



THE POST-CIVIL WAR QUEST FOR U.S. CAVALRY CARBINES

(.50-70 to the .30-40)

By John Vagnetti

At the end of the American Civil War the United States Army found itself short of cash and flooded with obsolete weapons of every type and caliber, but it was also being tasked to secure the reconstruction of the South as well as the expanding and turbulent Western frontier. This was a dilemma that needed to be addressed promptly.

The Laidley Board

In order to forestall this looming political and logistic conundrum, on December 5, 1864, the Chief of the Ordnance Department General A.B. Dyer (Figure 1) wrote a letter to Secretary of War Edwin Stanton requesting that a board be established “to examine, test and recommend for adoption a suitable breech-loader for muskets and carbines, and a suitable repeater magazine or magazine carbine.”¹ Stanton’s reply was in the form of Special Order No.458, which established a board headed by Major T. T. S. Laidley, Ordnance Department and five other officers. The board was directed to convene on January 4, 1865.² Stanton also invited a number of arms manufacturers to participate in the tests.³ However, despite extensive testing of the more than 65 weapons submitted, the year passed with no recommendations made.

In April 1865, while the Laidley Board was dithering, the war ended and the Cavalry was the only Army component that was equipped with a modern, magazine fed, metallic cartridge, repeating shoulder arm and that was the Spencer carbine (Figure 2). This carbine fired the self-contained Spencer .56-50 caliber cartridge and by mid-1866 the regular cavalry was predominately armed either with the .56-50 Model 1865 Spencer or the single-shot .52 caliber Sharps carbine that fired a linen cartridge with a percussion cap. In contrast, the Infantry had just adopted the center-fire .50-70 cartridge for their new Springfield breech-loading rifles.

The Hancock Board

In the meantime, Special Order No.40, dated January 30, 1866 convened the Hancock Board. Among the stated objectives of the board was to recommend “what form and caliber should be adopted as a model for future construction of a carbine for the cavalry.”⁴ By June, 1866 the board had tested a total 16 Springfield musket conversions, 16 breech-loading rifles, and 27 breech-loading carbines.

On June 4, 1866, the Board issued its report with the following among its several conclusions.

1. That the .45 caliber cartridge had given the best results as to accuracy, penetration, and range.
2. That the infantry rifles and single-shot cavalry carbines should employ the same cartridge.
3. The preferred cartridge load should be between 65-70 grains of powder and between 480 and 500 grains for the lead bullet.⁵

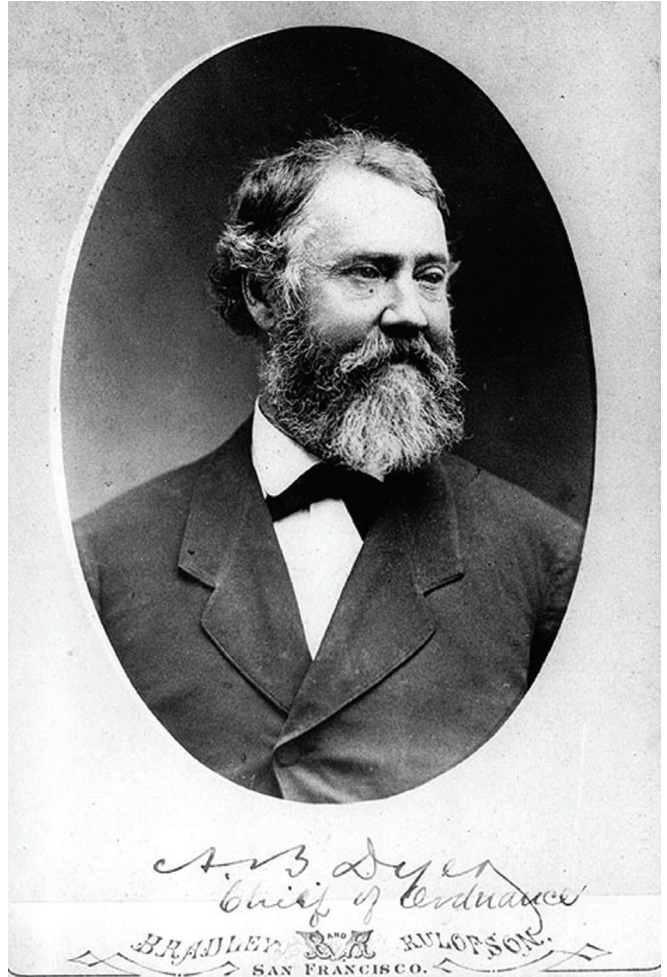


Figure 1. Chief of the Ordnance Department General A. B. Dyer.



Figure 2. Spencer carbine. Note the tubular magazine that is fed into a receptacle in the butt plate. Photo courtesy of Ron Paxton.

The board also opined that “The experiments by this board prove that the Spencer magazine carbine is the best service gun of this kind yet offered.”⁶ This statement insured that the .56-50 Model 1865 Spencer, then in service, would remain the cavalry standard for a little while longer.

After a review of the board’s conclusions, on June 16, 1866 General Dyer, the Chief of Ordnance, wrote an endorsement which included the comment, “ The board is correct in its conclusions that, of all the calibers tested by it, that of .45 will give the best results in accuracy, range, and penetration, with the same weight of powder and lead, but the superiority of this caliber over the .50 caliber is not, in my opinion sufficient to counterbalance the objections...arising from the great length of the cartridge...” He went on to assert that the length of the .45 caliber cartridge “is entirely too long for general service.”⁷ (NOTE: The actual difference was .330 of an inch.)

Ten days later, General Grant wrote that “while the superiority of a .45 caliber arm was beyond doubt, but the uniformity of caliber being so desirable, and there being such a large number of .50 caliber arms on hand, it may be advisable to adopt this cartridge.”⁸

Meanwhile, on July 28, 1866, President Andrew Johnson signed “An Act to Increase and Fix the Military Peace Establishment in the United States.” Among its many provisions, the bill stipulated that the regiments of all arms consist of 12 companies with a nominal strength of 100 men per company. The President subsequently fixed company manning at 64 privates for the sake of uniformity, although rarely was any unit near its authorized strength. The Act also increased the number of authorized cavalry regiments from six to ten; with the stipulation that two of these new regiments – the 9th and 10th Cavalry- would be manned by black troopers commanded by white officers.⁹ The pressure for standardization was growing.

Additionally, throughout 1867 there was an ongoing effort between the Ordnance Department and the Sharps Rifle Manufacturing Company to develop a carbine that could be economically altered from the percussion system to a cartridge arm that would take the new .50-70 Government cartridge.¹⁰ On February 25, 1868, the first 1,000 .50-70 carbines were delivered (Figure 3 and 4). Deliveries continued at approximately 1,000 carbines a month until October, 1869 when the last of the approximately 31,000 carbines was delivered.¹¹



Figure 3. Composite image of the 1867 Sharps carbine. Photo courtesy of Ron Paxton.

The overarching goal of the Army was still a single service-wide system of shoulder arms with a common cartridge. Obviously the issuing of the Springfield Model 1865 (.58 Rim-fire), the Model 1866, 1868 and Model 1870 Rifles (all in .50-70 Center-fire) to the infantry and the issue of the Spencer 1865 carbine (.56-50 Rim-fire) and the altered Sharps carbine (.50-70 Center-fire) to the cavalry did very little to further the goal of a common cartridge for Army shoulder arms.



Figure 4. Stock cartouche of DFC (David F. Clark) on right side of the stock. Photo courtesy of Ron Paxton.

The Schofield Board

General Order 60 (Dated 6 August 1869), which was part of 1869 Ordnance Memoranda No. 11, convened a board headed by General Schofield (Figure 5). The purpose of the board was “to examine and report on the best small arms for the use of the Army of the United States”. The board’s report was submitted on June 10, 1870. It concluded that, for cavalry use, only the Springfield (Figure 6), Sharps, and Remington (Figure 7) systems chambered for the .50-70 Government cartridge, were considered adequate for troop testing. Later on, a fourth carbine based on the bolt-action Ward-Burton design (Figure 8), was added to the trials.¹²



Figure 5. General Schofield.



Figure 6. Springfield 1870 trial carbine with Erskin S. Allin cartouche on the left stock flat and firing proof below the trigger guard. Photos courtesy of Jack Lewis.



Figure 7. Remington rolling block 1870 trial carbine stamped U.S. over Springfield over 1870. Photo courtesy of Jack Lewis.

As an aside, examples of the Springfield, Remington and Ward-Burton Trials carbines, while very scarce, can be found; however this is not the case with the Sharps trials carbines. No example of a Sharps trials carbine has ever been confirmed or photographed. I have always thought it odd that the Army and Ordnance Department, being as stressed for funds as they were during this period, would want to spend the money to tool up and manufacture a specific trials carbine based on the Sharps falling breech system, when they already had over 31,000 Sharps carbines that had been altered for the .50-70 Government cartridge. It is also worth noting that in General Grant's endorsement to the Dyer report on the findings of the Hancock Board mentioned earlier, he took exception "to the proposition to place new patent arms in the hands of troops for trial. There being such a large number of arms on hand capable of economical alteration, it seems unnecessary, at present to experiment with new arms."¹³ General Grant was probably referring to the alteration of some of the surplus muzzle-loading rifle-muskets to breech-loaders, using the Allin System. That said, it is not unreasonable to suppose that this same thinking carried over to the carbine trials a couple of years later.

I would also add that a reasoned opinion from a noted firearms scholar, author, and historian, our own George Moller, offered this explanation for the lack of any confirmed Sharps trials carbines: They were never made. He opines that the 300 Sharps "breech systems", intended for the carbine manufacture at Springfield Armory were instead used for the Type II Model 1870 Springfield-Sharps Rifle and the carbine trials were conducted with .50-70 Sharps carbines already on hand. I humbly agree.

By mid-1872 quantities of three of the four trials carbines had been in the field over a year and the Ward-Burton had started being issued as well. Congress wanted a decision and to accelerate that decision it directed on June 6, 1872 that Army appropri-

tions for the current fiscal year (June 1872-June 1873) include the following statement: "No part of this appropriation shall be expended until a breech-loading system...was adopted."¹⁴ A quick reading of this summary of the monthly performance reports submitted during the trials clearly shows that overall reliability and company commander's preference lay with the Model 1870 Springfield carbine (Table 1).



Figure 8. Ward Burton bolt action carbine. Photos courtesy of Jack Lewis.

Table 1. Summary of Monthly Reports on Breech-Loading Arms Trials (1871-1873)

Information Summary				
Breech-loading Arms Trial 1871-1873*				
	Springfield Mod. 1870	Remington Mod. 1870	Sharps Mod. 1870	Ward-Burton Mod. 1870
Number of Arms (rifle/carbines) Issued and reported on	1,828	1,502	2,470	1,039
Number of monthly reports received by Ordnance Department	814	810	584	**334
Number of cartridges fired	96,479	89,828	76,629	40,070
Number of cartridges failed	1,882	2,595	2,699	970
Percentage misfires	1.96%	2.9%	3.5%	2.4%
Proportionate number of parts broken per 1,000 arms per 1,000 reports	28.34	66.82	44.07	162.0
Last impression of preference by Company commanders	84	10	1	0

*Final monthly report January 1873 **Ward-Burton not issued until April 1872
Abstracted from Ordnance Memo No. 15

The Terry Board

In accordance with the Congressional directive, on September 3, 1872, the Secretary of War convened the Terry Board for a recommended solution to the long-delayed issue (Figure 9). The Board's final report was issued on May 5, 1873 and on May 19th the Ordnance Department recommended to the Secretary of War that the Springfield breech-loading system in .45 caliber be adopted. On May 29, 1873, within one day of the Congressional deadline, the Commandant of the Springfield Armory was ordered "to proceed with the manufacture of rifles and carbines using the Springfield single-shot, breech-loading system in .45 caliber."¹⁵ (Figure 10). The "Trapdoor Era" had begun. By the second quarter 1875, 7,778 Model 1873 carbines had been issued to 108 companies of cavalry. In that same period only 400 Sharps .50-70 carbines remained in issue.



Figure 9. General Alfred Terry.



Figure 10. Springfield 1873 carbine. Photo courtesy of Jack Lewis.

of War, recommend a magazine gun for the military service, the Secretary of War is authorized to spend not more than twenty thousand dollars... in its manufacture.”¹⁷.



Figure 11. Colonel Ranald Mackenzie.

The adoption of the Model 1873 carbine addressed the previous problems relating to standardization of arms and ammunition; however experience in the field quickly uncovered other problems. The two most serious were a notoriously weak stock at the wrist and extraction problems with the copper-cased ammunition. The extraction problem was noted early in the 1874 edition of “The Directions for Use” manual for the weapon. These concerns were magnified and remedies accelerated in the aftermath of the Custer Disaster on the Little Big Horn. The result was the Springfield Model 1877 carbine. The major changes in the Model 1877 were a strengthened stock incorporating a longer comb, shorter, thicker wrist, and a storage compartment in the butt stock for a three piece rod and headless cartridge-shell extractor. It should be noted that forensically documented extraction problems at the Little Big Horn were less than one half of one per cent of the 7th Cavalry rounds fired.

On August 1, 1876, barely a month after Custer’s defeat, another celebrated cavalry officer, Colonel Ranald Mackenzie (Figure 11) commander of the 4th Cavalry, voiced another issue regarding the cavalry’s carbine. In a telegram to General Sheridan, the Department Commander, Mackenzie requested Winchester Repeating Rifles for his companies in lieu of the Springfield. It was later determined that it wasn’t the range and stopping power of the Springfield that concerned him. Mackenzie wanted the volume of rapid fire that those Winchester arms could provide. Army tests in August, 1876 demonstrated the Winchester magazine¹⁶ arm was not suitable for service, and Mackenzie’s request was refused. However, the Army was not blind to the merits of a magazine repeater.

The Army Appropriations Act of 1877, which was signed into law on November 21, 1877, contained the following authorization “should a board of Ordnance Officers, approved by the Secretary



Figure 12. Col. James G. Benton.

The Benton Board

The board headed by Colonel Benton (Figure 12) duly constituted on December 8, 1877 was ordered to convene at the Springfield Armory on April 3, 1878 to consider and recommend a suitable magazine arm for military service. The board specified that any arm submitted for testing would be chambered for the .45-70 Government cartridge. Twenty-seven candidate arms were thoroughly tested and the board’s final report issued on September 23, 1878 recommended the Winchester-Hotchkiss bolt action magazine firearm.¹⁸ In the interest of economy and speed, parts were manufac-

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tured at both Winchester and the Springfield Armory. The \$20,000 authorization funded 500 rifles and 500 carbines for testing. These became known as the First Model (Figure 13). The most obvious identifying feature of this arm is the escutcheon embedded on the right side of the stock. Within is a lever which, depending on its position, functions as a magazine cut-off and safety (bolt-lock). The First Model's field use revealed a number of deficiencies. These included weak mainsprings, broken extractors, and most importantly, easily broken and cracked stocks. This resulted in changes to what is now known as the Second Model, which Winchester hoped would correct the above problems. The Second Model's redesign incorporated the following changes: The safety (left side) and the magazine cut-off (right side) were redesigned as separate levers located at the rear of the receiver and a metal tab extension was added to the rear of the receiver; all were intended to strengthen the design and minimize the cutting of the stock and thus correct the stock breakage problem (Figure 14). These design changes were largely unsuccessful.



Figure 13. First model bolt action Winchester Hotchkiss carbine. Note the magazine cut-off and safety inletted on the right side of the stock above the trigger (left) and stock cartouche of Erskin S. Allin on the left side of the stock above the trigger (right). Photos courtesy of Jack Lewis.



Figure 14. Second model bolt action Winchester Hotchkiss carbine. Note the magazine cutoff (right tab) and safety (left tab) has been moved to either side of the bolt at the rear of the receiver. Photos courtesy of Jack Lewis.

That said, almost all of the Second Model carbines were issued to the 4th Cavalry and it was used in several fights with the Apaches until it was officially withdrawn from service in 1884. However, some Second Model Winchester-Hotchkiss carbines were known to be in service with the 4th Cavalry as late as 1886.¹⁹

Meanwhile, Springfield went ahead with the manufacture of the Model 1884 Springfield, the primary change being the new Buffington rear sight, which permitted fine adjustments in both windage and elevation. While Springfield was busy with the finishing touches on the new Model 1884 carbine, the Army convened a Cavalry Equipment Board on March 1st, 1884. The board was comprised solely of cavalry officers and chaired by Colonel William B. Royall, 4th Cavalry. The board issued a six page, 30 section questionnaire on every aspect of cavalry equipment and arms. Although comments regarding the existing carbine were generally favorable, a majority of respondents indicated that a longer barrel and the use of a heavier bullet with the carbine would achieve a desired increase in effective range.²⁰



Figure 15. 1886 Springfield trapdoor experimental carbine. Photo courtesy of Jack Lewis.

The Cavalry Equipment Board submitted its final report in August, 1884. It approved the acquisition and testing of a modified carbine, although documents relating to the decision-making, in terms of the carbine's specifications, are incomplete. By April, 1886 slightly more than 1000 of the "Experimental Carbines" had been manufactured (Figure 15). The carbines had 24 inch barrels with three-groove rifling, were nearly full stocked with a single barrel band and had both sling swivels and as well as a sling ring and bar. The rear sight was a Buffington rifle sight, graduated for up to 2,000 yards and marked "XC" for Experimental Carbine. The carbine was intended to fire the .45-70-500 rifle round. Field trials began in August 1886 and final reports were to be submitted in June 1887. The reports were to "state the advantages or disadvantages of the carbine compared to the present service model, particularly as regards its length and ease of carrying, when mounted and the ballistic properties of the arm." After all was said and done, while the Experimental Carbine²¹ certainly met or exceeded the objectives of increased range and accuracy, the additional barrel length, the fragility of the rear sight and incompatibility with the carbine boots then in service, resulted in the carbines being turned in 1889. After almost twenty-five years of searching, the U.S. Cavalry was back to a single-shot, big bore, black powder shoulder arm.

Meanwhile, by the late 1880's, most, if not all, of the major European powers were adopting breech-loading, magazine arms that used smokeless ammunition. In response, on November 24, 1890, the Army issued General Order Number 126. This document established an ordnance board tasked "to consider and recommend

a suitable magazine system for rifles and carbines for the military service.”²² After testing and evaluating 53 designs, including those from most of the world’s armies, the board recommended the Danish Krag-Jorgensen. Of the sixteen criteria mandated by the board, the magazine cut-off seemed to be among the most important. This feature went back to the Stabler cut-off, that had been incorporated into the Model 1865 Spencer. After a number of refinements,²³ the Chief of Ordnance approved what was to become the Model 1896 carbine on May 23, 1895. The follow-on Models 1898 and 1899 differed primarily in the rear sights, stock

and upper hand guard. The Model 1898 was the last carbine with the sling ring and bar. With the adoption of the 1903 Springfield rifle for all components of the Army, the era of the cavalry carbine came to an end.

It should be noted that the viability of horse cavalry was also at an end, but, in spite of the advent of the machine gun, the slaughter of World War I and evolution of mechanized warfare, it took the Army another 40 years to recognize the horse cavalry’s demise.

Notes

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17. Farrington, 236-237.
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19. Farrington, 255-260.
20. Farrington, 265-266.
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