ARMORER
SPRINGFIELD ARMORY

FINAL ISSUE | SPRINGFIELD, MASSACHUSETTS | SEPTEMBER, 1967

ARMORY PIONEERED AIRCRAFT ARMAMENT

The advent of air assult tactics and the use of helicopters as gun platforms simultaneously brought the Springfield Armory into this new mission type activities during the early 1960's.

The mission essentially was to provide the weaponry necessary for the successful prosecution of this type tactics.

The Armory successfully developed many types of aircraft armament not only for helicopters but also fixed wing aircraft. In addition, it had the technical responsibility and supervision over all allied types of subsystems within this field and worked closely with American industry in providing Vietnam troops with their requirements.

Among the "hardware" provided were such items as the M1, M2, M5, the M75, XM134, XM21, XM19, XM20, XM23 and XM24, the M6, XM12 and XM13, XM14, XM16, XM25, XM18 and a host of others. The numbering may be difficult to remember, therefore, it can be summed up by saying that the armament ranged from variations of the M60 machine gun to rocket launchers, pods, and grenade launcher modifications.

A basic weapon used was the M60 machine-gun variation using 7162mm ammunition and helicopter-mounted in a variety of areas and positions. Using twin-handles, the weapon system had great successes.

Another subsystem was the M5 with its 'heart" of the M75 grenade launcher using the 40mm projectile. Mounted in the nose of the helicopter, the subsystem created havoc among the enemy.

On view also is the XM153 with its twin-machine guns mounted to the side of the helicopter. Each subsystem had a different use for a different occasion.

ARMORY EMPLOYEES TOPS WITH BLOOD

Springfield Armory employees set a community relations participation record during the past 15 years with their generous contributions to the American Red Cross Blood Donor program.

More than 8,000 pints of blood were donated through the program since its record-taking inception in January, 1951 with a total of 7,736 pints alone being garnered from January 1, 1951 through May, 1967.

This grand total represents a high-water mark for the Greater Springfield area and provides other area-based industrial, commercial, military and civic groups with a target for future attainment.

The Springfield Chapter, American Red Cross recognized the contributions of the Springfield Armory and its personnel throughout these recordbreaking years with the awarding of a bronze plaque on Sept. 6 to Col. Sweeney in behalf of the installation. The presentation was made by Bernard McMahon of the local Red Cross Chapter.

The official blood donor tabulation of this installation follows: In 1951-303; 1952-639; 1953-829; 1954-410; 1955-349; 1956-293; 1957-389; 1958-365; 1959-268; 1960-429; 1961-504; 1962-609; 1963-581; 1964-561; 1965-519; 1966-435; and 1967 (May) 253.

START HERE !

Your editors suggest first reading the Editorial on Page 2 prior to continuing with the rest of this issue. The Editorial will set the theme of this final ARMORER and provide the basis for continuity.

ARMORY MADE HISTORY IN NATION'S GROWTH

FINAL ISSUE HIGHLIGHTS HISTORICAL DATA; SPOTLIGHT ON PEOPLE, EVENTS AND DATES

The Springfield Armory will pass into history by April 1968!

This is not news to employees of this installation since of the 2400 who were on the installation rolls on November 19, 1964 when the phase-out order was announced nationally, there now remain 923 at this writing during the second week of September 1967. It should be noted that of these 923 present employees, only 720 are career Civil Service employees while the remainder are temporary hires.

There is much which can be noted during the life-span of the Springfield Armory from its official birth on April 2, 1794 to the present time and extending into the future toward April 1968. The following pages of information have been designed to provide those who remain together with the mailing list of retired personnel, a capsule treatment of this installation, its accomplishments and its people.

There have been contrasts in the career and destiny of this first

Continued on Page 12

1794 - COMMEMORATIVE ISSUE - 1968

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EDITORIAL

SPRINGFIELD ARMORY

1794-1968

This is not an editorial in the usual sense of the word!

It's message is geared less to pointing up a problem than it is to highlighting the entire contents of this special issue. It is, however, pointed to Springfield Armory employees ... both past and present. There is no need to add "future employees" since the future of this installation is a certainty.

Those who read this issue will note that it is a recording of constant accomplishments ... by duty, by people and by mission.

The emphasis in all cases is upon the "firsts" initiated and completed by the Springfield Armory. It can be no other way since this installation was the first of its kind in this country and maintained that leadership to its days of final closure. Its leadership ran the gamut from muskets to rifles to aircraft armament.

If certain notes of pride can be detected in listing the chronology of accomplishments, this must be forgiven ... not because it results from intentional bragging but because each of these accomplishments were the end product of the pride in which everyone in the Springfield Armory from 1794 to the present day viewed individual assignments and individual goals. The final result also ended in getting there first with the best and with the most.

The Springfield Armory accomplished its mission from the very beginning. The element of pride maintained this record to the very end. The end products of this installation saw service in every conflict in which this nation was engaged. Each of these conflicts in which Armory products saw service ended in victory. This alone qualified the existence of Springfield Armory in terms of SUCCESS.

Praise came from all quarters ... business, industry, civic, social and religious quarters. The praise was well earned ... it conveyed the essence of the cooperation extended from the federal installation to all other elements of the American society.

The Springfield Armory left and will continue to leave an impact upon this nation. The phase of national defense to which it was intrusted was never postponed with a "Manana" or "tomorrow". All pertinent national defense problems were immediate and received immediate attention. History records that this prompt attention was effective.

Therefore ... when you read the contents of this commemmorative issue ... read it with the view that only a very small portion of Springfield Armory history can be brought to your attention. The full and final story would take volumes of full-length books ... books which only the future can bring into focus.

Until that time, it is only necessary to note that the history portrayed in this issue is a history in which each of you has participated.

FOR THE HISTORY BUFF:

SPRINGFIELD ARMORY 1794-1968

(Editors Note: Since this is a commemorative issue, the following article is keyed to the April 1968 closure date.)

The Springfield Armory, until its phase-out the technical and scientific center for American military weapons ranging from pistols, rifles and machine guns to aircraft armament, this year observes its 174th anniversary.

Founded on April 2, 1794 by the Third Congress, the Springfield Armory can trace its history to the year 1777 when a "laboratory" and depot were established in rented buildings in what is now the downtown district of the City of Springfield.

Its historic role resulted in its designation on April 2, 1963 as a Registered National Historic Landmark.

From its very beginning, the Springfield Armory has been known primarily as the nation's center for the development and production of small arms weapons for ground use. Since 1963 emphasis at the Armory shifted heavily in the direction of research, development, engineering, procurement and pilot production of new armament systems for helicopters and fixed wing aircraft. Dynamic new talents in the scientific and support fields involved were added to the Armory to upgrade capabilities in this increasingly important aircraft armament mission area.

Springfield was chosen as the site of a National Armory primarily because of the presence of a considerable number of skilled gunsmiths, blacksmiths and craftsmen.

The availability of such a great number of artisans prompted General Henry Knox, General Geroge Washington's most experienced Artillery officer, to recommend Springfield as one of the sites for the location of a "laboratory". A few years later, the location was moved to higher ground known then as the "Training Field" and today as Armory Square. Here, barracks, shops and storehouses as well as a powder magazine were constructed. A powder mill -- forerunner of the present Water Shops -- was built at that location on the banks of the Mill River.

Following the Revolutionary War, all manufacture and repair work was stopped, but Springfield was retained as a storage depot for the New England area. Washington visited the city shortly after his inauguration in 1789 and, convinced of its potentialities, recommended the establishment of a National Armory here. His approval of the local area was adopted as a law by the Third Congress.

Since then, the Springfield Armory and the community of Springfield were mutually interdependent. The Armory attracted additional arms industries to the area, and the supply of competent gunsmiths in turn was an important factor in enabling the Armory to continue its activity.

Today, this installation is the only federal arsenal which can call itself an "Armory". The Springfield Armory was so designated from the very beginning and, because of its long historical association, the term has remained unchanged. However, the term has been coupled with "United States". "National", and since 1892 with "Springfield".

The first permanent building in Armory Square was a brick storehouse known as the West Arsenal (Bldg. 11). Built in 1807, it is still standing and today houses the Officers' Club and conference halls. The Middle Arsenal (Bldg. 15), also on the State Street side of Armory Square, was built in 1830 and is now occupied by an engineering group. The Main Arsenal (Bldg. 13), which appears on the city Seal of Springfield, is located on the west side of the Armory quadrangle.

Three plants were located on the Mill River in 1817. The present Water Shops built in 1902 are on the site of the former "Upper Mill".

Seven types of shoulder arms were produced at the Armory since 1794. They include: (1) flintlock; (2) percussion with smooth bore; (3) percussion with rifled bore; (4) breech-loading rifle; (5) bolt-action rifle; (6) semi-automatic; and (7) full automatic.

The French Charleville Musket Model 1763 served as the model for the first musket; a flintlock, manufactured at the Armory in 1795. This weapon is known as the United States Musket, Model 1795. The percussion type appeared about 1842; the first all-new rifled musket in 1855; and the first breechloader in 1866. The first bold-action rifle was introduced in 1892, and the world-famed Springfield Rifle came into being in 1903. After World War I, extensive development work was started on a semi-automatic rifle and the first Garand, designed by Springfield Armory's own John Garand, was first issued in 1937. Twenty years later, in 1957, the U. S. Army adopted a new automatic rifle - the Springfield-developed M14 rifle.

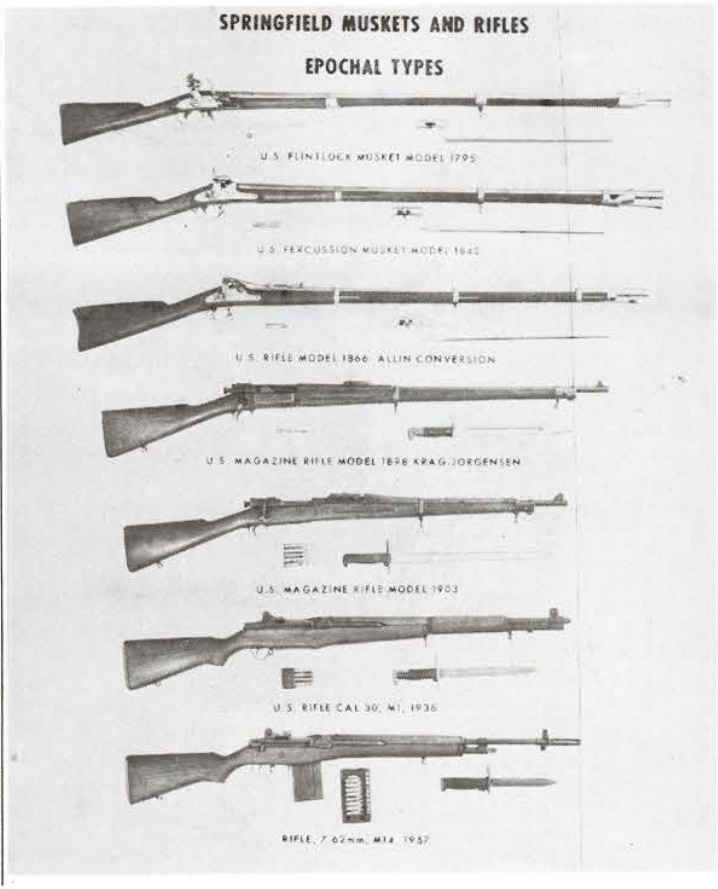
In 1795, with 40 people employed, 245 muskets were produced at Springfield Armory; in 1864, 276,000 rifles were produced. In World War I, the highest daily production was 1,500 with 5,381 employees on the payroll. During World War II, more than 4,000,000 Garands were produced with a peak work force of 14,000 people.

Springfield Armory became a part of the Army Weapons Command with Headquarters at Rock Island, Illinois, and furnished modern weapons to all elements of our Armed Forces. The Armory maintained facilities not only for the experimental development of rifles and automatic weapons as well as aircraft armament but also for pilot line production.

The Springfield Armory always stood ready with the blueprints for utilizing the nation's might in the event of an emergency.

FIRST CHIEF

David Ames, Supt.



MAIN ARSENAL

This is a building which has seen much of history.

Long a Springfield landmark, it was the social center of the area during the days of the Civil War. Most of the major formal balls and civic events took place on the upper floor which also has a balcony overlooking a view of the city.

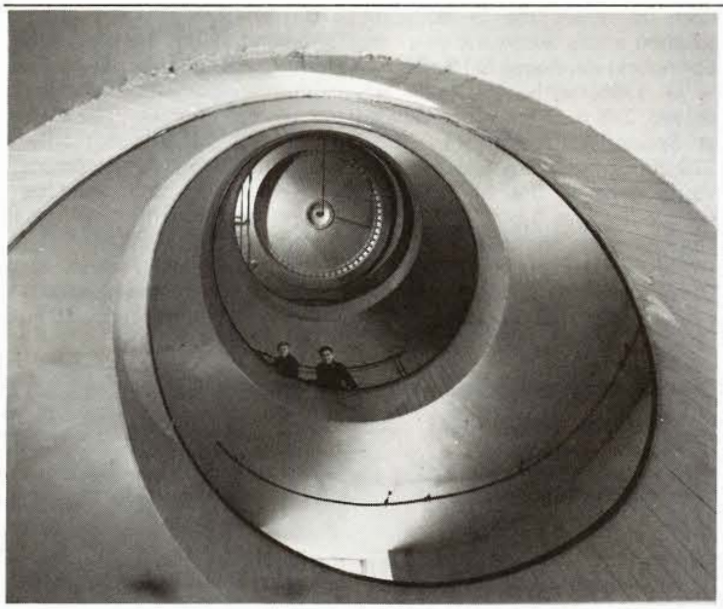
Henry Wadsworth Longfellow immortalized the Springfield Armory itself with a visit to the Main Arsenal. A widower for many years, Longfellow married for a second time and, with his new bride, visited this installation. His reaction to the storage of arms in this building prompted the birth of the poem "The Arsenal At Springfield," the opening lines of which run:

"This is the Arsenal, from floor to ceiling,
Like a huge organ, rise the burnish'd arms;"

Construction of the Main Arsenal began in 1846 and was completed in 1850.

When Springfield became a city in 1852, it adopted a city seal which still includes a view of the city. The upper part of the seal is given over to a view of the Main Arsenal.

During the Civil War period, the building was the scene of attempted sabotage. Two visitors, later identified as Confederate sympathizers, traveled from Canada to this city and went to the top of the Main Arsenal tower. Guards making their rounds later found a home-made bomb wrapped in a newspaper of Canadian origin at the base of this tower. The attempt at sabotage, needless to say, was unsuccessful.



THE FLOATING STAIRCASE

The "floating staircase" in the Main Arsenal at the Springfield Armory has been a subject of historic as well as architectural discussion since it was first constructed in 1849.

The 131-steps of the staircase lead in broad sweeping arcs from the main floor toward the top of the tower in the building . . . the same tower which was the scene of an attempted sabotage by Confederate sympathizers during the Civil War.

The most unusual feature of the staircase lies in the fact that its construction was accomplished by design with the aid of no nails whatsoever. In addition, no outward metal supports were incorporated in the building process, thus resulting in the illusion of an immense stairway suspended in mid-air.

Records indicate that an engineering feat of this type is unusual. The Main Arsenal staircase is believed to be one of only a few existing in this country.

Historically, the Main Arsenal was the center of social events for the entire area during the 1855-1880 period. Prominent figures of national, state and local government were guests of the installation commander during military balls as well as civic events. This same staircase was trod by Henry Wadsworth Longfellow during his visit to the Springfield Armory in the 19th Century.

It can truly be said that events of the past and the future have a way of meeting at the Springfield Armory of today!

ARMORY: COMMUNITY LEADER

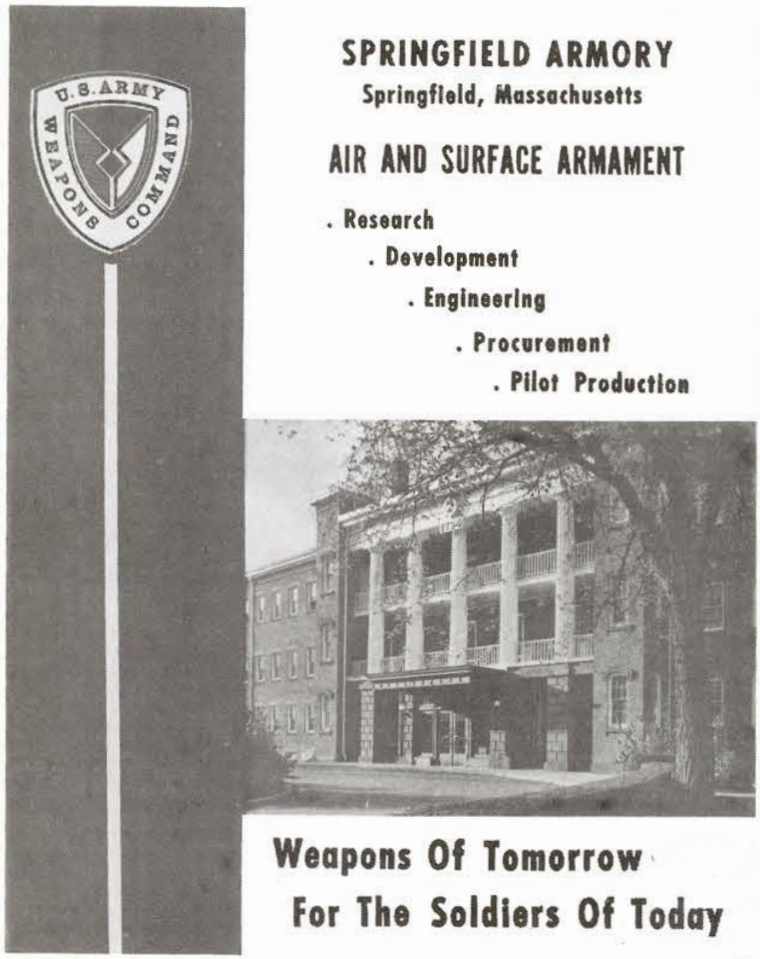
The Springfield Armory was honored on Sept. 6 by the Springfield Chapter, American Red Cross with the presentation of a bronze plaque commemorating 17 years of outstanding contribution to the blood donor program. The award was presented to Col. Arthur H. Sweeney, Jr. by Bernard H. McMahon, president of the Springfield Five Cents Savings Bank and local Red Cross Chapter president. Shown, left to right, are Henry Raschi, Col. Sweeney, Mr. McMahon and Sebastiano Guiliani. Raschi and Guiliani, top blood donors here, have donor records of four gallons and six pints each. The plaque will eventually be placed in the Armory Museum upon installation phase-out.

THE SPRINGFIELD ARMORY - 1967

The photos on the opposite page are designed to provide a quick glance at the installation area physically; its historic founding; and a few national figures who visited here. Of special note are the two photos showing past U. S. Presidents ... Franklin Delano Roosevelt and John F. Kennedy.


TO THE MEMORY OF
GEORGE WASHINGTON
COMMANDER-IN-CHIEF OF
THE AMERICAN ARMY
1775 – 1783
FIRST PRESIDENT OF THE UNITED STATES
WHO INDORSED THE LOCATION OF A
MAGAZINE AND LABORATORY AT SPRING-
FIELD IN 1777, PERSONALLY INSPECTED
THE WORKS ON THIS SITE IN 1789, AND
APPROVED SPRINGFIELD AS LOCATION
OF A NATIONAL ARMORY IN 1794
AND WHO THEREBY BECAME
THE FATHER OF
SPRINGFIELD ARMORY

THE ARMORY MISSION



The mission of the Springfield Armory during its most "modern" historical era can be best summed up by the above photo. The actual material from which the photo was taken was the installation press kit cover which saw extensive use and distribution throughout the nation.

FINAL COUNCIL

The final Springfield Armory Civilian Welfare Fund Council in the history of the installation continued its necessary functions in the waning days of Armory activities. Shown, left to right, Mrs. Mary C. Beard, Edward Julian, Frank English, John McGowan, Robert Wynne, Theodroe Zolynski and Lt. Walter H. Lynch III.

SUPERINTENDENTS AND COMMANDING OFFICERS SPRINGFIELD ARMORY, 1794-1968

	FROM	UNTIL
Ames, David, Supt.	1794	Oct. 31, 1802
Morgan, Joseph, Supt.	Nov. 1, 1802	Oct. 31, 1805
Prescott, Benjamin, Supt.	Nov. 1, 1805	Aug. 31, 1813
Lechler, Henry, Supt.	Sept. 1, 1813	Jan. 15, 1815
Prescott, Benjamin, Supt.	Jan. 16, 1815	May 31, 1815
Lee, Roswell, Lt. Col., Supt.	Jan. 1, 1815	Aug. 25, 1833
Talcott, George, Lt. Col., Ord Dept	Acting to	Oct. 31, 1833
Robb, John, Supt.	Nov. 1, 1833	April 15, 1841
Ripley, J. W., Maj., Ord Dept.	April 16, 1841	Aug. 16, 1854
* Whitney, James S., Gen., Supt.	Oct. 19, 1854	Mar. 1, 1860
Wright, I. H., Col., Supt.	June 27, 1860	April 25, 1861
Dwight, George, Capt., Supt.	April 25, 1861	Aug. 21, 1861
Dyer, Alexander B., Capt., Ord. Dept.	Aug. 25, 1861	Oct. 27, 1864
Laidley, T. T. S., Maj., Ord Dept	Oct. 27, 1864	May 14, 1866
Benton, J. G., Maj., Ord Dept	June 14, 1866	Aug. 23, 1881
Buffington, A. R., Lt. Col., Ord Dept.	Oct. 3, 1881	Feb. 2, 1892
Mordecai, Alfred, Col., Ord Dept	Feb. 2, 1892	Feb. 21, 1898
Arnold, Isaac, Jr., Lt. Col., Ord Dept	Feb. 21, 1898	May 29, 1899
Phipps, Frank H., Lt. Col., Ord Dept	June 5, 1899	Aug. 9, 1907
Blunt, Stanhope E., Col., Ord Dept	Aug. 9, 1907	Sept. 1, 1912
Peirce, William S., Lt. Col., Ord Dept	Sept. 1, 1912	Jan. 10, 1918
Stewart, G. H., Lt. Col., Ord Dept	Acting to	Mar. 15, 1918
Hoffer, Jay E. Col., Ord Dept	Mar. 15, 1918	Sept. 16, 1918
Hubbell, Lindley D., Lt. Col., Ord Dept	Sept. 16, 1918	April 14, 1920
Ames, Thales L., Col., Ord Dept	April 15, 1920	Aug. 7, 1923
McFarland, Earl, Maj., Ord Dept	Aug. 8, 1923	June 17, 1924
Schull, H. W., Col., Ord Dept	June 18, 1924	June 9, 1929
Joyes, J. W., Col., Ord Dept	July 1, 1929	Dec. 31, 1933
Smith, T. J., Lt. Col., Ord Dept	Jan. 1, 1934	Feb. 8, 1938
Borden, Wm. A., Lt. Col., Ord Dept, Acting	Feb. 9, 1938	Sept. 12, 1938
Stewart, G. H., Col. Ord Dept	Sept. 13, 1938	June 10, 1942
McFarland, Earl, Colonel, Ord Dept	June 11, 1942	July 31, 1943
Woody, George A., Col., Ord Dept	Aug. 1, 1943	Aug. 4, 1944
Buck, Champlin F., Jr., Col., Acting	Aug. 4, 1944	Oct. 7, 1944
Ramsey, Norman F., Brig. Gen.	Oct. 8, 1944	Nov. 16, 1945
MacGregor, Stephen H., Col., Ord Dept	Nov. 17, 1945	Aug. 9, 1947
McMorrow, F. J., Lt. Col., Ord Dept, Acting	Aug. 10, 1947	Aug. 20, 1947
Barroll, Morris K., Jr., Col., Ord Dept	Aug. 21, 1947	May 31, 1950
McMorrow, F. J., Lt. Col., Ord Dept, Acting	June 1, 1950	June 30, 1950
Guion, James L., Col., Ord Dept	July 1, 1950	May 13, 1953
Harlan, John F., Col., Ord Corps, Acting	May 14, 1953	July 31, 1953
Crowe, W. J., Col., Ord Corps	Aug. 1, 1953	Aug. 31, 1954
Ludlam, D. G., Col., Ord Corps	Sept. 1, 1954	June 14, 1955
Harlan, John F., Col., Ord Corps,	June 14, 1955	Jan. 18, 1956
Ludlam, D. G., Col., Ord Corps	Jan. 18, 1956	Sept. 1958
Harlbut, Oren E., Col., Ord Corps	Sept. 1958	Sept. 1959
Medinnis, C. L. P., Col., Ord Corps	Sept. 1959	June 1963
Durrenberger, William J., Col., Ord Corps	July 1963	Sept. 20, 1965
Sweeney, Arthur H., Jr., Col., Ord Corps	Sept. 21, 1965	

DEMONSTRATION TEAM

Shown above is the Armory demonstration team which was featured at the N. Y. World's Fair in 1965 as the Honor Guard to the Governor of Massachusetts. The team left to right, consisted of Raymond C. Mizejewski, James P. Murphy (both of Test Branch) and Chris Dvarecka. All told, the unit conducted more than 750 demonstrations before a total live audience exceeding 5,000,000 people during a seven year span. Not considered in the audience count were the countless millions who saw the team in action via television in many parts of the country. Most of the firing demonstrations were with live ammunition and using the M14 rifle, M60 machine gun and the M79 grenade launcher.

SPRINGFIELD ARMORY BAND

The crack Springfield Armory Band, shown above in a 1962 photo, was formed in 1959. It's services were called for in many civic and social events. Armory employees well remember the concerts conducted by the band at various points throughout the installation. How many names can you associate with the faces in the above photograph!

ARMORY GREAT: JOHN C. GARAND

John C. Garand, internationally famous gun designer and "father" of the M1 rifle known to troops throughout the world as the "Garand" exercised his talents as a member of the Springfield Armory family.

John C. Garand

Mr. Garand was born in 1887 at St. Remi, Province of Quebec, Canada moving to the United States in 1899 when he began employment as a bobbin operator in a cotton mill at Jewett City, Connecticut at the age of 12.

His mechanical ability was quickly evident and he was transferred to the machine shop.

His proven ability as an inventor brought him to Providence, Rhode Island where he entered the employ of a welding company there. His development of new tools and machines was recognized by Brown & Sharpe Co., and he thereupon entered employment in that firm's laboratories.

Shortly thereafter, Mr. Garand went to work at the Federal Screw Company, Providence, Rhode Island.

The beginning of World War I in 1914 saw Mr. Garand move his talents to New York City in a micrometer plant. He submitted his first weapons design to the U. S. Government in 1916 and was subsequently employed by the U. S. Bureau of Standards to develop a rifle which was later demonstrated at the U. S. Army War College and to the U. S. Ordnance Department. The efficacy of Mr. Garand's designs brought about interest by the U. S. Government in his work and resulted in his employment in 1919 at the Springfield (Massachusetts) Armory, the research and development center of military small arms for the United States.

Mr. Garand was assigned the mission of developing a semi-automatic rifle by Springfield Armory authorities. The net result was the adoption of the M1 rifle which later became known to troops as the M1 "Garand" rifle. Adoption date of the M1 for the U. S. Army was January 1936 and for the U. S. Marine Corps in 1940. The first production models of the weapon were delivered to troops in August 1937.

The new weapon increased the firepower of the individual soldier by five times over that of the Model 1903 predecessor.

The value of the M1 "Garand" rifle was proved during the days of World War II and the Korean conflict.

The era of the M1 "Garand" rifle began in January, 1936 when first adopted and continued through to May 1957 when it was superceded by the M14 rifle.

Mr. Garand currently lives in Springfield, Massachusetts.

QUALITY CHIEF

James V. Rowley
Chief, Quality Assurance Office

OPERATIONS DIVISION CHIEF RECOUNTS ARMORY "FIRSTS" LATER USED BY INDUSTRY

The Springfield Armory, long noted for its research, engineering and development of weapons, weapons systems and weapon ideas in the military field also compiled an enviable record among commercial industrial counterparts for advanced ideas which were ultimately adopted by industry throughout the country.

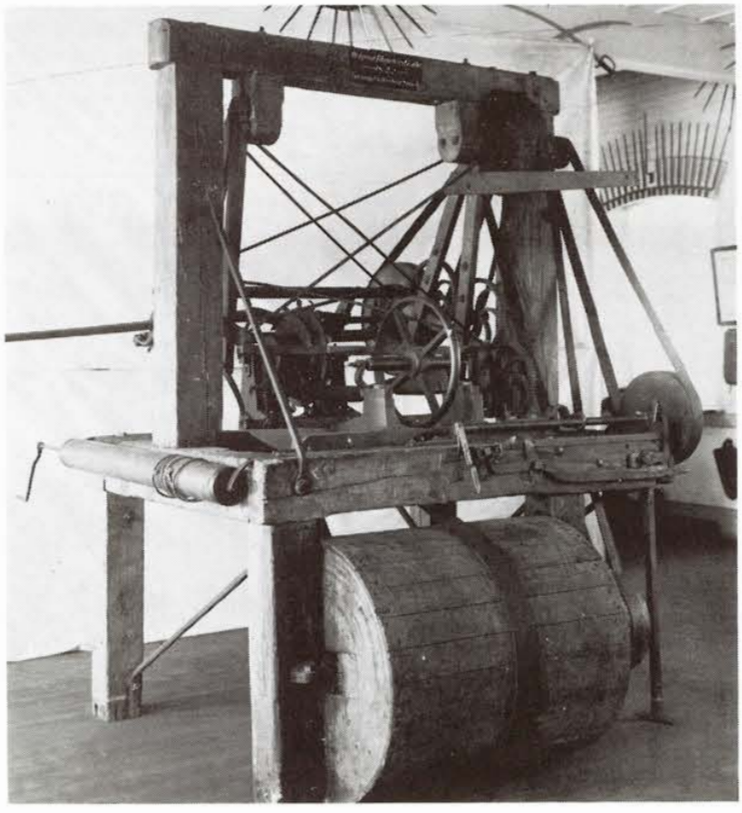
George G. Mackintosh
Chief of Operations

George G. Mackintosh, chief of the Operations Division, was asked by the ARMORER for a special article covering the metal-cutting field in which his division was so prominent throughout the years.

This is his modest citation of the facts, which as he admits, could be amplified even further given more time for necessary digging into statistics:

"Throughout its long history, Springfield Armory has pioneered in developing equipment and methods to more efficiently make the weapons for our country's armed forces, and to improve the reliability of those weapons. One of the earliest examples is the Blanchard Stock Turning Lathe (1822), which for many years has been displayed in the Armory's Museum, and which employs a still-used principle for turning wood blanks to a predetermined contour on a production basis.

"In the late 1930's, when tooling up for production of the M1 (Garand) Rifle, Armory engineers, working with machine tool manufacturers, took many strides forward in applying to mass production, methods which had, until then, been considered specialized processes. Perhaps the most important was the large-scale use of broaching in lieu of milling, which cut man hours and labor costs by more than fifty per cent on these operations. Because fewer machines were needed, the initial investment was lower despite the higher cost of a broaching machine compared to a miller.



"Another very important use of broaching was to produce rifling grooves in small arms barrels, replacing the conventional hook and scrape cutter rifling methods. Overall costs were reduced, output increased, and a more uniform product resulted. Armory employees worked closely with industry in developing the proper tools for the job, as well as a procedure for rifling barrels which is now standard throughout the small arms indsutry.

"Later the Armory developed the process for applying chrome plate to the bores of small arms barrels. Plated barrels have given greatly improved life, so that fewer spare barrels are needed and weapon maintenance costs have been reduced. The plating processes used by the small arms industry today follow procedures developed here.

"Automatic profilers were developed to meet an Armory need, and have eliminated much of the hard labor previously associated with making profiling cuts. Further evolution of these machines, again with our assistance, gave us precision profiling machines equipped with automatic program control devices.

"When the Armory's mission changed from production to pilot line manufacture, its pioneering work in collaboration with industry was continued to provide equipment to efficiently handle small-lot manufacture. The results included significant advancements in the use and application of pre-programmed tape, manually and electronically controlled milling and drilling equipment.

"We were among the earliest users of electro-chemistry for metal removal and the first to use the principle of precision cavity sinking to produce cavities impossible to machine by conventional means.

"Again, the Armory was the first to apply ultrasonic energy to cleaning weapons after test firing before packing. This process did away with many hours of hand scrubbing, reduced the direct labor needed for this job by fifty per cent, and gave a cleaner produce, as firing residue is nearly impossible to remove completely by hand methods. Many firms manufacturing weapons for the Department of Defense have copied the Armory's process.

"The fruits of our labors in developing new equipment and processes, of which the foregoing are only a few highlights, are available to all American industry. Over the years, the Armory has contributed much to the development of improved production equipment and methods which are now applied to the manufacture of products which benefit each of us today."

ARMORY AMASSES TOP SAFETY AWARD

The safety of Springfield Armory employees has always been of paramount importance both to management as well as employees themselves.

This emphasis upon safety as a constant "rule of life" has resulted in the awarding to this installation and its personnel of three consecutive Awards of Merit in the field of accident prevention by Hq., U. S. Army Materiel Command, Washington, D. C. These high awards were presented for safety records of the years 1964, 1965 and 1966.

Even more, the Springfield Armory is currently highest in the standings for the top Award of Honor for 1967 from the same source.

Receipt of these awards is particularly gratifying since all were earned during critical periods of tension and high productivity. National records indicate statistics that installations facing similar conditions of projected phase-out experienced poor accident records during the transition.

Springfield Armory, however, ran counter to the national trend and maintained its high level of safety.

The net result of this high efficiency index in the safety field has been that Springfield Armory has gained an enviable reputation of setting a safety criteria toward which higher military headquarters have pointed their own subordinate installations.

ARMORY LEGEND DRAWS WORLD FAMOUS HERE

The star-studded history of the Springfield Armory was filled with moments of glory which contributed to the greatness of this nation!

There were names of prominent people, doing prominent deeds, in prominent positions within and outside the government whose fates touched upon the Springfield-based arsenal and who added to its luster of truly being the "first" in the keystone bastions which gave the United States of America the international reputation of being the "ARSENAL OF DEMOCRACY".

Such people as General George Washington and General Henry Knox started the trend of association with the present day Springfield Armory.

There were, among others, such luminaries as: David Ames, the first superintendent ... Robert Orr, the first armorer ... Thomas Dawes, who made the first purchases of land which became the Springfield Armory ... Lt. Col. Roswell Lee, first military superintendent ... Thomas Blanchard, designer ... Major J. G. Benton, for whom the city's Benton Park and this installation's small arms museum are named ... William R. "Billy" Bull, who as an Armory employee, outshot all marksmanship competitors to gain the world title ... Erskine Allen, James Cranston, and Lucian Bruce who were connected with early development of small arms ... Daniel Shays and Luke Day of Shays' Rebellion notoriety ... General Shepard of Westfield who protected the Armory against Shays' men ... the Marquis de Lafayette, Washington's close friend who visited here ... and today a legend for his work in our field is the name of John C. Garand, the inventor of the M1 rifle which bears his name.

Some of the high points in the Armory's 174-year history are listed below in chronological order.

In 1777, manufacture of munitions in Springfield began on an organized scale in rented buildings; 1787, Shays' rebels launch attack on Armory to secure weapons; 1789, President Washington visits Springfield and inspects Armory works; and in 1794, Third Congress names Springfield as site of new national armory.

In 1807, the first permanent building in the quadrangle was erected (this former brick storehouse is used for the Officers' Club today); 1815, Lt. Col. Roswell appointed first military superintendent of the Armory;

Lt. Col. Roswell Lee

1822, Thomas Blanchard, Armory worker, designs revolutionary machine for turning gun stocks, forerunner of all modern lathe machines; 1842, percussion-type weapon replaces old flintlock musket; 1843, Longfellow visits Armory and writes poem "The Arsenal at Springfield"; and in 1849 the floating staircase in Main Arsenal was constructed.

Also, in 1852, work began on picket fence that encloses Federal Square today (old cannons melted down to provide the iron); 1852, Springfield becomes a city and includes in its adopted city seal a view of the Armory Main Arsenal; 1853, First National Exhibition of Horses, sponsored by leading local citizens, held on Armory grounds; 1855, manufacture begins on first rifled bore type of military rifle; 1864, attempt made to blow up main arsenal with home-made bomb (plot laid to Confederate sympathizers); 1866, Introduction of breech-loading rifle.

Also, in 1871, Museum established by Col. J. G. Benton, commanding officer; 1892, adoption of bolt-action rifle; 1892, the National Armory at Springfield becomes the "Springfield Armory"; 1903, the year of the famed '03 Springfield rifle, which played major role in World War I campaigns; 1918, first publication of the plant magazine "The Armorer"; 1921, visit of Marshal Foch, famous military commander of World War I.

Also, in 1937, the first issue of semi-automatic rifle (Garand) made to U. S. troops; 1939, establishment of apprentice school; 1940, President Franklin D. Roosevelt tours facilities; 1942, Armory awarded the Army and Navy "E" citation for first time; 1943, employment reaches all-time peak of 14,000 (women warworkers comprise nearly 70% of work force in World War II); 1944, production hits enormous total of 122,000 rifles monthly; 1951, expansion of developmental and warehouse facilities leads to addition of land in East Springfield; 1954, visit of Maxwell Anderson, Pulitzer Prize-winning playwright; 1955, Springfield Armory becomes part of Army Ordnance Weapons command.

Also, in 1957, the M14 is adopted by U. S. Army as its new official shoulder arm weapon; 1957, Senator (later President) John F. Kennedy visits Armory; 1958, the M14 rifle wins "SPRINGFIELD" name; 1962, S. A. Rifle and Pistol Club Range opens at Water Shops; 1962, Armory site of 1962 Army Research Conference; 1963, Armory designated as a national registered historic landmark; 1964, first

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BUILDINGS TRACE ARMORY EXPANSION

Part of the Springfield Armory history can be developed through its physical growth. Building construction is a prime portion of that development. The following list has been compiled for those who will find future interest, historically and otherwise, of in the Springfield Armory expansion.

Bldg. No.	Description	Const.
1	Commandant's Qtrs.	1845
2	Field Officers' Qtrs.	1894
3	Field Officers' Qtrs.	1898
4	Field Officers' Qtrs.	1836
5&6	Field Officers' Qtrs.	1870
7	Co. Officers' Qtrs.	1833
8	Co. Officers' Qtrs.	1836
9	Co. Officers' Qtrs.	1836
10	Co. Officers' Qtrs.	1833
11	Barracks	1808
12	Co. Officers' Qtrs.	1880
12	Main Arsenal	1850
14	Middle Arsenal	1830
15	Administration	1836
16	Administration	1817
17	Co. Officers' Qtrs.	1833
18	Garage for Qtrs. No.1	1937
19&19A	Storehouse	1863
20	Property Mfg.& Insp.	1941
21	Paint Shop	1880
24	Fuel Oil Storage	1941
25	Storehouse for Plant Vehicles	1942
26	Garage	1863
27	Annex Building	1869
28	Experimental Building	1919
29	Garage for Qtrs. No. 5, 6, 12	1941
31	Gatehouse at Gate No.1	1937
32	Manufacturing	1941
33	Gatehouse at Gate No.3	1908
35	Storehouse for Plant Facilities	1940
36	Garage (7 car)	1937
37	Swimming Pool	1937
101	Manufacturing	1892
102	Manufacturing	1892
103	Manufacturing	1892
104	Mfg. & Laboratory	1941
105	Personnel Services	1937
106	Heat Treating	1940
107	Metal Finishing	1918
108	Cyanide Disposal	1919
109	Storage (Heat Treat)	1919
110	Gatehouse at Gate No.10	1938
111	Building No.111	1942
112	Transformer House	1941
113	Chimney at Bldg. No.103	1931
114	Fuel Oil Storage	1931
T115	Metal Finishing	1942
T116	Gatehouse at Gate No.15	1942
201	Main Building	1857
202	Storehouse	1861
203	Manufacturing	1940
204	Mfg. & Plant Facilities	1941
205	Manufacturing	1941
206	Manufacturing	1940
207	Proof Firing	1941
209	Oil & Waste Building	1942
210	Storehouse	1942
212	Storehouse	1941
213	Storehouse	1880
214	Forge Press & Heat Treat	1942
T215	Gatehouse at Gate No.37	1942
T216	Oil Pump House	1942
218	Clip Mfg. & Welding	1941
222	Gate House at Gate No.30	1937
223	Waste & Chip Building	1937
300	Range Treating Facilities	1952
301	Salvage Building	1917
302	General Purpose Whse.	1952
303	Magazine - Powder	1956
304	Magazine - Primers	1956
305	Magazine Liquid Propellants	1956
306	Bridge Crane Structure	
307	Platform & Ramp	
T400	Quonset Hut	1952
T401	Firing Platform No.1	1944
T402	Firing Platform No.2	1952
T403	Radio - Tel. Booth	1954
T404	Van. Storage	
T405	Hose House	
T38	Guard House Gate 7	
T501	Range House	
T502	Chemical Outhouse	
T408	Chemical Outhouse	

ARMORY TOPS IN LABOR RELATIONS

The Springfield Armory, as this nation's first arsenal, instituted many "firsts" which were later adopted by its contemporaries.

Such a "first" took place in labor-management relations as a direct outgrowth of the January 17, 1962 Executive Order 10988 signed by the late President John F. Kennedy. The local implementation of that order which became a format for other military installations was one of the earliest on record. It gave Local R1-3 of the National Association of Government Employees (N.A.G.E.) exclusive recognition as a bargaining agent for all Armory employees with the exception of the Security Force which selected the American Federation of Government Employees (A.F.G.E.), an affiliate of AFL-CIO as its representative.

N.A.G.E. subsequently negotiated a contract with approximately 28 areas of negotiation. One such covered cited a requirement which previously had been implemented on an informal basis ... that of requiring management to consult and/or negotiate with N.A.G.E. representatives concerning the establishment and conduct of personnel policies and practices relating to the 28 subject areas. Later, a similar contract was developed between Springfield Armory management and A.F.G.E.

Implementation of Executive Order 10988 was a fitting climax to previous relationships which existed between installation authorities and employees.

In the early stages of labor-management relationships prior to World War II, employees were allowed to obtain membership in various organizations and associations which were theoretically designed to improve the well-being of employees and the efficient and effective administration of the federal service. The arrangement, however, was not satisfactory in many respects since official sanction was lacking and the effectiveness of the employee organizations was limited. The major role played by these organizations during this period was as a vehicle for social and fraternal functions, according to installation employees.

Records of the 1946 - 1961 period reflect an increasing emphasis upon Labor-Management relationships by such groups as the Federal Employees Veterans Association (F.E.V.A.) now known as N.A.G.E. and currently the largest independent federal employees association; A.F.G.E.; the National Association of Federal Career Employees (N.A.F.C.E.); and the National Federation of Federal Employees (N.F.F.E.). While increased group membership improved the climate and installation top level management had always been enthusiastic and cooperative, nevertheless, there was no official obligation on the part of all to implement the labor-management cycle.

Executive Order 10988 changed all that to the ideal relationship which developed following the November 7, 1963 date.

The ultimate result of the friendly relationships between labor and management was a furthering of the installation drive toward national defense requirements.

PLACEMENT TEAM HAS SEPT. RESULTS

The AMC Personnel Placement team provided the following comments relative to the status of Springfield Armory employees affected by the installation phase-out:

In May 1966, Army Materiel Command established a Placement Team at the Armory to provide outplacement assistance to employees affected by the phase-out. At that time, Mr. James J. Keating replaced Mr. Paul Coleman (Watertown Arsenal's Placement Team) who was assigned to the Armory several months prior to the team's arrival to assist employees and orient them to the procedures of the Department of Defense Central Referral System.

Since the closure announcement in November 1964, when there were over 2400 employees at the Armory, approximately two-thirds of the workforce have already departed. It is significant that 73% of people accepted outplacement assistance were able to remain in the New England States. In addition, about 33% of the employees elected to continue their federal careers through accepting positions with government agencies mainly within the Department of Defense. About 22% of the employees went into industry mainly in the Springfield area and more than half of this number were employees who retired and then accepted private employment. It is estimated that only 12% of the retirees fully retired.[

Geographically, employees have accepted positions as far south as Florida (17) and as far west to California (4) and overseas to Germany and Hawaii (7). However, the outplacement of employees has centered within 100 miles of Springfield and emphasizes the limited extent of mobility characteristic of Armory employees.

THE ARSENAL AT SPRINGFIELD

This is the arsenal, from floor to ceiling,
Like a huge organ, rise the burnish'd arms;
But from their silent pipes no anthem pealing,
Startles the villages with strange alarms.

Ah! What a sound will rise, how wild and dreary,
When the death-angel touches those swift keys!
What loud lament and dismal miserere
Will mingle with their awful symphones!

I hear even now the infinite fierce chorus,
The cries of agony, the endless groan,
Which, through the ages that have gone before us,
In long reverberations reach our own.

On helm and harness rings the saxon hammer,
Through cimbric forest roars the Norsemen's song,
And loud, amid the universal clamor,
O'er distant deserts sounds the tartar gong.

I hear the Florentine, who from his palace
Wheels out his battle bell with dreadful din,
And Aztec priests upon their teocallis
Beat the wild war-drums made of serpent's skin;

The tumult of each sacked and burning village;
The shout that every prayer for mercy drowns;
The soldier's revels in the midst of pillage;
The wall of famine in beleaguered towns;

The bursting shell, the gateway wrench'd asunder,
The rattling musketry, the clashing blade;
And ever and anon, in tones of thunder,
The diapason of the cannonade.

Is it, O Man, with such discordant noises,
With such accursed instruments as these,
Thou drownest nature's sweet and kindly voices,
And jarrest the celestial harmonies?

Were half the power that fills the world with terror,
Were half the wealth, bestow'd on camps and courts,
Given to redeem the human mind from error,
There were no need of arsenals nor forts:

The warrior's name would be a name abhorred!
And every nation, that should lift again
Its hand against a brother, on its forehead
Would wear for evermore the curse of Cain!

Down the dark future, through long generations,
The echoing sounds grow fainter and then cease;
And I like a bell, with solemn, sweet vibrations,
I hear once more the voice of Christ say "Peace!"

Peace! and no longer from its brazen portals
The blast of war's great organ shakes the skies!
But beautiful as songs of the immortals,
The holy melodies of love arise.

Henry W. Longfellow

ARMORY WEAPONS

Up to the transfer of mission, the Springfield Armory was responsible for many types of weapons and systems ... ranging from rifle to machine gun to grenade launcher to aircraft armament. Some of these weapons are shown on the next page.

WEAPONS OF TOMORROW. . . . . .

M60

M14

M79

SPRINGFIELD-ARMORY 1794

XM122

M85

M39A2

M73

M61

. . . . FOR THE SOLDIERS OF TODAY

TYPES OF SHOULDER ARMS DEVELOPED BY SPRINGFIELD ARMORY

FLINTLOCK

Model Year	Arm	Cal.	Bore	Approx. Barrel	Length Stock	(In.) Total
1799*	Musket	.69	SB	44.75	56.50	59.50
1807	Indian Gun or Carbine	.54	SB	33.75	45.75	48.25
1808	Musket	.69	SB	44.50	56.00	59.50
1812	Musket	.69	SB	42.00	54.00	57.50
1816	Musket	.69	SB	42.00	54.38	57.50
1830	Musket, Cadet (long)	.54	SB	40.50	43.00	55.75
1830	Musket, Cadet (short)	.54	SB	36.00	48.00	51.00
1835	Musket (1840)	.69	SB	42.69	55.00	57.75
1839	Musketoon (1840)	.69	SB	26.00	38.00	41.00

PERCUSSION LOCK

1841	Musket, Cadet	.57	SB	40.00	52.25	55.25
1841	Rifle	.54	R	33.00	43.00	48.80
1842	Musket	.69	SB	42.00	55.00	57.75
1847	Musketoons, Arty., Cav.	.69	SB	26.00	38.25	41.00
1847	Musketoons, Sappers	.69	SB	26.00	38.25	41.00
1851	Musket, Cadet	.57	SB	40.00	52.25	55.25
1855	Rifled Carbine	.58	R	22.00	29.44	36.75
1855	Rifle-Musket (Maynard) TL	.58	R	40.00	52.85	56.00
1855	Rifle (Maynard) TL	.58	R	33.00	44.00	49.30
1855	Pistol Carbine (with stock) TL	.58	R	12.00	26.50	28.25
1858	Musket, Cadet TL	.58	R	38.00	50.00	53.00
1861	Rifle-Musket	.58	R	40.00	52.50	56.00
1863	Rifle-Musket (1st Type)	.58	R	40.00	52.50	56.00
1863	Rifle-Musket (2nd type)	.58	R	40.00	52.50	56.00

BREECH LOADER

1865	Rifle (Allin alt.)	.58	R	40.00	52.20	56.00
1866	Rifle	.50	R	40.00	52.50	56.00
1866	Rifle, Cadet	.50	R	34.63	42.38	54.81
1868	Rifle	.50	R	32.63	48.75	52.00
1869	Rifle, Cadet	.50	R	29.50	48.75	51.88
1870	Rifle	.50	R	12.50	15.00	51.75
1870	Carbine	.50	R	21.75	29.88	41.38
1870	Rifle (Remington) (Navy)	.50	R	31.13	43.88	48.63
1870	Rifle (Remington) (Army)	.50	R	34.38	48.45	51.75
1871	Rifle (Ward-Burton)	.50	R	32.63	48.88	51.88
1871	Carbine (Ward-Burton)	.50	R	27.75	30.00	41.25
1873	Rifle	.45	R	32.38	48.70	51.92
1873	Rifle, Cadet	.45	R	29.50	45.75	48.92
1873	Carbine	.45	R	21.88	30.00	41.31
1875	Officers' Rifle	.45	R	26.00	33.63	47.38
1879	Rifle	.45	R	32.38	48.63	51.75
1879	Rifle, Cadet	.45	R	29.50	44.75	48.75
1879	Carbine	.45	R	21.88	30.00	41.31
1882	Rifle (Chaffee-Reece)	.45	R	27.88	46.00	49.00
1834	Rifle	.45	R	32.38	48.63	51.75
1884	Rifle	.45	R	32.38	48.70	51.92
1884	Rifle, Cadet	.45	R	29.50	44.75	48.75
1884	Carbine	.45	R	21.88	30.00	41.31
1889	Rifle	.45	R	32.38	48.63	51.75

BOLT ACTION MAGAZINE

1892	Rifle (K-J)	.30	R	30.00	46.00	49.14
1896	Rifle	.30	R	30.00	46.05	48.90
1896	Carbine	.30	R	22.00	30.05	40.90
1898	Rifle	.30	R	30.00	46.06	49.19
1898	Carbine	.30	R	22.00	30.05	40.90
1899	Carbine	.30	R	22.00	32.00	40.90
1903	Rifle	.30	R	23.50	41.50	43.50
1903	Rifle (alt 1905)	.30	R	23.79	40.17	43.21
1903	Rifle	.22	R	23.79	40.17	43.21
1922	Rifle; M1; M2	.22	R	24.00	31.25	43.63

SEMIAUTOMATIC MAGAZINE

1936	Rifle M1 Garand	.30	R	22.00	29.75	43.00

FULL AUTOMATIC MAGAZINE

Model Year	Arm	Cal.	Bore	Approx. Barrel	Length Stock	(In.) Total
1957,	Rifle M14	7.62mm	R	22.00	32.00	44.28

LEGEND:

SB - Smooth bore
R - Rifled
TL - Tape lock
K-J - Krug - Jorgensen

*Similar to the model of 1795 which was patterned after the "Charleville" model of 1763.

ARMORY LEGEND

Continued from Page 9

"Employee-of-the-Month" award presented; 1964, Armory closing by April 1968 is announced on November 19th; 1965, Defense Secretary Robert S. McNamara visits Armory on March 17th; 1966, General Electric takes over portion of Federal Square section; 1967, Research and Engineering mission transfers to Rock Island, Illinois in June; and 1967, Springfield Technical Institute takes over four Armory buildings.

ARMORY MADE HISTORY

Continued from Page 1

federal arsenal. The "peaks and valleys" of national defense interests have followed parallel ups-and-downs here. All through the life of this installation, national missions and national duties have been intertwined with the people of Springfield Armory and their capabilities. The fact that the United States of America has progressed internationally and its image as a world leader has been established has its reflection in what was accomplished here.

The "trademark" recognized by visitors here is reproduced for posterity. Also reproduced is the plaque which commemmorated the Springfield Armory as a National Historic Landmark. The ceremony took place on April 2, 1963.

For the record, some of the installation facilities have already been absorbed by industry as well as educational needs. General Electric Company now has use of nearly 100% of Federal Square. The Springfield Technical Institute has now signed for four of the approximately 26 buildings in Armory Square which it will ~~ultimately~~ acquire. The Ontario Casting Co. of Muncie, Ind. has indicated it will become a Springfield industry outlet by acquiring the Forge Shop at Watershops. The Main Arsenal and the Commandant's Quarters will undoubtedly be the new home of the Armory Museum complex.

On the subject of Springfield Armory employees: a total of 695 have accepted federal employment to date. A total of 510 are now located at installations within the New England area with 106 located in other installations in the North Atlantic States. So far, 72 have settled in the Mid-West, West and southern states while seven went overseas to either Germany or Hawaii.

More, 255 went to private industry (mainly in the Springfield area) and 397 employees have retired. These retirees, however, saw more than half returning to the labor market and being employed in the Springfield area private industry sector.

In addition, 102 Armory employees were separated and rehired as temporary personnel while a total of 227 departed between November 1964 and November 1965.

The remainder of Armory highlights will be found in the pages which follow.