsh also remodeled Barracks "B" and "C" as well as the Y.M.C.A. Building. Additionally, they paved

Below: *Photo of Walsh Construction Company's Founder, Patrick T. Walsh, its President, Thomas J. Walsh, and its Vice-President, Henry C. Kahl. The founder previously worked as a stone cutter at the Arsenal itself before starting his own business. Much like the Henry W. Horst Company, the Walsh Construction Company participated extensively in Arsenal construction. This company was in charge of building six storehouses, an office building, and a civilian hospital, as well as remodeling two barracks and the Y.M.C.A building.*



multiple roads and built the storehouses at the Savannah Proving Ground, which will be discussed in further detail later.[248]

Employees

Even in peacetime years the Arsenal kept its number of employees significantly higher than was the historic norm. Just before the Spanish American War only 600 men and women were employed on the island.[249] Prior to World War I there were about 1800 men and 175 women there employed. However, to keep up with the demands of war a large expansion in personnel was still necessary, and by the time of U.S. entry into the war the staff had increased to about 3600 men and 300 women. Expansion of employees and departments never slowed down during the war years, and by the time of the Armistice more than 13,000 men and

Below: *Regulation uniform adopted for women workers at Arsenal during the war.*

1400 women were employed at the Rock Island Arsenal.[250] Military personnel on the island also expanded during this time. Given the island's isolated position, expanding the military in the attempt to ensure security was not a pressing requirement. The island's location made the Arsenal an unusually secure place to work, even in war time, in contrast with other Army arsenals.[251]

The effect of war time expansion is seen in other ways as well. At the time of the Armistice, for example, there were 14,400 men and women employed.[252] After November of 1918, however, the number of employees hardly dropped at all due to the need to finish certain projects and then to make repairs to equipment in preparation for overhaul.[253] When levels finally ebbed in 1919, the number still remained high at 7,400 employees, much higher than in 1914.[254] It was clear that the expansion projects completed during this time were to be permanent changes at the Rock Island Arsenal.

Women

Women would also play a large part of the expansion at RIA. During the war years, more women worked on the island than had ever been employed previously. By 1918, 10% of the workforce was women, coming in at a total of 1,417 women workers.[255] Assigned female

Below: *The fire fighting force assembled before headquarters. The Fire Department as well as its technology was greatly expanded in 1918.*

uniforms presented somewhat of a problem at the time. It was high debate how to dress these women in a safe way, avoiding baggy clothes that would more likely lead to accidents, and yet keep the uniforms styled in a way that would not be distracting to the male workers. Women who worked with or near machinery were given more leeway, but women working away from machines were given the baggy, black sateen uniform. Overall, the women were kept very covered up in drab colors so the men could focus on their work.

Colonel Burr

Colonel Burr, while Commander of the Rock Island Arsenal, made significant changes effecting the Arsenal employees during the pre-war and war years. Burr especially cared about making sure the cost of producing military goods was as low as possible.[256] Through his personal interest and efforts Burr managed to save hundreds of thousands of dollars. To the benefit of the Arsenal employees, Burr succeeded in doing this without reducing employee numbers or wages. Burr was also very concerned with worker safety, and changes therein greatly reduced the number of accidents that occurred.

Colonel Burr's improvements at Rock Island Arsenal went even further. One of these changes, in fact, was made after personally appealing to Congress. By 1912, Congress passed a grant to present rewards for improvements to manufacturing processes, encouraging innovation and hard work. Also, in response to Colonel Burr's concern with worker safety, in 1918 Congress finally passed compensation rights for employees injured at work. [257]

Colonel Hillman

Colonel Leroy T. Hillman also largely impacted employees while Commander at the Rock Island Arsenal. Obviously, with the exponential increase in personnel and production, housing was a problem for those working at Rock Island. Colonel Hillman recognized this issue. Due to lack of housing, personnel turnover rates were high, hampering the war effort, and Hillman worked with the local cities to solve this problem. Through his efforts, suggestions, and

Below: *The Arsenal workers had a band, and it was a good one.*

collaboration, the cities surrounding Rock Island began building more houses in 1918 for Arsenal workers and looked more deeply into egregious rental issues in order to take care of the Arsenal workers in a way Colonel Hillman saw fit.[258]

Colonel Hillman was also very concerned with safety. In 1918, a new 155mm artillery ammunition loading plant was constructed.[259] Safety in this particular plant concerned Colonel Hillman especially because the Rock Island Arsenal had never done ammunition loading before. The lack of experience in this area of production caused Hillman to raise the safety standards to the benefit of everyone involved. While some explosions did occur, actions like prohibiting certain articles and substances being allowed in the plant, designating certain types of clothing to be worn, laying out specific care of explosives, and limiting visitor capabilities made the plant a safer place to work for everyone.[260] His sudden death in December of 1918 was a significant loss to the Arsenal.

Schools

In addition to the increased job opportunities, there were other benefits to being a Rock Island Arsenal employee as well. In an effort to add to workers' experience and knowledge, multiple different apprenticeship courses were both offered and required of workers, officers and enlisted men.[261] A more extensive knowledge of the job that a specific worker was expected to perform led to quicker production and results, as well as fewer accidents and injuries. Three different schools, the Supply School, the Machine Gun School, and the Motor Inspection School, all opened in 1917 with the hopes of increasing the efficiency of both work and the equipment produced.[262]

Leisure

Specific jobs aside, both men and women working on the island also had the opportunity to participate in multiple leisure activities. These leisure activities were initially established in the early days of the Arsenal and included activities like baseball, dances, band, and choir groups. These activities were especially nice for the large number of workers who moved from other areas of the nation and were unfamiliar with the area and the other people living here. Interaction between employees increased when the established Y.M.C.A hut was expanded to also function as a Post Exchange and lunch area for civilian employees.[263] The Y.M.C.A hut also hosted

Below: *Arsenal Museum, showing a few of the many war relics on view. This museum was created in 1905 and is the second oldest Army Museum in existence.*

dances; another form of recreation for the out-of-towners who were unfamiliar with the area's people and social activities. All in all, due to this expansion in personnel and production discussed previously, many new construction projects sprang up immediately before and during World War I to make all of this possible. These newly constructed permanent buildings would end up shaping the Rock Island Arsenal to the way it is today.

Arsenal Museum

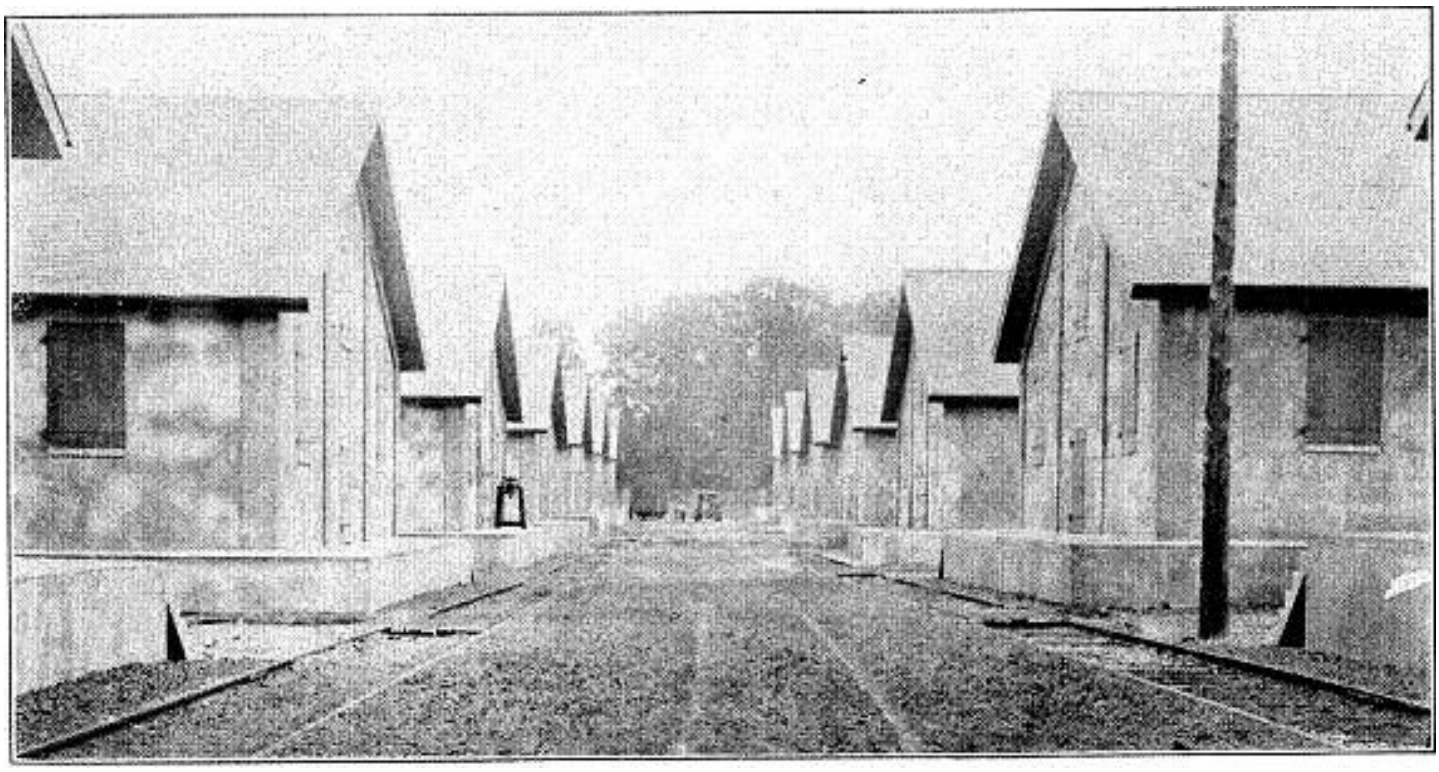
Before expansion of the Arsenal took place, as well as expansion in construction, employment, and production, the Arsenal engaged in a unique project that involved looking to the past. The Rock Island Arsenal Military Museum is the second oldest Army museum in existence and was built during peacetime in 1905. It shows nearly every type of fighting tool used from the 1800s, and some even from times back to the Revolutionary War. Although fairly small when first built and established, the museum was greatly expanded after World War I and remains one of the Arsenal's greatest interests for visitors.[264] Showing even more concern for the past, an association for the historic Davenport House was formed less than a year later, in 1906, to oversee the care, restoration, and preservation of that significant piece of Arsenal history as well.[265]

Construction

Obviously such expansion of production and personnel required more work space during these adaptive years, and since expansion began immediately after the Spanish American War, new construction projects began immediately as well. The first step in this process was, of course, making more room for the new construction projects, and the initial priority was to clear trees off the land in the western half of the island. Then, new roads had to be laid in order to reach these newly planned facilities.[266]

Up until 1916, time passed as these projects were worked on in no particular rush.[267] It was during this year that the intense need for

Below: *Nitrate and ammunition storehouse area constructed in 1917 and 1918.*



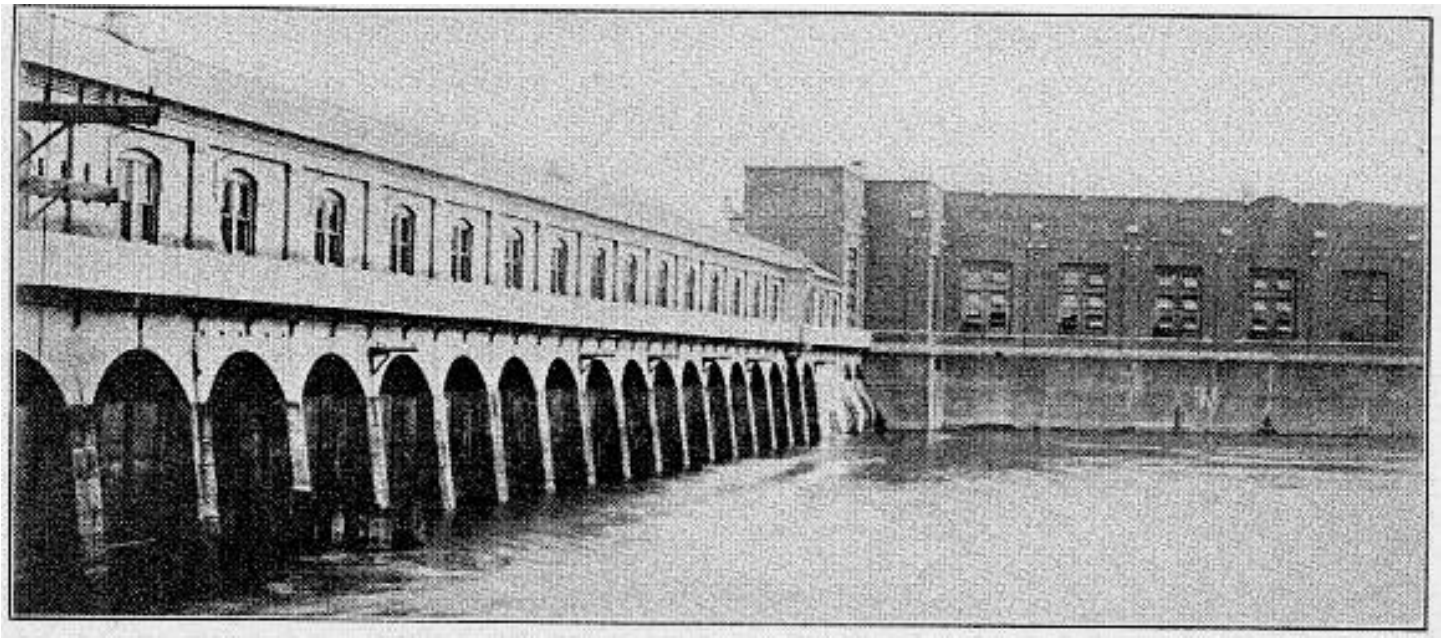
expansion was truly foreseen and the number of construction projects began rapidly piling up.[268] In order to satisfy the demand for more production, much more space was needed. To exemplify this increase, purchases in the manufacturing department increased from $7,115,849.53 before the war to $42,466,874.67 during wartime.[269] By the time of the armistice, purchases had increased even farther to $85,343,840.59.[270] 1.5 million feet of shop floor space was added in the attempt to keep up with the war-good orders.[271] The magnitude of the construction projects that followed up until 1918 is best expressed by the list that follows:

> 30 ammunition and nitrate storehouses, an artillery ammunition loading plant, a field and siege artillery machine shop, a forge shop, a general storehouse, five artillery vehicle storehouses with trackage, five temporary frame storehouses, two temporary office buildings, one temporary civilian hospital, four temporary building for quarters for enlisted guard, two temporary hospital buildings, two dry kilns, and three lumber shades.[272]

Finally, there was also a high steel tank built for water supply and a steam heating plant built.[273] The construction did not end there, however. In fact, the projects only increased with involvement in the war effort. Construction work was constant and the focus turned more towards permanent buildings that would shape the Arsenal the way it is today. The following new projects began in 1918:

> Eight artillery vehicle storehouses with trackage, extension of gunstock dry kiln, steel storage building, cafeteria for arsenal workmen, paving of North and South avenues, garage for

Below: *Power dam, viewed from below. The water power plant was a vital part of Arsenal production and was heavily guarded during wartime.*



motor trucks, enclosing stairways in shops and adding fire escapes, remodeling the guardhouse, 14 fuel storage tanks, slate roof on Shop D, foot path on railway bridge, operating room at hospital, unloading platform in courtyard A, additional boilers in heating plant, skylights in Shop K, filling of a cave, steam heating systems in officers' quarters, three steel warehouses, classification yard, improvements to barracks, improving pumping station, laying Sylvan Drive, pavement repairs, fixing heating system in Shop G, and more.[274] To top it all off, the fire department, along with its technology, was also expanded.[275]

Finally, without needing a list to display the magnitude of construction projects and repairs for the remainder of the war, between the years 1919 and 1921, there were 168 "permanent improvements" completed for the Rock Island Arsenal to add to all the other work done since 1916. [276]

A large percentage of the construction projects completed, were storehouses for post-war storage purposes. In addition to the 1.5 million feet of added shop space, almost 1.5 million more feet was added for storage facilities as well. This included 30 ammunition storehouses and 8 vehicle storehouses.[277] Greatly increasing the amount of objects produced also meant that the needed for somewhere to keep them increased, hence the storage space addition. As a matter of fact, one of the greatest concerns after a war deals with cleaning up the war materiel and having a place to then keep and store it.[278] The Arsenal acted upon this issue. Although tremendously helpful, building new storage facilities on the island still did not provide enough space to store everything. Storage space was then looked for elsewhere.

During the pivotal year of 1918, the Arsenal began executing construction projects off the island. Because of the rapid increase in personnel, and the resulting local shortage of private housing,

Below: *Tractors and tanks in field awaiting permanent storage. This picture, taken in June 1919, shows but a small part of the equipment brought to Savanna after the war.*

the Rock Island Arsenal also undertook the project of building houses throughout the "Tri-Cities", as they were known then, for Arsenal employees. [279]

Savannah Proving Ground

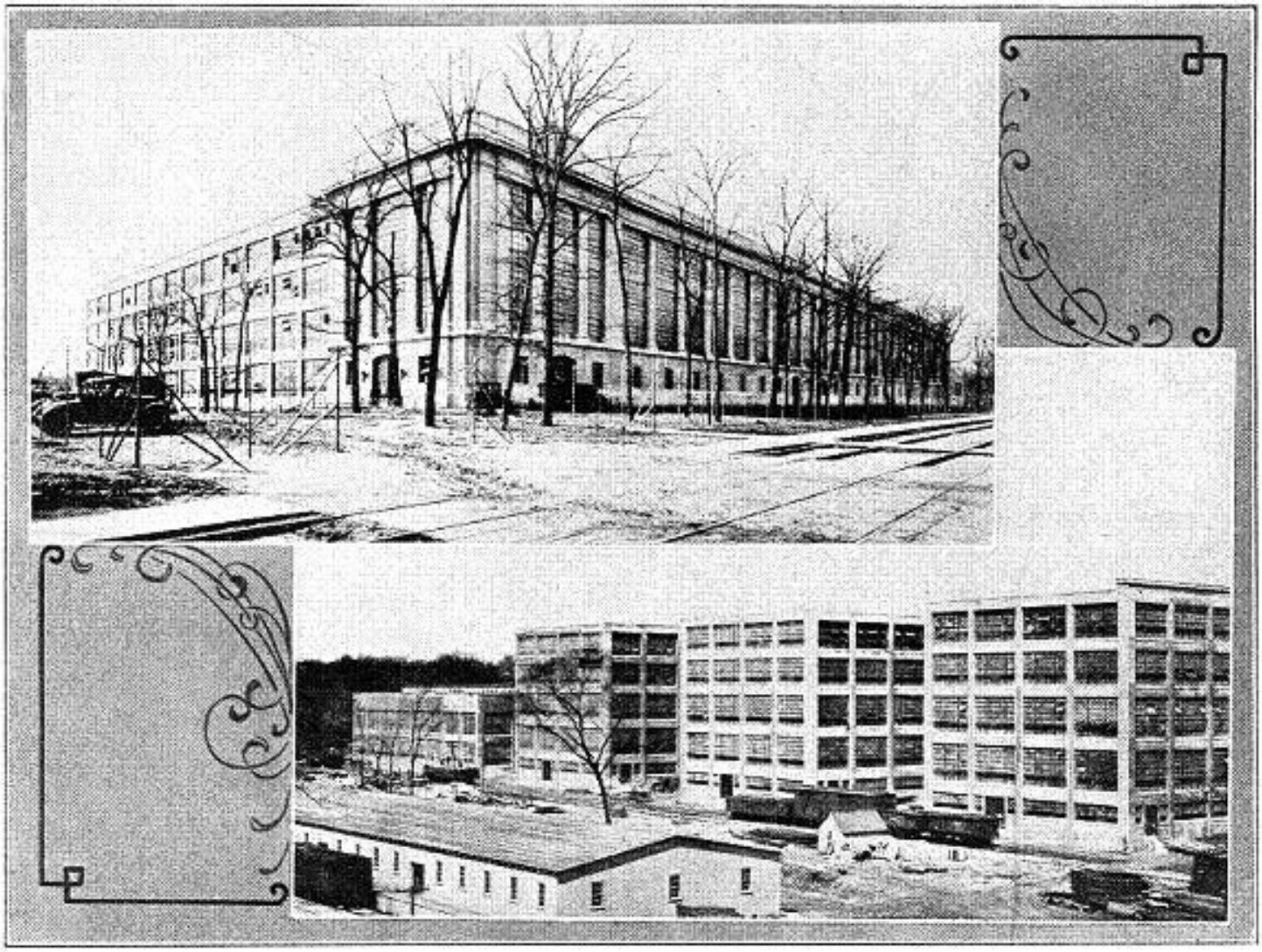
Another large piece of Rock Island Arsenal history deals with land not even close to the island. During these years of heightened construction projects and production, storage increasingly became a present and future problem. In 1917 land was purchased in Savannah, Illinois. The new Savannah Proving Ground was considered a sub-post of the Rock Island Arsenal.[280] Building started in May of 1918 with the main purpose of increasing facilities for the proof and test of field artillery and ammunition. Savannah rapidly undertook the mission of testing and storage of artillery and ammunition from the Rock Island Arsenal.[281] Testing the equipment consisted of "firing solid proof projectiles, or slugs, of several different calibers, at various elevations and deflections, with a variety of charges." [282] Procedures were developed to ensure the ammunition was tested under different conditions to further ensure that they were in working order and would not fail our soldiers in the field. The area was also used for storage purposes and at one point in time Savannah received 40-75 rail cars of artillery vehicles per day. A few years after the end of the World War, Savannah Proving Ground would justly be renamed as a depot.[283] There would eventually be a commander and quarters at Savannah to oversee the Proving Ground.

New Departments

In another attempt to reach maximum efficiency of both work and end result, the RIA created three new departments. Although, technically, the Inspection Department had previously existed, this particular department was expanded exponentially and seen as one of the most important departments by the end of the year. By increasing the personnel from 168 to 567, inspectors could be more thorough and inspect many more items per day, increasing the overall efficiency of the products.

Another important department established during the World War I years at RIA was the

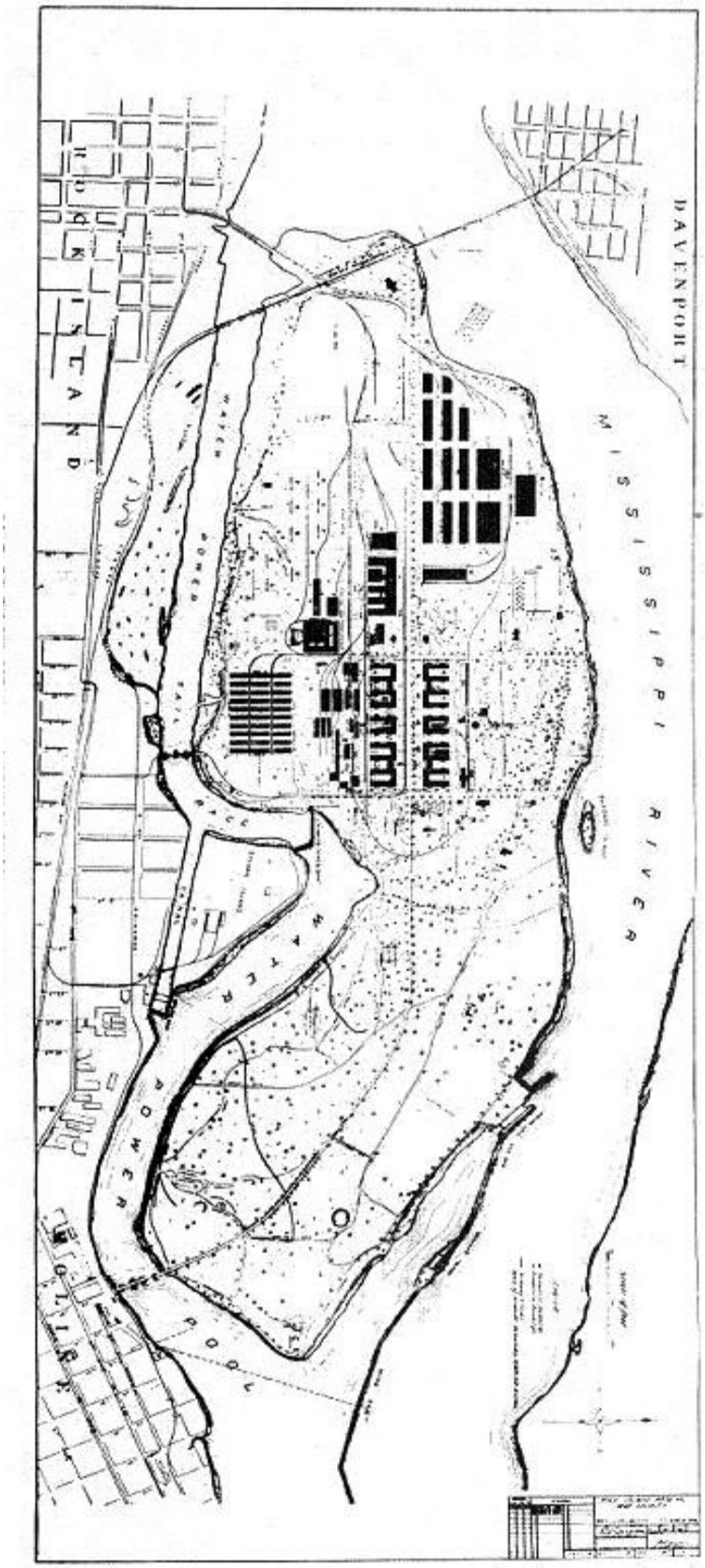
Below: *Shop M, one of the largest of the new buildings, viewed from front and rear.*



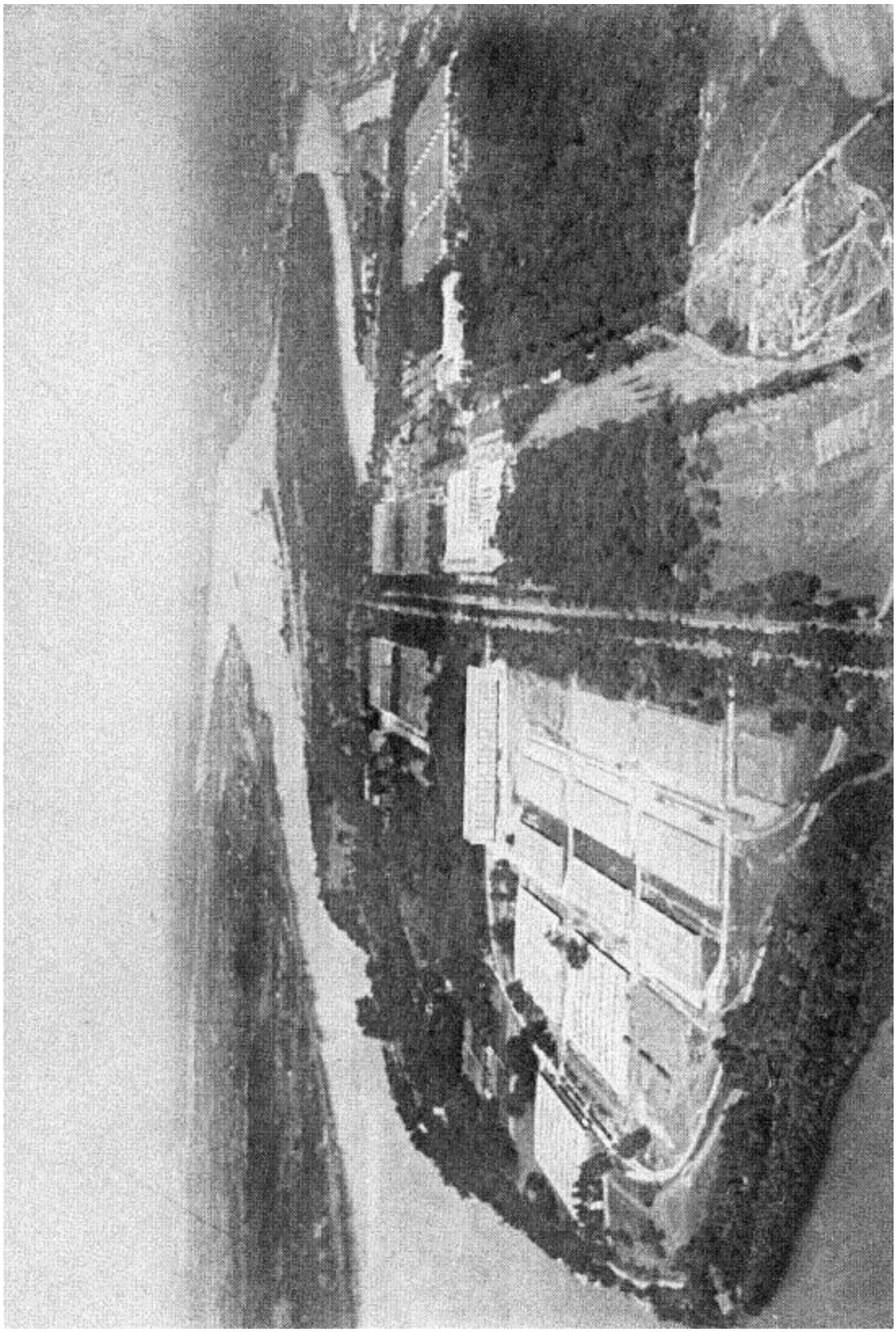
Armament Division. Established in 1918, it was the duty of this department specifically to care for the 950 cannon and 2000 other Ordnance vehicles. In fact, the readiness of these items was so vital to the war effort that workers of this department were expected to make any and all repairs on the spot, should they be necessary.[284]

Although also already existing, a new yet very important branch of the Ordnance Department was created in the wake of the war. The Arsenal Orders Branch was created to coordinate with the Ordnance Departments of other arsenals after receiving their information.[285] One reason to work with other arsenals was the goal of interchangeability. It was decided that things would be easier on everyone involved in the war effort if there were master gauges and other measuring tools that made parts the same size no matter where they were made. Making as many parts and measuring tools as interchangeable as possible was constantly sought after and still used today. Overall, the main goal of the Arsenal Orders Branch was collaboration, and since the main item of work at Rock Island was assembly of individual parts, working with the companies who provided those individual parts was vital to the fast-pace desired of production during wartime.

Below: *Map of Rock Island from 1910. Comparison of this map and the one of the proceeding page reveals the immense expansion of building that took place during the World War.*



Below: *Rock Island Arsenal viewed from the air. Roofs of new Artillery Vehicle Storehouses in foreground at left.*



Below: *The Great War ended with the signing of the Armistice on 11 November in Compiégne. This photograph was taken after the agreement.*

CHAPTER THIRTEEN
The Interwar Period

Interwar Years

Following the signing of the Armistice in Europe which produced a formal end to World War I, the Arsenal had to adjust back to the pace of peacetime years. The ensuing decade would be termed the "lean years" as demobilization took its course.

Peak employment at RIA during World War I reached over 14,000 in November 1918.[287] The following month, approximately 3,000 workers quit or were laid off due to the end of the war and the subsequent decline in production requirements. Throughout 1919, a Federal Examiner from the Department of Labor assisted 3,807 former Arsenal employees find jobs. Work throughout the Quad City region was not difficult to find. From 1919 to the mid-1920, the Arsenal experienced almost a complete turnover in personnel with 7,017 separations and 6,285 new employments and reinstatements.

Below: *When the Armistice was announced on 11 November citizens far and wide had reason to celebrate. In this photo, thousands congregated on Broad Street in Philadelphia cheering unceasingly.*

Demobilization

Along with the rapid demobilization of personnel in 1919, the Arsenal also began settling claims of existing purchase orders. This was done through a claims board that emerged in 1919 to settle $2,778,687 worth of purchase orders. Along with outstanding claims, the Arsenal also contended with excess sales of surplus goods and supply materials. Numerous divisions, including the Field Service Division and the Manufacturing Departments, transferred surplus as well as obsolete and condemned materials with an estimated value of $25,539,177.

The Field Service and Manufacturing Department was not the only Arsenal division affected by the rapid demobilization. Following the Armistice, the War Department proposed that the Quartermaster Corps should become the lead organization for the manufacture of harness and cloth equipment for the Army. At that time, the Quartermaster Corps already stored and distributed similar materials, thereby leading the Army to propose this policy of standardization. However, the proposal would also adversely affect the Arsenal by closing the Arsenal's "Harness Shop," which employed over 11 percent of the Arsenal's personnel during World War I. This reorganization became complete by late 1920. Thereafter, the only cloth and leather materials produced at the Arsenal were those relating to ordnance, such as breech and muzzle covers, scabbards, instrument cases, gun cases, and helmet linings.

The quick closing of the Harness Shop and the difficult process of demobilization were also complicated by the death of Colonel Hillman on 29 December 1918, following an attack of bronchitis and the Spanish Flu. Colonel Harry B. Jordan, subsequent Commander of the Arsenal,

Below: *Colonel Harry B. Jordan was Commander at the Rock Island Arsenal from 20 January 1919 – 1 June 1921. He served his first two years in the military as a Cavalry officer before he was moved to the Ordnance Department. He was also Commander at other arsenals as well as Rock Island. Colonel Jordan was awarded the Purple Heart and passed away nine years after retiring in 1949.*

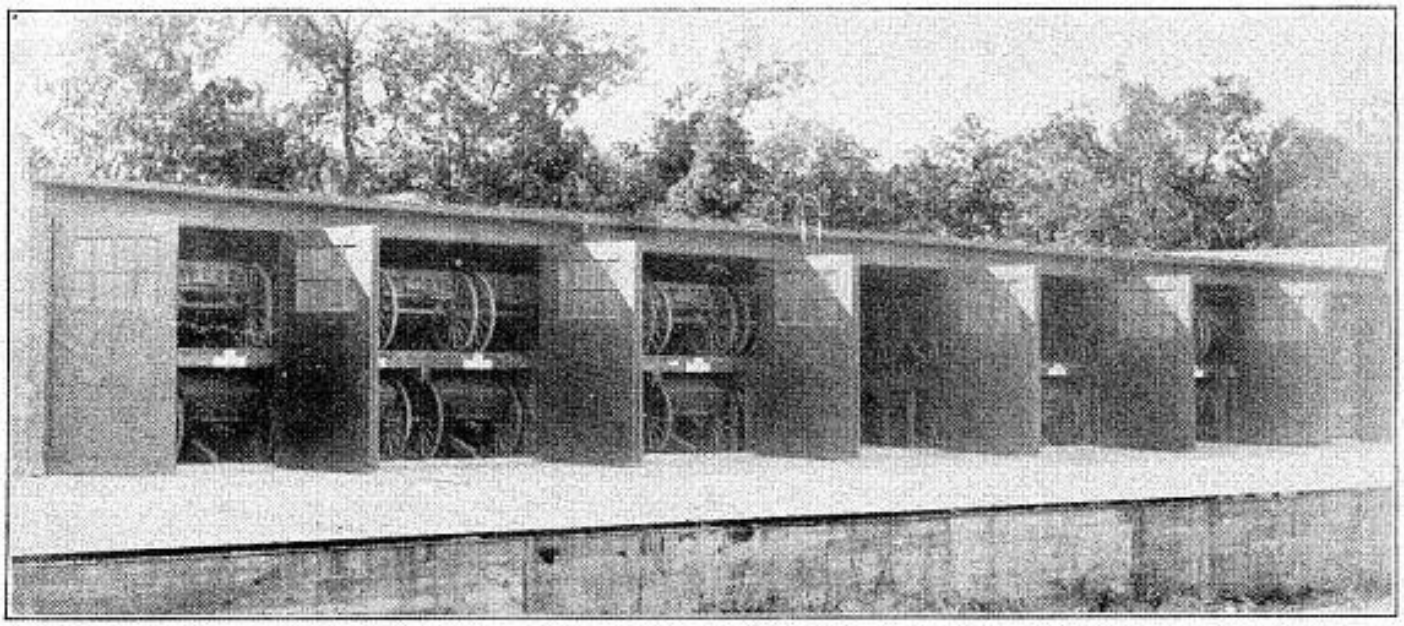
noted that Hillman was a "capable, noble and just commander and it is regretful that death should so unexpectedly relieve him from his work and duties so badly needed for our country."[291] During his tenure, Hillman oversaw the largest amount of construction and repair activity ever appropriated for the Arsenal with almost $11 million appropriated for various purposes.[292]

Colonel Jordan

On 20 January 1919 Colonel Harry B. Jordan arrived as the Commanding Officer of the Rock Island Arsenal. [293] Jordan had served at RIA from 1908-1912 as a staff officer and was later sent to France as part of the Expeditionary Forces. Colonel Jordan faced the tremendous task of restoring the Arsenal to a peacetime capacity. Jordan also worked to create better working relations between management and workers. Upon assuming command Jordan noted that:

> It was very soon evident that due to the conditions of employment during the war, the agreements made with machinists and other labor organizations and the fact that throughout the country

Below: *Storehouse VI, showing method of storing artillery.*



> labor had by collective bargaining obtained consideration of and representation in all matters relating to their welfare, employment, etc., a new method of handling the relations with employees was necessary.[294]

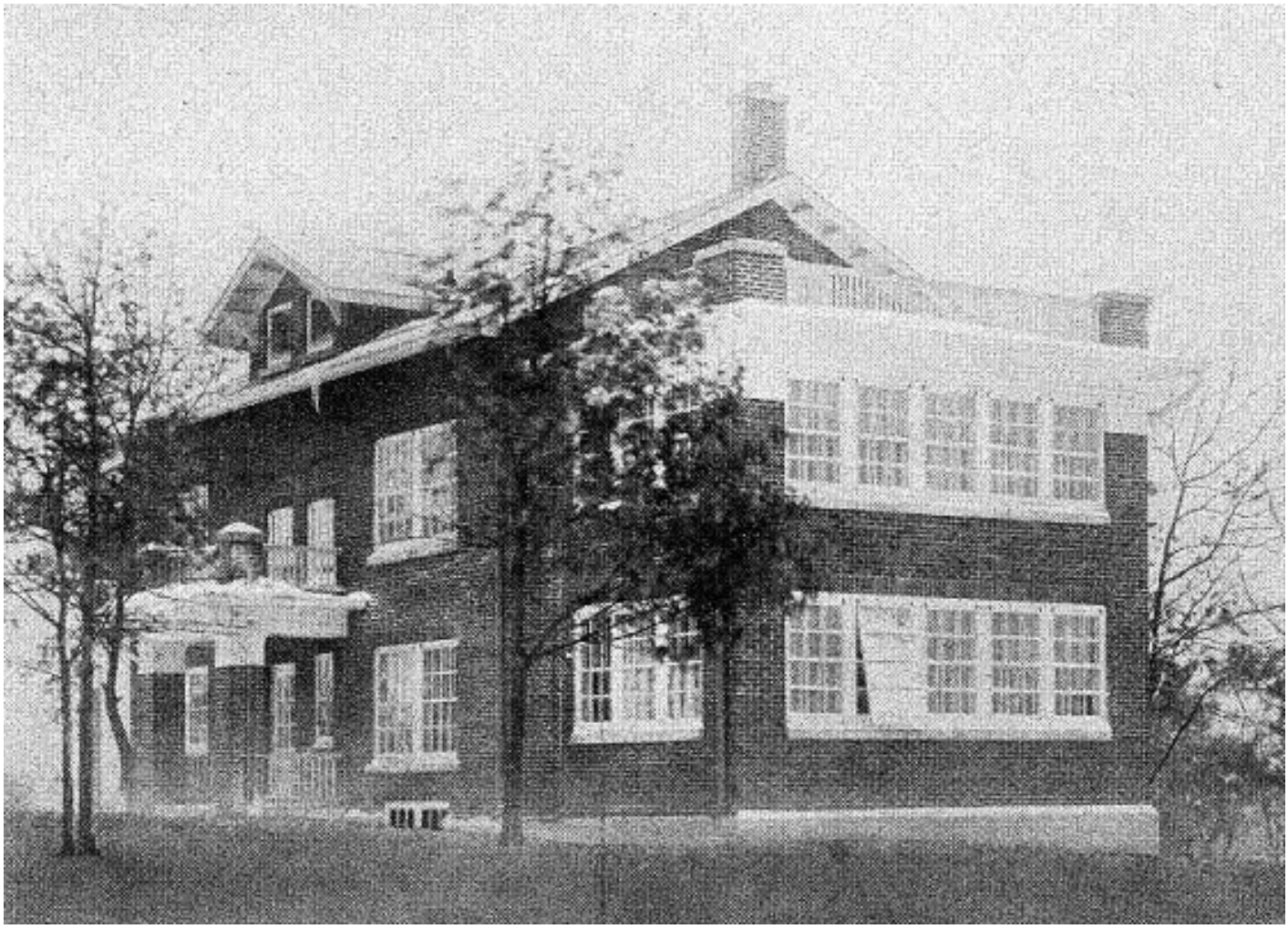
A council was created where individual complaints about issues related to work could be brought to the council for resolution. Matters of great significance were sent to a Joint Conference to be handled for final resolution. This new council put in place by Colonel Jordan was intended to reduce tensions between management and workers as well as give employees a greater voice and responsibility in solving matters related to their employment.

At the end of Colonel Jordan's service to the Arsenal on 1 June 1921, he had accomplished a tremendous amount of work. His efforts to forge better relations with Arsenal workers was appreciated by employees as were his efforts to find solutions to the multiple issues of storage and the decline in the workforce. Following Colonel Jordan, Colonel David Matson King took command and continued Jordan's work by reducing the Arsenal to a peacetime capacity. Meanwhile, Congress continually slashed budget funds for ordnance and other military expenditures, thereby making Colonel King's task to keep the Arsenal in a state of peacetime preparedness exceedingly difficult.

Storage Issues

The issue of storage presented the Rock Island Arsenal with numerous problems after World War I. The Arsenal received, identified, and stored various classes of materiel following the War. Items such as returned field stores requiring overhaul (rifles, artillery carriages, six-ton tanks, and five ton tractors); finished and partly finished components and raw materials from cancelled government contracts; components for Mark VIII tanks produced under American and British contracts; government owned tools shipped for the purpose of modernizing RIA shops; and building material designed to complete unfinished buildings.[295] All of these items created multiple issues for the Arsenal and created difficulties for storing the massive amount of equipment left over from the War years. Forty-eight buildings were being used for storage at the Arsenal in 1919, as compared to 39 before the armistice, yet, even with the increased storage capacity, the available space remained insufficient to house the incoming materiel.[296] The Savannah Proving Ground would help with this.

Below: *Commander's Quarters at Savannah Proving Ground, Savannah, IL.*



Savannah Proving Ground

In 1919 the Savannah Proving Ground was expanded even further. Forty warehouses of timber and corrugated iron were built, and artillery vehicles and tractors covered over 15 acres of open prairie at Savanna. During 1920, artillery from camps and overseas poured into Savanna Proving Ground at a rate of forty to seventy-five railroad cars a day. At Savanna, 11,693 artillery vehicles were uncrated in 12 months with the cost of unloading and storing at $11.10 per ton.[297] At the same time, employees at Savanna varied from 200 to 500 with adequate personnel difficult to retain because the town of Savanna was too small to provide the necessary workers. Additionally, many of the workers at Savanna complained about the two hours necessary each day to use the rail line to commute to the Proving Ground, on top of actual work time, to get the 9 miles from the city to the Proving Ground facility.

Temporary sheds and platforms were also constructed in 1920 to receive the surplus materiel items. A procurement, storage, and transportation division was organized by consolidating numerous departments to help streamline the turn-in of tools and materiel from private contractors. This reorganization effort was called the "group system of storage" and "the ordnance provisioning system." The new system made specialists of foremen by giving them control of material in their group and held them responsible for the detail of storage and issuing of items.[298] Throughout 1920 a total of 277,702 tons of manufacturing tools and ordnance were handled at the Arsenal even with multiple railroad embargoes, labor shortages and lack of storage space.

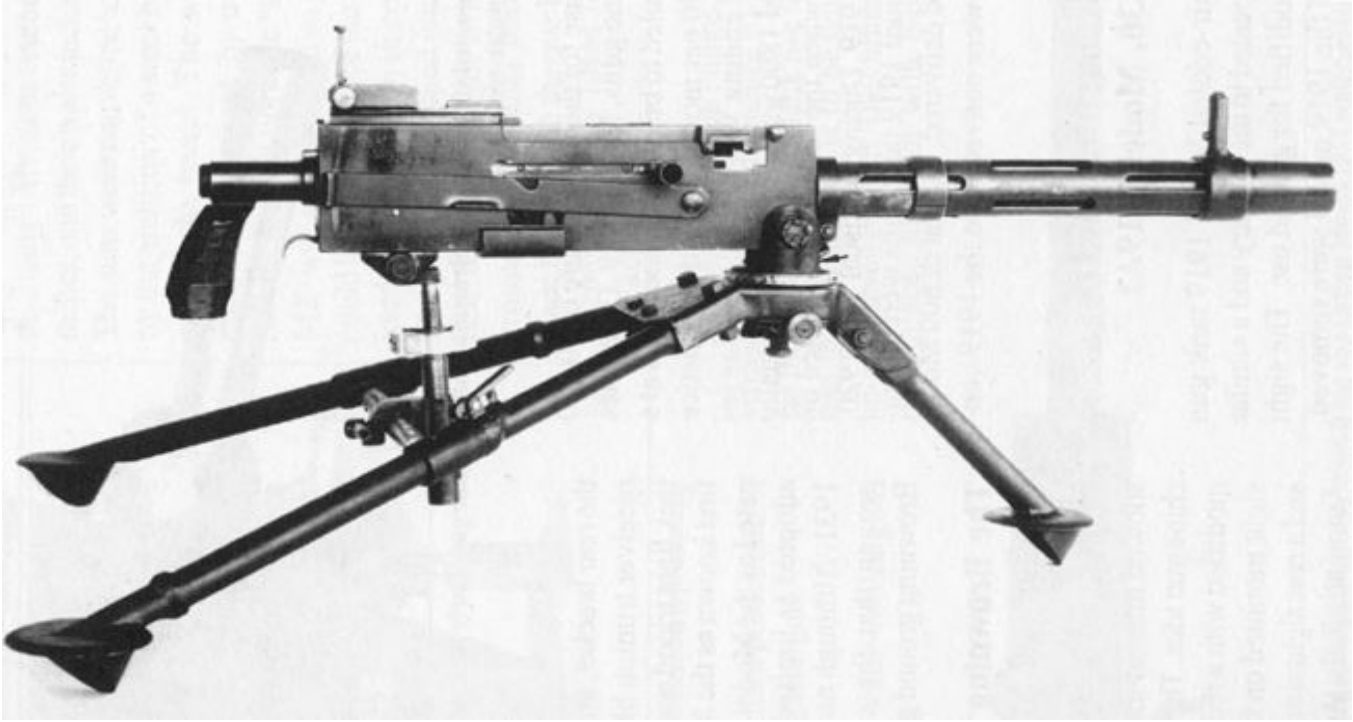
Below: *Tractors and tanks in field awaiting permanent storage. This picture, taken in June 1919, shows but a small part of the equipment brought to Savanna after the war.*

More Storage Problems

By 1921 storage conditions throughout the Arsenal had improved along with subsequent improvements in data tools, fixtures, dies, patterns and gauges.[299] Yet, even with the improvements, Arsenal employees still had great difficulty getting information from sub-contractors and smaller depots, thereby leading to the deterioration of materiel due to exposure to inclement weather and other factors. Many of the returned war items required work to restore them by removing rust, grease and bright spots. Throughout 1921, the Arsenal received 3,688 carloads of material, including 500 heavy machines for the new recuperator building obtained through salvage from the Dodge Brothers plant in Detroit, Michigan, and 198 carloads of equipment for the manufacture of the Browning Machine Gun from Bridgeport, Connecticut and the Springfield Armory.[300] Storage space had to be found for all of these items, including the many thousands of tons of steel, as well as record approximately 66,000 items of tools located at the plant of the Holt Manufacturing company, Peoria, Illinois.[301]

While the Arsenal became a repository for many pieces of war materiel, items were still being produced for the Army and foreign governments at the Arsenal. Machine tools received at the Rock Island Arsenal fell into four broad categories: machines peculiar to the manufacture of small arms; Browning Machine Gun and automatic rifle equipment; machinery from the Dodge Brothers Recuperator Plant; and machines for general rehabilitation. The machines peculiar to the manufacture of small arms doubled manufacturing capacity of the Rock Island Arsenal without an actual increase in floor space. [302] The Browning machine gun facilities included machine tools, jigs, as well as fixtures and gauges and were sent to RIA from machine gun and automatic rifle plants in the east. Machinery from the Dodge Brothers Recuperator Plant was sent to the RIA as reserve facilities intended to be used for future manufacture of 155mm gun and howitzer recoil mechanisms.[303] Lastly, machines for general rehabilitation were obtained through efforts of Rock Island personnel visiting various plants where government owned machinery existed and selecting the equipment that could be useful to the Arsenal's mission. Despite the great amount of work activity being conducted at the Arsenal, the lack of funds and orders received from the Chief of Ordnance further reduced the workforce of the stores division by half, from 927 workers to 459.[304] With the continuing reduction in personnel and the increased amount of materiel flowing into the Arsenal, inadequate warehousing became a severe problem.

Below: *M1919A2 Browning Machine Gun and spare parts were assembled at Rock Island Arsenal to be issued to the Army.*



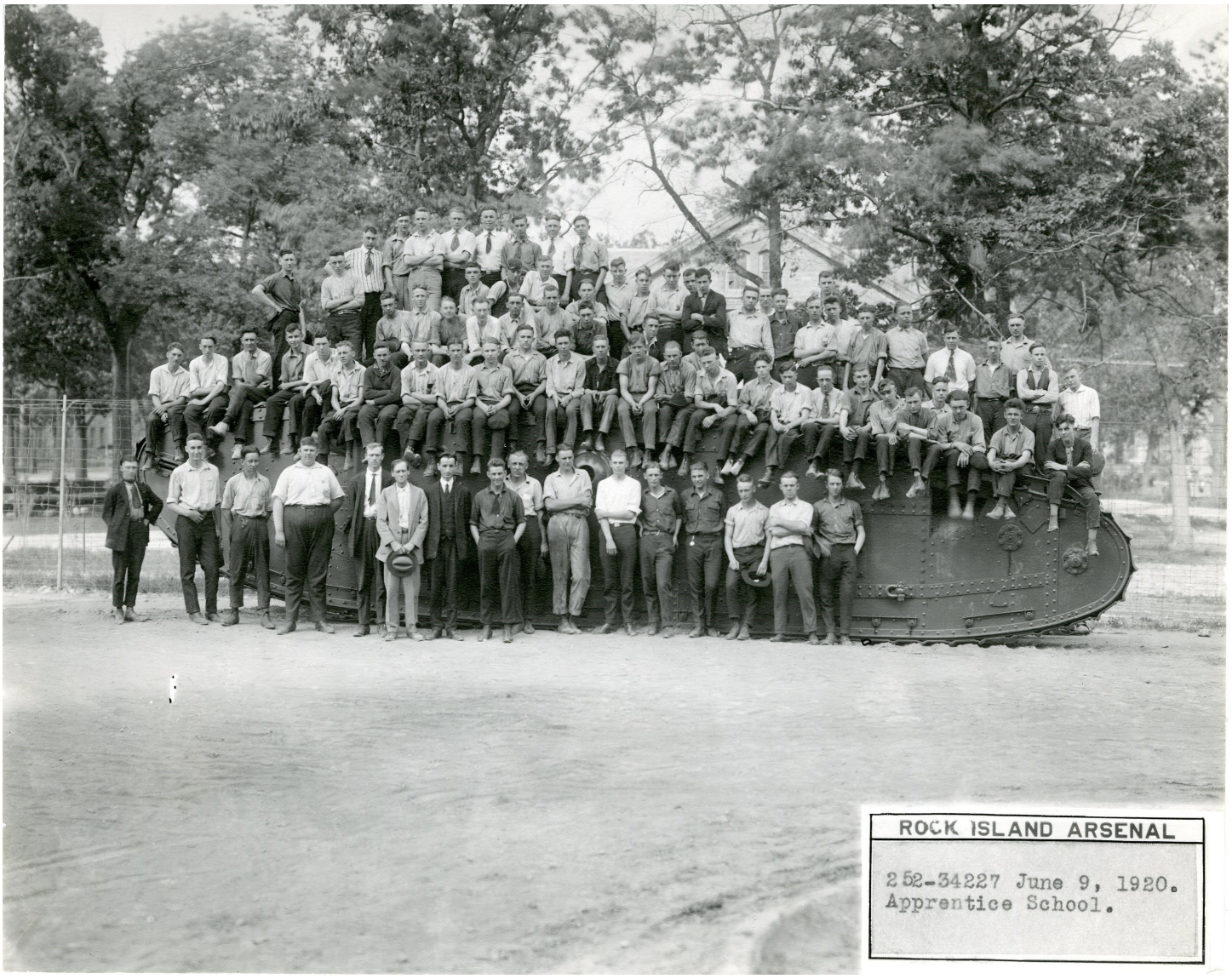
Field Artillery Section

Following World War I Rock Island Arsenal became the recipient of an enormous amount of manufacturing equipment used by commercial facilities that formerly had war contracts. The Field Artillery section at the Arsenal had to deal with integrating this commercial equipment with the machinery used during the war years to produce carriages, caissons, and auxiliary vehicles. However, with the transition to peacetime activity the Field Artillery section began preparing in 1919 and 1920 so that it could become the sole peacetime producer of recuperators and could develop the skills necessary to teach other plant operations the required skills in case war broke out again.[305] During the war, the War Department sent many Rock Island mechanics to France to assist with the manufacturing of the 75-mm recuperator, while several French mechanics worked at the Arsenal to assist American production.

In 1921 a four story building was constructed solely for the purpose of designing the recuperator after production in 1919 and 1920 had been delayed due to technical problems. The Chief of Ordnance designated the Rock Island Arsenal as the center for manufacture of the hydropneumatic recoil mechanism, of which the Arsenal was to produce 400 75mm mechanisms per month.[306] Additionally, the Chief of Ordnance directed the Arsenal to install facilities for the manufacture of numerous types of gun carriages and to hold in reserve manufacturing facilities for other types of hydropneumatic recoil mechanisms. In order to comply with the Chief's directives, Shops G, I, L, and M were redone as manufacturing units. Shops M and L began production on the 75mm mechanisms, with Shop L devoted almost exclusively to machine tools required for machining the heavy forgings entering into the 155mm gun and howitzer mechanisms. Throughout 1920, 213 artillery vehicles were manufactured, including 100 Mark VIII tanks, and the forging of thousands of miscellaneous parts, tools, and other items necessary for mobile field artillery.[307]

To assist with the development of the mobile artillery, a hydraulic press department was created on 28 March 1920, and the first work done in the department related to the manufacture of 210 Mark II demolition bombs for the Navy. Further, by 1921, welding and sight departments emerged. However, even though the Chief of

Below: *Apprentice schools that started before and during the previous war years continued in the hopes of increasing employee knowledge of jobs as well as research and experiment opportunities.* ***Note:*** *Men sitting on Mark VIII tank.*

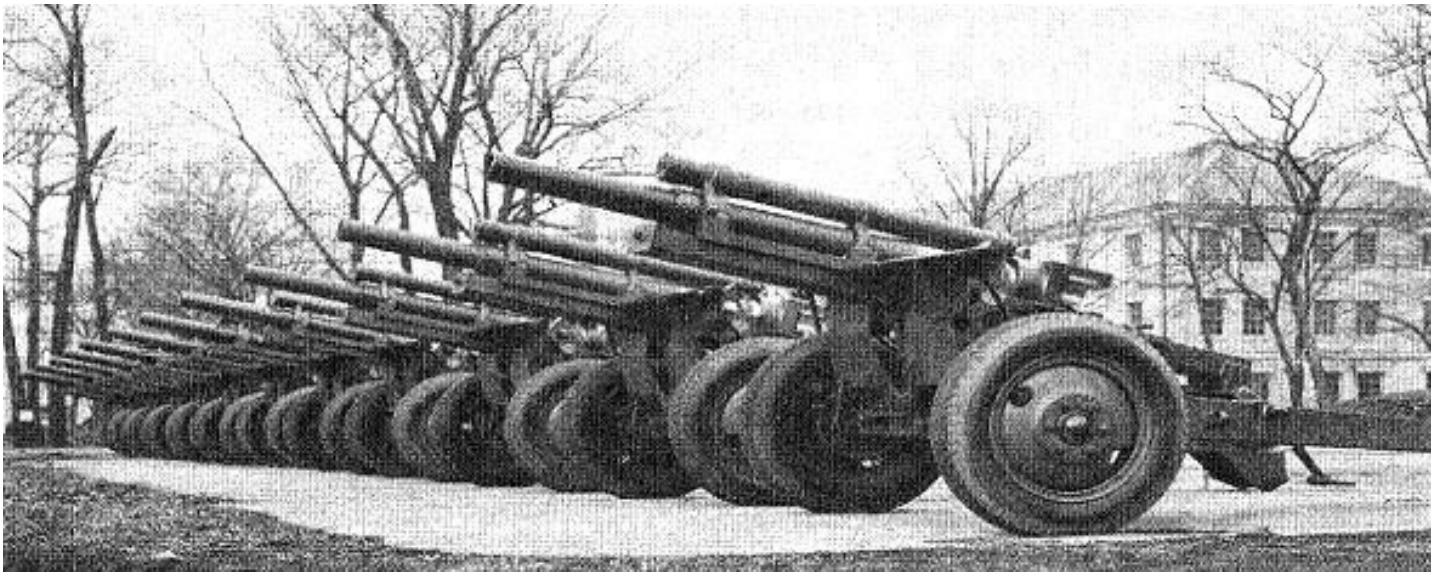


Ordnance initially requested the creation of multiple shops in order to manage the large quantities of materiel and production, work decreased throughout the early 1920's, forcing two of the artillery vehicle section shops to close and only portions of the remaining six stayed open. Only 2 shops producing any materiel for the field artillery remained by 1922.[308]

Experiments and Research

During these peacetime years, many items were produced including wooden models for the 37mm gun carriage, mortar cars, 3 inch anti-aircraft gun mounts, and 75mm pack howitzer carriages. The consolidation of activities throughout the early 1920's dramatically slowed the work-pace at the Arsenal. In its place, greater emphasis was focused on experimental work. Innovations during this time included the first automotive unit in the army tractor, model 1922E. The Arsenal also completed the design of a four-wheel drive flexible type power car and a six wheel Dodge Light repair truck.[309] The Arsenal continued to innovate with experimental designs throughout the 1920's in a wide range of fields from aluminum trails for the 105mm howitzer to the 75mm tank gun mount.

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.*



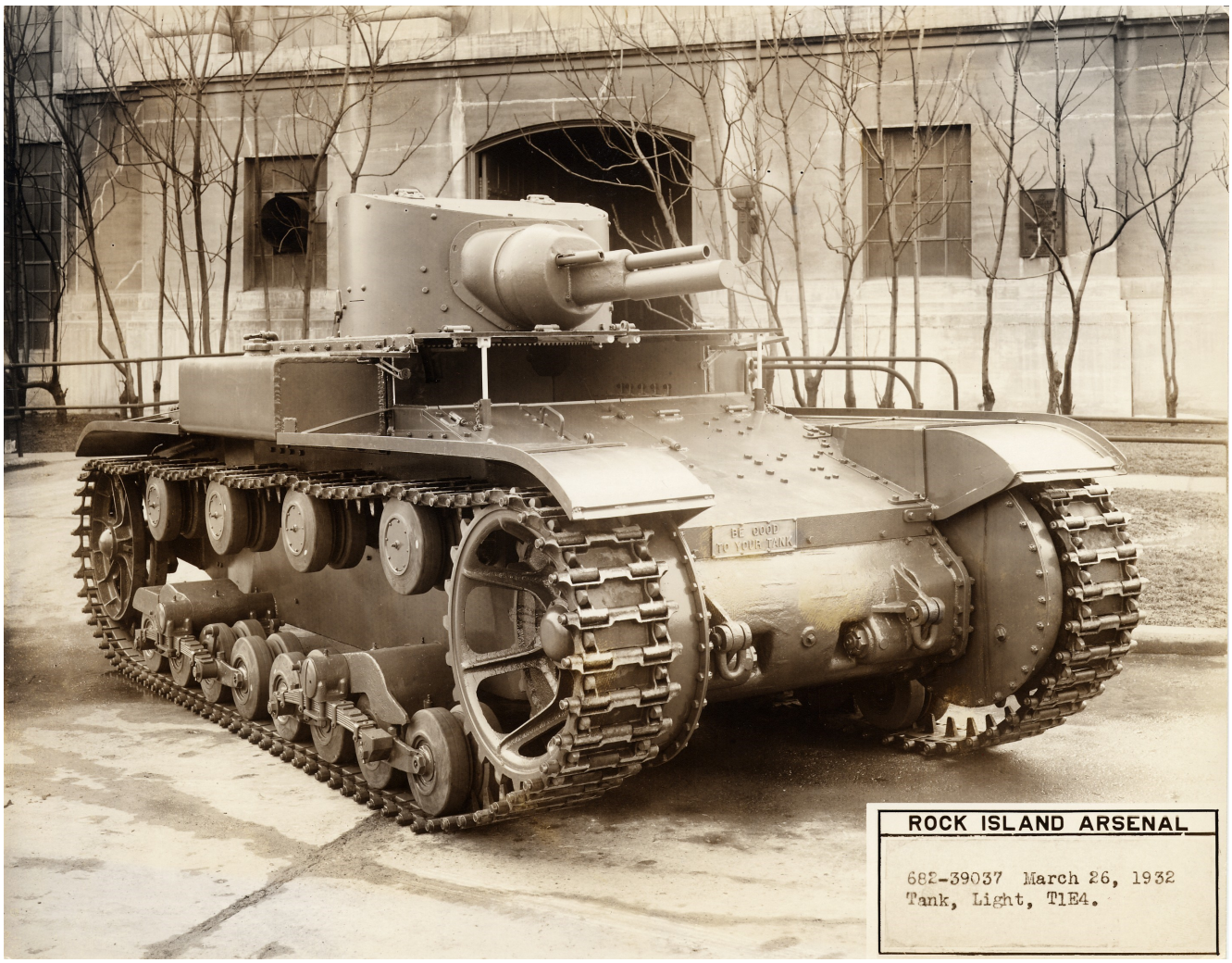
The most significant accomplishment of the Arsenal during the early 1930's was the manufacture of the 155mm gun, 8" howitzer carriage with the recoil mechanism and the heavy carriage limber. The original design was produced in Washington and brought to the RIA for detailing and manufacture. The Arsenal set a rapid pace in the production of the items, a pace which had never been equaled up to the 1930's as workers completed the carriage within 90 days from receiving the original drawings. [310]

By 1933 all manufacturing activities of the Arsenal were concentrated in Shop M, thereby leaving most of armory row inactive in terms of manufacturing. Even with the continued slowdown in operations, members of the Arsenal workforce frequently found their skills tested throughout 1933 with the manufacture of three recoil indicator bracket assemblies, armored cars, flexible tracks, and gun mounts. These projects along with other experimental design jobs were completed by 900 employees who produced over 40,207,950 individual pieces of equipment in the early 1930's.[311]

Production of Recoil Mechanisms

One of the most significant accomplishments of the Rock Island Arsenal throughout the 1920's and early 30's was the production of recoil mechanisms. The Arsenal thoroughly studied recuperators, especially since RIA became the sole custodian of that phase of ordnance development. The Rock Island Arsenal obtained the information and knowledge to produce recuperators through the personal efforts of a previous commander, Colonel Hillman. In 1916, Hillman succeeded in purchasing the drawings and rights to produce the St. Chamond artillery recuperator from the French, thereby bringing the Ordnance Department at Rock Island up to modern standards and increasing production capabilities for the First World War effort. [312] Employment in the field artillery section reached a highpoint of 2,852 in the spring of 1920 but declined significantly to 682 by mid-1921. The lowest point for employment in the field artillery section came in 1924 with only 144 workers. During the mid-1920's employment levels remained low until the early 1930's, when numerous orders came in from the Navy for cartridge storage tanks and from the air corps for propeller hub assemblies.[313] In order to meet the new demands a night shift emerged for seven months until another shop could be readied with the appropriate materials to operate during normal daytime hours. With the increasing demands from the Navy and Air Force, the field artillery section

Below: *T1E4 Light Tank manufactured at RIA during Interwar Years.* ***Note:*** *Front plate says "Be good to your tank."*



expanded in 1934 to 900 workers and up to 1,200 workers by 1935, almost two-thirds of the Arsenal's entire workforce.

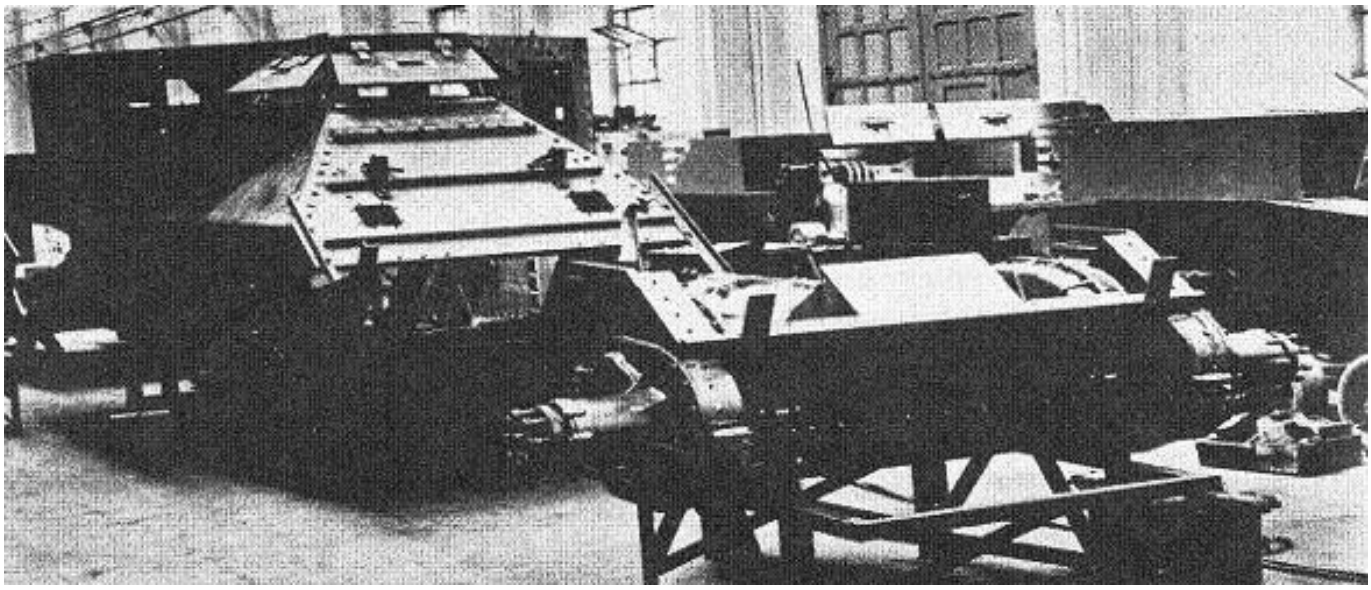
Equipment Improvements

During the five years leading up to World War II, the artillery shops at the RIA received modern equipment. An ear-marked Federal allocation of funds allowed the Field Artillery department to purchase $340,000 worth of machinery that included automatic worm grinders, universal milling machines, gear hobbing machines, turret lathes, and automatic screw machines. Another $100,000 worth of machinery was purchased in 1936 with an additional $200,000 the following year.[314] These investments were based on the fact that many throughout the Army began to realize the importance of keeping the expertise the Arsenal provided in regards to the manufacture of recuperators. Many "educational orders" were placed with the RIA to experiment with recuperator design in regards to the disassembling and re-assembling of the various calibers of recoil mechanisms.

Tanks and Tractors

Immediately following World War I, an order came to the RIA for the assembly of 100 Mark VIII tanks, the largest single Arsenal order in its history. Manufacture had barely started when the 1919 peace treaty was signed. In 1919 over 500 complete sets of equipment for the Mark VIII tank were shipped to Rock Island for the assembly of 100 tanks; however, funds to complete the 100 tanks were not available for expenditure until

Below: *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.*



after 30 June 1920.[315] The job of completing the 100 tanks became enormously difficult due to the severe labor shortages caused by the post-war draw down. Throughout the course of the Mark VIII building process, over 3,000 RIA workers assisted with the project, although no more than 819 employees at any given time throughout the course of 1919-1920 were assigned to this project. Many workers at the RIA recognized the imminent layoffs following the Armistice, and many workers left the Arsenal for different jobs and higher wages, making continuous production difficult, especially without the workers required. [316]

The Design Section also contributed too many developments for tanks and tractors. Design work in the self propelled gun carriage section of the Artillery division was moved from Washington to Rock Island and made part of the new Design section at RIA in 1922. The Design section also conducted work for the development of a tank to supersede the medium tanks, models 1920 and 1922. The new medium tank developed by the RIA Design section had several new features, including a reduced weight to near 15 tons and an increased speed of 12 miles an hour. It was also able to accelerate up to 18 miles per hour. Further, the tank's track was patterned after a different medium sized tank developed in Britain, in which the tank could perform the arc of a circle when turning as well as the ability to retard speed of one track and accelerate the speed of another track proportionally to allow turning without appreciable loss in speed.[317]

Tractor work began at the RIA in 1922 when the field artillery shops constructed an 800 pound reconnaissance tractor. The body of the tractor was made of duralumin, was waterproof, and was designed to float. The tractors constructed were made of light aluminum alloys and had a propeller to help the tractor maneuver in water. Since no other manufacturer in the United States had used duralumin sheets in the quantity and under conditions the Rock Island Arsenal was called upon to face in making tractors and carts, many problems in heat treating and quenching duralumin were encountered and solved.[318]

Although the modern tank evolved from the Design section and artillery shops during 1919-1939, intensive production and development of combat vehicles did not begin until the middle of 1936. From 1937 to 1939, the Arsenal produced 297 light, 9 medium and 8 pilot tanks, 80 combat cars, 81 scout cars, and 108 converted or modified combat vehicles. [319]

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.*

Small Arms

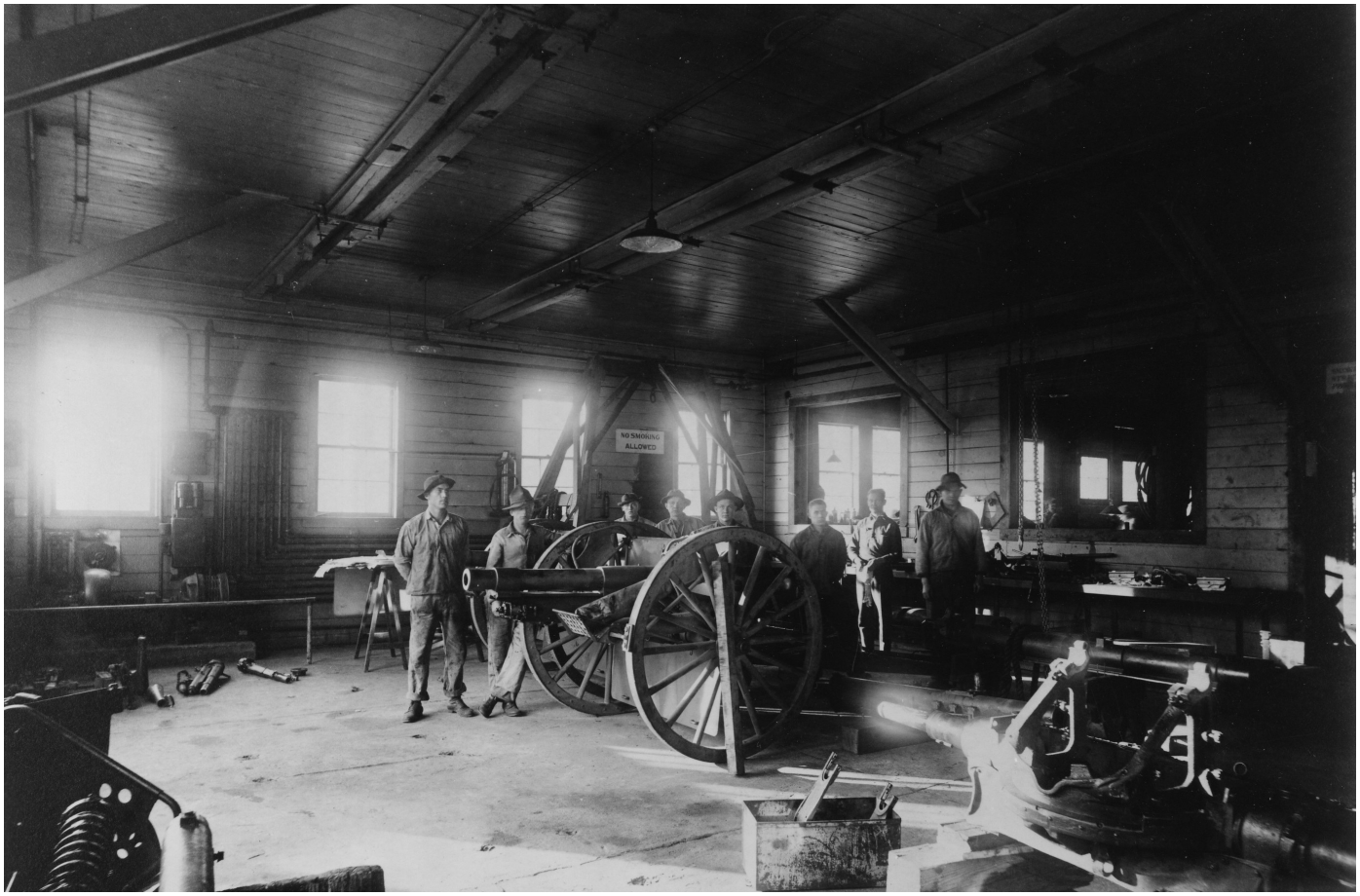
At the time of the Armistice, RIA was producing orders for 190,000 model 1903 rifles, but by 31 May 1919, all production for the new rifles ceased due to the end of the war. [320] Even though production of new rifles stopped, repair efforts on the 1903 model continued with a schedule of 1,000 rifles repaired daily, but it soon became apparent to many storage officers that further work would be needed to store and refurbish the equipment properly.

Efforts were made to have the arsenals and depots act as the processors of equipment, which as a result, more than a million rifles were processed at the Rock Island Arsenal immediately following the war. During 1920, the Armory, which included Shops B, D, and E cleaned and repaired over 1,250,000 parts received from Raritan Arsenal and overhauled more than a million rifles, pistols, revolvers, machine guns and bayonets turned in from World War I. In one eight hour day the Arsenal could recondition approximately 6,800 weapons. [321] In order to achieve such efficiency in cleaning the weapons, the Arsenal developed and installed the first World War I, all rifle and machine gun bores successful cleaning machine ever used in the United States. Previously, and until the end of were cleaned by hand.[322] In addition to overhauling weapons, the Small Arms Department manufactured screws, caps, nuts, and bolts as well as turned out a few special orders such as the making of 80,000 collars out of 99.5% copper for naval torpedoes.[323]

Overhaul of Rifles

During the first year following the end of World War I, the Arsenal had received criticism from the Ordnance Office that the Arsenal's cost to repair the rifles was higher than that of the Springfield Armory. However, later investigation demonstrated that the Arsenal conducted a more thorough analysis of the weapons than the Springfield Armory, although the investigation also concluded that the Arsenal required 25% higher labor costs. Due to the investigation, the Arsenal developed a plan to increase production levels by 45% and decrease personnel costs by 25%, which in turn decreased the quality of the work being performed on the rifles, but the Ordnance Department deemed the repaired rifles to be in satisfactory condition even with the decreased quality. [324]

Below: *Photo taken on 20 November 1924 of 33rd Ordnance Company working on (heavy maintenance) overhaul.*



With plans for the manufacture of the 1903 rifle discontinued, new plans were developed to place the armory in a position to begin immediate production in case war were to break out following the Armistice. Much of the work throughout the early 1920's was dedicated to that task. Every machine in the small arms department was set up and adjusted, sealed and coated with rust-preventing grease, in order to be ready to produce new equipment in case the peace failed.[325] Workmen soon had to contend with machines that were breaking down, but with the decline in the military budgets following the war, not enough monies existed to repair the damaged tool machines.

After significant effort to overhaul the massive amount of war materiel that was sent to the Arsenal following the Armistice work in the Small Arms Department declined dramatically. The number of employees decreased on a yearly basis until a low of 14 civilian workers was reached in 1924.[326] The reduction in personnel and the shift away from producing quality materials as well as adequately re-conditioning the returned weapons was noted in multiple reports to the Army Chief of Ordnance.[327] The machines necessary to produce the required supplies and materiels also faced tremendous neglect due to personnel decreases.[328]

Small arms manufacturing resumed at the Rock Island Arsenal after 18 years of only repairing and cleaning rifles. In 1937-1938, procurement and manufacturing in the Small Arms Department included 1,181 machine guns, 2,745 machine gun mounts, 2,018 ammunition chests, 132,500 helmet linings, 53 million metallic belt links, and 493 infantry hand carts.[329] Procurement and manufacture were of similar numbers the following year.

Below: *Rodman Avenue in 1921 before the repaving project. New Deal legislation allowed for the huge project and created many jobs.*

Outside Jobs

With the downsizing of the Rock Island Arsenal and various manufacturing activities following World War I, many workers at the Arsenal began thinking about new and creative ways in which to keep various manufacturing processes relevant and available for use. One of the ideas that quickly emerged related to conducting manufacturing work for other federal government divisions besides the Ordnance Department. Arsenal management quickly approved the diversification concept and the workers elected representatives who called on the Secretary of War, Newton D. Baker, and other department heads to support the "outside contracts" concept. While the plan was given approval by the Secretary of War, the total number of "outside contracts" did not measure up to the optimistic projections of the plan's sponsors as many jobs were lost in the years following the Armistice. However, work did include the construction of collapsible dams on the Ohio River for the U.S. Army Corps of Engineers, large gates and valves for the Reclamation Service, posts for the Land Office, fin assemblies for the air corps chemical bombs, and aluminum cartridge cases for the Navy. [330]

Concerns quickly developed about the appropriate role of government in business. Many businesses complained that the Arsenal possessed an unfair advantage in regards to contracts because the Arsenal did not include certain aspects of costs common to private industry. These private industry complaints resulted in the Arsenal's financial books being audited by a firm, which found that in general, the Arsenal's costs were reasonably comparable with those of private industry and that while some accounting practices certainly decreased the Arsenal's production costs, other aspects of government work caused increased expenses.[331] The investigation and audit

Below: *Colonel King was transferred to the Ordnance Department from being an Artillery officer for almost six years. King first spent ten years at Rock Island where he was assigned from 1907-1917. He came back in June of 1921 when he was appointed the Rock Island Arsenal's Commanding Officer. He served in this position until January of 1932, the time of his death.*

did not settle matters. Employee representatives were deeply concerned when the Arsenal did not obtain work because of the high prices quoted for projects in comparison with private industry. Many employee representatives charged that the management was deliberately quoting high prices in order to prevent work from coming to the Arsenal.[332] A new investigation was launched, which cleared the management of any ulterior motives and led to a reduction in the influence the employee representatives had in connection with Arsenal work orders.

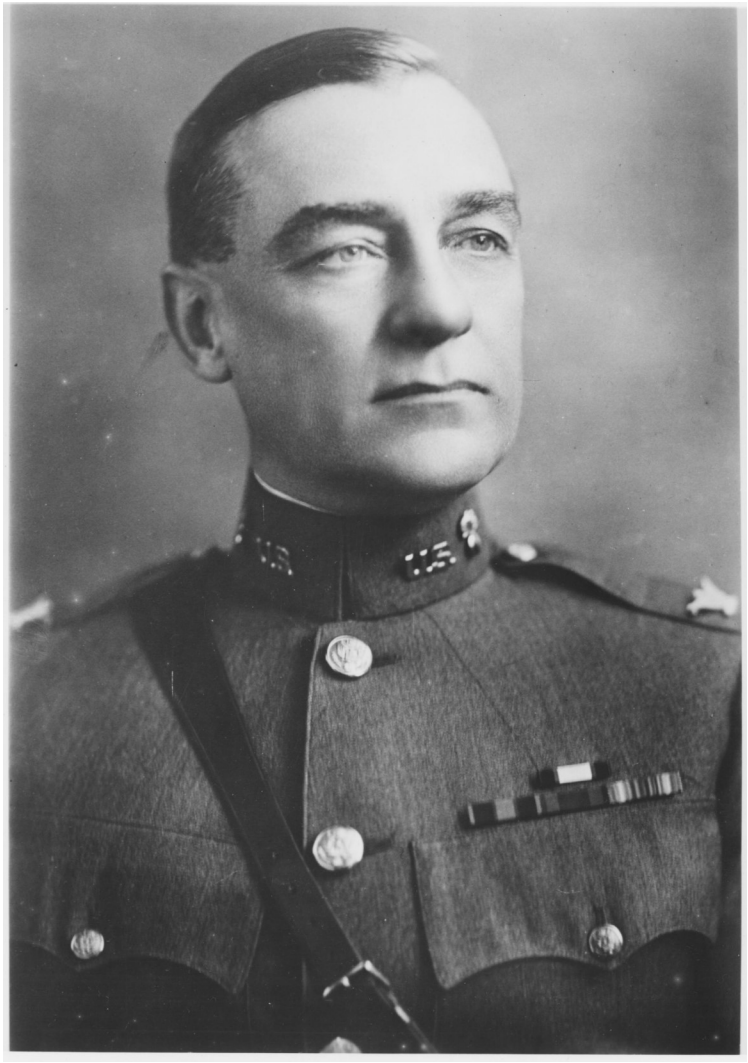
New Deal Legislation

In response to the Great Depression, funds were made available through New Deal legislation. Through this legislation, the Arsenal received monies in 1933 for a Civil Works Administration (CWA) group to widen Rodman Avenue. Further, in 1934 the Arsenal received $370,000 in Public Works Administration (PWA) funds for additions or repairs throughout the island. A Civilian Conservation Corps (CCC) camp emerged at the Arsenal in 1935 in which the camp workers trimmed trees, conducted drainage work, landscaped, and revetted the river bank. This work was later supplemented by eight extensive Works Project Administration (WPA) projects that were completed from 1937 to 1939. WPA workers repaired buildings, plumbing, heating, and electrical installation and built 2,800 feet of dike for flood protection. [333]

Col. King's Death & Subsequent Commanders

On 12 November 1931 Col. King became seriously ill and was granted an extended sick leave. Even while on sick leave King continued to work on Arsenal matters but later succumbed

Below: *Colonel Herman Walter Schull was detailed to the Ordnance Department after spending his first three years as an Artillery Officer. He would later become Commanding Officer at three different Arsenals, being at the Rock Island Arsenal from 1 March 1932 until 25 May 1934 after which he was promoted to Brigadier General.*



to illness on 27 January 1932. He was buried next to General Rodman.

Following King's death, the Chief of Ordnance appointed Colonel Herman Walter Schull as Commander. Schull served during the Spanish American War and had previously served as the Commander of the Springfield Arsenal.[334] He assumed command at RIA on 4 March 1932 and moved forward to create greater methods of efficiency in the maintenance and manufacturing efforts at the Arsenal. Schull oversaw the dredging of a channel 200 feet wide in order to remove the mud and silt deposited at the water pool, allowing the dam to produce more power for the arsenal. Further, a new concrete bridge was constructed connecting the island with Moline in 1932. [335]

In May 1934, Colonel Schull was relieved of Command of the Arsenal and was appointed Assistant to the Chief of Ordnance. Colonel A.G. Gillespie then assumed command. Gillespie would later be replaced by Colonel Norman F. Ramsey who would lead the Arsenal into World War II. Ramsey saw the Arsenal's operations increase dramatically in the years leading up to World War II as assembly lines were reactivated, new equipment was purchased, and more workers were hired to accommodate the increased orders placed by the government for war materiel.[336]

Below: *Brigadier General Alexander G. Gillespie was the 14th Commanding Officer at Rock Island Arsenal. He took command on 24 May 1934 and there remained until 30 June 1937. For his services in France, General Pershing awarded him an AEF Citation, and he received the Distinguished Service Medal, Legion of Merit, Army Commendation Ribbon, and the Purple Heart, as well.*

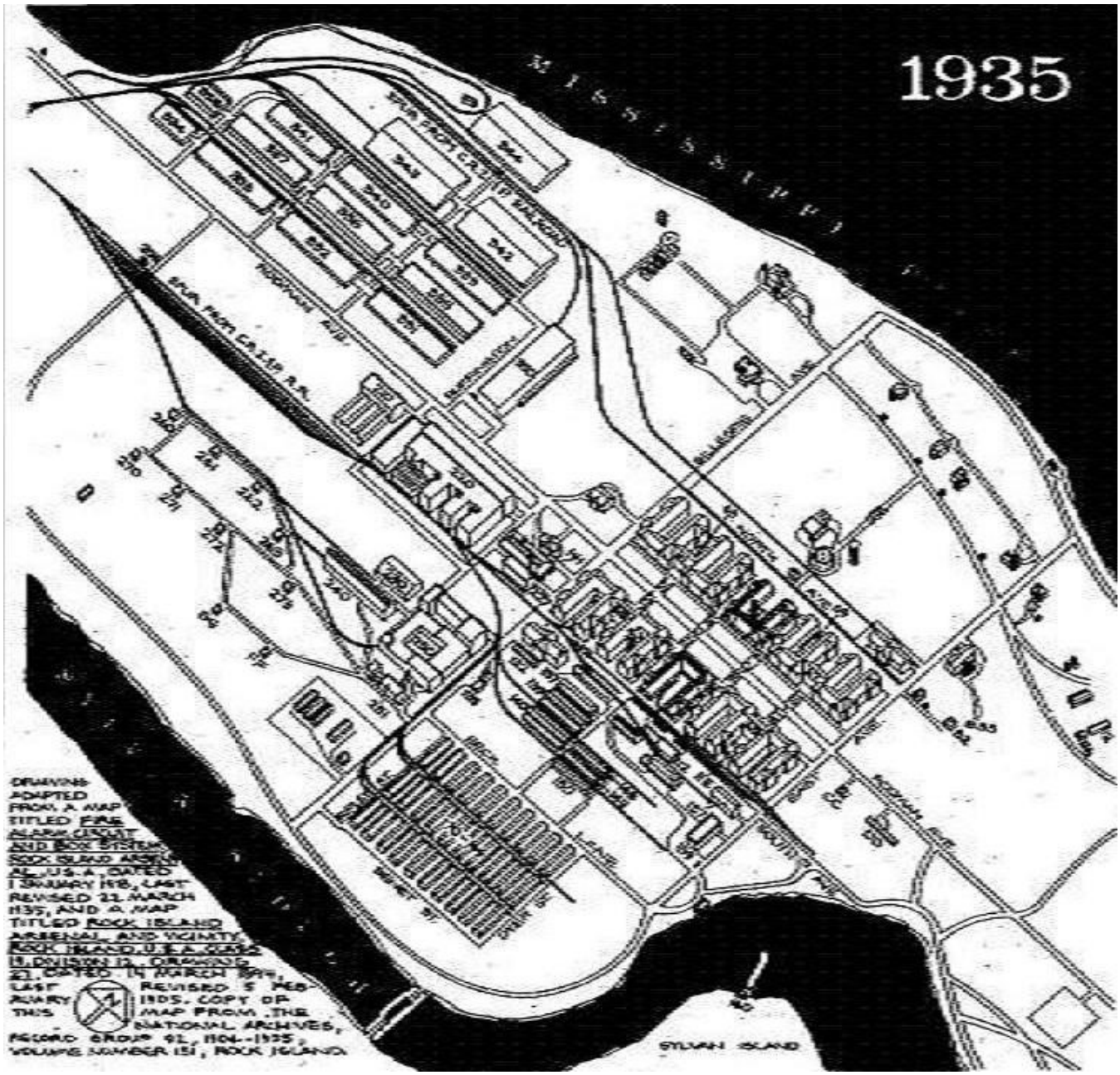
Navigation of the Rapids

Ever since the Sauk and the Fox tribes resided in the Rock Island area, the Mississippi River was tortuous with rapids and a strong current, making the river un navigable for commerce. Boats frequently were wrecked and had to transfer freight and passengers by rail around the rapids.[337] To improve the river navigation Congress authorized the construction of a dam and locks at the foot of Rock Island in 1930. Construction began in 1931 and the first lock began operating in 1934. The locks were situated at the downstream tip of the island in order to permit the use of the swing span of the Government Bridge without impairing its clearance. Parallel locks were built, one 600 feet in length and one 360 feet in length, with both 110 feet wide, which is the same as the Panama Canal.[338] The guide walls extend 600 feet upstream from the upper gate and 1100 feet downstream from the lower gate. Two locks were constructed to facilitate both upstream and downstream traffic, as well as to ensure that a breakdown in machinery would not shut down the river. [339] A roller dam was also created to allow for further navigation of the river and remains the largest roller dam in the world to this day.

Conclusion of Interwar Period

Initial need to overhaul the huge amount of artillery and ammunition after World War I helped keep personnel numbers up. Eventually, employee numbers started to decrease. Even though new experiments, research, and continued production of materiels during the interwar period helped the Rock Island Arsenal face World War II, many changes and increases in manufacturing and personnel were still much needed.

Below: *1935 map of Rock Island Arsenal. Most of the construction seen here occurred from 1917-1921. Note: Compare expansion with 1910 map on page 197.*



Below: *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.*

CHAPTER FOURTEEN
World War II: Rock Island Arsenal, An Arsenal for Democracy

RIA's Role in Mobilizing American Industry

Leading up to WWII, the 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 under educational contracts.

The Arsenal was given the responsibility of providing the technical supervision of such items as tanks, artillery, and machine guns in private plants. Private contractors also 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 tools, die, jig, gage and fixture drawings; machine – tool requirement; and updated component and assembly drawings.

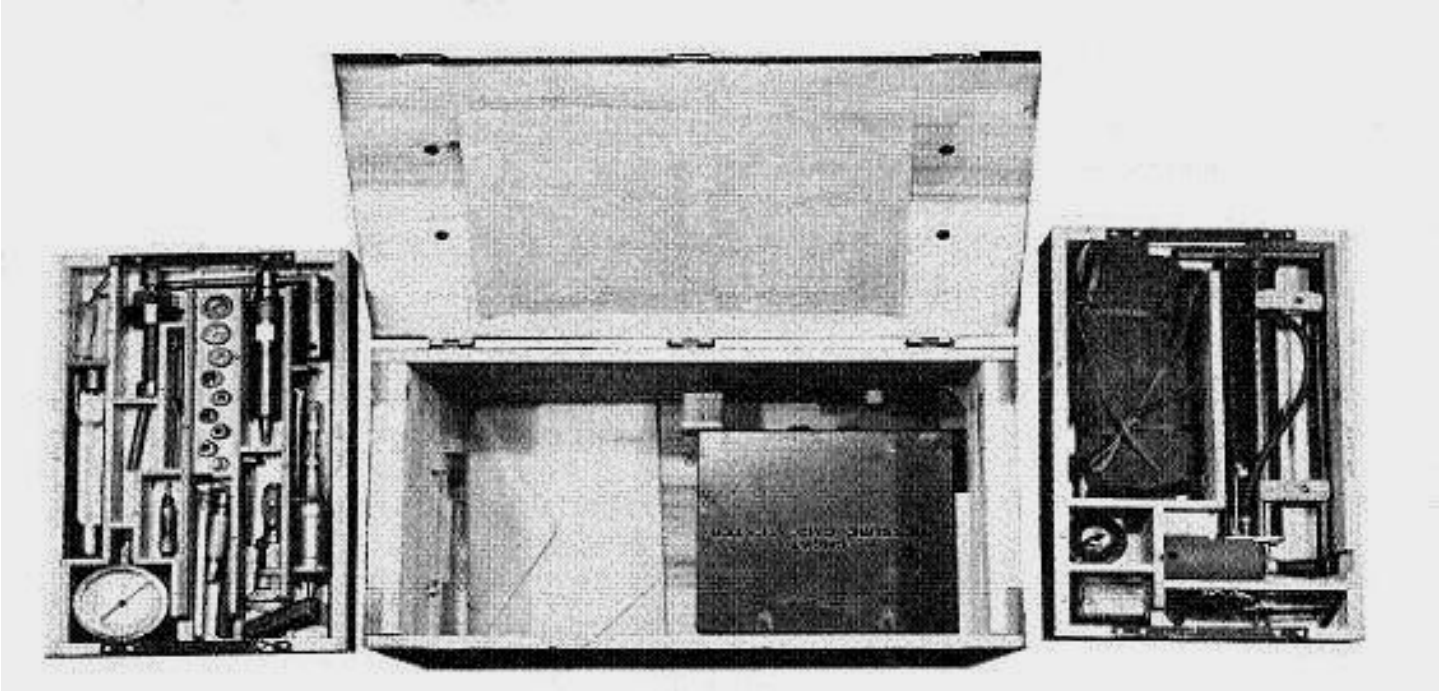
When available, the Arsenal loaned inspection gages, surplus machines, and tool equipment to the private manufacturers. RIA's role as educator and technical advisor to Midwest plants converting to war production sharply increased following the Japanese attack on Pearl Harbor, 7 December 1941.[340]

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

The Arsenal also contracted with International Harvester, and the company was able to produce 750 model T-7 tanks per month. Although they participated in assembly of the tank only, RIA provided the means and education to turn International Harvester into a tank plant during war years. [341]

*** Note: Used for this chapter is Thomas Slattery's 50th Anniversary of WWII commemoration piece, *Rock Island Arsenal: An Arsenal For Democracy,* written in 1992.

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 the field maintenance was also produced by RIA.*
Note: *Inside the lid of the chest is where a list of contents was attached.*



FDR's "Great Arsenal of Democracy" Speech

In 1940, German forces blitzkrieged, using swift intensive military attacks, across Western Europe and began air attack on Great Britain. In the United States, Franklin Delano Roosevelt was re-elected President and 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.[342] 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, from Germany, Italy, and Japan, 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 there are "four essential freedoms"… freedom of speech, of worship, from want, and from fear.[343]

1940, RIA Reopened Buildings 109 and 110

In 1940 RIA re-opened Buildings 109 and 110 (Shops G and I), repaired old machinery, and installed new machines for the production of 105mm 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 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

Below: *RIA's circa World War I Storehouse W1, Building 350, could not adequately handle the Arsenal's steadily increasing depot activities during the period of 1940-1941, and this led to the construction of Building 299. The Arsenal processed approximately 1,500 orders weekly with shipments directed to all corners of the world.*

Harbor, RIA began manufacturing the Army's new air-cooled .30 caliber Browning Machine Gun, M1919A4.[344]

The United States' 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. Of course, government munitions plants like the Rock Island Arsenal experienced the "boom" in production before most private industries.

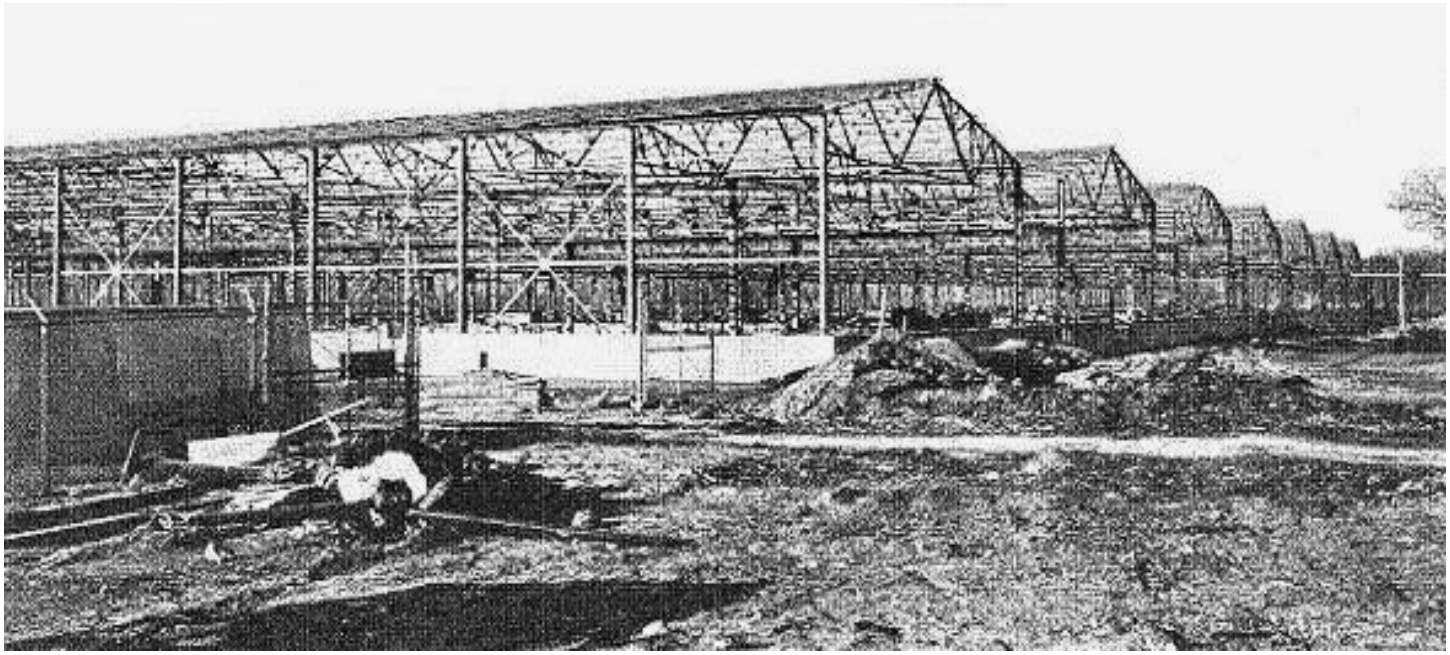
11 March 1941, FDR Signs Lend-Lease Act

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 give 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.[345] The World War I era Storehouse W1 Building 350 was no longer adequate.

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.*



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.[346] The building enclosed 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.

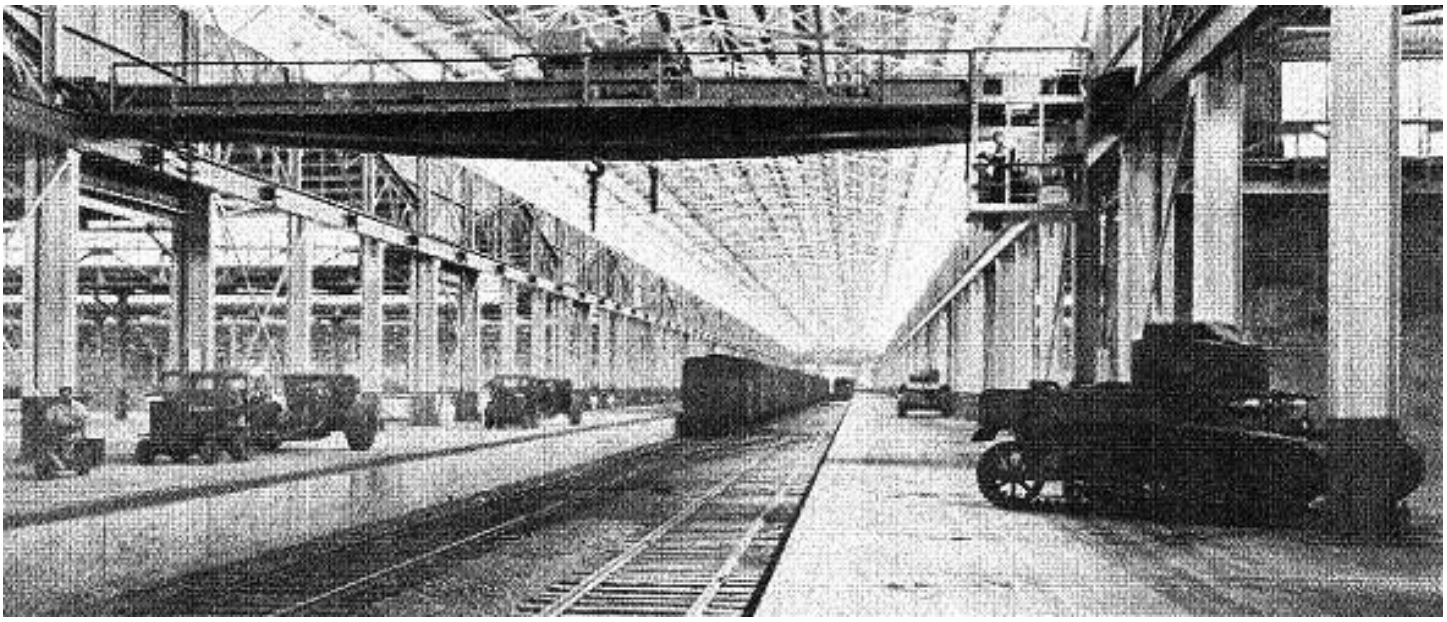
President Roosevelt's Lend-Lease outpouring of American munitions to foreign allies hindered the Army's own development. Before American Industry mobilized for war, the strain on arms production from Britain and France encroached on the production of items needed for U.S. Army's own training operations. 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 ammunitions in early 1941 reduced U.S. ammunition for training by 40 percent.[347]

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".[348] In the eleven months prior to December 1941 the United States had boosted its tank production to many hundreds a month. At RIA, in the year 1941 alone, 4,820 artillery vehicles, including tanks, trucks, and carriages, were manufactured. When compared to only 1,871 artillery vehicles produced in the previous year, the purpose for the production boost is evident.[349]

Below: *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 WWII approximately 650 employees worked in building 299 of which nearly 65 percent were women.*



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 smaller 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."[350]

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.[351]

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.*

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 "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.[352]

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 labor. Another requirement stipulated that applicants must be between 18 and 50 years of age, and capable of performing physical labor.[353]

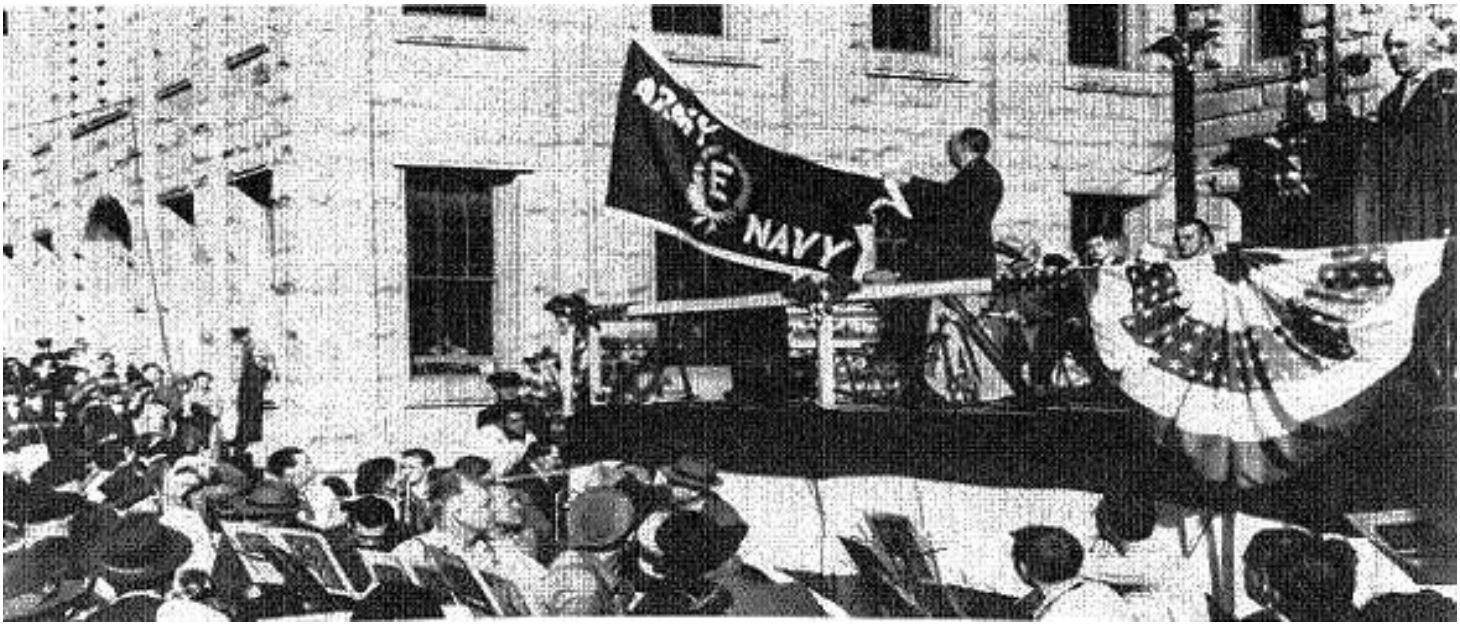
Arsenal Machines Never Stopped

Early in the war the RIA workforce worked two separate shifts per day, each shift being 10 hours. Some operations, however, worked around-the-clock with three 8 hour shifts that ran 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 materiels 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 home front could produce the all-out-effort required to convert the United States into an "Arsenal of Democracy".

Below: *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.*



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.[354]

Victory or Defeat was in the Balance

The United States Government restricted the production of other commercial goods to reserve materiels 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

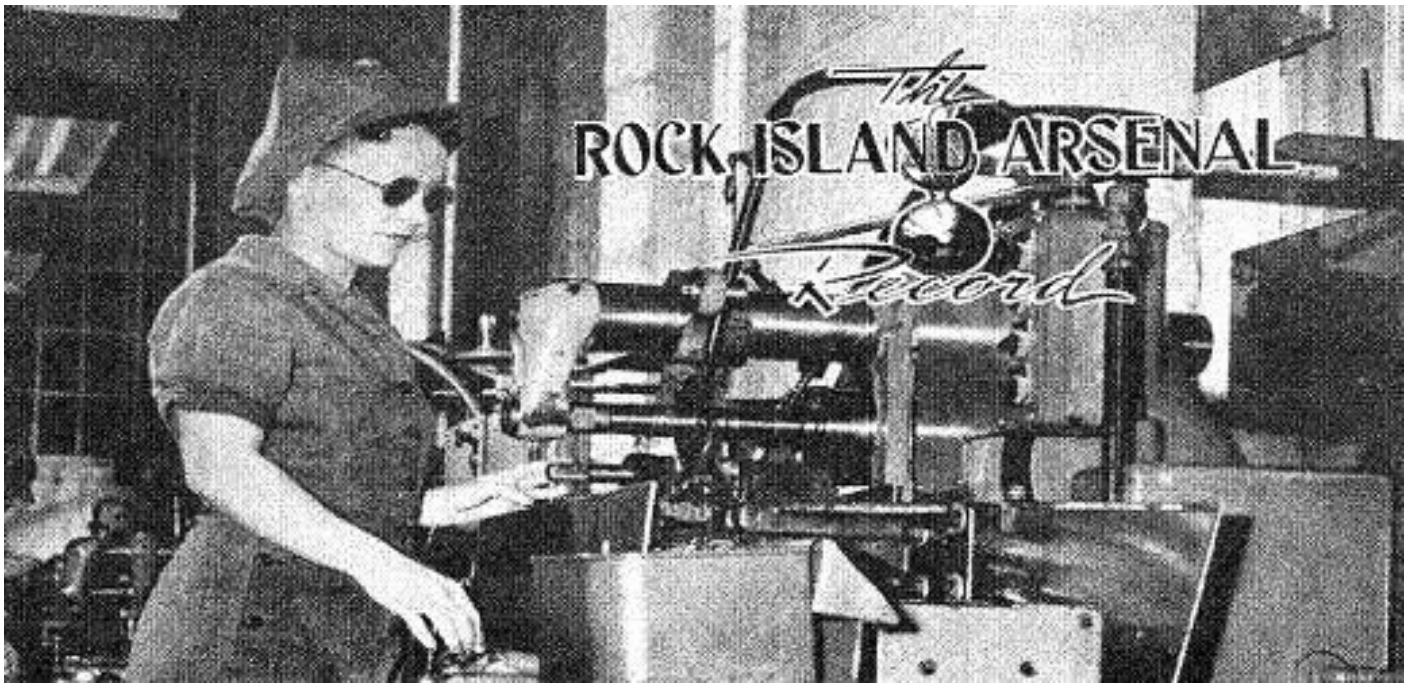
On 30 September 1942 RIA received the coveted Army-Navy "E" pennant for excellence of war production. During the ceremony Illinois Governor Dwight Green summed up the situation in his address to RIA employees. He said, "Today, the only business in America – is the business of winning the war."[355]

During World War II the RIA Artillery Vehicle Department consisted of 27 divisions which in turn were divided in 98 sections for the manufacture, overhaul, and modification of many types of ordnance equipment. By 1942 the Artillery Vehicle Department alone had 10,200 employees.[356]

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.[357] From that date until the end of the war

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 WWII era. The Rock Island Arsenal Record published originally as an employee news magazine and today serves as a valuable source for historical information regarding the RIA during WWII.*



arsenal employment gradually declined. Just as in World War I, women replaced the men in the arsenal shops, offices, and storehouses who had left to fight. 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.[358] Italian prisoners-of-war formed another source of labor for the Rock Island Arsenal.

Italian Quartermaster Service Companies

On 16 July 1944 the 38th and 40th Italian Quartermaster Services Companies arrived at Rock Island Arsenal by train from Pine Camp, New York.[359] Technically they were no longer prisoners since Italy had earlier surrendered 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 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

Below: *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.*

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 to the Italians.[360]

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.[361]

RIA Apprenticeship School

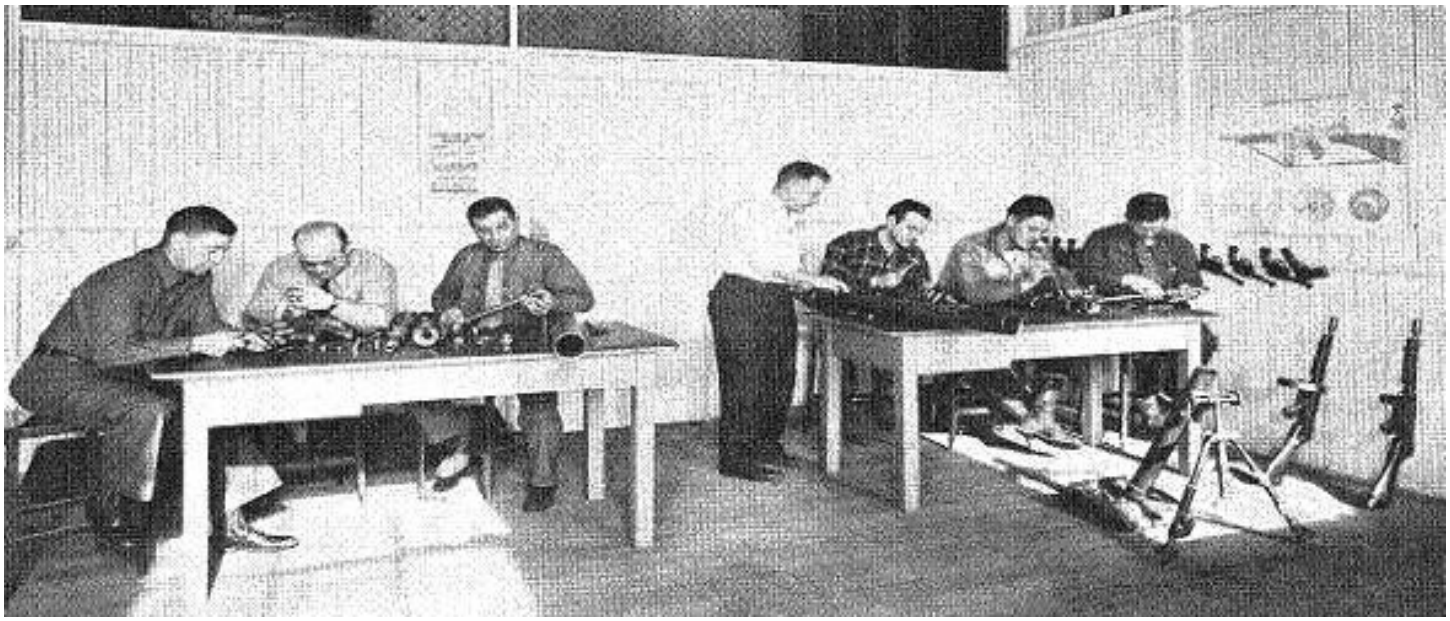
One problem RIA had to cope with during the war was the scarcity of skilled laborers. With men being called into uniform and private industry converting to war production skilled craftsmen were difficult to find. Rock Island Arsenal sent announcements to 100 Midwest radio stations to broadcast their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

The RIA Apprenticeship School provided the answer for some of the Arsenal's manpower needs. Unable to hire experienced skilled craftsmen, 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.[362] Also hundreds of workers were completing in-service training which would lead to machine operator jobs and other positions in the factory.

RIA Wartime Construction

In 1942 construction continued on Building 299, the construction of Buildings 208 and 390 began, and the new forge shop, Building 22, 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.

Below: *RIA's major role as an education/training center during WW II 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.*



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 were installed in the various shops during 1942.[363] 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.

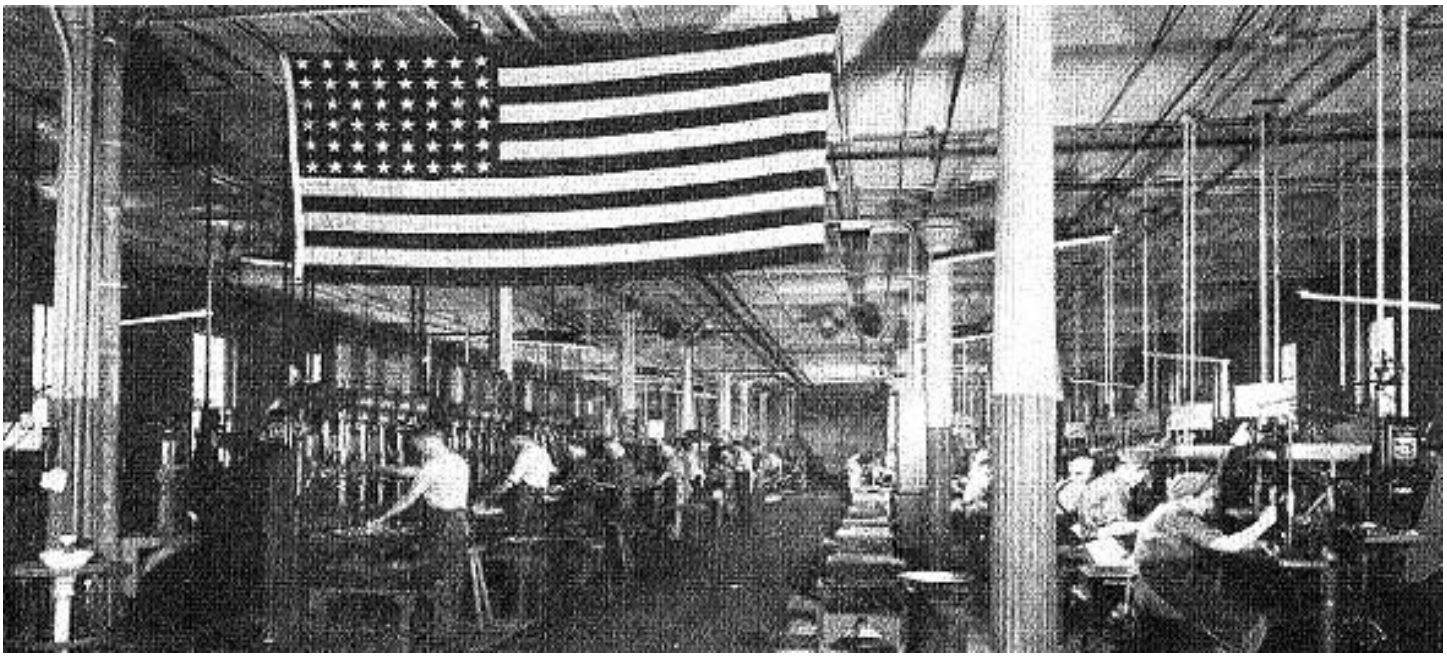
American and British Joint Ventures

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.[364]

Below: *RIA Small Arms Division produced 84,945 machine guns and manufactured 715,000 machine gun barrels of various models during WW II. This 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.*



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.

American Locomotive Company received the contract to remanufacture the M3 tank chassis 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.[365]

RIA Small Arms Manufacturing – Machine Guns, Belt Links, Etc.

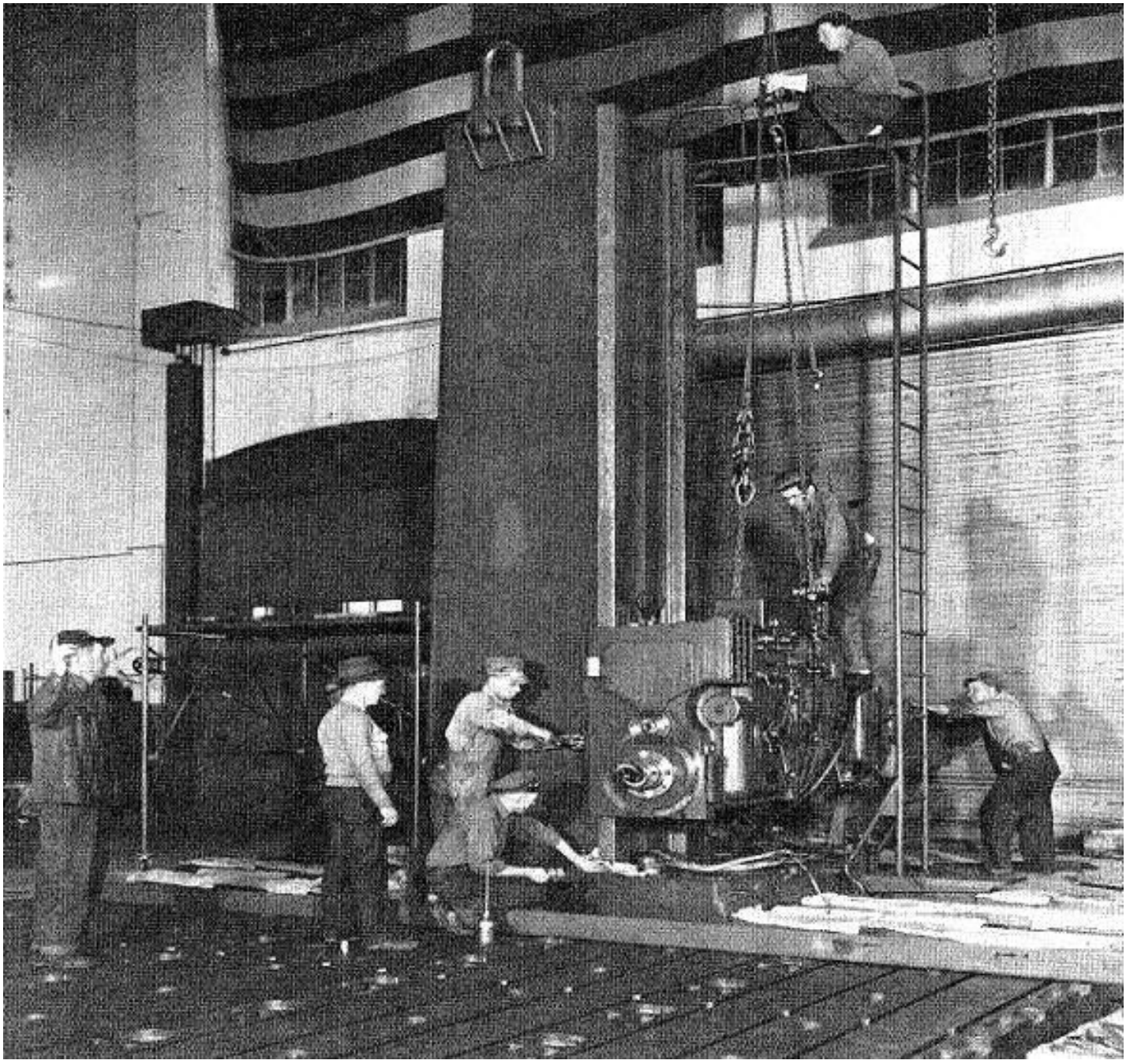
RIA manufactured both the water and air cooled .30 caliber Browning Machine Guns, metallic belt links and parts for .30 caliber machine guns, and overhauled and modified .50 caliber machine guns, machine gun tripods, mounts and parts. The RIA Manufacturing Department's Small Arms Division produced 84,945 machine guns and manufactured 715,000 machine gun barrels of various models during World War II.[366]

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.[367]

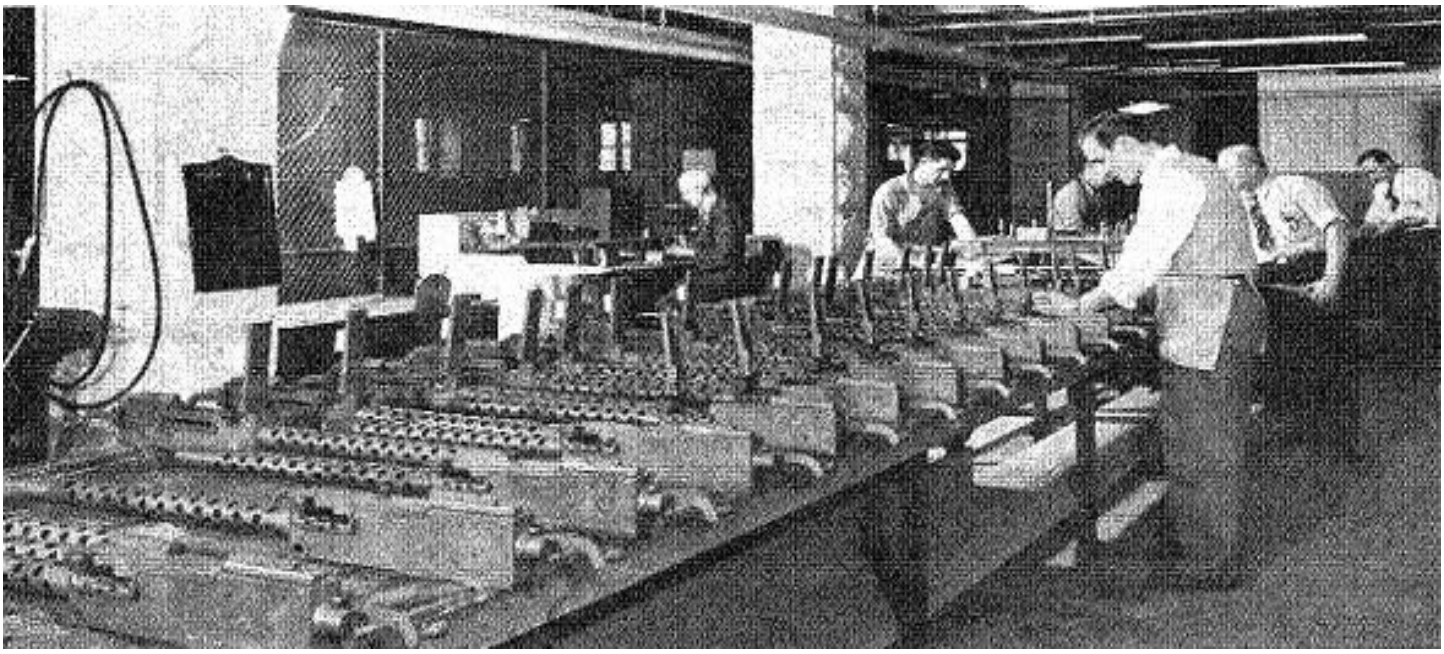
Manufacture of Breech Mechanisms for the 155mm M2 Gun

Rock Island Arsenal began development work on the .60 caliber machine gun, TI17E3, 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

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.*



Below: *A view of the final inspection department for Browning Machine Guns M1919A4, M1919A5, and M1917A1, located in Shop K, Building 68.*



and the installation of approximately 116 new machine tools.[368]

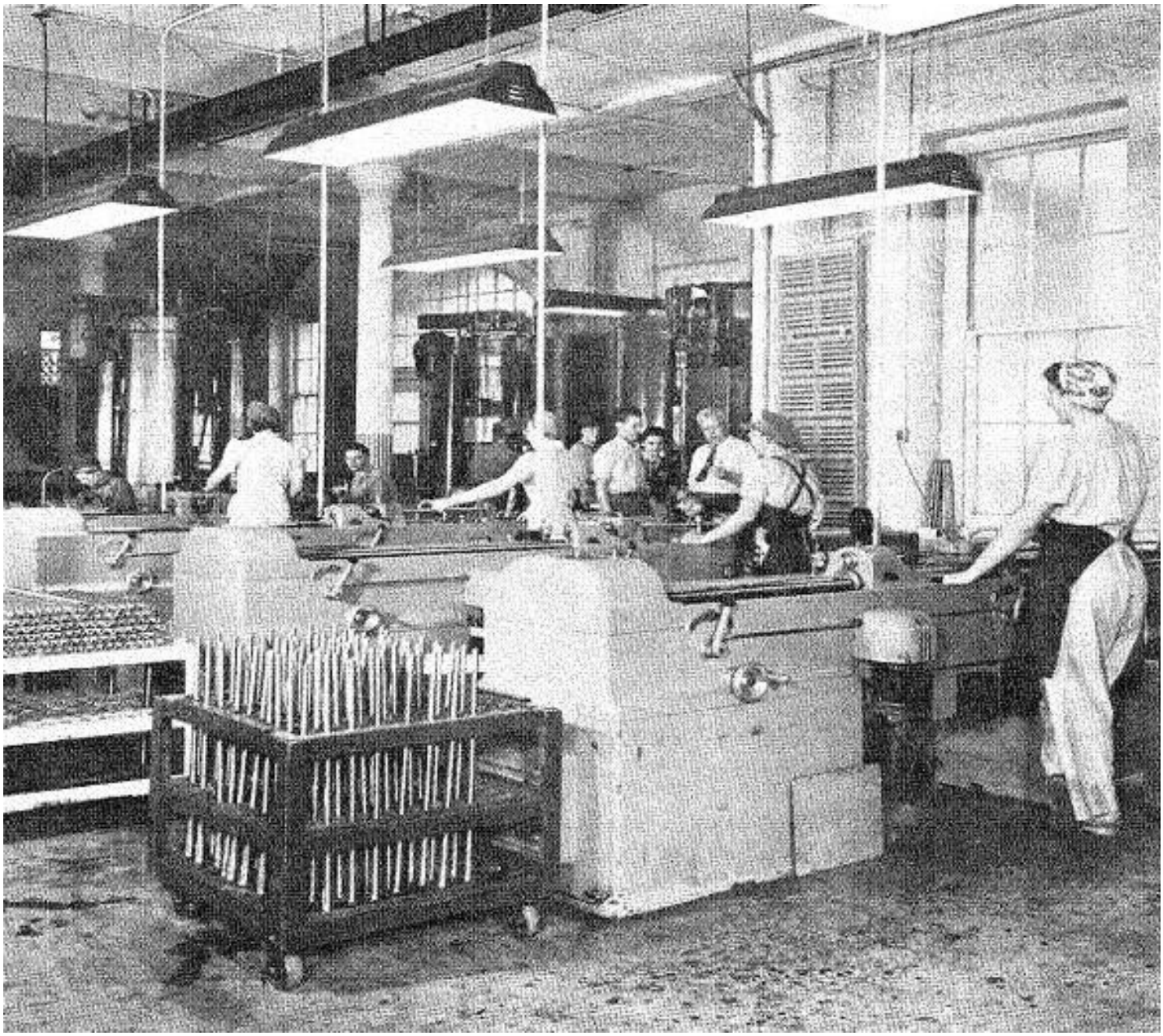
On 1 October 1944 Colonel Carl A. Waldmann succeeded Brigadier General Norman F. Ramsey as RIA commander. Brigadier General Ramsey assumed command of Springfield Armory following his tour of duty at Rock Island Arsenal.

More RIA Production During WWII

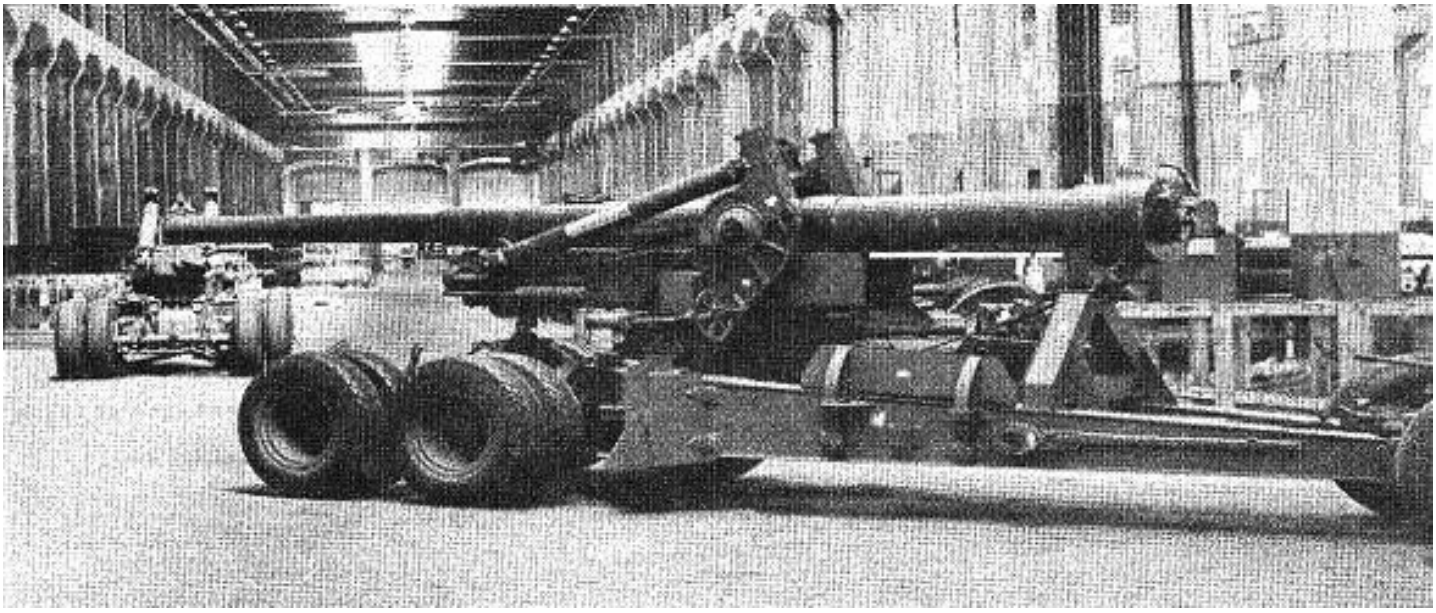
Other major items of RIA production during WWII included 6,889 artillery carriages of various types, 24,539 recoil mechanisms for various artillery pieces, and 22,520 gun mounts for various models. In addition, RIA manufactured thousands of paracrates, parachests, and paracaissons used for air transport and air drop of weapons and equipment.[369] Furthermore, RIA overhauled or modified approximately 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, 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

RIA also 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 paracrates. 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 weapons and equipment.

Below: *RIA's Rifle Shop 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: *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.*



RIA Rifle Broaching Method for Machine Guns

One of RIA's contributions to the WWII war effort was a new method of broaching barrels, cutting all the grooves in one pass instead of one at a time, for machine guns. During World War II, Mr. Baumbeck wrote an account of the RIA broaching (rifling) operation for machine gun barrels.[372] 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 test trial 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 machine gun production at both 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 made 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. [373]

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*.

Below: *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.*

William Baumbeck, RIA Chief Superintendent of Production

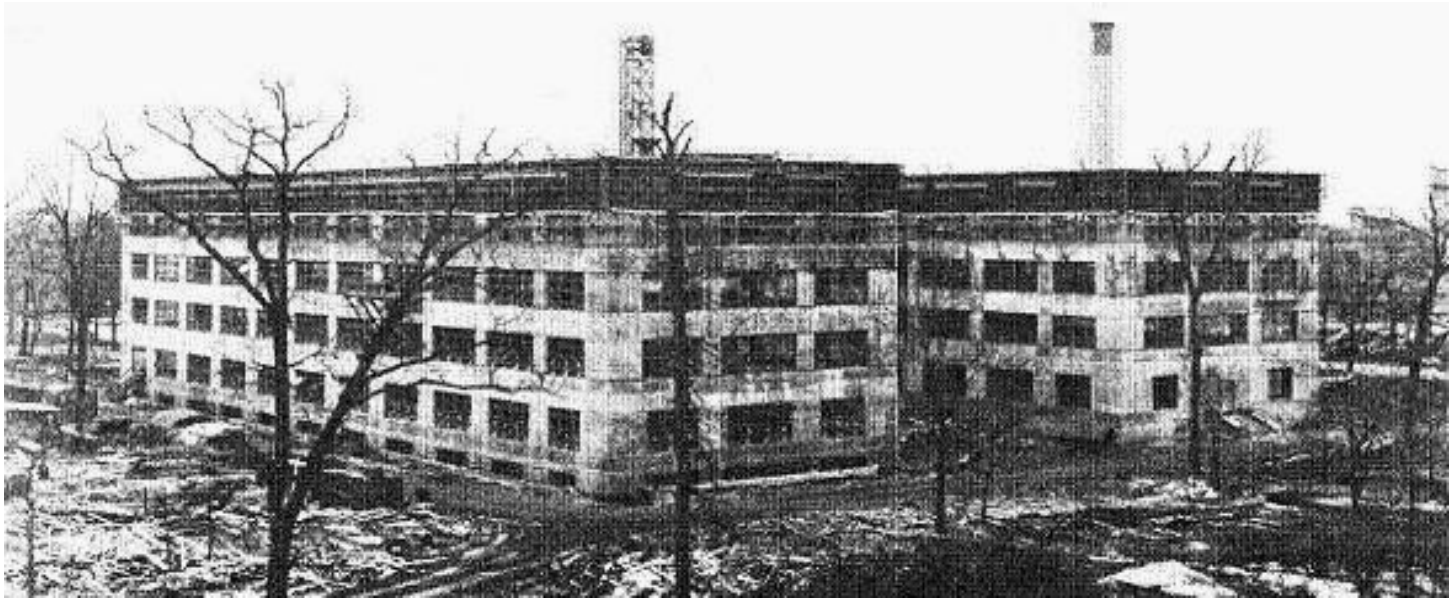
William Baumbeck, RIA's top civilian employee, was placed in charge of all RIA manufacturing activities on 6 May 1926. On 8 December 1943 Mr. Baumbeck received the War Department's Emblem for Excellence Service from Secretary of War Stimson in Washington, D.C.[374] He was one of only two recipients to 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 WWII, paid tribute to William Baumbeck in the book The Industry – Ordnance Team. He commented that:

> Every Regular Ordnance office has a deep personal affection for our six old-line arsenals (NOTE: 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.[375]

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 the 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 Men's 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.

Below: *Post Headquarters. Scenes of wartime construction: Reinforced concrete used in the construction of Buildings 390, 208, 222, etc., saved more valuable building materials such as iron and steel for manufacturing of ordnance items.*



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.[376] 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 Arsenal received a variety of machine tools from many Midwest manufacturers upon the completion of their war contracts at the end of WWII.

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, after 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, just 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: *The Automotive Division continued to overhaul tanks after the Second World War. M4A3 Sherman tanks with 76mm guns are shown loaded for shipment on 27 July 1950. In addition to overhaul, the Arsenal installed radios in these tanks and prepared some of them for storage.*

CHAPTER FIFTEEN: The Korean War

Rock Island Arsenal: Post WWII

Following previous practice, the Rock Island Arsenal returned its production level to peacetime status after the end of WWII. After the Armistice, existing orders were immediately canceled to ensure a rapid downsizing from the emergency production rates of wartime. Employment was decreased to 1,483 workers by the first few months of 1946, causing a large percent of women to lose their jobs. During WWII, for example, women employees made up 68% of the RIA Ordnance Depot workforce. By 1946, however, only 15% of RIA workers were women.\[377] In addition to the decreased workforce, most of the manufacturing shops were shut down, and after the war the main bulk of production and experimental work was all conducted in Shop M. During this shut-down time, however, many of the manufacturing shops were equipped with improved and modernized machines and tools.[378] This would help the shops return to an emergency production rate more smoothly and effectively when hostilities with Korea broke out within the next few years.

Peacetime Activities of 1945-1947

Prior to the conflict in Korea, the Rock Island Arsenal's main job was overhaul. Materiels that were returned from Europe and the Pacific needed to be repaired and prepared for long-term storage.[379] Some production of materiels was taking place during this time, however they were usually spare parts to aid in the overhaul/repairing process.[380] Carriages and tanks were a big part of the overhaul process at the Rock Island Arsenal, and many returned from abroad to be prepared for storage.[381] Up until 1951, repairing existing items comprised the majority of activities.[382]

Below Left: *Brigadier General N.F. Ramsey was Commanding Officer of Rock Island Arsenal from 1937-1944. In 1925 he was awarded the Soldier's Medal for heroic conduct 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 materiels and served as a laboratory and instruction center for commercial firms having contracts to produce similar materiels.*

Below Right: *Colonel C.A. Waldmann was Commanding Officer of Rock Island Arsenal from 1944-1947. As a result of Colonel Waldmann's efforts RIA received necessary funding to develop a new broaching method and machinery for*

Besides overhaul, another large chunk of the work that was being conducted at RIA during the peacetime years was in construction. As early as 1945, focus turned on the maintenance of roads, fences, and water mains. Several parking issues were addressed, and Buildings 33, 34, and 35 were constructed on the east end of the island.[383] While new buildings were being built, there was also an incidence of unintended, accidental destruction. On 11 May 1946, a fire started in the dynamometer room of Building 208 charring the building and causing exstensive damage to the interior. The cause of the fire was never determined.[384]

Change Of Command

In October 1944, Colonel Carl Andrew Waldmann, Officer-in-charge of Manufacturing during most of World War II, assumed command of Rock Island Arsenal following Brigadier General Norman Foster Ramsey who was transferred to take command of Springfield Armory. Colonel Waldmann remained Commander of Rock Island Arsenal until July 1947. He retired from the Army in the next month, on 31 August. During his time as RIA Commander, Colonel Waldmann personally helped make the new broaching method (cutting the rifling grooves for machine gun barrels) possible by obtaining the necessary funds to develop the machinery. This advancement after WWII made the production of rifles a much quicker process.[385]

After Colonel Waldmann's retirement from the Army, Colonel Walter Wilton Warner assumed command of the Rock Island Arsenal in July 1947. Throughout his career in the military Colonel Warner served as an Ordnance Officer in Europe multiple times. During his time of service he was awarded with the Distinguished Service Medal, the Legion of Merit, the Army Commendation Ribbon, the Croix de Guerre with Palm, and the Order of the Red Star (Soviet Union). He served as Rock Island Commander until his retirement on 31 August 1953.[386]

Below: *Colonel Walter Wilton Warner was Commanding Officer of Rock Island Arsenal from 1947-1953. He earned the Distinguished Service Medal, the Legion of Merit, the Army Commendation Ribbon, the Croix de Guerre with Palm, and the Order of the Red Star. Colonel Warner retired from the Army in January 1953.*

Research Activities

Near the end of WWII, the Rock Island Arsenal began furthering their research projects in an attempt to improve out-dated weapons that were used in WWII. One particular project involved the development of the 4.5-inch, single-tube rocket launcher that could replace the model previously used against the Axis Powers.[387] The inaccuracy of the rocket launcher had caused trouble during WWII because "the spin-stabilized rockets did not have enough velocity and spin up-on leaving the tubes to maintain a precise initial alignment or stability in free flight."[388] One post-war goal was to fix this inaccuracy.

Rocket launchers were not the only item being researched during these peacetime years. Experiments were also conducted right away in the Small Arms Division that led to more productive, efficient manufacturing of rifles on the island.389 Additionally, innovations and increases in worker safety in the Automotive Division decreased the amount of work time spent on overhauling tanks, tractors, and artillery vehicles. Unfortunately, this would also mean a large decrease in employment in the Automotive Division during peacetime years, but by 1951 employment levels would rise again, almost to its previous level. This decrease in necessary work time would also prove helpful not only with overhaul but also when emergency production began again during the hostilities with Korea.[390]

Below: *January 1948 photo of members of the Machinist Apprentice School.*

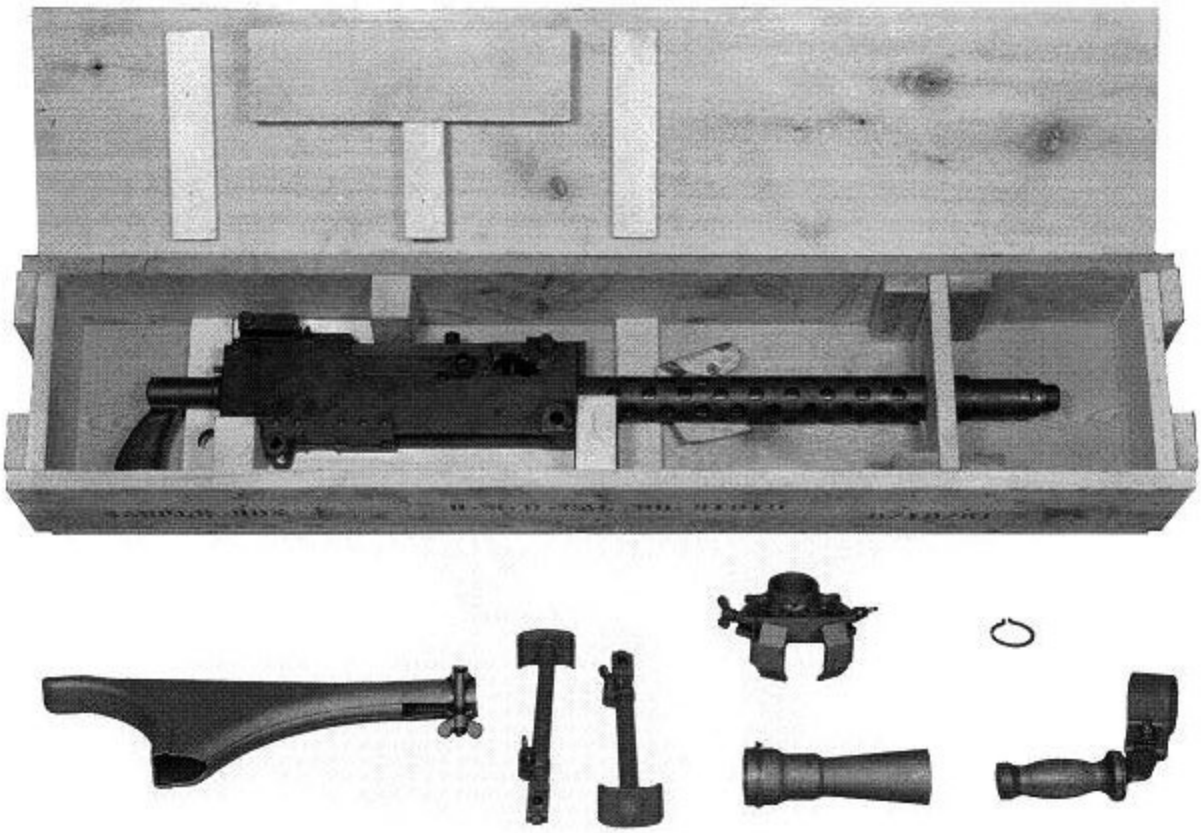
Not all offices lost vast numbers of employees after WWII. In the case of the Laboratory, for example, the height of employment that this division had ever reached peaked at 105 employees at the end of WWII. This particular rise in employment was obviously due to problems with weaponry experienced during WWII and the research efforts to fix these issues that followed. Also corrosion and corrosion resistance were becoming large problems when it came to overhauling materiels. Most of the research done during these peacetime years in the Laboratory was done in an effort to combat corrosion.[391]

Apprentice Schools

Even during these peacetime years the Apprentice Division continued to expand. With all of the research that was going on, new apprentices were accepted every year. In order to train them and provide experience for the future they mainly worked in manufacturing small spare parts for overhaul. At the end of the war the Apprentice Schools had about twenty-seven students, and the number of students increased to forty-two by mid-1949.[392] By the year 1951 there were forty-eight machinists, seven artillery field mechanics, one molder, one leather worker, one steamfitter, one carpenter, and one electrician learning their crafts in the RIA Apprentice Schools.[393] Within the next year, thirty-one machinists, ten artillery field mechanics, and two electricians were added to the group.[394]

The RIA was involved in types of training other than the Apprentice Schools. In 1954, the Cooperative Student-Engineer Training program began. This program took high school graduates and put them in a six year engineering training program, after they passed civil service tests. As well as getting on the job training these students received an education at a nearby college or university. In an effort to make machines more efficient and safe, a similar school that trained machine tool inspectors also began in 1954.[395]

Below: *Shipped Browning, M1919A6, .30 caliber air-cooled Machine Gun, as packed in container with unwrapped contents.*



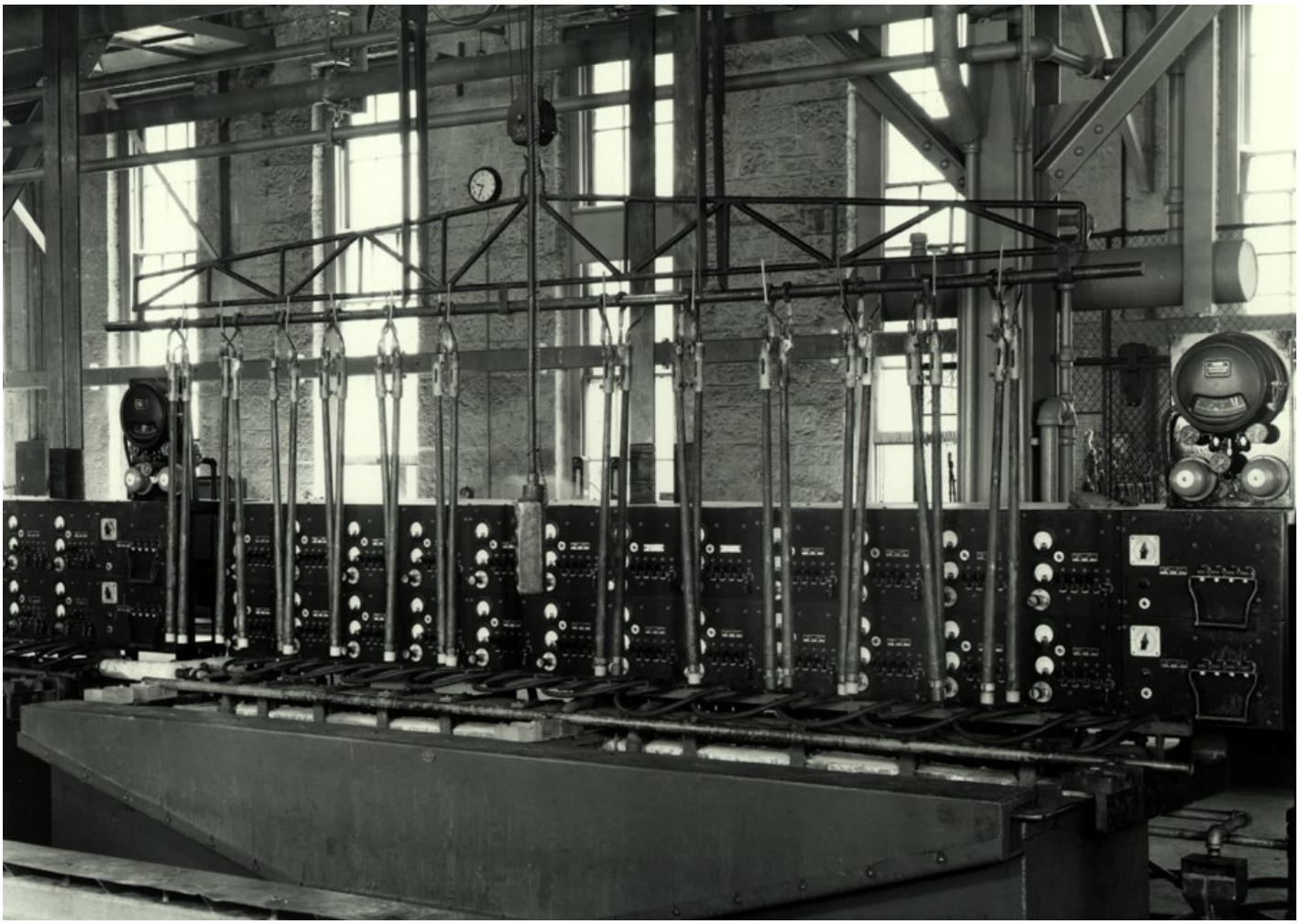
Small Arms Division

The Small Arms Division continued to keep fairly busy after the end of WWII. Their main order of business was overhaul of different items like the 3" /50 cal. loader, T21 gun mount, .30 cal. carbine, .60 cal. machine gun, aircraft personnel catapults, aircraft canopy remover, 3" .50 cal. rocket launcher and grenade launchers.[396] As well as making miscellaneous spare parts, they also produced and rebuilt small arms weapons like the M1 rifle, the Browning automatic rifle, sniper rifles, sub-machine guns, and .30 and .50 cal. machine guns.[397] This expansion of activities caused an increase in employment throughout the peacetime years. By 1949, employment in the Small Arms Division had increased from 119 to 317. By the time hostilities with Korea had escalated employment had risen all the way to 930. The amount of time spent simply on repair and overhaul, however, is exemplified by the fact that it was not until 1953 that the first complete machine gun manufactured since WWII was completed.[398]

Production Boost

Even prior to hostilities with Korea, both employment and activity increased at RIA in late 1947 and early 1948. During this time, workers were kept busy by a manufacturing order of the 3-inch .50 caliber loader for the Navy and gun mount T21. This order allowed for new production instead of just repair activities. Much of this work on the Navy loader and gun mount was experimental, and the increase in employment also aided largely in the increased overhaul of automotive equipment and small arms.[399] During this time, the number of items stocked in the warehouse rose from 68,000 to 80,000.[400] Clearly overhaul was taking up the majority of workers' time. Some new items of manufacture, however, were being produced from mid '48 to mid '49,

Below: *The manufacture of .50 caliber and .30 caliber machine gun barrels carried over from the Second World War. A Method for chrome plating the bores and front bearings of .50 caliber machine gun barrels was devised.*



largely due to Navy orders. From 1949-1950 the Arsenal would again experience a slight slump in production just prior to the Korean conflict.[401] Conversely, the small arms division would increase its number of employees during this fiscal year because of a new plating project.[402]

Items of new manufacture July '48 June '49

3" .50 cal. Loader	218
M3 Combo Arm Rack	2100
Air Corps Trailers	628
Aircraft Personnel Catapult	232
81mm Mortar Base Plate	337
Aircraft Canopy Remover	560
Hand Carts	551
Electrical Output Tester	500
Paracrates	50
M20 Rocket Launcher	750
Parachests	475
Carbine Slings	8000
Paracaissons	945
.30 cal. Flash Hider	1050
Harnesses	103
75mm M8 Howitzer Cover	230
M7A1 Grenade Launcher	21,794
.30 Cal. Stellite Lined Barrels	50
.60 Cal. Machine Guns	187
M1919A6	15,300
.30 Cal. Carbine Recoil Plate	5,500
Bench Mark Tablets	27,260
Survey Marker Disc	28,780
Rifle/Pistol Targets	18,583,750[403]

Outbreak of Conflict

In 1950, hostilities in Korea broke into war. From 1910 until the end of WWII the Korean

Below: *Many of the artillery weapons fielded during the Korean War were weapons like this 8-inch howitzer. Its carriage was originally manufactured at Rock Island Arsenal during the Second World War. It was vintage military ordnance that was overhauled and fielded.*

peninsula had been ruled by Japan. After WWII and the cessation of hostilities in the Pacific, the Allied Powers split Korea up into two sections along the 38th Parallel. The Soviet Union took occupation of the northern part, and the United States took occupation of the southern part. By 1948, the northern part had established a Communist government, and the 38th Parallel also became an ideological border. Reunification of the two parts was debated, but skirmishes and disagreements between the North and South continued to escalate. On 25 June 1950 North Korea invaded South Korea. The United States became highly involved, helping the South to drive back the northern invaders while China and the Soviet Union provided support for the Communist North.

Considering American involvement, arsenals throughout the United States quickly returned to a war-status production rate. The Rock Island Arsenal would, again, not be left behind. The Manufacturing Department alone would almost double its employment size from July 1950 to June 1951, going from 1895 to 3242.[404] In that same year, from mid 1950 to mid 1951, over 29.6 million items of new manufacture were produced in response to the conflict in Korea.[405] Production continued to rise in an effort to support the war, and by 1952 41.8 million items of new manufacture were being produced per year.

Items of new manufacture July '51– June '52

Mortar & Mount	716
75mm Loader Rammer	115
Recoil Mechanisms	82
Sets Equilibrator Parts	164

Below: *Rock Island Arsenal's most publicized contribution to the Korean War was the 3.5 inch superbazooka. The first shipment of superbazookas was air transported 13 days after U.S. troops were ordered into battle. One week later, on 20 July 1950, seven Soviet-built tanks were knocked out with the superbazooka in a decisive battle.*

105mm Howitzer Rack	1071
Equilibrator Kits	1617
.30 Cal. Carbine Arm Rack	4,767
Aircraft Personnel Catapult	4,981
Aircraft Canopy Remover	971
Barrel Assemblies	75,345
.30 Cal. M7 Flash Hider	14,014
Carrying Assembly Handle	133
.30 Cal. Delinking Attach.	2,300
Metallic Belt Links	5,127,000
.30 Cal. Assembly Latch	20,960
Survey Marker Disc.	5,200
National Cemetery Marker	100
Threaded Survey Marker	1050
Brass Marker	80
Sear	799,370
Front Sight Assembly Post	91,120
Assy. Disconnector Level	9,095
Operating Slide Stop	986,912
Front Sight	585,754
Barrel Locking Spring	93,500
Magazine Catch Plunger	719,590
Outside Tube	4,892
Inner Tube	4,284
Telescoping Tube	3,865
Inside Tube	1,454
Carbine Sling	42,650
Control Pattern Harness	450
Empty Shell Case Cover	500
Breech Cover	500
Muzzle Cover	3,000
Brush Covers Bore	5,061
Hip Holster	2,900
Danger Flag	10,400
Spare Parts Bag	26,910
Breech Assy. Cover	2,197
Bipod Pad	12,000
Telescope Sight Cover	2,000
M1 Paracover	85
Targets	33,173,000[406]

Foresight and Fame

Throughout the Korean War the most publicized contribution was the 3.5 inch rocket launcher, popularly known as the "superbazooka," that was manufactured at the Rock Island Arsenal.[407] By early 1950 orders for the superbazooka and activity to produce it doubled in foresight of the upcoming conflict. This anticipation would prove highly beneficial. When President Truman ordered U.S. troops to battle against the "Korean Reds" on 30 June 1950, just five days after the North had invaded the South, the first shipment of the famous 3.5inch Bazooka was shipped just 13 days later. These superbazookas that were immediately sent to aid

Below : *A self-propelled 155mm Howitzer fires at the enemy north of Yanggu in North Korea. Its high mobility permitted a rapid change of position each night. (30 June 1951)*

U.S. and South Korean troops were manufactured at the Rock Island Arsenal and sent directly out of the Quad City International Airport in Moline, Illinois.[408] The heightened testing, experiments, and production of the Rock Island Arsenal prior to the Korean conflict allowed the United States to show its immediate ability to support South Korea against the communist North.

Immediately after the outbreak of hostilities the Rock Island Arsenal focused its production on rocket launchers, range finders, navy missiles, shell loaders, mortars, gun covers, spare parts for arms and artillery, carriages, automotive vehicles, paracrates, and paracaissons.[409] The first and most notable acceleration was in the modification of the 90mm tank gun.[410] Along with keeping up with production expectations, the Rock Island Arsenal was also trying to improve the efficiency of production processes and the item itself, as well as saving money. Throughout the Korean conflict, there were over 50 manufacturing research and development projects to improve and produce artillery items, rocket launchers, recoilless rifles, and Navy missiles.[411]

RIA Keeps Busy

In addition to the 3.5" superbazooka, RIA had other projects to keep it more than busy. From July 1951 to June 1952 there were several special projects that included work on .50 cal. multiple machine gun mounts, guided-missile launchers, loader rammers, multiple rocket launchers, the 75mm pack-howitzer trails, and, specifically, the Honest John Rocket.[412] The Honest John Rocket would eventually become the first surface-to-surface nuclear capable missile produced in U.S. Arsenals. The Rock Island Arsenal was specifically assigned the mission of designing the launching mechanism for the Honest John. With the design of the truck mount, the first ground tactical weapon designed for firing an atomic weapon warhead was successfully tested on 29 January 1953.[413]

RIA also engaged in another special project to create a guided-missile launcher. After largely moving away from standard rocket launchers in 1950, RIA began efforts to create a guided-missile launcher that would launch the already produced Terrier anti-aircraft missile. Five of these missile launchers were tested and manufactured, but orders were cancelled in 1953 when the Nike Ajax anti-aircraft missile became its replacement.[414]

Below: *Nike Hercules launching equipment. (8 August 1958)*

Below: *In 1941, the first project order for the development of the Honest John truck-mounted launchers was received. This began a series of research and development projects at Rock Island Arsenal that included the towed Little John Rocket launchers and the Lightweight Lacrosse Launcher.*

The Rock Island Arsenal was always looking to improve. Simply producing the items ordered was not enough. In January 1953, the Methods Improvement Branch was created and organized to "analyze, evaluate, and improve methods and procedures throughout the manufacturing establishment."[415] Cutting back on spending as well as increasing the efficiency and safety of the products, machines, and producers was a main goal in the Manufacturing Department. The efforts of this new branch were successful, saving the Rock Island Arsenal about $389,000 over the next fiscal year. Along with saving money, artillery products themselves were also improved. During the actual conflict, reducing the weight and increasing the operation efficiency of artillery components was also made a priority. These artillery pieces were tested to ensure that they would continue to perform as expected even in arctic conditions. All of this testing, in turn, also led to improvements in the recoil mechanisms.[416] Thanks to all of these improvements, U.S. troops had more reliable artillery to help the fight in Korea.

Work was not the only thing going on throughout the island. Additionally, the Arsenal Welfare Council kept busy planning multiple events for both military and civilian workers on the island. Things like carnival rides, square-dances, movie showings, boat rides, orchestra dances, attendance awards, golf tournaments, and even a Christmas Show were provided for the leisure and pleasure of the hard working Arsenal employees. [417]

Below: *Lieutenant Thomas R. Dower (left) and SFC Louis Hoaeae of Oahu (right) firing a .50 cal. machine gun at fleeing Chinese Communist forces as elements of the 5th Regimental Combat Team (RCT) continued their assault near the Han River, Korea. (1 Feb. 1951)*

Stalemate and Armistice

Throughout the Korean War several attempts to negotiate an armistice were made. In fact, the armistice negotiations lasted for two years. During these two years of stalemate negotiators on each side knew that the territory they occupied when the treaty was actually signed would be their occupied territory after the war. Consequently, each side engaged in fighting small battles to increase the amount of territory their side held. These battles were often done on mountaintops and other areas of high ground in the attempt to gain highly defensible positions. The return of POWs was also a large problem in working out the negotiations.

At the end of 1952, the new United States President, Dwight D. Eisenhower, traveled to Korea to learn what might end the war. On 27 July 1953 the UN called for a cease fire with the battle line approximately along the original dividing line, the 38th Parallel. The Armistice Agreement would eventually be signed by the United Nations, with the support of the United States, the North Korea Korean People's Army, and the Chinese People's Volunteers. The United States, South Korea, North Korea, and Chine also agreed on peace talks for the future.

After the cessation of hostilities in Korea, the Rock Island Arsenal reduced production to peacetime status.[418] The Rock Island Arsenal had yet again succeeded in supporting a United States war effort, supplying U.S. and South Korean troops with the necessary means, especially the 3.5" bazooka, needed to win the war.

Below: *Brigadier General Theodore Addison Weyher was Commanding General at the Rock Island Arsenal until 1955. In that same year, he transferred to Commanding General of Ordnance Weapons Command, the new command at Rock Island Arsenal, and remained in that position until his retirement from the Army in 1957.*

Brigadier General Weyher

After Colonel Warner's retirement from the Army in December 1953, Colonel Theodore Addison Weyher assumed command of the Rock Island Arsenal. Prior to his assignment at Rock Island COL Weyher worked in different positions for the Ordnance Department from as early as 1935. He served as Deputy Commander of the Frankfort Arsenal August 1949-May 1952. Just prior to his assignment at Rock Island, COL Weyher was assigned to the Chief of Ordnance Office in Washington D.C. and worked as the Chief of the Research and Materials Branch, Research and Development Division. In July 1954 he was promoted to Brigadier General and retained the position of Commanding General of the Rock Island Arsenal until January 1955 when Command was transferred to Colonel Arthur Robert Cyr. In January 1955 BG Weyher assumed command of the new Ordnance Weapons Command and established its headquarters on the Rock Island Arsenal as the first general officer command on the island other than the Rock Island Arsenal itself. He retired in June 1957. [419]

Part Four

Part Four of *An Illustrated History of the Rock Island Arsenal and Arsenal Island* will begin with a large and lasting change to the island. In 1955 the Ordnance Weapons Command joined the island, making the Rock Island Arsenal home to two commands for the first time. Part Four will also cover the Cold War Era from 1955 to 1990 .

Notes

[1] Black Hawk, directed to U.S. Interpreter Antoine LeClaire, *Life of MA-KA-TAI-ME-SHE-KIA-KIAK or Black Hawk, an Autobiography* (Cincinnati, Ohio: No publisher listed, 1833), reprinted in *Black Hawk, an Autobiography,* Donald Jackson, ed., (University of Illinois Press: Urbana, Illinois, 1964), p. 42-43, hereafter cited as Black Hawk Autobiography.

[2] Harry Downer, *History of Davenport and Scott County* (S.J. Clarke Publisher, 1910), Vol. I, p. 69. Hereafter referred to as Downer; *The Journals of Zebulon Pike* (University of Oklahoma Press, Norman, Oklahoma, 1966) Vol. I, p. 42, hereafter cited as Pike Journal.

[3] Jedediah Morse, *A Report to the Secretary of War of the United States on Indian Affairs* (New Haven, CN: S. Converse et. al., 1822), reprinted by (Scholarly Press, Incorporated, St. Clair Shores, Michigan, 1972), p. 126-127, hereafter cited as Morse Report.

[4] Louis Phelps Kellogg, *The French Regime in Wisconsin and the Northwest,* (Madison, Wisconsin State Historical Society of Wisconsin, 1925) p. 314-341, hereafter referred to as Kellogg.

[5] Henry R. Schoolcraft, *Summary Narrative of an Exploratory Expedition to the Sources of the Mississippi River, in 1820* (Philadelphia, PA: Lipincott, Grambo, and Company, 1855), reprinted by (Kraus Reprint Company, Milwood, New York, 1974), p. 174.

[6] Cecil Eby, "That Disgraceful Affair," *The Black Hawk War* (New York: W.W. Norton and Company, 1973), p. 48-51.

[7] This information is from Article 2 and 3 of a facsimile document of the 1804 Treaty, a treaty between the United States of American and the United Tribes of Sauk and Fox Indians. The facsimile document is part of the historical files of the U.S. Army Armament, Munitions and Chemical Command (AMCCOM) Historical Office, Rock Island Arsenal, Rock Island, Illinois.

[8] Black Hawk Autobiography, p. 55-56; Roald Tweet, "Formed by a River," in *Joined By A River,* Frederick I. Anderson, ed., (Davenport, Iowa: Lee Enterprises, Incorporated, 1982) p. 18.

[9] Franc B. Wilkie, *Davenport, Past and Present* (Davenport, Iowa: Publishing House of Luse, Lane and Company, 1858), p. 17.

[10] Article 7 of facsimile document of the 1804 Treaty between the United States and Sac and Fox Indians.

[11] Ellen M. Whitney, ed., *The Black Hawk War, 1831-1832* (Springfield, Illinois: Illinois State Historical Library, 1973) Vol. 2, p. 31, hereafter cited as Whitney.

[12] Pike Journal, Vol. 1, p. 128.

[13] Major Daniel W. Flagler, *A History Of The Rock Island Arsenal From Its Establishment In 1863 To December, 1876; Of The Island Of Rock Island, The Site Of The Arsenal, From 1804 To 1863* (Washington, D.C., : Government Printing Office, 1877) p. 10, hereafter referred to as Flagler.

[14] Ibid., Reproduction of letter: "Letter from Major Zachary Taylor to General Howard," Fort Madison, 6 September 1814, p. 10-12.

[15] Black Hawk Autobiography, p. 42-43.

[16] Emma Helen Blair, *The Indian Tribes Of The Upper Mississippi Valley Region Of The Great Lakes, As Described By Nicolas Perrot, French Commandant In The Northwest; Bacqueville du La Portheire, French Royal Commissioner To Canada; Morrell Marston, American Army Officer; and Thomas Forsyth, United States Agent at Fort Armstrong* (Cleveland, Ohio: The Arthur H. Clark Company, 1921), p. 42-45, hereafter cited as Indian Tribes.

[17] Solon Justis Buck, *Illinois in 1818* (Chicago, Illinois: A.C. McClurg and Company, 1917), p. 13-17; Reuben G. Thwaites, ed. And annotator, "Letter-Book Of Thomas Forsyth." *Collection of the State Historical Society of Wisconsin,* Vol. XI (Madison, Wisconsin: Wisconsin Democrat Printing Company, 1888), p. 325-355.

[18] Indian Tribes, p. 46.

[19] Whitney, Vol. I, p. 150; Black Hawk, p. 76-107; Henry R. Schoolcraft, *Personal Memoirs Of A Residence Of Thirty Years With The Indian Tribes On The American Frontier, 1812-1842* (Philadelphia, Pennsylvania: Lippincott, Grambo and Company, 1851) p. 326.

[20] Morse, p. 126.

[21] Fracis Paul Prucha, *Military Posts of the United States, 1789-1895* (Madison, Wisconsin: State Historical Society of Wisconsin, 1964) p. 31-32, hereafter cited as Prucha, Military Posts.

[22] Whitney, Vol. II, Part I. p. 31.

[23] Flagler, p. 126.

[24] Carolyn Gilman, Jane D. Holmquist, and Lucille M. Kane, eds., "Up the Mississippi River in a Six-Oared Skiff, The Journal of Stephen H. Long, 1817," *The Northern Expedition of Stephen H. Long* (St. Paul, Minnesota: Minnesota Historical Society Press, 1978), p. 98-102.

[25] Prucha, Military Posts, Appendix B.

[26] Francis Paul Prucha, *Army Life on the Western Frontier: Selections from the Official Reports Made Between 1826 and 1845 by Colonel George Croghan* (Norman, Oklahoma: University of Oklahoma Press, 1958), p. 109.

[27] George W. Wickstrom, *The Town Crier* (Rock Island, Illinois: J.W. Porter Company, 1948), p. 35, hereafter cited as the Wickstrom.

[28] Anthony F.C. Wallace, *Prelude to Disaster: The Course of Indian-White Relations Which Led To The Black Hawk War Of 1832* (Springfield, Illinois: Illinois State Historical Society, 1970), p. 33.

[29] Whitney, Vol. 2, p. 1183.

[30] Ibid., p. 2, 11, 44-45.

[31] Black Hawk Autobiography, p. 110-111.

[32] Whitney, Vol. 2, p. 85-87.

Ibid., Vol. 2, p. 13.

[34] Black Hawk Autobiography, p. 113-114.

[35] Whiney, Vol. 2, p. 425-426

[36] Ibid., p. 415-146.

[37] Frank E. Stephens, *The Black Hawk War* (Chicago, Illinois: The Caxton Club, 1903), p. 183; Oda B. Johnson, History of Fort Armstrong, 1816-1836, unpublished masters thesis at University of Iowa, dated January 1940, in the AMCCOM Historical Office archives.

[38] Caleb Atwater, *Remarks Made On Tour To Prairie du Chien, Thence to Washington City In 1829* (Columbia, Ohio: no publisher cited) reprinted by (New York City, New York: Arno Press, A New York Times Company, 1975) p. 54-55.

[39] Black Hawk Autobiography, p. 16.

[40] Charles Winslow Elliot, *Winfield Scott, The Soldier And The Man* (New York: McMillan Company, 1937), p. 268.

[41] Oda B. Johnson, "Fort Armstrong, 1816-1836," unpublished masters thesis at University of Iowa, dated January 1940, in the AMCCOM Historical Office archives.

[42] Wickstrom, p. 36-37.

[43] U.S. Stattues at Large, Vol. 6., private acts of the 29th Congress, Chapter 9, p. 908.

[44] Wickstrom, p. 31-41; "Not Hanging Around Much Longer," *Quad City Times,* 13 July 1978, np; *Rock Island Argus,* 26 October 1977, np; The Rock Island *Mississippian* and *Republican* newspapers, "Execution of John Long, Aaron Long, and Granville Young," 30 October 1845.

[45] Flagler, p. 28.

[46] Ibid., p. 30.

[47] Ibid., p. 33-35.

[48] Ibid., p. 36.

[49] George Wickstrom and Charles P. Ainsworth, " Always Lumber, The Story of Dimock, Gould and Company, 1852-1952" (Rock Island, Illinois: Augustana College Book Concern, 1952), p. 26.

[50] Frank J. Nevins, "Seventy Years of Service from Grant to Gorman," *The Rock Island Magazine,* October 1922, p. 5-7, hereafter referred to as Nevins.

[51] Notes extracted from the Report of the Board of Inquiry to the War Department dated May 9th, 1859. The notes were found on the Map of the Rock Island Bridge and Its Vicinity which accompanies the report. The original is in the National Archives, Washington, D.C.

[52] Nevins, p. 16.

[53] Flagler, p. 44-47, 64-65.

[54] Nevins, p. 17.

[55] Leonard C. Weston, "The Rock Island Bridge Episode," *The Iowan,* Fall issue, 1964, p. 21.

[56] Flagler, p. 176-177.

[57] B.F. Tillinghast, *Rock Island Arsenal in Peace and in War* (Chicago, Illinois: The Henry O. Shepard Company, 1898), p. 8-9.

[58] Ira O. Nothstein, "Rock Island Arsenal, Its History and Development" (Public Works Administration Project, 1937). A copy is available at AMCCOM Historical Office, Rock Island Arsenal, p. 156.

[59] U.S. Congress, House, Resolution of the Legislature of the State of Iowa asking for Establishment of an Armory and Arsenal at Rock Island (Washington, D.C.; Government Printing Office. 1859) p. 1; Thirty-seventh Congress, 1st Session, Misc. Doc 16, Series Set No. 115.

[60] Robert Bouilly, "Arsenal Island," F.I. Anderson, ed., *Joined By A River* (Davenport, Iowa: Lee Enterprises Incorporated, 1982), p. 120-122.

[61] *National Armory: An Appeal to Congress by the Citizens of Rock Island and Moline, Illinois and Davenport, Iowa* (Rock Island, Illinois: Danforth and Jones, 1861), p. 4-10.

[62] Bouilly, p. 120-122.

[63] Flagler, p. 97, 111.

[64] Daniel W. Flagler, Major, *A History of the Rock Island Arsenal from its Establishment in 1862 to December 1876 and the Island of Rock Island, the Site of the Arsenal 1804 to 1863,* (Washington: Government Printing Office, 1877) pp. 97-98. This is also known as Ordnance Memorandum #20. It is hereafter referred to as Flagler.

[65] Russell F. Weigley, *Quartermaster General of the Union Army:* a biography of M.C. Meigs, (New York: Columbia University Press, 1959), pp. 32-33.

[66] The War Department comp., *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies* (Washington: Government Printing Office, 1880-1901), Series II, Vol. VI, p. 115.

[67] T.R. Walker, "Rock Island Prison Barracks" in William B. Hesseltine, *Civil War Prisons* (Kent, Ohio: Kent State University Press, 1962), p. 48. It is hereafter referred to as Walker.

[68] O. Bryan England, *A Short History of the Rock Island Prison Barracks,* (Rock Island: Historical Office, U.S. Army Armament, Munitions and Chemical Command, 1985), pp. 3, 27. It is hereafter referred to as England, See also Walker, pp. 48-49

[69] Walker, p. 49.

[70] *War of Rebellion,* Series II, Vol. VI, p. 196.

[71] Kat R. Perry-Mosher, "History of Rock Island, Ill., 1863" *Confederate Veterans,* Jan 1906, p. 28; England, p. 5.

[72] England, p. 42.

[73] Lafayette Rogan, *Diary of Lafayette Rogan,* typescript in Historical Office, U.S. Army Armament, Munitions and Chemical Command (AMCCOM), p. 1. It is hereafter referred to as Rogan.

[74] *War of Rebellion,* Series II, Vol. VI, p. 196.

[75] Ibid., p. 949.

[76] Ibid., p. 23-24.

[77] Ibid., p. 26.

[78] Ibid., p. 12.

[79] England, p. 42.

[80] Ibid.

[81] Rock Island *Argus,* 14 Dec 1863, p. 3, Col. 1-3.

[82] Ibid.

[83] J.W. Minnich, "Comment on Rock Island Prison," *Confederate Veteran Magazine,* Aug 1908, pp. 394-395; J.W. Minnich, *Inside of Rock Island Prison* (Nashville, Tennessee: Publishing House of M.E. Church, South, Smith and Lamar, Aug 1908), pp. 30-31.

[84] *War of Rebellion,* Series II, Vol. VII, p. 38; War Department Circular No. 2, 1 Jun 1864.

[85] Ibid., pp. 17, 39; J.W. Minnich, *Inside of Rock Island Prison,* pp. 5-11; T.R. Walker, pp. 55-57.

[86] Rogan, p. 7.

[87] *War of Rebellion,* Series III, Vol. IV, p. 680; England, pp. 22-23.

[88] Rogan, p. 50.

[89] B.M. Hord, "Forty Hours in a Dungeon at Rock Island," *Confederate Veteran,* August 1904, pp. 2-3; England, pp. 22-24.

[90] *War of Rebellion,* Series II, Vol. VII, p. 415.

[91] George F. Skock, "The Golden Age Regiment Iowa's Graybeards," *Civil War Times Illustrated,* Vol. XX (No. 2), May 1981, pp. 32-46.

[92] Ibid.; "The Graybeards," *Alton Telegraph Newspaper,* 3 Feb 1864; Walt Shotwell, "Remembering the Graybeards," *The Des Moines Register,* 26 May 1986, Section T.

[93] *War of Rebellion,* Series II, Vol. VII, p. 65.

[94] *War of Rebellion,* Series II, Vol. III, p. 1002.

[95] England, p. 35.

[96] Rogan, p. 52.

[97] *War of Rebellion,* Series II, Vol. VII, p. 1037-1040.

[98] England, p. 36.

[99] Cemetery Records of the Rock Island National Cemetery, located in the Historical Office, AMCCOM, Rock Island, Illinois.

[100] England, Camp Statistics, p. 42.

[101] Flagler, p. 36.

[102] Flagler, p. 97; Appendix to Chapter II, copy of an act for the establishment of certain national arsenals, p. 111.

[103] Ira O. Nothstein, "Rock Island Arsenal, Its History and Development," National Archives and the Works Progress Administration Project, 1937, unpublished manuscript, p. 79.

[104] Flagler, pp. 97-98.

[105] Flagler, p. 38.

[106] Nothstein, p. 81.

[107] Flagler, p. 98.

[108] Brevet Major General George W. Cullen, *Biographical Register of the Officers and Graduates of the U.S. Military Academy at West Point, NY* third edition, Vol. II, (Boston and New York: Houghton, Mifflin and Company, the Riverside Press, Cambridge, 1891) pp. 25-26; *Eleventh Annual Reunion of the Association of the Graduates of the U.S. Military Academy, at West Point, New York, June 17, 1880,* (East Saginaw, Michigan: E.W. Lyon, publisher) pp. 80-88.

[109] Ltr., Bvt. LTC D. W. Flagler to Baily Davenport, 13 Oct 1875. This copy is included in the AMCCOM Historical Office's files pertaining to the Clock Tower Building.

[110] Robert H. Bouilly, "Arsenal Island," *Joined by a River: Quad Cities,* Fredrick I. Anderson, ed., (n. pl. Lee Enterprises Incorporated, 1982) pp. 125-126.

[111] Flagler, p. 36.

[112] Ibid., p. 127.

[113] Ibid., p. 148.

[114] Ibid., the claim of David B. Sears, p. 132-133; the Davenport claim pp. 134-135.

[115] Flagler, pp. 106-107; Roald Tweet, *The Rock Island Clock Tower, From Ordnance to Engineers,* (n. pl., Rock Island District U.S. Army Corps of Engineers, May 1977), p. 11. Hereafter known as Tweet.

[116] Ltr., RIA CO Major Charles P. Kingsbury to R.I. Prison Barracks Commandant Colonel A.J. Johnson, 26 Feb 1864, AMCCOM Historical Office Archives.

[117] Ltr., RIA CO Major Charles P. Kingsbury to the Chief of Army Ordnance BG George D. Ramsey, 17 Mar 1864, AMCCOM Historical Office Archives; *War of Rebellion,* Series II, Vol. VII, p. 23.

[118] Ltr., RIA CO Major Charles P. Kingsbury to R.I. Prison Barracks Commandant Colonel A.J. Johnson, 10 June 1864. AMCCOM Historical Office Archives.

[119] Nothstein, pp. 94-104.

[120] Tweet, pp. 15-17.

[121] Albert Manucy, *Artillery Through The Ages; A Short Illustrated History of Cannon, Emphasizing Types Used in America,* (Washington: GPO, 1949) p. 17. Hereafter known as Manucy.

[122] Manucy, pp. 27-28. Interview with Mr. Ralph Kripper, Historian, AMCCOM Historical Office, 7 Apr 1987; Flagler, p. 265.

[123] Flagler, p. 117.

[124] U.S. Army, Ordnance Department, Letter from BG S.V. Benet, Chief of Army Ordnance to the Honorable William Belk, Secretary of War, dated 9 Oct 1875, *Annual Report of the Chief of Ordnance to the Secretary of War for the Fiscal Year Ended 30 June 1876* (Washington: GPO, 1876), p. 7. This series of reports appeared from 1866 through 1922. Hereafter referred to the *Report of the Chief of Ordnance.*

[125] U.S. Army Ordnance, "Letter from BG Alexander B. Dyer to Secretary of War," 24 Oct 1871, *Report of the Chief of Ordnance,* for the fiscal year ending 30 Jun 1871, p. 246.

[126] Flagler, pp. 106, 256.

[127] *Report of the Chief of Ordnance* for the fiscal year ending 30 Jun 1869, p. 18.

[128] Flagler, p. 256.

[129] D.N. Richardson, "Island of Rock Island – What General Rodman Has Accomplished in Four Years," Davenport *Daily Democrat,* 10 Nov 1870, p. 2.

[130] "The Eight Hour Law – Trouble on the Island," Rock Island *Union,* 4 Aug 1868, p. 4.

[131] Ibid.

[132] "Meeting of Stone Cutters," Rock Island *Union,* 6 Aug 1868, p. 2.

[133] Flagler, p. 256-257.

[134] Ibid., p. 257.

[135] Ibid.

[136] D.N. Richard, Davenport *Daily Democrat,* 10 Nov 1870, p. 2, cols, 1-6.

[137] "General Rodman's Funeral," Rock Island *Argus,* 10 Jun 1871, p. 2.

[138] *Report of the Chief of Ordnance* for the fiscal year ending 30 Jun 1869, p. 25.

[139] MacDonald and Mack Partnership, *Historical Properties Report, Rock Island Arsenal, Final Report, 1985,* p. 91. This document was prepared by the MacDonald and Mack Partnership, Minneapolis, Minnesota, under contract CX-001-2-0033 between Building Technology Incorporated, Silver Springs, Maryland, and the

Historical American Buildings Survey/Historic American Engineering Record, National Park Service, U.S. Department of Interior. Hereafter, it is referred to as MacDonald and Mack.

[140] Flagler, pp. 290-291.

[141] *Report to the Chief of Ordnance* for the fiscal year ending 30 Jun 1899, p. 77.

[142] Ibid., p. 306-307.

[143] Ibid., p. 336-337.

[144] "The Arsenal," Moline *Review,* 1 Nov 1879, np.

[145] Flagler, p. 319-320.

[146] Ibid.

[147] *Report of the Chief of Ordnance* for the fiscal year ending 30 Jun 1879, p. 202; Flagler, p. 283.

[148] Flagler, pp. 326, 358-359.

[149] *Report of the Chief of Ordnance,* Appendix 10, at Rock Island Arsenal for the FY ending 30 Jun 1880, p. 253.

[150] *Report of the Chief of Ordnance,* Appendix K, for the FY ending 30 Jun 1879, p. 204.

[151] *Report of the Chief of Ordnance,* Appendix 10, for the FY ending 30 Jun 1880, p. 256.

[152] *Report of the Chief of Ordnance,* Appendix K, for the FY ending 30 Jun 1879, p. 204-205.

[153] *Report of the Chief of Ordnance,* Appendix 10, for the FY ending 30 Jun 1879, p. 255.

[154] Ibid., pp. 256-257.

[155] *Report of the Chief of Ordnance,* Appendix K, for the FY ending 30 Jun 1879, p. 204.

[156] *Report of the Chief of Ordnance,* Appendix 10, for the FY ending 30 Jun 1880, p. 256-257.

[157] *Report of the Chief of Ordnance,* Appendix K, for the FY ending 30 Jun 1879, p. 204.

[158] *Report of the Chief of Ordnance,* Appendix 10, for the FY ending 30 Jun 1880, p. 253.

[159] *Report of the Chief of Ordnance* for the FY ending 30 Jun 1877, p. xvi.

[160] "Proposals for Wrought Iron "I" Beams," Moline *Review,* 16 Jul 1880, p. 5.

[161] "Proposals for Stone," Moline *Review,* 25 Aug 1879, p. 6.

[162] Nothstein, p. 142.

[163] *Report of the Chief of Ordnance,* Appendix 38, for the FY ending 30 Jun 1883, p. 414-415.

[164] Ibid., p. 415.

[165] Nothstein, p. 146.

166 *Report of the Chief of Ordnance* for the FY ending 30 Jun 1896, np.

167 District Engineer, U.S. Army Corps of Engineers, Rock Island District, *The United States Water Power at Moline, Illinois – Mississippi River,* p. 3. It is hereafter referred to as History of Water Power.

168 Flagler, p. 208.

169 Ibid., pp. 162-163, 197.

170 Ibid, pp. 155-156, 196.

171 Ibid., pp. 185-186.

172 *History of Water Power,* pp. 4-5.

173 Flagler, pp. 119-120.

174 Ibid., p. 204.

175 Ibid., p. 228.

176 Ibid., pp. 197-198.

177 Ibid., p. 240.

178 Ibid., pp. 240-241, 465.

179 *Report of the Chief of Ordnance* for the FY ending 30 Jun 1872, np.

180 Flagler, pp. 454-455.

181 Nothstein, p. 128; Flagler, pp. 323-324.

182 No author, "History of Rock Island Arsenal, 1862-1913," unpublished manuscript called for by O.O., 253010-D-195, AMCCOM Historical Office files, pp. 54-55. Hereafter referred to as History of the RIA 1862-1913.

183 *Report of the Chief of Ordnance* for the FY ending 30 Jun 1874, p. 251; Leonard Weston, "Telodynamic Power System," *The Military Engineer,* Nov-Dec 1966, Vol. 58, No. 386, pp. 418-434.

184 *Report of the Chief of Ordnance* for the FY ending 1903, p. 38.

185 Nothstein, p. 148.

186 History of the RIA 1862-1913, pp. 54-55.

187 Nothstein, p. 149.

188 Flagler, p. 474.

189 No author, *War's Greatest Workshop Rock Island Arsenal,* (Tri-cities: *Arsenal Publishing Company, 1922),* p. 88. Hereafter referred to as War's Greatest Workshop.

190 War's Greatest Workshop, p. 91-92.

[191] *Report of the Chief of Ordnance* for the FY ending 30 Jun 1869, p. 312.

[192] History of the RIA 1862-1913, p. 26.

[193] Ibid.

[194] "The Arsenal," Rock Island *Argus,* 7 Dec 1875, np.

[195] David A. Clary, *These Relics of Barbarism: A History of Furniture in Barracks and Guardhouses of the United States Army, 1800-1880,* (U.S. Department of the Interior, National Park Service, Harpers Ferry Center, West Virginia) pp. 583-589.

[196] "History of the RIA, 1919-1939," RIOC, Section I, p. 17.

[197] Nothstein, p. 198.

[198] "History of the RIA, 1862-1913, p. 28. *Report of the Chief of Ordnance,* Appendix 27, for the FY ending 30 Jun 1881, pp. 271-273.

[199] History of the RIA, 1862-1913, p. 8.

[200] *Report of the Chief of Ordnance* for the FY ending 30 Jun 1882, p. 365.

[201] History of the RIA, 1862-1913, p. 39.

[202] Ibid., pp. 15-16, 28.

[203] Nothstein, p. 150, 161; *Report of the Chief of Ordnance* for the FY ending 30 Jun 1898, p. 69.

[204] *Report of the Chief of Ordnance* for the FY ending 30 Jun 1898, p. 70.

[205] Ibid., p. 69; Nothstein, p. 161.

[206] Nothstein, p. 162; *Report of the Chief of Ordnance* for the FY ending 30 Jun 1898, p. 70.

[207] Ibid.

[208] War's Greatest Workshop, p. 63; *Report of the Chief of Ordnance* for the FY ending 30 Jun 1898, p. 71; Nothstein, p. 163.

[209] Nothstein, p. 163; *Report of the Chief of Ordnance* for the FY ending 30 Jun 1898, p. 29.

[210] *Report of the Chief of Ordnance* for the FY ending 30 Jun 1898, p. 28-29.

[211] Ibid., p. 76.

[212] *Report of the Chief of Ordnance* for the FY ending 30 Jun 1897, 1898, and pp. 5, 70, and 31 respectively.

[213] *Report of the Chief of Ordnance* for the FY ending 1898, p. 29.

[214] Benedict Crowell, *America's Munitions 1917-1918* (Washington, D.C.: GPO), 148.

[215] *War's Greatest Workshop: Rock Island Arsenal* (Rock Island, Illinois: Arsenal Publishing Co., of the Tri-Cities), 14.

[216] Clifford Stephens, *A History of Rock Island and Rock Island Arsenal From Earliest Times to 1954* Vol. II 1898-1940 (Rock Island, Illinois: Rock Island Arsenal, 1954), 244.
[217] *War's Greatest Workshop*, 64.

[218] *War's Greatest Workshop*, 45.

[219] Stephens, 203.

[220] *War's Greatest Workshop*, 16.

[221] *War's Greatest Workshop*, 24.

[222] *War's Greatest Workshop*, 16.

[223] *War's Greatest Workshop*, 113.

[224] Crowell, *America's Munitions,* 44.

[225] Stephens, 247.

[226] Stephens, 258.

[227] *War's Greatest Workshop,* 22.

[228] "The Role Of The Arsenal and Their Situation Today," Organization Planning Files, Arsenal Leasing Study Folder, ASC Special Collections, B3 Shelf 1 Box 6; "Study of Ordnance Technical Resources," Role of Arsenals Folder, ASC Special Collections, B3 Shelf 1 Box 7.

[229] *War's Greatest Workshop*, 63.

[230] Crowell, *America's Munitions,* 72.

[231] Crowell, *America's Munitions,* 73.

[232] Crowell, *America's Munitions ,* 70.

[233] Crowell, *America's Munitions ,* 71.

[234] Crowell, *America's Munitions ,* 79.

[235] Crowell, *America's Munitions,* 56.

[236] Crowell, *America's Munitions ,* 59-60.

[237] Crowell, *America's Munitions ,* 64.

[238] *War's Greatest Workshop*, 20.

[239] Crowell, *America's Munitions ,* 178.

[240] No author, *History of Rock Island Arsenal, 1862-1913* (Rock Island, Illinois: Rock Island Arsenal, nd), 50.

[241] Crowell, *America's Munitions ,* 230.

[242] Crowell, *America's Munitions ,* 122.

[243] *War's Greatest Workshop*, 57.

[244] *War's Greatest Workshop*, 56.

[245] *War's Greatest Workshop*, 57.

[246] Stephens, 259

[247] *War's Greatest Workshop,* 125 & 169.

[248] *War's Greatest Workshop,* 146-148.

[249] Stephens, 203.

[250] *War's Greatest Workshop*, 16.

[251] *War's Greatest Workshop*, 49.

[252] Stephens, 259.

[253] Stephens, 263.

[254] Stephens, 266.

[255] *War's Greatest Workshop*, 16.

[256] Stephens, 242.

[257] Stephens, 243.

[258] ASC History Office, Working Papers, COL Hillman Hall of Fame Nomination.

[259] Stephens, 249.

[260] ASC History Office, Rules for Employees of The T.N.T. Plant and Ammunition Assembling Building, Colonel Hillman, 1918.

[261] Stephens, 245.

[262] Stephens, 251.

[263] Stephens, 258.

[264] *War's Greatest Workshop*, 105.

[265] *War's Greatest Workshop*, 108.

[266] *War's Greatest Workshop*, 28.

[267] Stephens, 245.

[268] Stephens, 246.

[269] *War's Greatest Workshop*, 15.

[270] *War's Greatest Workshop,* 9.

[271] *War's Greatest Workshop,* 24.

[272] Stephens, 249.

[273] *War's Greatest Workshop,* 28.

[274] Stephens, 261-262.

[275] *War's Greatest Workshop,* 54.

[276] *War's Greatest Workshop,* 81.

[277] *War's Greatest Workshop,* 24.

[278] *War's Greatest Workshop,* 57.

[279] *War's Greatest Workshop,* 120.

[280] Stephens, 262.

[281] *War's Greatest Workshop,* 13.

[282] Ordnance and Explosives Archives Search Report for Savanna Army Depot Activity Savannah, Illinois, U.S. Army Corps of Engineers, March 1999, 2-1

[283] Ordnance and Explosives Archives Search Report for Savanna Army Depot Activity Savannah, Illinois, U.S. Army Corps of Engineers, March 1999, 2-2.

[284] Stephens, 257.

[285] *War's Greatest Workshop,* 55.

[286] No author, *Rock Island Arsenal: A Brief History of the Armory Shops* (Rock Island, Illinois: Rock Island Arsenal, nd), 12.

[287] George W. Wickstrom, "History of Rock Island Arsenal, Section 1, 1919-1939" (Rock Island, Illinois: Rock Island Arsenal), 12.

[288] Wickstrom, Section 1, 16.

[289] Wickstrom, Section 1, 17.

[290] Wickstrom, Section 1, 19.

[291] Stephens, 264.

[292] Stephens, 265.

[293] Stephens, 264.

[294] Stephens, 267.

[295] Wickstrom, Section 1, 23.

[296] Wickstrom, Section 1, 25.

[297] Wickstrom, Section 1, 27.

[298] Wickstrom, Section 1, 26.

[299] Wickstrom, Section 1, 27.

[300] Wickstrom, Section 1, 28.

[301] Wickstrom, Section 1, 29.

[302] Wickstrom, Section 1, 30.

[303] Wickstrom, Section 1, 31.

[304] Wickstrom, Section 1, 29.

[305] Wickstrom, Section 1, 41.

[306] Wickstrom, Section 1, 42.

[307] Wickstrom, Section 1, 44.

[308] Wickstrom, Section 1, 44.

[309] Wickstrom, Section 1, 45.

[310] Wickstrom, Section 1, 47.

[311] Wickstrom, Section 1, 49.

[312] ASC History Office, Working Papers, COL Hillman Hall of Fame Nomination.

[313] Wickstrom, Section 1, 58.

[314] Wickstrom, Section 1, 59.

[315] Wickstrom, Section 1, 61.

[316] Wickstrom, Section 1, 62.

[317] Wickstrom, Section 1, 63.

[318] Wickstrom, Section 1, 64.

[319] Wickstrom, Section 1, 66.

[320] Wickstrom, Section 1, 67.

[321] Wickstrom, Section 1, 67.

[322] Wickstrom, Section 1, 68.

[323] Wickstrom, Section 1, 71.

[324] Wickstrom, Section 1, 68.

[325] Wickstrom, Section 1, 71.

[326] Wickstrom, Section 1, 71.

[327] Wickstrom, 71—Col. King, Annual Report, 1928.

[328] Wickstrom 72-73—Col. King Annual Report, 1928.

[329] Wickstrom, Section 1, 74.

[330] Wickstrom, Section 1, 75.

[331] Wickstrom, Section 1, 76.

[332] Wickstrom, Section 1, 76.

[333] Stephens, 298-299.

[334] Stephens, 363.

[335] Stephens, 365.

[336] Stephens, 373.

[337] Stephens, 358.

[338] Stephens, 360.

[339] Stephens, 362.

[340] Stephens, 439-445.

[341] Harry C. Thompson and Lida Mayo, *The Technical Services, The Ordnance Department: Procurement and Supply, War Department's U.S. Army in World War II Series* (Washington, D.C.: Office of the Chief of Military History Department of the Army, 1960), p. 251-252; William Baumbeck, *History, Artillery Vehicle Department,* Vol. IV, p. 7.

[342] Richard B. Morris, ed., *Encyclopedia of American History* (New York City, New York: Harper & Row Publishers, 1982), pp. 431, 434; Mark Skinner Watson, *Chief of Staff: Prewar Plans and Preparations, War Department's U.S. Army in World War II Series* (Washington, D.C.: Historical Division, 1950), pp. 310-312.

[343] Alexander DeConde, *A History of American Foreign Policy* (New York City, New York: Charles Scribner's Sons, 1971), pp. 592-593.

[344] Baumbeck, *Chronological History,* p. 20.

[345] Harry E. Bawden, ed., *Achievement of Rock Island Arsenal World War I* (Davenport, Iowa: Bawden Bros., 1948), p. 104.

[346] Ben J. Gerwe, comp., "History of Rock Island Ordnance Depot, Section II 1939-1943" unpublished manuscript, (Rock Island, Illinois: Historical Office, U.S. Army Armament, Munitions, and Chemical Command (AMCCOM), 1943), p. 23.

[347] Watson, *Chief of Staff: Prewar Plans and Preparations,* pp. 35-316.

[348] Baumbeck, *Chronological History,* p. 19.

[349] Ibid., 19-20.

[350] No author, "Quad-Cities Take War in Stride Without Hysteria; Arsenal, Plants Guarded," *Davenport Democrat and Leader,* (9 December 1941), p. 1.

[351] No author, "Military Police to go on Guard on U.S. Bridge", *Davenport Democrat and Leader,* (10 December 1941), np.

[352] No author, "Soldiers Raid and Burn Hobo Shacks: Army Police Clear Jungles Near Arsenal," *Davenport Democrat and Leader,* (11 December 1941), p. 1.

[353] No author, "Skilled Laborers Are Needed AT R.I. Arsenal," *Davenport Democrat and Leader,* (19 December 1941), p. 31.

[354] No author, "Soldiers of Production," *The Rock Island Arsenal Record,* Vol. 1, No. 11, (February 1943), p. 16.

[355] No author, "Army-Navy "E", Rock Island Receives Highest Award," *The Rock Island Arsenal Record,* Vol. 1, No. 8, (November 1943), pp. 19-22.

[356] William Baumbeck, *History, Artillery Vehicle Department Vol. II,* p. 4.

[357] No author, *Employees Handbook,* pp. 4-5

[358] Gerwe, "History of the Rock Island Ordnance Depot," p. 51.

[359] No author, *History of 39th and 40th Italian Quartermaster Service Companies* (Rock Island, Illinois: Rock Island Ordnance Center, 1946), p.1.

[360] Fred Klann, "Italians on Island Not Nuisance, Not Pampered, Says Man in Charge," *Moline Daily Dispatch* (7 December 1944), np.; Dorothy Creen, "Italian Signees Aiding War Effort at Arsenal," *Moline Daily Dispatch* (2 August 1944), p.1.; No author, "Italians Service Units at Arsenal Live in Barracks and Eat Spaghetti at Their Own Mess," *Des Moines Sunday Register,* (1 April 1945, p. L-3.

[361] No author, *History of 39th and 40th Italian Quartermaster Service Companies,* p.3.

[362] Baumbeck, *Chronological History,* p. 21.

[363] Ibid, p. 22.

[364] R.P. Hunnicutt, *Sherman, A History of the American Medium Tank* (Presidio, California: Presidio Press, 1946), pp. 394-397.

[365] Ibid, 397.

[366] Bawden, ed., *Achievement of RIA,* p. 95.

[367] Baumbeck, *Chronological History,* p. 24.

[368] Ibid.

[369] Bawden, ed., *Achievement of RIA,* p. 95.

[370] Ibid.

[371] Ibid.

[372] Baumbeck, *History, Artillery Vehicle Department, RIA, Vol. V., January 1944- August 1945,* p. 105-114.

[373] Ibid.

[374] No author, "Ordnance Loyalty: William Baumbeck Symbolizes a Great Civilan Tradition," *Ordnance, The Magazine of Scientific and Industrial Preparedness,* (November-December 1948), p. 165; No author, "Davenport Fetes William Baumbeck," The Rock Island Arsenal Record, Vol.2, No. 10, (January 1944), p. 25-26.

[375] Levin H. Campbell, Jr., Lieutenant General, The Industry-Ordnance Team (New York City, New York: McGraw-Hill Book Company, Inc., 1948) p. 35.

[376] "Civilian Employment – Rock Island Arsenal" chart, dated October 1955

[377] Clifford Stevens, *A History of Rock Island and Rock Island Arsenal From Earliest Times to 1954* Vol. III 1940-1954 (Rock Island, Illinois: Rock Island Arsenal, 1954), 596.

[378] Stevens, 481-482.

[379] Ibid., 500.

[380] Ibid., 527.

[381] ASC History, *An Illustrated History of Rock Island Arsenal Part Three: Chapter Six- The Cold War (1945-1991),* Draft, 2008, Section 6.

[382] Ibid., 487.

[383] Stevens, 579.

[384] Ibid., 580 & 582.

[385] Ibid., 479-480 & 630-631.

[386] Ibid., 488.

[387] Ibid., 516.

[388] Ibid., 517.

[389] Ibid., 486.

[390] Ibid., 546 & 551.

[391] Ibid., 560 & 563.

[392] *History Manufacturing Department Rock Island Arsenal* 1 July 1948 – 30 June 1949, Volume X, 8.

[393] *History Manufacturing Department Rock Island Arsenal* 1 July 1950 – 30 June 1951, Volume XII, 7-8.

[394] *History Manufacturing Department Rock Island Arsenal* 1 July 1951 – 30 June 1952, Volume XIII, 8.

[395] Stevens, 584-585.

[396] *History Manufacturing Department Rock Island Arsenal,* 1 July 1948 – 30 June 1949, Volume X, 32.

[397] *An Illustrated History of Rock Island Arsenal Part Three (1945-1991),* Section 6.

[398] Stevens, 530 & 533-4.

[399] Ibid., 485 & 489.

[400] *An Illustrated History of Rock Island Arsenal Part Three (1945-1991),* Section 6.

[401] Stevens, 497.

[402] *History Manufacturing Department Rock Island Arsenal* 1 July 1949 – 30 June 1950, Volume XI, 22.

[403] *History Manufacturing Department Rock Island Arsenal* 1 July 1948 – 30 June 1949, Volume X, 41.

[404] *History Manufacturing Department Rock Island Arsenal* 1 July 1949 – 30 June 1950, Volume XI, 2 & 1 July 1950 – 30 June 1951, Volume XII, 2.

[405] Ibid., 32-33.

[406] Ibid., 1 July 1951 – 30 June 1952.

[407] *An Illustrated History of Rock Island Arsenal Part Three (1945-1991),* Section 6.

[408] Stevens, 523.

[409] Ibid., 489.

[410] Ibid., 497.

[411] Ibid., 489.

[412] ibid., 498.

[413] Ibid., 525.

[414] Ibid., 524.

[415] Ibid., 489.

[416] Ibid., 489, 504, 508, & 510.

[417] Ibid., 586.

[418] Ibid., 498.

[419] Ibid., 635.

BIBLIOGRAPHY

Ainsworth, Brigadier General Fred C., and Joseph W. Kirkley, comp. *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies.* Series II, Vol. 7 and Series III, Vol. 4. Washington, D.C.: Government Printing Office, 1899.

Anderson, Frederick, I., ed. *Joined By A River.* Davenport, Iowa: Lee Enterprises Incorporated, 1982.

Blair, Helen E. *The Indian Tribes of the Upper Mississippi Valley Region of the Great Lakes, as described by Nicholas Perrot, French Commandant in the Northwest; Bacqueville du La Potheire, French Royal Commissioner to Canada; Morrell Marston, American Army Officer; and Thomas Forsynth, United States Agent at Fort Armstrong.* 2 Vols. Cleveland, Ohio: Arthur C. Clark, 1912.

Blunt, Colonel Stanhope E. "Rock Island Arsenal." *Historic Rock Island County.* Rock Island, Illinois: Kramer and Company, Publishers and Engravers, 1908.

Bouilly, Robert H. "Arsenal Island." *Joined By A River.* Davenport, Iowa: Lee Enterprises Incorporated, 1982.

Bryner, Douglas. "Capture of Fort McKay, Prairie du Chien, in 1814." *Collection of the State Historical Society of Wisconsin,* Vol. 11. Madison, Wisconsin: Democrat Printing Company, 1888.

Buck, Solon Justice. *Illinois in 1818.* Chicago, Illinois: A.C. McClurg, 1917.

Buley, R. Carlyle. *The Old Northwest.* 2 Vols. Indianapolis, Indiana: Indiana Historical Society, 1950.

Clary, David A. *These Relics of Barbarism: A History of Furniture in Barracks and Guardhouses of the United States Army, 1800-1880.* Harpers Ferry, West Virginia: National Park Service, 1985.

Crowell, Benedict. *America's Munitions, 1917-1918.* Washington: Government Printing Office, 1919.

Cullen, Brevet Major General George W. *Biographical Register of the Officers and Graduates of the United States Military Academy at West Point, New York.* Third edition, Vol. 2. Boston, Massachusetts: Houghton, Mifflin and Company, 1891.

District Engineer. *The United States Water Power at Moline, Illinois – Mississippi River.* Rock Island, Illinois: United States Engineer Office, ca. 1936.

Downer, Harry. *History of Davenport and Scott County.* 2 Vols. Chicago, Illinois: S.J. Clarke, 1910.

Draper, Lyman Copeland, ed. *Collection of the State Historical Society of Wisconsin.* Vol. 6. Madison, Wisconsin: State Historical Society of Wisconsin, 1908.

Dunne, Edward F. *Illinois, the Heart of the Nation.* Vol. I. Chicago: Illinois: Lewis Publishing Company, 1933.

That Disgraceful Affair. The Black Hawk War. New York: W.W. Norton and Company, 1973.

Eby, Cecil. *That Disgraceful Affair, The Black Hawk War.* New York: W.W. Norton and Company, 1973.

Elliot, Charles Winslow. *Winfield Scott: The Soldier and the Man.* New York: The MacMillan Company, 1937.

England, Bryan O. *A Short History of the Rock Island Prison Barracks.* Rock Island, Illinois: Historical Office, U.S. Army Armament, Munitions and Chemical Command (AMCCOM), 1985.

Flagler, Major Daniel W. *A History of the Rock Island Arsenal from Its Establishment in 1863 to December 1876; of the island of Rock Island, the Site of the Arsenal from 1804 to 1863.* Washington, D.C.: Government Printing Office, 1877.

Forsyth, Thomas. "Falls of St. Anthony in 1819." *Collection of the State Historical Society of Wisconsin,* Vol. 11. Madison, Wisconsin: Democrat Printing Company, 1888.

Fort Armstrong, 1816-1836. Post Returns, from August 1819 to April 1836, Vol. 2. Records for the War Department. Washington: General Services Administration, 1958.

Gilman, Carolyn et al., eds. "Up the Mississippi River in a Six-Oared Skiff, the Journal of Stephen H. Long, 1817." *The Northern Expedition of Stephen H. Long.* St. Paul, Minnesota: Minnesota Historical Press, 1978.

History Manufacturing Department Rock Island Arsenal. 1 July 1948 – 30 June 1949. Volume X. Arsenal Museum Collection, nd.

History Manufacturing Department Rock Island Arsenal. 1 July 1949 – 30 June 1950. Volume XI. Arsenal Museum Collection, nd.

History Manufacturing Department Rock Island Arsenal. 1 July 1950 – 30 June 1951. Volume XII. Arsenal Museum Collection, nd.

History Manufacturing Department Rock Island Arsenal. 1 July 1951 – 30 June 1952. Volume XIII. Arsenal Museum Collection, nd.

Jackson, Donald, ed. *Black Hawk: An Autobiography.* Urbana, Illinois: University of Illinois Press, 1964. Includes a reprint of *Life of MA-KA-TAI-ME-SHE-KIA-KIAK or Black Hawk,* dictated by Black Hawk to Antoine LeClaire, U.S. Interpreter for the Sauk and Fox Indians at Fort Armstrong on Rock Island. Cincinnati, Ohio: Cincinnati Press, 1833.

Jackson, Donald, ed. *The Journals of Zebulon Montgomery Pike.* 2 Vols. Norman, Oklahoma: University of Oklahoma Press, 1966.

Johnson, Oda B. "History of Fort Armstrong, 1816-1836." A Thesis – Master's Thesis in History, State University of Iowa, January 1940.

Kellogg, Louis Phelps. *The French Regime in Wisconsin and the Northwest.* Madison, Wisconsin: State Historical Society of Wisconsin, 1925.

Mack, Robert and Jess Hess. *Historic Properties Report, Rock Island Arsenal, Final Report, 1985.* Minneapolis, Minnesota: MacDonald and Mack Partnership, 1985.

Manucy, Albert. *Artillery Through the Ages: A Short Illustrated History of Cannon, Emphasizing Types Used In America.* Washington, D.C.: Government Printing Office, 1949.

Maron, Philip, ed. *Schoolcraft's Expedition to Lake Itasca, the Discovery of the Source of the Mississippi River, in 1820.* Lansing, Michigan: Michigan State University Press, 1958.

Meeker, Moses. "Early History of the Lead Region." *Collection of the State Historical Society of Wisconsin.* Vol. 6. Madison, Wisconsin: State Historical Society of Wisconsin, 1908.

Meese, William. *Early Rock Island.* Moline, Illinois: Press of Desaulniers and Company, 1905.

Minnich, J.W. *Inside of Rock Island Prison*. Nashville, Tennessee: Publishing House of M.E. Church, 1908.

_____. *Eleventh Annual Reunion of the Association of the Graduates of the U.S. Military Academy, at West Point, New York, June 17, 1880.* East Saginaw, Michigan: E.W. Lyon, publisher, 1880.

_____. "History of Rock Island Arsenal, 1862-1913." Unpublished manuscript. Rock Island, Illinois: Historical Office, U.S. Army AMCCOM, 1913.

_____. *War's Greatest Workshop, Rock Island Arsenal.* Tri-Cities: Arsenal Publishing Company, 1922.

Morse, Jedediah. *A Report to the Secretary of War of the United States on Indian Affairs, 1822.* Reprinted St. Clair Shores, Michigan: Scholarly Press, 1972. Morse's report includes a letter dated November 1820 to Jedediah Morse from Major Morrell Marston, U.S.A. Commanding at Fort Armstrong. The original manuscript is in the Library of the State Historical Society of Wisconsin in Madison, Wisconsin.

Nothstein, Ira O. "Rock Island Arsenal, Its History and Development." Unpublished manuscript, a National Archives and the Works Progress Administration Project. Rock Island, Illinois: Historical Office, U.S. Army AMCCOM, 1937.

Nute, Grace Lee. *The Voyageurs.* St. Paul, Minnesota: Minnesota State Historical Society, 1925.

Prucha, Francis Paul. *The Sword of the Republic, the U.S. Army on the Frontier, 1783-1846.* Bloomington, Indiana: Indiana University Press, 1964.

_____. *Guide to the Military Posts to the United States, 1789-1895.* Madison, Wisconsin: The State Historical Society of Wisconsin, 1964.

_____, ed. *Army Life on the Western Frontier: Selections from the Official Reports made between 1826 and 1845.* Norman, Oklahoma: University of Oklahoma Press, 1958.

Rogan, Lafayette. *Diary of Lafayette Rogan.* Rock Island, Illinois: typescript in Historical Office, U.S. Army AMCCOM, ca. 1966.

Schoolcraft, Henry R. *Summary Narrative of an Exploratory Expedition to the Source of the Mississippi River in 1820.* New York, New York: Lipincott, Grambo and Company, 1855; reprinted, Milwood, New York: Kraus Reprint Company, 1973.

Slattery, Thomas J. "Rock Island Arsenal: An Arsenal For Democracy, 50th Anniversary of WWII." Rock Island, Illinois: Field Printing Office, 1992.

Smith, Alice E. *History of Wisconsin.* "From Exploration to Statehood." 2 Vols. Madison, Wisconsin: Democrat Printing Company, 1973.

Stephens, Clifford W. *A History of Rock Island and Rock Island Arsenal from Earliest times to 1965, Vol. I, II, III, & Supplement.* Rock Island, Illinois: Rock Island Arsenal, 1965.

Twaites, Reuben G. ed. *Collection of the State Historical Society of Wisconsin.* Vol. 11. Madison, Wisconsin: Democrat Printing Company, 1888.

Tweet, Roald. *A History of the Rock Island District U.S. Army Corps of Engineers 1866-1983.* Rock Island, Illinois: U.S. Army Engineer District, Rock Island, 1984.

_____. *The Rock Island Clock Tower, From Ordnance to Engineers.* Rock Island, Illinois: Rock Island District U.S. Army Corps of Engineers, 1977.

U.S. Army, Ordnance Department. *Annual Report of the Chief of Ordnance to the Secretary of War* for fiscal Years beginning 1866 through 1901. Washington, D.C.: Government Printing Office, 1866-1901.

Walker, T.R. "Rock Island Prison Barracks." *Civil War Prisons.* Kent, Ohio: Kent State University Press, 1962.

Wallace, Anthony F.C. *Prelude to Disaster: The Course of Indian White Relations which Led to the Black Hawk War of 1832.* Springfield, Illinois: Illinois State Historical Library, 1970.

War's Greatest Workshop. Arsenal Publishing Co., of the Tri-Cities: Rock Island, 1922.

Weigley, Russell F. *Quartermaster General of the Union Army: A Biography of M.C. Meigs.* New York City, New York: Columbia University Press, 1962.

Wickstrom, George W. *History of Rock Island Arsenal, Sect. I 1919-1939 & Sect. II 1939-end of war.* Rock Island, Illinois: Rock Island Arsenal, nd.

_____. *The Town Crier.* Rock Island, Illinois: J.W. Potter Company – Owner of the Rock Island *Argus* Newspaper, 1948.

_____, and Charles P. Ainstworth. *Always Lumber; The Story of Dimock, Gould, and Company, 1852-1952.* Rock Island, Illinois: The Augustana Book Concern, 1952.

Whitney, Ellen M. ed. *The Black Hawk War, 1831-1832, Vol. 2, Letters and Papers Part I and Part II.* Historical Collections of the Illinois State Historical Library, p. 35-38. Springfield, Illinois: Trustees of the Illinois State Historical Library, 1973.

Fowle, Frank F. “The Original Rock Island Bridge Across the Mississippi River.” *Railway and Locomotive Historical Society.* Bulletin No. 50. 1941.

Hord, B.F. “Forty Hours in a Dungeon at Rock Island.” *Confederate Veteran.* August 1904.

Minnich, J.W. “Comment on Rock Island Prison.” *Confederate Veteran.* August 1908.

Nevins, Frank J. “Seventy Years of Service from Grant to Gorman.” *Rock Island Magazine.* October 1922.

Nothstein, Ira O. “The First Railroad Bridge to Cross the Mississippi.” *Museum Quarterly,* (Davenport Public Museum). April 1956.

Perry-Mosher, Kate R. “History of Rock Island, Illinois, 1863.” *Confederate Veteran.* January 1906.

Skock, George F. “The Golden Age Regiment, Iowa’s Greybeards.” *Civil War Times Illustrated.* May 1981.

Stanley, F.A. “The United States Arsenal at Rock Island,” articles 1-7. *American Machinist.* February 2, 9, 16, 23, March 2, 9, 23, and 30, 1905.

Weston, Leonard C. “The Rock Island Bridge Episode.” *The Iowan.* Fall issue 1962.

_____. “Telodynamic Power System.” *The Military Engineer.* November-December 1966.

Zobrist, Benedict K. “Steamboat Men and Railroad Men, the First Bridging of the Mississippi River.” *Missouri Historical Review.* 1965.

"The Arsenal." Rock Island *Argus.* 7 December 1875. np.

"The Eight Hour Law – Trouble on the Island." Rock Island *Union.* 4 August 1868.

"The Execution of John Long, Aaron Long, and Granville Young." Transcribed from The Rock Island *Mississippian* and *Republican.* 10 October 1845.

"General Rodman's Funeral." Rock Island *Argus.* 10 June 1871. p. 2.
"The Greybeards." *The Alton Telegraph.* 3 February 1864. np.

"Meeting of Stone Cutters." Rock Island *Union.* 6 August 1868. p. 2.

"Old Wood Bridge First to Span the Upper Mississippi and How it was Built." *Rock Island Argus.* 26 January 1899.

"Proposals for Stone." Moline *Review-Dispatch.* 25 August 1879. p. 6.

"Proposals for Wrought Iron." *Moline Review.* 16 July 1880. p. 5.

Richardson, D.L. "Island of Rock Island – What General Rodman Has Accomplished in Four Years." Davenport *Daily Democrat.* 10 November 1870. p. 2.

Shotwell, Walt. "Remembering the Greybeards." *The Des Moines Register.* 26 May 1986. Section C.