THE CHARGER

April 2014

505th Meeting

Vol. 35, #8

Tonight's Program:

Materials and Processes in the Manufacture of Civil War Small Arms

The Civil War witnessed a technological revolution in weaponry. This was highlighted by a changeover in shoulder-fired weapons from smoothbore firearms that had to be loaded through the muzzle each time a shot was fired to rifled-barrel firearms, some of which loaded at the breech. Most of these new rifle-muskets still had to be loaded between each shot, but repeating weapons such as 7-shot Spencer and 16-shot Henry rifles and carbines were developed as well. Unfortunately for the common soldier, tactics did not advance as quickly as technology. Napoleonic linear tactics from earlier in the century now combined with more accurate, faster-firing weapons to result in catastrophic casualty figures throughout the War.



Tonight's Speaker:

John Harkness

John Harkness holds BS and MS Degrees in Metallurgy from Case Institute of Technology and Case Western Reserve University, respectively, and is a Fellow of the American Society for Metals International (ASMI). He retired in 2011 from the position of Principal Scientist, Alloy Research and Development, at Brush Wellman Inc. (now Materion. He is co-inventor on several US and foreign patents for lean, low cost, high performance Cu-Be alloys; has written extensively on the performance attributes of Be-containing alloys and has contributed to articles on Cu-Be and other Cu alloys in the ASM Handbook series. He is a Past Chairman of the Cleveland Chapter, ASM International. Mr. Harkness is a lifelong student of military history and the development of military technology. He is Past President of the Cleveland Civil War Roundtable (1982), a member of the Company of Military Historians and the Ohio Gun Collectors' Association, a former Civil War and Revolutionary War re-enactor and has shot original Civil War small arms with live ammunition extensively in target competition in the North-South Skirmish Association.

Date: Wednesday, April 9, 2014

Place: Judson Manor

1890 E. 107th Street Cleveland, Ohio

Time: Drinks 6 pm

Dinner 6:45 pm

Reservations: Please send an email to ccwrt1956@yahoo.com with your reservation, or call Dan Zeiser at (440) 449-9311 by 9 pm the Sunday before the meeting.

Meal: Entree, vegetable, salad, and dessert.

CLEVELAND CIVIL WAR ROUNDTABLE

FOUNDED 1957

President:Jim Heflich(216) 381-8833Vice President:Patrick Bray(216) 407-7878

Treasurer: Chris Fortunato learnedhand@live.com

Secretary: **Jean Rhodes** (440) 739-0579

Directors:

Paul Burkholder Mike Wells
C. Ellen Connally Howard Besser
Historian - Dave Carrino

website: $\underline{www.clevel and civil warround table.com}$

email: pkburkholder@gmail.com

Editor - THE CHARGER - Dan Zeiser

email: danzeiser@aol.com

Cleveland Civil War Roundtable Past Presidents

2013 Mike Wells

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2011 Lisa Kempfer

2010 Dennis Keating

2009 Jon Thompson

2008 Terry Koozer

2007 John Fazio

2006 Dave Carrino

2005 Mel Maurer

2004 Warren McClelland

2003 Maynard Bauer

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2001 William Vodrey

2000 Bob Boyda

1999 Dick Crews

1998 John Moore

1997 Dan Zeiser

1996 John Sutula

1995 Norton London

1994 Robert Battisti

1993 Kevin Callahan

1993 Kevili Callallali

1992 Bob Baucher

1991 Joe Tirpak

1990 Ken Callahan Jr.

1989 Neil Glaser

1988 Martin Graham

1987 George Vourlojianis

1986 Tim Beatty

1985 Brian Kowell

1984 Neil Evans

1983 William Victory

1982 John Harkness

1981 Thomas Geschke

1980 Charles Spiegle

1979 William Bates

1978 Richard McCrae

1977 James Chapman

1976 Milton Holmes

1975 Thomas Gretter

1974 Nolan Heidelbaugh

1973 Arthur Jordan

1972 Bernard Drews

1971 Kenneth Callahan

1970 Frank Schuhle

1969 Donald Heckaman

1968 Frank Moran

1967 William Schlesinger

1966 Donald Hamill

1965 Lester Swift

1964 Guy DiCarlo Jr.

1963 Paul Guenther

1962 Edward Downer

1961 Charles Clarke

1960 Howard Preston

1959 John Cullen Jr.

1958 George Farr Jr.

1957 Kenneth Grant

President's Message

Here it is April already, and just two exciting meetings left in our program year that I get to preside over as Roundtable President, and I have a bit of a confession to make - I've never been to Gettysburg! Well, I did stop there once on a drive east to Philadelphia. But it was years ago, long before I became consumed with interest in the Civil War. I do not remember anything of the visit except seeing vultures circling very close from the summit of Little Round Top. Once a birder, always a birder...

But this June my wife and I are signed up for a 3-day/4-night Gettysburg tour under the auspices of her college alumni association. Morning classroom sessions with an expert historian and afternoons walking the battlefield. Nights at one of Gettysburg's historic inns. I will be thrilled every minute of the tour - I hope Patty has enough moments of interest to make it all worthwhile to her.

My request to fellow Roundtable members - most of whom have been to Gettysburg multiple times - what special places should I be sure not to miss? A special monument? A unique vista from atop one of the ridges? Barlow's Knoll? The Codori Farm? I have been reading a great deal in preparation for the tour, but would really appreciate your unique recommendations.

See you at Judson Wednesday the 9th for John Harkness's talk on Civil War armaments. John is an expert metallurgist and past Roundtable President. It should be a very informative evening. And please disregard my maladroit suggestion a few months ago to bring any Civil War weapons you might own to the meeting. As was very correctly pointed out to me privately, that violates common sense safe practices. John will have a few properly secured armaments to display.

Respectfully, Jim Heflich laureldoc@gmail.com

CLEVELAND CIVIL WAR ROUNDTABLE 2013-2014 SCHEDULE



September 11, 2013

A Species of Legal

Fiction:

The Wheeling

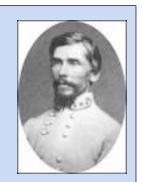
Conventions and the

Creation of West Virginia

Dr. David T. Javersak

October 9, 2013

Slaves to Contradictions: Patrick Cleburne's Emancipation Proposal



Wilson R. Huhn

November 13, 2013

Zouaves:
America's Forgotten
Soldiers
Patrick Schroeder



December 11, 2013

"It was a terribly grand scene..."

The Slaughter Pen and Prospect Hill at Fredericksburg

Kristopher White

January 8, 2014

The Dick Crews Annual Debate
What Was the Most Important Battle
of the Civil War?

Moderator: William F. B. Vodrey

February 12, 2014

The U.S. Navy

and the

Naval Battles of

Charleston 1863



Syd Overall



March 12, 2014

The Battle of Kennesaw Mountain

Dan Vermilya

April 9, 2014

Materials and

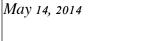
Processes in the

Manufacture of Civil

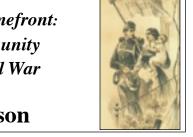
War Small Arms



John Harkness



Soldiers and the Homefront: A Northern Community Confronts the Civil War



Nicole Etcheson

Civil War Weapons

Many Weapons were used in the <u>The Civil War</u> from knives to swords along with a variety of firearms, including rifles, pistols, muskets, and repeating weapons. Also widely used was artillery including cannons. Some of the new weapon technologies used in the civil war include rifled gun barrels, the Minie ball and repeating rifles.

Civil War Cannons

Cannons played a major role in the the civil war. Some of the cannon used by union and confederate forces include the 12 pound Howitzer, the 10 pound Parrot rifle, and the 3 inch ordnance rifle. Lean more about Civil War Cannon

Civil War Guns

The civil war brought many advancements in gun technology, most notably the widespread use of rifled barrels. Popular rifles used in the civil war include the Springfield rifle, the Lorenz rifle, the Colt revolving rifle. Lean more about <u>Civil War Guns</u>

Civil War Swords and Sabers

Swords were still used widely in the civil war. Popular swords include the Model 1832 Foot Artillery Sword, Model 1832 Dragoon Saber, Model 1840 Light Artillery Saber, and the Model 1840 Army Non-commissioned Officers' Sword. Learn more about <u>Civil War Swords</u>

The Minie Ball

The Minié Ball (aka Minie Ball) was a type of bullet that was used throughout the Civil War. Designed to expand while traveling along the rifle barrel, it increased muzzle velocity as well as providing spin to the bullet, expanding its accuracy and range. This advance in weaponry, along with outdated military tactics devised in an era of older firearms, are often cited as a reason for the large numbers of casualties of the Civil War. Learn more about the Minie Ball

Taken from www.historynet.com/civil-war-weapons

Rifles

Springfield Rifle Musket



This was a single shot, muzzle-loading gun that used the percussion cap firing mechanism. It had a

rifled barrel, and fired the .58 caliber Minié ball. The first rifled muskets had used a larger .69 caliber Minié ball, since they had simply taken .69 caliber smooth bore muskets and rifled their barrels. Tests conducted by the U.S. Army indicated that the .58 caliber was more accurate at a distance. After experimenting with the failed Maynard primer system on the Model 1855 musket, the Model 1861 reverted to the more reliable percussion lock. The first Model 1861 Springfields were delivered late in that year and during 1862 gradually became the most common weapon carried by Union infantry in the eastern theater. Western armies were slower to obtain Springfield rifles, and they were not widely used there until the middle of 1863.

Rifles were more accurate than smooth bore muskets, and could have been made using shorter barrels. However, the military was still using tactics such as firing by ranks, and feared that shorter barrels would result in soldiers in the back ranks accidentally shooting front rank soldiers in the back of the head. Bayonet fighting was also important at this time, which also made militaries reluctant to shorten the barrels. The Springfield Model 1861 therefore used a three-band barrel, making it just as long as the smoothbore muskets that it had replaced. The 38-inch-long rifled barrel made it a very accurate weapon, and it was possible to hit a man sized target with a Minié ball as far away as 500 yards (460 m). To reflect this longer range, the Springfield was fitted with two flip up sights, one set for 300 yards (270 m) and the other for 500. Along with a revised 1863 model, it was the last muzzle-loading weapon ever adopted by the US Army.

By the end of the war, approximately 1.5 million Springfield rifle muskets had been produced by the Springfield Armory and 20 subcontractors. Since the South lacked sufficient manufacturing capability, most of the Springfields in Southern hands were captured on the battlefields during the war.

Many older Springfield rifle muskets, such as the Model 1855 and 1842, were brought out of storage and used due to arms shortages. Many smooth bore muskets dating all the way back to the Springfield Model 1812 were brought out of storage for similar reasons. These old and obsolete weapons were replaced by newer weapons as they became available.

Enfield Rifle Musket

The second most widely used weapon of the Civil War, and the most widely used weapon by the Confederates, was the British Pattern 1853 Enfield.

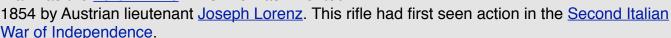


Like the Springfield, this was a three-band, single-shot, muzzle-loading rifle musket. It was the standard weapon for the British Army between 1853–1867. American soldiers liked it because its 577 cal. barrel allowed the use of .58 cal. ammunition used by both Union and Confederate armies. Originally produced at the Royal Small Arms Factory at Enfield, England, approximately 900,000 of these muskets were imported during 1861–1865, seeing use in every major battle from Shiloh onward. Many officers, however, preferred the Springfield muskets over the Enfield muskets—largely due to the interchangeability of parts that the machine-made Springfields offered.

The Enfield had a stepped flip up sight, which was adjustable from 100–900 yards (91–823 m) (1,200 yards (1,100 m) in later models) in 100 yard increments. Realistically, though, hitting anything beyond 500 yards was mostly a matter of luck.

Lorenz Rifle

The third most widely used weapon of the Civil War was the <u>Lorenz Rifle</u>. This rifle was invented in



The Lorenz rifle was similar in design to the Enfield rifle-musket. It used a percussion lock, was similar in length, and had three barrel bands, like the Springfield and Enfield. The Lorenz rifle was originally .54 caliber. A large number were bored out to .58 caliber so that they could use the same ammunition as the Springfield and Enfield rifle-muskets.

The quality of Lorenz rifles during the Civil War was not consistent. Some were considered to be of the finest quality, and were sometimes praised as being superior to the Enfield. Others, especially those in later purchases, were described as horrible in both design and condition. The bored out versions were not consistent in caliber, ranging from .57 to .59. Many of these poorer quality weapons were swapped out on the battlefield for Enfield rifle-muskets whenever one became available.

The Union purchased 226,924 Lorenz rifles, and the Confederacy bought as many as 100,000.

Whitworth Rifle

The Whitworth rifle was designed by Sir Joseph Whitworth, and was manufactured in Manchester, England. The Whitworth rifle featured a unique



hexagonal shaped bullet (with a matching hexagonal barrel) that gave it superior accuracy. This rifle was mostly used by Confederate snipers. The accuracy of the Whitworth was often exaggerated, but it was capable of hitting a man sized target beyond 1,000 yards.

Whitworth rifles were equipped with either Enfield style sights or telescopic sights. The telescopic sights were more accurate, but had a reputation for bruising the user's eye due to the rifle's recoil.

Other rifles used

Other rifles used during the Civil War were the British P-1841-Bored Brunswick Rifle (not common), Burnside carbine (used only by cavalry), Henry rifle (Very limited issue; many brought privately by individuals), and the Spencer rifle (used almost exclusively by cavalry). There was also the Model 1859 Sharps rifle, a single-shot breechloader. They were expensive to manufacture and only 11,000 were produced, most of which were unissued or went to sharpshooters. However, the Sharps carbine was very common, with over 90,000 produced. The rifles differed from each other mainly in the different "actions" they had. Almost all rifles were made with iron barrels, while only some, like the Burnside, used steel, which then was expensive.

Model 1855 rifles were fairly common. Most of the regular army was equipped with them in 1861, and the Confederates had a few thousand that had been stored in Southern arsenals. They acquired more through

battlefield pickups and would use them throughout the war (although the 1855 rifle was eventually replaced in the Union ranks by 1861 Springfields).

The Model 1841 Mississippi Rifle, the progenitor of the Model 1855 and 1861 Springfield, was still used in the Civil War to a fair degree, especially by Confederate non-commissioned officers (NCOs) and sharpshooters.

The Confederacy also produced a variety of weapons itself, standardizing on .58 caliber in 1862. These were usually clones of existing designs and tended to be poor quality due to shortages of raw material and skilled labor. Some such weapons included clones of the Sharps carbine, the Richmond/Fayetteville rifles (a Springfield clone) and imitations of Enfield rifles and musketoons.

The only breechloading rifle (not built as a carbine like the Burnside) firing a primed-metallic cartridge (a . 50 cal. rimfire) made by the Federal Government (at Springfield Armory) and actually designed for issue to infantrymen was the Model 1865 Springfield Joslyn Rifle, of which only 3,007 were made. In fact, this rifle was the first breechloader ever made in any national armory that fired a primed metallic cartridge. It was basically a Joslyn Carbine action fitted to an 1863 Springfield barrel and stock (though heavily modified). It was issued to disabled soldiers of the Veteran Reserve Corps very late in the war (April 1865) and likely was never used in action. However, it established the single-shot metallic cartridge breechloader as a standard infantry weapon, which eventually all modern armies adopted in one form or another. The US adopted the breechloading 1866 Springfield "Trapdoor" infantry rifle built from surplus rifle-musket parts after the war.

The new repeater rifles would see fairly limited use in the Civil War. The first such weapon adopted by the US Army was the Model 1855 Colt Revolving Rifle (and a companion carbine), but it had a serious defect in that the gun would often discharge several chambers at once, the extra rounds flying straight into the hand that was holding the barrel up. Some soldiers tried to get around this dangerous problem by loading only one chamber, however this defeated the purpose of having a repeater rifle. Most Colt Revolving Rifles were eventually sold off by the War Department for 55 cents just to get rid of them. The unfortunate experience the army had had with these led to a stigma against repeating rifles, combined with the old fear that they (and single-shot breech loaders) would encourage men to waste ammunition.

Spencer rifles were the first successful repeater used in the United States. After attending a demonstration firing, President Lincoln was impressed enough to give it his approval. The seven-shot Spencer was produced in rifle and carbine versions, although the latter was more



common. By 1864, some Union companies were armed with them, although rarely whole regiments. A few fell into Confederate hands, but proved largely unusable due to a lack of ammunition (the Confederacy had insufficient supplies of copper to manufacture the Spencer's rimfire cartridges).

The Henry rifle had a copper or brass cartridge that effectively sealed the breech of the gun so that the hot propellant gases would be held inside of the gun. The ignition source was a folded rim on the inside of the gun. The inventor of the gun was able to mass-produce a cartridge that had a powerful powder charge. The power of a Henry Rifle was comparable in power to military pistols, but that



was not enough to be used as a shoulder fired rifle for the military. While most shoulder fired rifles during the time fired a bullet between 350 and 500 grains propelled by 40 to 60 grains of powder the Henry rifle shot a small .44 bullet of only 200 grains and 26 to 28 grains of black powder, giving it a quite short range. While the Henry was carried and used by men in the Civil War it was not widely accepted or popular by the military. Nonetheless, Henry and Spencer rifles were used at the December 1864 Battle of Nashville to quite devastating effect.

For More Information

http://www.cincinnaticwrt.org/data/ccwrt history/talks text/holt shoulder arms.html

http://www.civilwar.org/education/history/warfare-and-logistics/warfare/smallarms.html

http://www.militaryfactory.com/smallarms/civil-war-guns.asp

http://militaryhistory.about.com/od/smallarms/ig/Civil-War-Weapons-Gallery/

http://www.army.mil/gettysburg/weaponry/small_arms.html

http://civilwarstory.nstemp.com/links/smalll-arms.html

http://www.civilwar.si.edu/weapons_intro.html

MARK YOUR CALENDAR!

2014 Field Trip, September 18-21

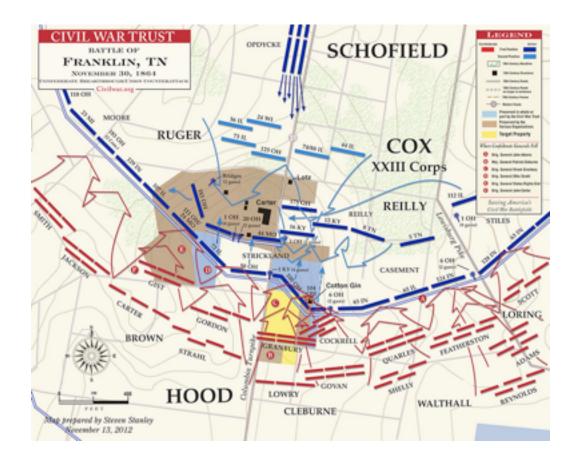
Thursday, travel to Franklin, Tennessee
Friday and Saturday, tour of Franklin and other sites TBA
Sunday, Return to Cleveland



NEXT MONTH

Soldiers and the Homefront:
A Northern Community
Confronts the Civil War

Nicole Etcheson



http://www.civilwar.org/battlefields/franklin/maps/franklin-animated-map/

