A Revolution in Arms: A History of the First Repeating Rifles (review)

Robert B. Gordon

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of these machines originated with Colt or his talented plant superintendent, Elisha K. Root. The authors thus miss an opportunity to deconstruct these photographs to see what they reveal about the nature of technological change in antebellum America. To this reader, the assemblage suggests the extent to which technical know-how spread from one plant to another and how that process, in turn, fostered important incremental improvements in machine design during a critical period of American industrialization. Unfortunately, however, the text remains silent on this subject.

This criticism notwithstanding, *Samuel Colt* is a fine study that makes a significant contribution to the literature. For anyone who wishes to learn about Colt, his firearms, and his advanced marketing methods, this is a very good starting point.

MERRITT ROE SMITH

Professor Smith is a member of the history and STS faculties at the Massachusetts Institute of Technology.

A Revolution in Arms: A History of the First Repeating Rifles.

By Joseph G. Bilby. Yardley, Pa.: Westholm Publishing, 2006. Pp. ix+270. $26.

The outbreak of the Civil War forced ordnance officers to find weapons for the Union army just as they were coping with the technological change arising from the displacement of the smoothbore musket by the rifle, whose accuracy at long range allowed entrenched troops to inflict heavy casualties before a close encounter with an advancing enemy. Hordes of Yankee inventors with their zealous agents descended on the overburdened ordnance department with novel schemes and weapons just as the war commenced. The chief of ordnance, General James Ripley, and his staff were overwhelmed by promoters with political connections in high places touting hundreds of new products. They could hardly have welcomed Oliver Winchester and Charles Cheney bearing newly designed repeating (magazine) rifles for sale. Winchester had the Henry rifle made by his New Haven Arms Company, and Cheney, friend of navy secretary Gideon Wells, wanted contracts for the Spencer rifle that was not yet even in production. These were not only breechloaders—already an innovation disliked by Ripley—but rifles that fired metallic cartridges of doubtful reliability available only from a few makers. Would soldiers use the lever mechanism of the new rifles to simply fire them off without bothering to aim properly? Could the specialized ammunition be supplied to troops in the field? Would the complex mechanisms of the new weapons prove reliable in hard use? Joseph Bilby's new book answers these questions and tells us how Cheney managed to obtain a government contract for Spencer repeaters, how these gradually entered service, and how Winchester got Henry rifles into the hands of Union troops through private sales.

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Bilby has searched surviving records of engagements in which troops used Spencer or Henry weapons. He shows us how the repeaters forced Union officers to devise tactics to take advantage of their capabilities: a rapid-fire, short-range weapon, unlike the muzzle-loading, long-range Springfield rifle. They learned the need for fire discipline after their troops in early engagements quickly shot off all their ammunition, leaving them helpless to resist a second enemy advance. Experience showed that the repeaters were best deployed with cavalry and skirmishers. Union commanders also discovered that an enemy armed with muzzle-loaders could pin down their troops armed with the new repeaters before they could get close enough to use their rapid-fire capability. Spencer and Henry rifles had no impact on the outcomes of Gettysburg and Vicksburg. But out west, Sheridan, Custer, and others achieved victories with the aid of Spencers or Henrys, and then brought this expertise to the Union cavalry in the east by 1864, with decisive results in Virginia.

Bilby also explores the entrepreneurship of Winchester and Cheney. Cheney bested Winchester in getting rifles into production during the war. After 1865 Winchester improved his product, adapted it to the civilian market, and, following the lead of Samuel Colt, courted overseas military buyers. Cheney's Spencer company failed to innovate or develop new markets. Its final indignity was the eventual sale of the Spencer production machinery to Winchester.

Bilby begins his book with a review of the development of the breech-loading rifle based largely on established secondary sources, and on the history of the mechanical design work of B. T. Henry and Christopher Spencer. This will be familiar material to readers of the now-abundant small-arms literature. Bilby's important contribution, however, is his analysis of the evidence for the use made of the Spencer and Henry rifles in battle. He confronted the problem of sparse records and hearsay evidence and solved it in part by using the reports of ammunition expended by particular regiments. Readers will find the book well indexed, nicely produced, and tastefully illustrated. It has a useful bibliography, though it's a bit weak in helping the reader locate the manuscript and primary sources consulted.

The repeating rifle was useless without the metallic cartridge. We have good accounts of the design and manufacture of the rifles. The equally (or more) difficult technological problems that had to be overcome to make reliable cartridges remain relatively unexplored by historians of technology. Research on this would be a welcome addition to our understanding of the nineteenth-century military-industrial complex.

ROBERT B. GORDON

Robert Gordon is with the departments of geology and geophysics and mechanical engineering at Yale University.