

# *Springfield Research Newsletter*

ISSUE NUMBER 16  
March, 1981

## GENERAL NOTES

The research reported in this issue was divided almost equally between the 1871-74 and 1894-1913 periods. The records examined were from Springfield Armory as well as the Office of the Chief of Ordnance.

We have obtained a pretty solid lead to the location of the records which were on hand at Springfield when our last National Armory was shut down, and we hope to be able to report something about the contents of those records in the next issue of our newsletter.

## TRAPDOOR DATA

The Ordnance Department and its field activities were kept busy during the 1871-74 period with a variety of projects, probably the most important being development of the cal. .45 rifle which was to be the standard infantry weapon during the following 20 years. In addition, some of the largest sales of captured Confederate weapons and equipment were conducted during this period, with "Rebel guns", U. S. pattern, in calibers .54 and .58, bringing the tidy sum of \$0.27 each. The Ordnance Department was also responsible for disposal of the extensive Government holdings at Harpers Ferry, W. Virginia, and in the process found it much more difficult and controvertial at that time to sell land than guns.

Included in this issue are extracts from the reports of operations and experiments made at Springfield Armory for fiscal years 1871, 1872, 1873, and 1874.

The reports of alterations and fabrications at Springfield show that development of a sporting rifle commenced in 1871 (the first being fabricated pursuant to a request by Col. J. E. Smith of the 14th Cav. in Apr., 1871), and that early sporters were based on Cadet rifles as well as service rifles. Although not shown in these reports, a few sporting carbines were also made during this period. Correspondence shows that the folding tang rear and globe front sights adopted for the Model 1875 Officer's rifle were proposed by Lt. W. R. Dunton of the 19th Inf. in July, 1874. Until seeing Lt. Dunton's drawing, we were unaware that the tang sight for this rifle has elevation graduations on the side of its leaf.

Another interesting development during this period was the trowel bayonet. Those listed in the fiscal year 1871 report were Lt. Rice's original pattern, having the regulation bayonet socket. The trowel bayonets familiar to most collectors were fabricated in fiscal year 1875; those have the blade designed by Lt. Rice but with handle and unique



wooden plug patented by Chillingworth.

It is also interesting to note that Springfield was in the business of ammunition manufacture in fiscal years 1871-73. Discontinuance of ammunition manufacture at Springfield appears to have coincided with dropping of the Martin primer, which occurred in the latter part of 1872.

Aside from master armorer E. S. Allin, the person exerting the most influence on small arms development during the early trapdoor era at Springfield was Lt. Henry Metcalfe. Metcalfe deserves credit not only for the cartridge holder of transitory use which bears his name, but also for invention of the stacking swivel used on most U. S. long arms from 1874 to the present. He also developed other improvements to the trapdoor rifle, such as the addition of cannelures to the small end of the cleaning rod, as well as improvements to the Smith & Wesson revolver; and he was responsible for much of the experimental work performed at Springfield at that time. The private and semiofficial letters sent by Lt. Metcalfe between Dec., 1874, and Feb., 1877, have been preserved as a separate file within the records of Springfield Armory at the National Archives; and we intend to study and report on those letters for the next issue of this newsletter.

#### KRAG DATA

The bulk of Krag serial data reported in this issue is for rifles and carbines turned in to Springfield Armory from San Antonio Arsenal and individual units. These arms were inspected and tested, and many were found to have components which had been re-casehardened in the field contrary to regulations.

Rifle no. 298984 was reported as having been furnished as part of a Sub-Target Gun Machine, such as is illustrated on p. 167 of THE KRAG RIFLE STORY.

One other interesting item pertaining to the Krag was the special adaptation of a leather sling for carbines to meet the needs of the Engineer Corps: this sling was the regular sling for rifle except that the part next to the trigger guard was made wider and drawn tight so as to serve as a bearing strap between the guard and the back of soldier, and was capable of adjustment to keep it tight. This item was developed around Nov., 1902.

#### M1903 DATA

The large block of M1903 rifle serial numbers reported in this issue is for rifles turned in to Rock Island Arsenal by the 28th Inf. Although these rifles had only been in service for a few years, they suffered from eroded bores, enlarged muzzles, and other forms of wear and tear. Even in peacetime service, rifles had to be replaced about every four years on the average. New rifles were generally furnished as replacements, presum-



ably because it was cheaper to mass-produce new rifles than it was to inspect, clean, rebarrel, and otherwise handle used rifles on an individual basis. Used rifles were normally turned in to the nearest arsenal or depot, where they were overhauled and then placed in storage. This practice explains why the total number of rifles manufactured is far in excess of the size of the army at any time. Improvements in the rifles and their ammunition together with the large stock of reconditioned rifles on hand by 1928 made it feasible to discontinue manufacture of service rifles at that time; but in the early years, the Ordnance Dept. had real fears that Springfield and Rock Island would not be able to manufacture new rifles at a rate sufficient to replace those wearing out in the service.

The next issue will contain illustrations of some of the experimental sights for the M1903 rifle.

#### TRADING POST

WANTED: Palm rest assembly and Rinkuna double set trigger for 1903 International Match Springfield. W. P. Eyberg, 654 Salem Avenue, Rolla, MO 65401.

WANTED: M1903 and '03A1 NM rifles. David Phillips, 2903 Cherry, Higginsville, MO 64037.



# REPORT OF OPERATIONS AT THE SPRINGFIELD ARMORY

for the year ending 30 June 1871

## Alterations and Fabrications

### Muskets

6716	Breech Loading Rifle Muskets Model of 1868	altered from muzzle loader
1	" " " " " "	1866 " " " "
1	" " " " " "	1868 Experimental
1532	" " " " Cadet"	1869
1	" " " " " "	1869 Sample
1600	" " " " Joslyn	altered to center fire
1008	Remington Rifle Muskets For Trial	
1001	Sharps	" "
1021	Springfield " "	" "
1	Spencer	altered from Spencer Rifle
22012	Remington Navy Rifles	
1	" " Rifle	Sample
6	Experimental Muskets	
3	Springfield Sporting Rifles Cal. 50	Sample
1	Remington " Rifle " 50	"
341	Springfield Carbines For Trial Cal. 50	
313	Remington " " " 50	
308	Sharps " " " 50	
50	Colts Army Revolvers with Locke's Improvement	
150	Cavalry sabers nickel-plated	

### Appendages

34680	Tompions Cal. 50
3698	Screw Drivers altered for Rem. Navy Rifle
1025	" " Model 1866
6684	" " Combination

### Ammunition for Small Arms

108400 Metallic Cartridges

### Components of Arms

Miscellaneous parts for the following arms: Springfield Model 1866 Musket, Sharps Carbine, Remington Carbine, Springfield Carbine, Sharps Trial Musket, Remington Trial Musket, Spencer Carbine, Springfield Model 1868 Musket, Remington Navy Rifle

### Miscellaneous

504 Trowel Bayonets



# REPORT OF EXPERIMENTS MADE AT SPRINGFIELD ARMORY

during the year ending 30 June 1871

<u>Date</u>	<u>Subject of Report</u>	<u>By Whom Made</u>
Jul. 28, 1870	Springfield Musket Mod. 1868 with wad in muzzle	Capt. I. Arnold, Jr.
Aug. 1, "	Special ammunition prepared at Frankford Arsenal for Springfield Musket Mod. 1868	" " " "
" 13, "	Gun-barrels browned by J. S. Howard's process	Foreman L. C. Allen
Sep. 7, "	Ballistic Pendulum with Whistler's arrangement of battery	Capt. I. Arnold, Jr.
Nov. 26, "	Remington Navy Rifle, to test liability to explode by reason of point of firing pin projecting beyond face of breech block	1st Lt. H. Stockton
Dec. 28, "	Springfield BLR Musket Mod. 1868 & Frank- ford cartridges	" " " "
" 22, "	Frankford cartridges of 1869 & 1870	" " " "
Jan. 9, 1871	Joslyn Muskets altered to center fire	" " " "
" 12, "	Frankford cartridges & Martin cartridges	" " " "
" 13, "	Machines & methods employed in working cotton waste	2nd Lt. H. Metcalfe
" 20, "	Colts Improved Altered, and Smith & Wesson Pistols	" " " "
Feb. 4, "	Frankford cartridges of 1868	1st Lt. H. Stockton
" 11, "	Smith & Wesson pistol New Model No. 3	2nd Lt. H. Metcalfe
" 25, "	Comparative trial Colt, Remington, and Smith & Wesson pistols	" " " "
Mar. 7, "	Initial velocity with Thread Pendulum	Capt. I. Arnold, Jr.
May 8, "	Flat & indented anvils for Martin ctges	2nd Lt. H. Metcalfe
" 11, "	Remington & Sons firing pin retractor	1st Lt. H. Stockton
June 7, "	Winchester Repeating Infantry Musket	2nd Lt. H. Metcalfe



# REPORT OF OPERATIONS AT THE SPRINGFIELD ARMORY

for the year ending 30 June 1872

## Alterations and Fabrications

10010 Springfield BLR Muskets Mod. 1870 altered from muzzle loaders  
 1557 " " " " Cadet " " " " " "  
 1015 Ward Burton R Muskets for trial  
 5 Remington " " " "  
 2 Experimental Muskets Cal. 40 for exp. firing  
 1 Springfield Sporting rifle Sample  
 1 Remington Navy Rifle  
 1108 Spencer Rifle Musket converted from carbine  
 20 Springfield Carbines for trial Cal. 50  
 317 Ward Burton " " " " 50  
 1064 Screw drivers combination  
 3784 " " Mod. 61 altd to Mod. 71  
 17019 " " " " " " 70  
 4314 " " " " " " Spencer  
 18841 Tompions Cal. 50  
 9054 Thongs for Spencer Rifle and Carbine  
 51416 Metallic cartridges for Smith & Wesson revolvers

## Experiments Made

<u>Subject</u>	<u>By Whom Made</u>
Modification of Remington Breech System	Lt. H. Stockton S. W. Porter
Cartridges for Colts Army Revolver	Lt. H. Stockton
Martin, Bridgeport, and Smith & Wesson pistol ammunition	Lt. H. Metcalfe
Smith & Wesson Pistols and ammunition (Martins improved)	" " "
Morgenstern Rifle	" " "
Altered Martin cartridges	" " "
Schofield Improved Smith & Wesson pistol	" " "
Remington guns and cartridges	Capt. J. R. Edie
Martin cartridges of Frankford Arsenal make	Lt. H. Metcalfe
Board on Trowel Bayonets	Capt. J. R. Edie, S. W. Porter, C. Bailey
Pocket Oilers	Capt. J. R. Edie



# STATEMENT OF PRINCIPAL OPERATIONS AT SPRINGFIELD ARMORY

for the year ending 30 June 1873

## Muskets and Rifles

2000 Remington Locking Rifles Cal. 50  
 4 Experimental Muskets Cal. 40 System Model of 1870  
 1 " " " 42 " " " "  
 3 " " " 45 " " " "  
 1 " " " 45 " " " 1873  
 5 Springfield Sporting rifles Cadet Model of 1869  
 1 " " " "  
 6 Wooden guns for bayonet fencing

## Sabers, Swords, Etc.

2 Swords General Officers  
 1499 " Foot & Staff Officers  
 22 Scabbards " " " " Brownd  
 1539 " " " " " Nickel-plated  
 1 Saber for Cavalry officers - Sample  
 1 " " Artillery " "  
 1564 Cases Leather for officers swords

## Appendages for Small Arms

11032 Screw Drivers - altered to Model of 1870  
 1010 " " Combination  
 17678 Thongs for Rifle  
 1301 " " Carbine  
 15576 Wiping Brushes

## Ammunition for Small Arms

200 Bullets Cal. .45 "Laidley"  
 1150 Metallic cartridges Cal. .45

## Components of Arms

Miscellaneous parts for the following arms: Springfield Model 1868 Musket; Sharps Carbine, Rifle, and Musket; Spencer Carbine; Remington Locking Rifle; Ward-Burton Musket; Spencer Rifle; Springfield Model 1866 Musket; Remington Cadet; and Smith & Wesson Revolver. Also, 4528 Bayonet Scabbards Steel



# REPORT OF EXPERIMENTS MADE AT SPRINGFIELD ARMORY

during the year ending 30 June 1873

<u>Date</u>	<u>Subject of Report</u>	<u>By Whom Made</u>
Dec. 27, 1872	Colt and Smith & Wesson pistols	Capt. J. R. Edie
Jan. 31, 1873	Springfield BLM - Endurance & penetration	Lt. H. Metcalfe
Feb. 7, "	Colt pistol - supplementary	Capt. J. R. Edie
Mar. 24, "	Smith & Wesson pistol	" " " "
Apr. 29, "	Nickel plating - "Brownett Process"	" " " "
May 8, "	Sharps pistol	" " " "
" 2, "	Schofields pistol	" " " "
" 10, "	Winchester ammunition	" " " "



# STATEMENT OF PRINCIPAL OPERATIONS AT SPRINGFIELD ARMORY

for the year ending 30 June 1874

## Muskets and Rifles

7998	Springfield Rifles	Cal. 45	Complete	
1	"	"	"	Nickel-plated
5	"	"	"	Samples
6	"	"	"	Experimental
9408	"	"	"	less bayonet and upper band
592	"	"	"	"
2	"		Sporting Rifles	Cadet
4	"	"	"	Cal. .45
1	"		Breech Loading	Shot Gun
400	"	"	"	Rifle Muskets Cal. 50 Model 1870
100	"	"	"	" " " " " " with

attachment for Metcalfe's cartridge holder

## Carbines

10048	Springfield Carbines	Cal. .45
4	"	" " " Samples

## Miscellaneous

25 Cadet swords complete  
 2793 Cartridge blocks, Metcalfes  
 500 Rifle ball cartridges Cal. .45  
 1000 Wiping rods, altered, Springfield Carbine  
 19860 Screw drivers, " , Model 1870  
 20 Bayonet sockets for bayonet fencing  
 5 Screw drivers, clamp, for rear sights

## Components of Arms

Miscellaneous parts for the following arms: Springfield Model 1868 Musket; Sharps Carbine, Rifle, and Musket; Springfield Rifle and Carbine, Cal. .45; Springfield Model 1870 Musket; Remington Navy Rifle; and Remington Locking Rifle. Also: 10988 Bayonet Scabbards Steel; and 6 upper bands, Cal. .45, Model 1874.



# REPORT OF EXPERIMENTS MADE AT SPRINGFIELD ARMORY

during the year ending 30 June 1874

<u>Subject</u>	<u>By Whom Made</u>
Metcalfe's Spiral Pressure Plug	Lt. H. Metcalfe
Gatling gun mounted on a tripod & furnished with a drum feed case	Capt. J. R. Edie
Velocities with Benton's Thread Velocimeter	Maj. J. G. Benton
Trial of Maj. Benton's proposed stand for Gatling gun and method of transporting same on a saddle	" " " "
Method of cleaning Spencer carbines	Lt. H. Metcalfe
Experimental firing for the purpose of regulating the sighting of Springfield Rifle and Carbine Cal. .45	Capt. J. R. Edie
Trial of a patent bayonet fastening received from Ordnance Office	Lt. G. D. Ramsay, Jr.
Experiments with materials for gun barrels	" H. Metcalfe
Experiments with feed cases for Gatling guns	" " "
Experiments with defective ammunition Cal. .45	" " "
Experimental firing to obtain penetration and recoil of Cal. .45 arms	" " "
Experiments with reinforced copper cartridges	" " "
Experimental firing for accuracy with Springfield Rifle Cal. .45	" " "
Trial of new device for measuring recoil of guns	" " "
Experimental firing with "part rifling" in comparison with full rifling	Maj. J. G. Benton
Testing Lee's Rifle	Lt. H. Metcalfe
Experiments with copper cartridges with a thick cup anvil and a thin reinforcing cup	S. W. Porter
Trial of Smith & Wesson improved revolvers	Benton, Edie, Ramsay, & Metcalfe



# STATEMENT OF PRINCIPAL OPERATIONS AT SPRINGFIELD ARMORY

for the year ending 30 June 1874

## Muskets and Rifles

7998	Springfield Rifles	Cal. 45	Complete	
1	"	"	"	Nickel-plated
5	"	"	"	Samples
6	"	"	"	Experimental
9408	"	"	"	less bayonet and upper band
592	"	"	"	"
2	"		Sporting Rifles	Cadet
4	"		"	Cal. .45
1	"		Breech Loading	Shot Gun
400	"		"	Rifle Muskets Cal. 50 Model 1870
100	"		"	" " " " with attachment for Metcalfe's cartridge holder

## Carbines

10048	Springfield Carbines	Cal. .45
4	"	" " " " Samples

## Miscellaneous

25	Cadet swords complete
2793	Cartridge blocks, Metcalfes
500	Rifle ball cartridges Cal. .45
1000	Wiping rods, altered, Springfield Carbine
19860	Screw drivers, " , Model 1870
20	Bayonet sockets for bayonet fencing
5	Screw drivers, clamp, for rear sights

## Components of Arms

Miscellaneous parts for the following arms: Springfield Model 1868 Musket; Sharps Carbine, Rifle, and Musket; Springfield Rifle and Carbine, Cal. .45; Springfield Model 1870 Musket; Remington Navy Rifle; and Remington Locking Rifle. Also: 10988 Bayonet Scabbards Steel; and 6 upper bands, Cal. .45, Model 1874.



# REPORT OF EXPERIMENTS MADE AT SPRINGFIELD ARMORY

during the year ending 30 June 1874

<u>Subject</u>	<u>By Whom Made</u>
Metcalfe's Spiral Pressure Plug	Lt. H. Metcalfe
Gatling gun mounted on a tripod & furnished with a drum feed case	Capt. J. R. Edie
Velocities with Benton's Thread Velocimeter	Maj. J. G. Benton
Trial of Maj. Benton's proposed stand for Gatling gun and method of transporting same on a saddle	" " " "
Method of cleaning Spencer carbines	Lt. H. Metcalfe
Experimental firing for the purpose of regulating the sighting of Springfield Rifle and Carbine Cal. .45	Capt. J. R. Edie
Trial of a patent bayonet fastening received from Ordnance Office	Lt. G. D. Ramsay, Jr.
Experiments with materials for gun barrels	" H. Metcalfe
Experiments with feed cases for Gatling guns	" " "
Experiments with defective ammunition Cal. .45	" " "
Experimental firing to obtain penetration and recoil of Cal. .45 arms	" " "
Experiments with reinforced copper cartridges	" " "
Experimental firing for accuracy with Springfield Rifle Cal. .45	" " "
Trial of new device for measuring recoil of guns	" " "
Experimental firing with "part rifling" in comparison with full rifling	Maj. J. G. Benton
Testing Lee's Rifle	Lt. H. Metcalfe
Experiments with copper cartridges with a thick cup anvil and a thin reinforcing cup	S. W. Porter
Trial of Smith & Wesson improved revolvers	Benton, Edie, Ramsay, & Metcalfe