SMALL ARMS IN THE UNION ARMY, 1861-1865

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PREFACE

In 1959 I wrote a Master of Arts thesis in history at Oklahoma State University titled "Army Ordnance and Inertia Toward a Change in Small Arms Through the Civil War." I started with Fred Albert Shannon's Organization and Administration of the Union Army, where all students begin the subject of Civil War munitions. Shannon's work, published in the 1920's, remains the standard reference to the activities of the Ordnance Department and the Bureau in Washington, D. C., which commanded it. His views that incompetence, lethargy, and mismanagement on the part of the Ordnance Bureau were responsible for the problems in acquiring and improving arms for the Union army, have remained the standard interpretation of Federal munition problems. These criticisms have been applied to small arms, consisting of rifles, muskets, pistols, and edged weapons. Others have written on the subject since Shannon, but historians have not deviated substantially from the Shannon thesis.

Yet, as I worked on the Ordnance Bureau in the late 1950's, I began to suspect that the view of the bureau held by most, if not all historians, was unbalanced. Limited resources and data at that time did not permit a more detailed examination of the question, but doubts continued to plague me. In 1970, however, I was given an opportunity to examine the papers of the Ordnance Bureau, after this topic was approved for my dissertation by my doctoral committee. The examination of these records, together with a great mass of additional documents and other materials, confirmed my view that the general concept of the

Federal Ordnance Bureau and Department was distorted. This imbalance stemmed not only from the legend of Ordnance Bureau and Department mismanagement created during the Civil War itself, but from a constant tendency of more recent writers to evaluate the organization's work of manufacturing and acquiring arms during the conflict by using measurements of the twentieth century.

During both the research and writing of this study, I tried constantly to remember that the nineteenth century had different values, habits, and frames of reference. Only by this means could a realistic appraisal be made of the work done by the Chief of Ordnance and his command. This study is the result of this attitude and treatment. Although it does not vindicate the Ordnance Bureau and Department of all charges made against it, it attempts to take a realistic view of its limitations and arms production capacity.

The able and often needed assistance of the staff of the Oklahoma State University Library deserve my appreciation. In particular, I would like to thank Mrs. Marguerite S. Howland, the head documents librarian; Mr. Josh H. Stroman, who was of invaluable help in acquiring much needed material; and Mrs. Heather MacAlpine Lloyd, the reference librarian, who was of inestimable value in my research.

I would also like to thank the members of my graduate committee for their aid throughout my entire graduate program and for their careful reading of this dissertation: Dr. Guy R. Donnell, of the Political Science Department; Dr. H. James Henderson, Dr. Theodore L. Agnew, Dr. Homer L. Knight, and Dr. LeRoy H. Fischer, of the History Department. I owe special thanks to Dr. Knight, who, as head of the History Department, made it possible for me to pursue not only this

academic degree, but those before it, and to Dr. Fischer, the chairman of my graduate committee, whose long, hard, and able editorship of my dissertation is appreciated.

I would also like to thank Dr. O. A. Hilton, now retired, of the Oklahoma State University History Department, for teaching me how to be a historian; Dr. Odie Faulk, for his kindness and good advice; many friends who tolerated me during this effort; and the people who helped with the preparation of this manuscript.

I would also like to thank my daughter, Abigail, for tolerating my absence during the writing of this dissertation. But most of all, I want to thank my wife, Lucy, whose encouragement, research assistance, and writing help was indispensable.

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CHAPTER I

ORDNANCE DEPARTMENT ADMINISTRATIVE PROBLEMS

The year 1861 dawned in an air of crisis. South Carolina had already declared itself out of the Union, and the other slave states were rife with talk of secession. Nevertheless, activity in the old Winder Building in Washington, D. C., which housed the bureaus of the United States Army, increased only moderately during the secession crisis. If there was a sense of urgency in the Ordnance Bureau, the central headquarters of the Ordnance Department which had charge of the arsenals, depots, and armories, it was not discernible from its actions or correspondence. Colonel Henry Knox Craig, the Chief of Ordnance, fussed about the dim offices of the Ordnance Bureau as he had for nearly a decade, and the routine continued almost unbroken. The reports of the ordnance officers, sergeants, and military storekeepers poured into the bureau, and were dutifully recorded and forwarded to the Second Auditor of the Treasury. The Chief of Ordnance replied to the original correspondents, who were strung out at numerous military establishments, that their reports had been received and "appear correct."[1]

In accordance with law, the bureau was preparing the annual

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[1]Miscellaneous Letters Sent, December 26, 1860, to April 17, 1861, Records of the Office of the Chief of Ordnance, Old Military Records Division, National Archives, Washington, D. C. The term Ordnance Department is used when referring to the total function of all its members, establishments, and activities. The term Ordnance Bureau is applied only in dealing with the Ordnance Department's central office in Washington, D. C.

allotment of arms for the state militias, and even here there was little excitement. Most of the governors were asking for the newer rifle musket, Sharps carbine, "long-range" rifle, or some weapon other than the older standard smooth-bore musket, and the bureau was doing its best to fulfill their demands. Some of the governors demanded a greater quantity than their allotment under the quota system set up by the Militia Act of 1808, but their enthusiasm made little impression on the officers of the bureau. Their orders were filled under the law, but their pleas for advancements on the next year's quota or their requests to purchase directly from the government were turned down. Colonel Craig carefully explained to the governors or the states' adjutant generals that he had no authority under the law to fulfill their wishes. And, indeed, the old colonel was quite correct. Such decisions were beyond his authority.[2]

Yet the loyalty crisis created problems for Craig. In the midst of the routine and bureaucracy, he was aware that the United States might be facing a large scale insurrection; how large, no one could know. Admittedly, he was worried about protecting United States property located in the Southern states, and admonished his subordinates not to permit ordnance stores, arms, or buildings to fall into the hands of "traitors." He was perhaps more wily than is usually supposed. The letters from his office indicate that he delayed arms shipments to potentially secessionist states. He informed several of the Southern governors that their state arms, due them under the quota,

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[2]Ibid.; United States Congress, United States Statutes at Large (vols. I-VII, Boston: Little, Brown, 1848-1874; vols. IX-present, Washington: United States Government Printing Office, 1874-present, Vol. II, p. 490.

were on their way, when in fact the arms had not been sent at all. When the governors protested that they had received no arms, the old colonel would promise to look into the matter. Years of experience had taught Craig the value of the evasive bureaucratic maneuver. Some governors would never receive the arms.[3]

Yet, if the war's opening had been delayed, the South would have received their arms and Craig could have done nothing about it. Painstaking care had gone into the preparation of the 1861 quotas; no distinction was, or under the law, could be made between Northern states whose loyalty was unquestioned and Southern states who at any moment might leave the Union, taking the federally supplied arms with them to use against the government. It was not the prerogative of an army bureau to decide who should be armed when the controversy was of a political or constitutional nature.

The regulations of the army and the militia were clearly stated in the laws of Congress, and most military men considered them inviolate. Crisis did not justify breaking the law. The role of the Chief of Ordnance with regard to ordnance and ordnance stores was clear. His

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[3]Craig to Cooper, February 5, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Craig to Prince, February 26, 1861, ibid.; Craig to Alexander, April 17, 1861, ibid.; Craig to Gilbert, March 2, 1861, ibid.; Craig to Fuller, July 2, 1861, and Gist to Floyd, November 12, 1860, United States Department of War, The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies (4 series, 70 vols., 128 books, index, Washington: United States Government Printing Office, 1880-1901), Ser. iii, Vol. I, pp. 5-6; Craig to Gist, November 26, 1861, ibid., pp. 8-9; Maynadier to Richardson, December 10, 1860, ibid., pp. 11-12; Clapton to Holt, January 10, 1861, ibid., p. 34; Craig to Holt, January 15, 1861, ibid., p. 41; Daves to Cameron, April 2, 1861, ibid., pp. 63-64; Craig to Harris, February 4, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Craig to Ellis, February 4, 1861, ibid.; Craig to Rector, February 9, 1861, ibid.

duties were to arm the regulars and fill the clearly detailed quotas of the governors of the states. He supervised the production at the two national armories at Harpers Ferry, Virginia, and Springfield, Massachusetts, and the disbursements of the various government arsenals. Acting under the authority of the Secretary of War, he seldom deviated from the orders of the secretary or violated the letter of the law.

The country was still at peace, no matter how tenuous that peace. There was no authority and no finances which made it otherwise. For the Ordnance Bureau, or even the War Department, to take prejudicial action would have been not only illegal, but provocative. And if blunders were to be made, they should be made by officials elected by the people and constituionally empowered to make administrative decisions.

The thunder of the guns which shattered the early morning silence at Charleston harbor found the United States government and its military establishment unprepared for war—psychologically and philosophically, as well as materially. To find the reasons for this state of unpreparedness, one must go beyond the institutional and military structure of the nation, and examine its tradition and philosophy.

The traditional United States point of view was to distrust, perhaps for good reason, a well organized and powerful military establishment. European monarchies and dictatorships were so close to the military as to be almost inseparable in the minds of many Americans. Most Americans felt that military might was a tool of tyrants and the natural enemy of liberty. They felt a strong military establishment could not be trusted to keep the best interests of a democratic society at heart.

With the protection afforded by its geographic position, the United States could easily avoid the dangers of a large and powerful military class. The army could be kept small by congressional control. Since most Americans considered a large army to be a danger to their liberty, they therefore protected themselves by keeping not only the size of the military small, but also by keeping the expense to a minimum. The "founding fathers" had seen fit to constitutionally limit arms appropriations, at least in time, to two years. The army was expected to be large enough to police the Indian frontier and to serve as a base from which to expand a citizen-soldier army in the event of a foreign war. Nothing else was expected of it. Secretary of War John C. Calhoun had warned of the dangers of this limitation in 1820, but such ideas were paid little heed. The American successes of the Mexican War had tended to support the general belief that no large or expensive military establishment need be maintained.[4]

Even in event of danger, it was reasoned, a large standing army was not needed. At the first roar of cannon, patriot volunteers would quickly spring to the colors and swell the ranks of the army. Some officers felt that the small well-trained regular army would be the core of the new brigades, divisions, and corps of this expanded force. The militias were organized within the states, and both their line and service administrations could be transferred to the Federal government in time of war.

Although there was considerable justification for the limitation

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[4]John C. Calhoun, quoted in "Annual Report of the Secretary of War, 1850," American State Papers: Military Affairs (38 vols., Washington: Gales and Seaton, 1832-1861), Vol. II, pp. 188-193.

in the size of the military establishment, the expense limitations were unrealistic, considering that by the middle of the nineteenth century the world was in a technological revolution, and military technology was advancing at a rapid rate. If the United States was to keep pace with these changes, it would need the professional military expert, the bureaucrat, and the scientific expert; it would also need money for procurement and testing.

Despite the rapidly occurring changes, Congress and the public in general made few concessions to these developments. The rising professionalism in the military following the Mexican War had made the officers of the army service bureaus into professional bureaucrats and technical experts. Although organization and bureaucracy were necessary to the efficient functioning and improvement of the military arts, they added to the mistrust of the military establishment. Professionalism and bureaucracy tended to increase the social distance between soldier and civilian and to raise the specter of a large or well-financed army becoming an independent power within the nation. Technical military professionalism was considered, at best, a necessary evil.

The intensified sectional controversy following the Mexican War created an atmosphere in which Congress tended to push the military out of the picture, and isolate it from political questions and any implication that the army might be involved in settling political disputes. This led the new professional officer to avoid politics and increased his isolation from the general patterns of American life and thought. These officers did not wish to make the army itself a political issue, or imply that the disputing sides in controversies might be

able to call upon it to settle questions insoluble in the halls of Congress.[5]

Likewise, Congress did not often invade the domain of the military in technical problems. The question of breech-loading small arms had been controversial for more than forty years preceding the Civil War. Although individual congressmen and senators might try to use influence in order to get an inventive constituent ordnance board tests, Congress as a whole separated itself as much as possible from the hazards of the military arms controversy. Congress set up a system of arming the militias in 1808, improved the military organization and administration in the 1820's and 1830's, appropriated meager annual funds, and provided the funds for examining new arms in the 1850's, but beyond that it took little interest or action.[6]

The primary military concern of Congress was economy. It perpetuated an archaic system of arming both militia and the regulars. The standard militia small arm, from a financial point of view, was still the smooth-bore musket. All allotments to the states were still in terms of the value of the old musket. States could get more advanced and expensive arms if they were available, but to do so they had to make sacrifices in the total number of arms they could draw from the Federal government. In the mid-1850's the rifle musket began to replace the smooth-bore musket as the standard arm in the regular service, but limited appropriations to the military did not permit large stands of these weapons to be manufactured. The rifle musket,

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[5]Ibid.; Russell F. Weigley, History of the United States Army (New York: Macmillan, 1966), pp. 117-196.

[6]Ibid., pp. 173-196; United States Statutes at Large, Vol. X, p. 579.

which tremendously increased the range and accuracy of infantry fire, was considered a very expensive weapon at $13.93 each. Under cost limitations placed on the army by an economy minded Congress, government armories could hardly have been expected to replace older muskets with new rifle muskets; most arms in government arsenals were still of the old patterns.[7]

Thus, Congress forced the military to concentrate on economy and efficiency in the decade preceding the Civil War. For the Ordnance Department, this meant both consolidation of facilities and standardization of arms. Standardization had military as well as economic advantages. "Upon due consideration of the subject," wrote the Chief of Ordnance in 1845, "the department . . . followed in the steps of the great powers of Europe, deciding that a diversity of arms was productive of evil, and adopting those of ordinary construction which are the simplest managed by the common soldier." From that time forward, standardization of arms would be one of the main drives of the secretaries of war and chiefs of ordnance. All standardization programs were justified not only in simplicity of use, but more often letters and reports of both the Secretary of War and the Chief of Ordnance stressed economy of manufacturing. The system of private arsenals manufacturing arms for the government was abandoned, largely on eco-

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[7]Maynadier to Richardson, December 10, 1860, Official Records, Ser. iii, Vol. I, pp. 11-12; Craig to Floyd, November 12, 1859, ibid., p. 1; Craig to Wilkins, January 29, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; United States Army Ordnance Department, A Collection of Annual Reports and Other Important Papers Relating to the Ordnance Department, 1812-1889, Stephen Vincent Benet, comp. (4 vols., Washington: United States Government Printing Office, 1890), Vol. IV, p. 838.

nomic grounds, and all manufacturing of rifles and muskets was then done at the national armories at Harpers Ferry and Springfield.[8]

The technology of the age, with its constant introduction of new weapons, complicated the attempt to standardize small arms. By the 1850's, Colt's revolving pistols had reached a high degree of efficiency and popularity. The Chief of Ordnance still considered them to be too complicated and too expensive, and therefore a violation of accepted practices. These were his principal objections when he wrote in 1850:

> Colt's pistols may be used to advantage in the hands of skillful or careful men; [but] it would be premature to exclude entirely the use of the dragoon pistol; that the pistol, being a weapon calculated and suitable for personal defense alone, had its efficiency in this respect increased when made to repeat; that the repeating pistols (Colt's) cannot be advantageously used by the mass of our private soldiers for want of the necessary discretion, coolness, and skill; and that they should be furnished to them in limited numbers only, to be placed in the hands of such men as their officers may select to be so armed.
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> I do not think it would be advisable at this time to purchase Colt's patent, and to undertake to make these pistols at the national armories. The cost of the patent right and of the requisite machinery to commence the manufacture of these pistols would be very great . . . .

In addition, Colt's revolving rifles and carbines were rejected without serious consideration.[9]

In 1855, the standardization of small arms went even further. An ordnance board recommended the adoption of a single caliber for the service. The new caliber would be .58 inch, and would replace the

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[8]Talcott to Wilkins, January 14, 1845, ibid., Vol. II, p. 3; Claud E. Fuller, The Whitney Firearms (Huntington, W. Va.: Standard Publications, 1946), p. 194; William B. Edwards, Civil War Guns (Harrisburg, Pa.: Stackpole, 1962), p. 11.

[9]Talcott, "Annual Report of the Chief of Ordnance, December 3, 1850," Ordnance Collection, 1812-1889, Vol. II, pp. 353-354; Talcott to Conrad, December 30, 1850, ibid., p. 361.

smooth-bore musket caliber of .69 inch and the rifle caliber of .54 inch. All arms would be rifled and the service would retain the Harpers Ferry rifle pattern in everything except caliber. Carbines and musketoons would no longer be produced and the pistol would be equipped with a detachable stock to fill the void created by the end of musketoon production. The old muskets would be replaced with a new pattern rifle musket. All of these arms would be equipped with the Maynard primer magazine on their locks. Although there remained a limited number of privately produced arms in the service, particularly Colt pistols and Sharps breech-loading cavalry carbines, this decision came closer to standardizing arms in the American services than anything which preceded it. In September, 1855, Craig announced that the armories had ceased fabricating all but the .58 caliber arms.[10]

Economy dictated that the supply of flintlock and percussion smooth bores on hand should not go to waste. Thus, preparations were made to rifle the .69 caliber smooth-bore muskets; the .54 caliber rifles were to be rebored and rifled to .58 caliber. These remodeled weapons were inferior to the Springfield rifle muskets; except for the rifled musketoon, however, these remodeled arms performed well in

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[10]Craig to Davis, June 26, 1855, and Davis's endorsement thereon, July 5, 1855, ibid., pp. 557-559; Craig, "Annual Report of the Chief of Ordnance, September 4, 1855, ibid., pp. 565-566; Jefferson Davis, "Annual Report of the Secretary of War, 1855," United States Senate Executive Document Number 1, 34th Congress, 1st Session (Washington: Union Printers, 1855), p. 9; Craig to Whitney, May 1, 1855, Letters Sent to Ordnance Officers, Ordnance Office Records, National Archives.

service.[11]

From the mid-1850's, the Ordnance Department made extensive tests of new arms and tried to expand the number of arms in service. But the bureau was hampered by limited facilities for both the production of new models and remodeling of old arms. Despite the warning of Craig in 1857 that the nation needed a reserve of at least one million rifles and muskets, appropriations from Congress and the cooperation of important officials, including the Secretaries of War, were not forthcoming.[12]

Congress also wanted to reduce the number of arsenals and depots within the military system. To facilitate this, Captain William Maynadier was asked for recommendations on such arrangements, and he advised that the number of arsenals be reduced to four, each serving one section of the country. This situation went so far that in 1860 Congress seriously considered closing the arsenal at St. Louis, but Craig protested, pointing out that this act would remove that important facility from a strategic location.[13]

These same economies existed in all areas of ordnance. Patented

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[11]Davis, "Annual Report of the Secretary of War, 1855," Senate Executive Document Number 1, 34th Congress, 1st Session, p. 9; Craig, "Annual Report of the Chief of Ordnance, September 4, 1855," Ordnance Collection, 1812-1889, Vol. II, pp. 565-566; Craig to Floyd, April 23, 1858, ibid., p. 642; Wood to General Headquarters, Department of the West, March 1, 1859, Letters Received, Ordnance Office Records, National Archives; "Records of the Firings, and Opinions of the Board for the Trial of Small Arms, February 1, 1860," Reports of the Testing Boards, Ordnance Office Records, National Archives.

[12]Craig to Floyd, August 14, 1857, Ordnance Collection, 1812-1889, Vol. II, pp. 612-613.

[13]Maynadier to Floyd, December 19, 1860, ibid., Vol. III, pp. 433-434; Craig to Holt, February 1, 1861, ibid., p. 556.

and improved small arms, such as Colt revolvers and Sharps breech-loading carbines, were bought, but only in limited numbers. The ordnance corps of officers was kept small, and was always below authorized strength. The Secretary of War even refused the time-honored practice of extra pay for line troops who performed ordnance duties.

The Ordnance Bureau and Department on the eve of the Civil War faced serious problems. Many flintlock muskets were still to be converted to the percussion system. The smooth-bore muskets were still to be rifled and the caliber .54 rifles were still to be converted to the new caliber. The production of the government armories was insufficient to provide adequate numbers of new rifle muskets, and the means for supplying the militia quotas of the states with first-class arms was likewise inadequate. But these and other problems would be solved, as they had been solved in the past: with hard work, and slow but steady progress. Given enough time, the situation would be corrected, but no one knew how little time there was.[14]

When the Civil War broke with sudden fury on the unprepared departments of the army, probably no sphere was quite so unprepared as the Ordnance Department. Colonel Craig, the seventy-year-old veteran who commanded the department from its Washington bureau, had done reasonably well in his nine years of peacetime tenure, but his age, inflexibility, and a growing irascibility made him a poor choice to lead

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[14]Craig reported that the 1860 production at the Federal armories was 14,399 rifle muskets, 2,701 rifles, and 200 cadet muskets. The government had about 530,000 rifles and muskets of all types on hand, a decline from the 700,000 rifles and muskets which it possessed before the sales of arms which followed the adoption of the .58 caliber rifles and rifle muskets. Craig, "Annual Report of the Chief of Ordnance, October 30, 1860," ibid., Vol. II, pp. 688-689; Craig to Holt, February 12, 1861, Official Records, Ser. iii, Vol. I, p. 63.

a wartime department. A more vigorous chief had to be chosen.[15]

The selection of a new Chief of Ordnance was not a difficult task. The man in line, both by virtue of seniority and long, honest, and efficient service, was Lieutenant Colonel James Wolfe Ripley. A native of Connecticut, born in 1794, he was graduated from the United States Military Academy at West Point, New York, and commissioned a second lieutenant in 1814. Ripley served two tours of duty in Florida. The first was with Major General Andrew Jackson in the Indian Wars, and the second was with Colonel James Gadsden while surveying Indian reservations. Jackson, Gadsden, and the territorial governor, William Pope Duval, commended the young officer for his efficient and able service.[16]

During the South Carolina nullification controversy of 1832, Ripley was ordered to accompany Major General Winfield Scott to Charleston to prepare the defense of the harbor fortifications. His work was done well, and "his gentlemanly deportment won . . . esteem and respect" among the citizens of Charleston. "Captain Ripley," wrote Scott, "has no superior in the middle ranks of the army, either in general intelligence, zeal, or good conduct."[17]

During the next decade, Ripley held several important ordnance posts. His capable services were rewarded with a promotion to major in 1838, and an appointment as superintendent of the United States

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[15]A. Howard Meneely, The War Department in 1861: A Study in Mobilization and Administration (New York: Columbia University Press, 1928), p. 48.

[16]George Washington Cullum, ed., Biographical Register of the Officers and Graduates of the U. S. Military Academy (2 vols., New York: Houghton, Mifflin, 1890), Vol. I, pp. 119-120.

[17]Poinsett to Jackson, April 5, 1833, ibid., p. 120; Scott to Jackson, April 15, 1833, ibid., pp. 120-121.

Armory at Springfield, Massachusetts, in 1841. At Springfield he instituted rigid work rules, increased the size and cleanliness of both the grounds and the armory, and cut the cost of the musket from $17.50 to $8.75 by the end of his tenure in 1854. "Springfield Armory," wrote Colonel George W. Cullum many years later, "is truly Ripley's monument."[18]

Between 1854 and 1860, Ripley served as commander of the Watertown Arsenal in Massachusetts, Chief of Ordnance of the Pacific Department, and Inspector of Arsenals. In June of 1860, Secretary of War John B. Floyd detailed Ripley to go abroad, first to Japan and then to Europe, to examine arsenals and arms fabrication.[19]

While in transit to Europe, Ripley heard of the rebellion of the Southern states, and returned at once to the United States. Ripley immediately moved to Washington and checked in at Willard's Hotel on April 20, 1861, probably to be on hand in the likely event that Chief of Ordnance Craig would be removed. The Secretary of War, Simon Cameron, had consulted Lieutenant General Winfield Scott, the Commanding General of the Army, as to Craig's status, and both agreed that Craig was not suited to head a wartime bureau. Further, Scott pointed out, Ripley, the senior ordnance staff member, was close at hand, and was a most capable officer. Cameron complied with the request of Scott, and on the pretext of Craig's illness, a minor ailment for which he had taken a few days' rest, ordered Ripley to take charge of the Ordnance Bureau "during the feeble health of its chief." The following

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[18] Ibid., pp. 119-121; Jacob Abbott, "The Springfield Armory," Harpers Monthly, Vol. V (July, 1852), pp. 160-161; Robert V. Bruce, Lincoln and the Tools of War (Indianapolis: Bobbs-Merrill, 1956), pp. 23, 146.

[19] Biographical Register of the U.S. Military Academy, Vol. I, p. 121.

day, April 24, 1861, Lieutenant Colonel Ripley, Acting Chief of the Ordnance Bureau, ramrod-straight, white-haired, and fierce-eyed, climbed the stairs and entered the dark, musty hall of the Winder Building to assume his new duties. He had been deferent -- even humble — but he must have felt some pride in taking the position he had earned with forty-seven years of faithful and efficient service.[20]

Ripley has since been called incompetent. He was not. There was nothing in his past to indicate that he lacked the qualities to head an important military bureau. On the contrary, he had moved with utmost dispatch and efficiency in every responsible position he had held. Ripley stepped into the office of Chief of Ordnance at a difficult time and, all things considered, did a reasonably good job by any standards of measurement of the day. In the areas where he failed, these shortcomings resulted from his lack of imagination, his reluctance to change, and his lifelong habit of obeying the law, letter and spirit.

The Ordnance Department, Ripley discovered, was too small to handle the needs of a large army, the size of which no one yet knew. The Ordnance Department had never been large. It had been authorized as a separate department under the Secretary of War by the act of Congress of April 5, 1832, which detached it from the artillery and gave it a staff of fourteen officers. By another act of Congress of July 5, 1838, the President might increase the number of officers in the corps to as many as twenty-two; in October of 1844 this number was raised to

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[20]Special Order No. 115, Adjutant General's Office, April 23, 1861, Official Records, Ser. iii, Vol. I, p. 102; Bruce, Lincoln and the Tools of War, pp. 14, 23, 29.

thirty-four. During the Mexican War, Congress authorized the President to add, at his own discretion, eight officers when he "deemed it expedient;" by the end of that conflict, the number had risen to only thirty six. From that time to the Civil War, the Ordnance Department was never at full officer strength, and the last annual register of the army before the war listed only forty-one officers in the corps, many of whom would take field command at the first opportunity.[21]

The department would face crushing demands upon its time and officer staff. As early as January, 1861, Colonel Craig has noted that his correspondence and records were falling far in arrears because of the constant inquiries of the potentially combative sections which caused the "press of business." Yet, even with this pressure, Craig continued to grant leaves, some of them extended, to officers, ordnance sergeants, military storekeepers, and clerks. Since Craig was obviously aware that the slave states might have to be repressed by military force, his actions are unaccountable, except to say that he, like many others, did not realize the extremes to which the rebellious states were willing to go.[22]

While the rest of the United States Army grew rapidly, the Ordnance Department, as well as other services, remained almost static in the size of its officer corps for the first two years of the war.

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[21] United States Statutes at Large, Vol. IV, p. 504; ibid., p. 528; Bomford to Black, December 14, 1844, Ordnance Collection, 1812-1889, Vol. I, pp. 523-524; Bomford, "Annual Report of the Chief of Ordnance, November 22, 1844," ibid., p. 249; "Register of the Army," United States House of Representatives Executive Document Number 54, 36th Congress, 2nd Session (Washington: United States Government Printing Office, 1861), p. 8.

[22] Craig to Cooper, February 12, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives.

It was not through the apathy of the Chief of Ordnance that the corps remained small. Ripley constantly bombarded the offices of the Secretary of War and the Adjutant General with the details of his plight. It was generally recognized from the outset of secession that the department was too small to handle any crisis, even of a limited nature.[23]

The war placed an incredible burden upon the officers of the Ordnance Department. Many of the arsenals and depots had no more than one officer, most not above the rank of lieutenant. Yet Congress did not see fit to expand the officer personnel of the department, and the number of officers serving with it showed little increase. By the summer of 1862, the Ordnance Department could list only forty-four officers, and as of June 30, 1863, the number stood at only forty-five.[24]

Each time the war situation changed, Ripley desperately tried to shift his officers where they could be of the greatest possible use. But as the arsenals and depots became more numerous, the staff was stretched to the breaking point, and it became more difficult to make these shifts. Second Lieutenant T. J. Treadwell was sent to Indianapolis to establish a depot in April of 1861. In May, Ripley ordered Second Lieutenant A. Buffington to the busy St. Louis Arsenal "where there is no subaltern officer." In September, Ripley wrote to the Adjutant General that Fort Pickens did not need two ordnance officers,

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[23]Ripley to Cameron, June 24, 1861, Ordnance Collection, 1812-1889, Vol. III, p. 435.

[24]Ripley to Thomas, September 12, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives.

and requested that one of them be relieved and ordered to Washington where his services were needed. Shifting of the thin ordnance staff continued throughout the entire war, and even the United States Military Academy was denied more than one ordnance and gunnery officer. Captain Stephen Vincent Benet remained there, where his duties also burdened him with the task of inspecting cannon cast at nearby the West Point Foundry. In a number of cases, particularly in areas not so close to the war front, ordnance stations had to be placed under the command of ordnance sergeants and military storekeepers.[25]

The war was only days old when the generals in the field began to ask that ordnance officers be attached to their commands. Given the limited size of the Ordnance Department officer corps, this placed an extreme burden on the organization, but Ripley did what he could to put some of his officers in the field. Major General George B. McClellan was among the first to ask, and he was supplied with an officer in early May of 1861. But the major who was assigned to him resigned shortly thereafter, and Ripley sent two of his best officers, Captain Charles P. Kingsbury and First Lieutenant Silas Crispin, to McClellan's headquarters at Cincinnati in late May. Major General Irvin McDowell was assigned an ordnance officer, but informed the Secretary of War that he needed two. To the Secretary's inquiry, Ripley could only answer: "The limited number of Ordnance Officers . . . and the many pressing duties devolving on this Department [make]

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[25]Ripley to Thomas, May 25, 1861, ibid.; Ripley to Thomas, September 2, 1861, ibid.; Ripley to Thomas, August 19, 1861; Ripley to Thomas, August 20, 1861; Ripley to Thomas, June 22, 1862, ibid.

it impossible now to spare an Officer."[26]

In June, Major General N. P. Banks requested an ordnance officer for his headquarters. Although there was none available, Ripley requested that McClellan keep Captain Kingsbury and send First Lieutenant Crispin to Banks. Since neither Congress nor the army would supply the Ordnance Department with its needed officers, Ripley had to continue to shuffle those in his command. When work slacked in the field, Ripley would quickly request that the Ordnance officers be relieved and sent back to the Ordnance Department. If field headquarters attempted to keep the men, Ripley would write the Adjutant General asking that the officers be returned to him.[27]

One of Ripley's more serious problems arose from the practice of field commanders pirating his officers. When Major General John C. Fremont ordered Second Lieutenant Buffington from his duties at the St. Louis Arsenal, Ripley wrote the Adjutant General's Office:

> His removal thence to other duty, at a different Station, are irregular and unauthorized. The urgent and important duties of the Arsenal imperatively require the services, there, of <u>at least</u> two officers, and I have no officers to send there.
>
> I therefore request that an order be sent to General Fremont to return Lieutenant Buffington to his station; not to be removed unless by authority of the Secretary of War.[28]

Ripley tried in other ways to keep his command intact. After the

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[26]McClellan to Ripley, May 21, 1861, Letters Received, Ordnance Office Records, National Archives; Ripley to McClellan, May 28, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; McDowell to Cameron, June 4, 1861, with Ripley's endorsement thereon, June 8, 1861, ibid.

[27]Ripley to McClellan, June 13, 1861, ibid.; Ripley to Williams, August 21, 1861, ibid.; Ripley to Thomas, June 26, 1861, ibid.

[28]Ripley to Thomas, October 22, 1861, ibid.

disastrous Peninsula Campaign, Colonel Kingsbury, McClellan's ordnance officer, asked for a leave of absence because of health. Ripley replied to the adjutant that he had no authority to grant such a leave, since Kingsbury, while in his capacity with the Army of the Potomac, was not under his command. However, if Kingsbury would resume his regular rank of captain and his duties under the Ordnance Bureau, Ripley would be glad to authorize the leave.[29]

Ripley used regulations whenever possible to hold his officers in the Ordnance Department. One officer, the son of an influential New York politician, had the opportunity to join the staff of Major General John E. Wool. The father wrote Ripley to inform him of the opportunity, and pointed out that the appointment had the approval of the President. Ripley replied that the lieutenant had not served the three months which regulations required in order to be eligible for transfer. In so doing, he also made a case for the needs of his department:

> So urgent is the demand for the services of Ordnance officers on their appropriate duties that none can be spared for detached service without great injury to the operations of the Department, which have been already much crippled, by the withdrawal of Officers for such service.[30]

Ripley soon began to insist that officers be appointed within the field commands to handle ordnance and ordnance stores. This could be done within regulations by field commanders, and would leave trained ordnance officers free to devote their time to more technical duties. Despite Ripley's protests, the drain on his command was constant and damaging. When Major General Don Carlos Buell asked for an ordnance

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[29]Kingsbury to Stanton, July 15, 1862, with Ripley's endorsement thereon, July 17, 1862, ibid.

[30]Ripley to Harris, September 18, 1861, ibid.

officer, Ripley replied that he already had thirteen of his officers in the field, and that those remaining in the department could accomplish their duties "only by the severest constant labor."[31]

With thirteen officers in the field, the Ordnance Bureau had only thirty-two officers remaining under its orders. In some cases, it became necessary to request transfers of ordnance field officers not under command of the bureau from one field headquarters to another. In July of 1862, Ripley asked Brigadier General Lorenzo Thomas, the Adjutant General, to transfer Lieutenant Treadwell from the Department of the South to Major General John Pope's command, leaving only First Lieutenant Horace Porter in the Department of the South. In some cases, Ripley simply refused field generals' requests for ordnance officers. In April of 1862, Major General Fremont sent the Chief of Ordnance a telegram asking the assignment of an officer to his command. Ripley replied the same day, saying "this Department has not a single officer that can be spared." In December of 1862 he informed Major General Banks by telegram: "Have no Officers who can be spared." In April of 1863, Major General William T. Sherman, who was before Vicksburg, asked Ripley for an ordnance officer. Ripley replied that none could be sent, since it would strip an important arsenal of a subaltern and would damage the operations of both the arsenal and the bureau.[32]

The depserate difficulty with ordnance officers was only slightly relieved with the addition of new officers to the corps. The addition

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[31]Ripley to Bainbridge, February 21, 1862, ibid.; Buell to Thomas, March 28, 1862, and Ripley's endorsement thereon, April 5, 1862, ibid.

[32]Ripley to Thomas, July 1, 1862, ibid.; Ripley to Fremont, April 18, 1862, ibid.; Ripley to Anderson, December 17, 1862, ibid.; Ripley to Sherman, May 5, 1863, ibid.

came late, and only after much insistence from the Chief of Ordnance. Ripley, shortly after taking office, began to communicate with his superiors about the deficiencies of his department. He had made several statements and inquiries to Adjutant General Thomas about the condition of the Ordnance Department, but he made his clearest statement of the department's problems and needs when he wrote the Secretary of War only two months after taking charge of the office: "The present organization of the Ordnance Department was intended, and is only suitable, for an army on a peace establishment. Its strength is now entirely inadequate to the proper discharge of the many duties pertaining to it." The field commands drained the department of officers and impaired the efficiency of ordnance posts and of the inspection of arms. The immediate addition of nine officers to the department, he continued, was "absolutely necessary for the proper discharge of the duties pertaining to the armament and equipment of the armies and fortifications of the nation."[33]

Ripley's protest and declaration made no perceptible impact on either Secretary of War Cameron or Congress, and Ripley continued to shift his officers from place to place as the situation demanded. Always they were too few, and as the war continued their burdens became greater. In June of 1862, Ripley wrote to Edwin M. Stanton, Cameron's successor as Secretary of War, that "an increase is imperatively demanded by the interest of the public service." He complained that he had to turn away qualified officers because Congress had failed to expand his department. The many duties, coupled with the shortage of

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[33]Ripley to Cameron, June 23, 1861, Ordnance Collection, 1812-1889, Vol. III, p. 435.

officers, made it difficult for the department to keep up with the demands made upon it. "Taking into consideration these indispensable duties," Ripley continued, "the increase to meet the wants of the service will require the addition of 30 officers, making the aggregate of the corps 75 instead of 45 as at present."[34]

In his annual report made in November of 1862, Ripley again told Stanton that officer strength of his department was "but nine greater in the aggregate than were in commission during the Mexican War, and amounting to but 45 in all." This remark Ripley put into his report as a reminder of the difficulty, although not directly as a plea for more officers.[35]

It was clear to all who were faintly familiar with the problems of ordnance that the officer corps was too small. The failure of Congress to take action during the first two years of the Civil War is unexplainable, except through hostility to Ripley or perhaps because the ordnance office failed to catch the heroic fancy of its members. Whatever the reasons, Congress did not act. Incredibly, relief did not come until the war was more than half over. When it did, even Ripley's modest proposal of thirty additional officers was not met. Only nineteen were added, bringing the total to sixty-four, where it remained for the rest of the war.[36]

Brigadier General George D. Ramsay, who succeeded Ripley in September of 1863, would continue the fight for officers. In January

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[34]Ripley to Stanton, June 10, 1862, ibid., pp. 439-440.

[35]Ripley, "Annual Report of the Chief of Ordnance, November 21, 1862," ibid., p. 444.

[36]United States Statutes at Large, Vol. XII, p. 473.

of 1864, he again wrote the Secretary of War, pointing out "the necessity for an increase in the number and rank of the officers of the Ordnance Department," but no increase was made.[37]

With the shortage of trained ordnance specialists, the functions of ordnance officers in the field often had to be assigned to line officers. Given the limited strength of the Ordnance Departments officer corps, there was no alternative but to appoint officers untrained in the technology and the administration of ordnance and ordnance stores. In most cases, these officers were accountable to headquarters of the various field commands, rather than to the Chief of Ordnance. This practice added to the confusion, since these officers frequently did not follow the prescribed procedure and did not return proper or complete reports. Therefore, the Ordnance Bureau did not know who was being armed or with what, and what supplies remained or were needed. The bureau was without authority and could neither enforce requirements nor administer discipline to these acting ordnance officers.[38]

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[37]George D. Ramsay was born in Virginia in 1801 and graduated from the United States Military Academy in 1820. He progressed slowly in rank, as did most officers of his time. He achieved the rank of captain in 1835 and held it for twenty-six years, until he was promoted to major at the beginning of the Civil War. He served with Major General Zachary Taylor in the Mexican War, and as Taylor's Chief of ordnance in 1847-1848. He commanded the Washington Arsenal from 1858 to 1863, when on September 15, 1863, he was appointed to replace retiring Brigadier General Ripley as Chief of Ordnance. Biographical Register of the U. S. Military Academy, Vol. I, pp. 259-260; see also Chapter V for a fuller discussion of Ramsay; Ramsay, "Annual Report of the Chief of Ordnance, October 27, 1863, Ordnance Collection, 1812-1889, Vol. III, p. 454; Ramsay to Stanton, January 21, 1864, ibid., pp. 465-466.

[38]Ripley to Bainbridge, February 21, 1862, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Ripley to Hunt, September 27, 1862, ibid.

Although there were constant complaints by the Chiefs of Ordnance about "improper returns" and unauthorized disbursements, the bureau could do little to correct the situation, except to draw up new and somewhat more simplified ordnance record return forms for installation and field use. Even then the new forms may have caused still more confusion, since the officers often paid little attention to the changes.

The situation with these acting ordnance officers became so serious, that in April of 1864 Ramsay wrote the Secretary of War of "the manner in which acting ordnance officers of divisions and brigades are now appointed, when appointed at all, and the necessity of introducing a method of appointment by which these officers can be held directly responsible to this Department, through the chief ordnance officer of the Army or military department, in which they may be doing duty." By changing the structure of the ordnance administration in the field, the Chief of Ordnance in Washington would exercise control over the acting ordnance officers through his control over the chiefs of ordnance with the armies in the field.[39]

A month later, Ramsay's request was granted by General Order 193 from the Adjutant General's office. The order made all line officers acting as ordnance officers accountable to the chiefs of ordnance in the field. It further required them to make up to date reports on issues, captures, losses, and defects to the Ordnance Department to "correct the evil" which had been created through the lack of information. It required that regular monthly reports be made by these officers to the chiefs of ordnance in the field and that they in turn

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[39]Ramsay to Stanton, April 7, 1864, Ordnance Collection, 1812-1889, Vol. III, pp. 467-468.

forward all of these plus their own report to the Chief of Ordnance in Washington. Any change in situation, establishment of depots, or change in officer staff, must also be reported to the Washington headquarters of the Ordnance Bureau. Consequently, the handling of ordnance in the field improved considerably.[40]

Thereafter, line officers functioned reasonably well, but the failure to place trained officers with the Ordnance Department or in the field shows, to a degree, that Congress and the general public did not hold military technology and administrative experts in very high esteem. This attitude was both unrealistic and damaging to the prosecution of the war.

The nineteenth century valued its military heroes, but to those who were denied that status, it paid scant attention. There was little glory to be earned at the Ordnance Department arsenals, armories, and headquarters in Washington. Hence promotion, which in wartime came rapidly for officers serving in the field, came slowly or not at all for the members of the bureaus of the War Department, no matter how necessary their work nor how well they performed it. The laws governing the bureaus created a structure which denied promotion by restricting the numbers of officers who could occupy each rank. While the drama of battle excited men's romantic imagination, the issuing of arms and supplies did not. For these reasons, many ordnance officers hoped for or actively sought line assignments. The war was only days old when Captain Oliver Otis Howard and First Lieutenant Jesse Reno quit ordnance and took to the field; both men would become general

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[40]General Order No. 193, Adjutant General's Office, May 7, 1863, ibid., pp. 469-470.

officers before the end of the war. When Captain Horace Porter was ordered east in early 1864 to serve with the Ordnance Bureau in Washington, he was bitterly disappointed and did all within his power to get a field assignment. He eventually found a position on Lieutenant General Ulysses S. Grant's staff and he, too, would attain a brigadier general's star. Captain Charles P. Kingsbury, while serving on the staff of Major General McClellan as Chief of Ordnance for the Army of the Potomac, held the rank of colonel, but would be forced to return to his regular rank when he resumed his work directly under the Ordnance Bureau. When ordnance officers were requested for field duties, those who received such assignments considered themselves fortunate; it was an opportunity for promotion, even if only by brevet, and greater pay and prestige.[41]

Because the Ordnance Department was limited in size and restricted by law, its officers could receive few promotions. Rank was disproportionately low for command responsibility. James G. Benton, a captain, commanded the Washington Arsenal, succeeding George D. Ramsay, a major; this responsibility certainly dictated a higher rank for its head. Alexander B. Dyer, while directing the Springfield Armory, the largest arms manufactory in the world, and commanding its 3,000 men, held the rank of captain most of the time, and never rose above major. Yet, his command in both size and responsibility would have called for at least the rank of brigadier general if he had been

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[41]Horace Porter, Campaigning With Grant, Wayne C. Temple, ed. (Bloomington: University of Indiana Press, 1961), pp. 11-24; Kingsbury to Stanton, July 5, 1862, with Ripley's endorsement thereon, July 17, 1862, Miscellaneous Letters Sent, Ordnance Office Records, National Archives.

in the field.[42]

Ripley, in his annual report of 1862, pointed out the difficulty which ordnance officers faced. "The ordnance officer," he wrote, "whose duties, . . . arduous and useful, and whose professional acquirements, if reputable, demand liberal education and severe studies, has but little opportunity of public distinction, and none for promotion but such as comes in the regular course of casualties in his own corps."[43]

The promotion requests of the Chief of Ordnance fell on deaf ears, and even the addition of nineteen officers in 1863 did not improve advancement prospects or give the department a fair share of field grade officers. Ramsay followed the arguments used by his predecessor when he pointed out to the Secretary of War that ordnance officers had received the most unfair treatment at the hands of Congress with respect to field grade rank, and that no other department suffered under such "manifestly invidious" discrimination. "I see no just reason," he emphasized, "why they should not be within certain limits placed upon the same footing with paymasters and quartermasters of the Army."[44]

With no results forthcoming, Ramsay in desperation wrote Stanton a letter in which he quoted from his previous annual report and cited figures to point out the discrimination against Ordnance. He listed

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[42]Ramsay to Stanton, January 21, 1864, Ordnance Collection, 1812-1889, Vol. III, p. 466.

[43]Ripley, "Annual Report of the Chief of Ordnance, November 21, 1862," ibid., p. 444.

[44]Ramsay, "Annual Report of the Chief of Ordnance, October 27, 1863, ibid., p. 466.

the departments of the army and the number of field grade officers in each:

> Adjutant-General's Department, 20 members; all field officers.
>
> Quartermaster's Department, 67 members, 19 field officers, or 1 in 3 1/2.
>
> Commissary Department, 29 members, 13 field officers, or 1 in 2 1/4.
>
> Engineer Corps, 105 members, 35 field officers, or one-third.
>
> Ordnance Corps, 64 members, 12 field officers, or 1 in 5 1/3.

The officers of his department, Ramsay continued, in light of their commands and duties, deserved "a rank commensurate with them, a rank to which their exertions and efforts so eminently entitled them." To this letter he added the draft of a bill he hoped the Secretary of War would submit to Congress. The proposed legislation would have added enough field grade officers to make the Ordnance Department equal to the Corps of Engineers. His efforts failed.[45]

The promotion opportunities of regular ordnance officers improved very little during the war, and even by 1865 the number of field grade officers in the Ordnance Department still lagged behind not only the field armies, but the other staff departments of the War Department. The rapid promotions which came for field service during the war did not come for the members of the support branches of the War Department, no matter how necessary their work nor how well they performed it. The staff services in general, and ordnance in particular, were clearly discriminated against in rank, promotions, and numbers. Furthermore,

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[45]Ramsay to Stanton, January 21, 1864, ibid., pp. 466-467.

since the standards of professional and technical competence were high for Ordnance Department officers, all but graduates of the United States Military Academy were virtually eliminated; Ripley on several occasions refused the applications of volunteer officers because of backgrounds in civilian life. But the unromantic work of the Ordnance Department made it unappealing to young West Point trained officers who could attain both rank and glory in the line.[46]

The shortages and discrimination which existed with the officers of the Ordnance Department were duplicated with enlisted men. At the outbreak of the war, the authorized strength of enlisted personnel was 400 plus four for each light battery. In all, the figure came to about 450 men by April of 1861. The Secretary of War, by an act of Congress in 1846, had the discretionary power to determine the number of soldiers serving with ordnance. The vast expansion of the army in 1861 and the additional duties of the Ordnance Department would indicate that the number of enlisted men serving with it should have been greatly expanded, but the increase was small indeed. In July of 1862, sixty men were added at the Washington Arsenal; in September of 1863, sixty men were added at Watertown Arsenal; and the additions to the Military Academy totaled only ten. The expansion of the numbers of light batteries added a few more, but in total, the number of enlisted men

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[46]When Joseph H. Wheelock requested an appointment as lieutenant of ordnance, Ripley replied: "There is no vacancy now. But if one should occur, I deem it highly inexpedient to fill it from civil life. Both the interests of the service and justice to the Cadets require that such appointments shall be made, only as has been the invariable practice heretofore." Ripley to Wheelock, May 6, 1861, ibid. For Ripley's requests for Military Academy graduates, see Ripley to Thomas, June 25, 1861, ibid.; Ripley to Townsend, July 26, 1861, ibid.

serving with ordnance by the summer of 1864 could not have exceeded 610 men.[47]

Ramsay told the Secretary of War that the number of enlisted men serving with the Ordnance Department was totally inadequate to meet its needs. The men serving with the batteries, Ramsay said, "are ordnance soldiers only in name, as they are generally transferred from the batteries to the Ordnance Department to serve with the batteries as blacksmiths, carriage makers and harness makers." If these men are not counted as "ordnance soldiers," that leaves a total of only 530 enlisted men. "In view of the important value of military stores at arsenals," Ramsay emphasized, "it is deemed absolutely necessary that a continual and strong guard should be continually on duty; but this cannot be done with the number of enlisted men now allowed to this Department, as it is not sufficient for the purpose." Ramsay then suggested that the number be raised to 700, not including those soldiers attached to the light batteries.[48]

There is no indication that the Secretary of War added the enlisted men following Ramsay's request, but there were additions from time to time to meet specific needs of various arsenals. In October of 1864, the commander at the Allegheny Arsenal was permitted to reenlist soldiers who had served with field units and bring them to the arsenal. But these piecemeal additions would not have totaled the number requested by the Chief of Ordnance, and throughout the war the department

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[47]Ramsay to Stanton, June 23, 1864, Ordnance Collection, 1812-1889, Vol. IV, pp. 1139-1140.

[48]Ibid., p. 1140.

never had enough enlisted men to fulfill the demands made of it.[49]

There was marked discrimination against ordnance soldiers, much as there was against their officers. Congress had attempted to encourage enlistments and reenlistments by various acts in 1861, 1863, and 1864, offering bounties for enlistments and reenlistments. It was to be expected that these bounties were for all soldiers, but such was not the case. The War Department decided that this rule did not apply to the enlisted men of ordnance. Repeated appeals were made by the chiefs of ordnance to rescind the general order restricting the payment of bounties and premiums to the men, but the War Department stood behind its decision, never explaining the rationale which motivated it.[50]

As a result of these practices, ordnance officers complained that their enlisted men were taking discharges at the end of their terms of service rather than reenlisting. This was particularly damaging to the operation of the arsenals, since many of these men were highly skilled workmen essential to the efficient operation of the arsenals and armories. Many of them had been the skilled civilian workmen at the arsenals whom the laws of Congress had forced to don uniforms as an economy move. The War Department may have reasoned that, since these were people working for the Ordnance Department prior to their military service, they would remain at their tasks even if they were unequally treated. If so, this was a mistaken judgment, for skilled

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[49]Ibid.; Dyer to Kingsbury, December 26, 1864, ibid.

[50]Ripley to Stanton, July 30, 1863, ibid., pp. 1136-1137; Townsend to Ripley, September 2, 1863, ibid., p. 1137; Ramsay to Thomas, February 22, 1864, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Williams to Ramsay, February 26, 1864, Ordnance Collection, 1812-1889, Vol. IV, p. 1137.

arms workmen could find employment elsewhere. Despite this, the War Department never reversed its decision, and the drain on enlisted men continued.[51]

The heavy administrative and operational burden of the Ordnance Department, and its constantly expanding duties, made it extremely difficult to stay abreast of current business and future needs. The chiefs of ordnance have been criticized because they failed to institute more efficient administrative procedure. But given both the lack of mechanical devices and the requirements made by the War Department for records and proper channels, it is difficult to see how much streamlining could have been done in the department.[52]

The records of the bureau, laboriously kept and recorded in longhand by a small overworked civilian clerical staff, were absolutely necessary to provide information required in planning and distributing ordnance stores. The bureau suffered throughout the war from both a shortage of clerical staff and space. Every chief of the bureau during the entire period of the war asked for more clerks, and all complained that work fell in arrears because of the lack of them.

Ripley sent an urgent request to Stanton in January of 1863, summing up the problems of his department, and asking for some relief. At the beginning of the war, Ripley noted, the Washington headquarters of the department had only eight civilian clerks assigned to it. At that time it handled 300 quarterly returns of stores and had money

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[51]Ramsay to Stanton, July 14, 1864, ibid., p. 1139.

[52]Donald A. MacDougall, "The Federal Ordnance Bureau, 1861-1865" (Unpublished Ph.D. Dissertation, Berkeley: University of California, 1951), pp. 207-208.

disbursements of $1,200,000. Since that time, the clerical staff of the Washington office, although expanded by the employment of ten temporary civilian clerks, received no permanent increase despite the fact that the department handled 14,000 quarterly returns and had annual disbursements of $38,000,000. Ripley then suggested that the rank of the ten temporary clerks be dispensed with, and that twenty-three regular clerks be added to the bureau. This was the minimum necessary, he said, to accomplish "rigid enforcement of the rendition of all these accounts and returns, and their proper examination . . . to prevent fraud, and waste or misapplication of public property, and to keep the Government advised of the amount, condition, and position of its military means." Ripley got the number of civilian clerks increased to thirty-six, but this proved to be far too small, and ordnance headquarters in Washington continued to fall behind in its paperwork.[53]

When Ramsay took over the Ordnance Department in September of 1863, the authorized number of clerks was augmented by the addition of temporary civilian clerks and other assistants. In his first annual report to the Secretary of War, Ramsay urgently requested that the number of civilian clerks be expanded to 130 and the total civilian force be increased to 141, and additional space provided for them. Even then, he stated, it would require a full year to bring the ordnance records up to date. No action was taken on Ramsay's proposal, and in January of 1864 in a letter to the Secretary of War he repeated

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[53]Ripley to Stanton, January 17, 1863, Ordnance Collection, 1812-1889, Vol. III, pp. 449-450; Ramsay, "Annual Report of the Chief of Ordnance, October 27, 1863," ibid., p. 455.

his request, pointing out that the bureau's civilian staff was already sixty-seven greater in number than was authorized by Congress. The new force, Ramsay claimed, was "necessary to keep up the current business promptly and bring up arrears as long as the military organization is on its present large scale, and for at least one year after the war is ended." Ramsay got his record keepers, who were given the title "temporary clerk," indicating that the authorization came from the Secretary of War, rather than Congress.[54]

Shortage of civilian clerical help remained a serious problem in the bureau until the end of 1864, when the pressure of its business eased. The end of the war found the work sufficiently caught up so that large numbers of clerks could be immediately cut from the rolls of the bureau. But when the pressure was greatest and the clerks were most needed, neither Congress nor the War Department cooperated sufficiently to meet the demand.[55]

The acquisition of clerical help became almost a fetish with the chiefs of ordnance, as evidenced by numerous letters hiring or offering to hire them. At one point Ripley so admired the "hand" of Private William J. O'Brien, then serving at a company headquarters in the Western theatre, that he took it upon himself to make every conceivable effort to acquire the private. He wrote the commander of Private O'Brien's company, then Major General George H. Thomas, and even the Secretary of War, and eventually prevailed upon all three to

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[54]Ibid.; Ramsay to Stanton, December 3, 1863, ibid., pp. 457-458.

[55]Maynadier to Sewell, May 10, 1865, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Maynadier to Sloan, May 10, 1865, ibid.

allow O'Brien to serve with the Ordnance Bureau in Washington. The demand for clerks who were fast, accurate, and honest was very great; clerks who failed to meet these standards were often summarily dismissed. The worst offense of all was, of course, disloyalty, but this did not occur in the Ordnance Bureau. Following in the footsteps of Ripley, Chief of Ordnance Ramsay, who had himself been accused of Southern leanings because of his Virginia birth, was sensitive on the loyalty issue and quick to guarantee the loyalty of his staff.[56]

But dishonesty was another matter. Washington was full of stories of bribery, influential jobbers, and manufacturers willing to use any means to secure government contracts. Government civilian clerks were in a position to do favors and make a considerable profit for themselves. The ordnance office was not plagued by any great number of dishonest civilian clerks, but it did not escape untainted. One clerk was told that he "had, while holding a responsible position in this office, used that position to throw business into the hands of particular claim agents." The clerk was "dishonorably dismissed" and ordered to transact no further business in the War Department.[57]

In structure, the Ordnance Department was not highly centralized, and its organization, as set by law, contributed to confusion and inefficiency. As an agency of the War Department, it operated outside of the structure of the rest of the army. It was accountable to the

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[56]Ripley to Thomas, November 5, 1862, ibid.; Ripley to Kelton, November 24, 1862, ibid.; Ripley to O'Brien, January 28, 1862, ibid.; Ripley to Potter, September 16, 1861, ibid.; Ramsay to Stanton, June 3, 1864, Ordnance Collection, 1812-1889, Vol. III, p. 470.

[57]Maynaider to Johnson, May 10, 1865, Miscellaneous Letters Sent, Ordnance Office Records, National Archives.

Secretary of War, but not to the military head of the army. Its ability to act quickly was almost impossible under the laws, since the process of contract bidding was often long and laborious.

The Ordnance Department was not independent enough to enforce its opinions and policies. The Secretary of War often ordered the issue of arms without first consulting the Chief of Ordnance as to what weapons were available or where these arms could best be used. In addition, its funds were often used by field commanders to purchase arms; although this practice violated both army regulations and laws of Congress, these purchases were generally confirmed by the Secretary of War. This meant that the department could never be completely sure what arms would be on hand to issue or how much of its own funds it would be allowed to spend. As a result, the bureau could never plan with certainty what it was going to do with regard to issues and purchases. The waste and inefficiency which resulted was almost invariably blamed upon the department; no one seemed inclined to correct the structure which was the real cause of the difficulty.

Within the department, each arsenal and armory operated virtually independent of the central bureau in Washington. The posts were generally under the command of honest and efficient officers who administered their commands well and economically, but it left the bureau in a basically inflexible position where it could not transfer funds or personnel—except for officers—to other arsenals or duties.

The arms inspection system was also faulty, since inspectors were scattered at private arsenals, armories, and ports of importation. Some of their duties made them accountable to local armories. The department was always short of inspectors, and the job was placed upon

an officer in addition to his regular duties. On occasion the pressure of time forced the inspecting officer to make impromptu decisions without thorough examinations. Inspection was always done by random sampling, but with many duties the officer often could not inspect as many examples as desirable. These men were highly knowledgeable and efficient, but they were too few in number and the constant rush led to errors which would not have been made if the government had seen fit to properly staff the department.

At the Federal arsenals and armories the commanding officer had the power to hire and remove employees, set wages, and make the rules governing work, but the hours of labor and the conditions for extra work and pay were set by Federal policy. The absence of a general wage scale caused some confusion. If the army and the navy had installations in the same area, their wages might differ, and therefore the government would be competing against itself in the labor market. In addition, the commander governed almost all other phases of the arsenal. He had, for example, to compete for materials and machinery and go into the market in order to do so. Again, if navy installations were in the area the government was similarly forced to compete with itself. However, the arsenals were efficiently run, and despite the shortages of officers their products were amazingly uniform and of high quality.[58]

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[58]Ramsay to Thomas, November 26, 1863, ibid.; Rodman to Ramsay, December 21, 1863, with Ramsay's endorsement thereon, January 4, 1864, and an endorsement of approval by Watson, January 16, 1864, Ordnance Collection, 1812-1889, Vol. IV, pp. 1160-1161; Rodman to Ramsay, March 4, 1864, ibid., pp. 1161-1162; Smith to Ramsay, March 10, 1864, ibid., p. 1164; Ramsay to Stanton, May 31, 1864, ibid., pp. 1164-1165; Dyer to Whittemore, July 20, 1865, ibid., p. 1165; Dyer to Wise, February 15, 1865, Miscellaneous Letters Sent, Ordnance Office Records, National Archives.

When these arsenals were expanded during the Civil War, it was done smoothly, and the conditions were generally safer than before. Relatively few accidents occurred in the new and often overworked facilities where ammunition was manufactured. This is particularly unusual considering that all propellants were black powders, which are often unstable, with a low flash point, and a very fast rate of burning and gas expansion. An explosion at the Washington Arsenal in 1864 took twenty lives, most of them young women who were generally used in cartridge work. But this kind of tragedy was unusual in government ordnance work.[59]

The production at these arsenals was greater than anyone would have deemed possible before the war. All kinds of ordnance stores and ammunition were produced in prodigious amounts. By the end of the war, these arsenals had produced three quarters of a billion rounds of small arms cartridges alone, and from 1862 until the end of the war could always boast surpluses numbering in millions of rounds.[60]

Despite the accomplishments of the Ordnance Department, its central bureau and its officers, enlisted men, and civilian employees, no other agency of the army came in for as much criticism from both contemporaries and historians. The criticisms of the department, and particularly its bureau, however, have generally been unbalanced; few

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[59]Benton to Ramsay, June 18, 1864, Ordnance Collection, 1812-1889, Vol. III, pp. 595-596.

[60]Dyer, "Annual Report of the Chief of Ordnance, October 23, 1866," ibid., p. 1569.

have given a realistic view of either their successes or failures.[61]

Many of these criticisms are deserved, but others are unjust. The department was criticized for its lack of progressive views relative to small arms. There is a large degree of truth to this, particularly while Ripley was head. But the charge that Ripley's claim that the department had no time to test new weapons was the bureaucratic subterfuge of a conservative, unprogressive officer is only partly true. Ripley's conservatism is only partly the answer for the limitations placed upon trials of new weapons. With a staff so limited in both size and time that it required nearly all of its energies to carry on the necessary duties of arming the troops, it would have been extremely difficult to carry on the extensive testing needed of the many new designs before any sound conclusions could be drawn.

Reports of most of the officers in the field on new arms were often so confused and contradictory that they were invalid for making final decisions on the weapons. While Ripley was evasive and was opposed to some of the more modern arms, it must be conceded that the department had very little time for testing them.

It has also been said that the Ordnance Bureau was very inefficient and bogged in red tape. All letters were laboriously recorded in letter books and the records were so far behind that current information required much searching time. Also, as prescribed by regulations,

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[61] For the standard criticism of the Ordnance Department and Bureau, see Bruce, Lincoln and the Tools of War, passim; MacDougall, "The Federal Ordnance Bureau," passim; Fred Albert Shannon, The Organization and Administration of the Union Army, 1861-1865 (2 vols., Cleveland: Arthur H. Clark, 1928), pp. 108-128, 131-132, 135-142. Shannon's view is that "the mistakes having to do with the arming of the federal troops were due to sheer stupidity" on the part of the Ordnance Bureau. Ibid., p. 108.

accounts were sent to the Treasury Department separately rather than in lists.

There were similar charges that the Ordnance Department delayed in arming new units coming into service, and that many troop organizations reached Washington or some other staging areas before arms were provided. Claims were also made that officers at various depots and arsenals moved slowly when arming troops in the field, and that they checked with the Chief of Ordnance before they would make issues even to small units. Often the wrong weapons or ammunition, or inferior arms and ammunition, were issued.

Such charges by contemporaries and historians failed to disclose that the methods used were not created by the Chief of Ordnance, but by carefully prescribed and long-standing army regulations, rules of the War Department, and congressional legislation. Thus, the criticism of this system, although valid, is to a degree misdirected. In most respects, the Ordnance Department was complying with the procedural practices required of it.

The delay in arming troops in the states often occurred not as a result of ordnance officers, but because the law required that troops be officially mustered before they could be armed. Militia troops were not armed because they were not in United States service and therefore were not entitled to draw arms from the United States. The militias not called into Federal service had to draw their arms from the states, and the states by law were restricted to a quota. None of these laws or regulations was created or instituted by the Ordnance Bureau, but

by Congress.[62]

The delays which occurred because ordnance officers had to check with Washington before they could issue arms were a result of the pressing shortage, and because the central ordnance office had to have some idea of how many and to whom the limited number of arms was being issued. This was absolutely necessary for planning purposes. Arms and equipment had to be transferred from the various arsenals to the depots and arsenals close to the theatre of operations, while other arms had to be reserved for certain commands. A policy of honoring requests as received would have been disastrous. The policy of control through the bureau office in Washington was often far from successful, and some delays occurred which should have been avoided; given no alternative system, the Chief of Ordnance had to act within the authority granted him.

The charge that the ordnance office often issued the wrong arms and ammunition is undeniably true, but there are reasons which alleviate this indictment. Officers in the field during the Civil War were largely volunteers and their requisitions were far from explicit. Requisitions made upon the bureau show that officers asked for ammunition for "minie muskets," "the Austrian musket," "the Austrian rifle," "the musket," "the rifle," "the French guns," "revolvers," "Belgian muskets," and "Prussian muskets." Very often they failed to specify the proper caliber or, on occasion, any caliber at all, and they

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[62]Ripley to Perrine, April 26, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Ripley to Porter, May 5, 1861, ibid.; Ripley to Backers, June 7, 1861, ibid.; Ripley to Dix, August 26, 1861, ibid.; Ripley to Newton, January 30, 1862, ibid.

frequently did not designate whether the arms were rifled or smooth-bored, or were muskets, carbines, or pistols. Some simply sent requisitions for "small arms ammunition for my company." On many occasions the Chief of Ordnance would have to ask: "What kind of arms have you? What ammunition do you desire?" And often the officer would reply to the telegram with an answer no clearer than his original requisition. On other occasions, officers would reply to the ordnance office with invectives and charges of incompetence.

The wartime army of nonprofessional soldiers created other problems which plagued the Ordnance Bureau. On numerous occasions officers in field commands charged defective ammunition or defective arms and claimed that the guns would not fire. This created a particular problem, since there were many defective arms in use during the early months of the war. Ordnance had to decide whether the complaint was the result of the officer wanting better arms for his command and thus exaggerated the defects, or if the complaint was valid, or if, as commonly happened, the officer did not know what he was doing. There are many letters which indicate that the officers and men in the new volunteer army did not know how to load their arms. The Massachusetts "Master of Ordnance" did not know that the paper of the cartridge had to be torn open before loading. Another officer did not know that there was a "half cock" on the lock of a musket. And still another who complained of poor accuracy did not know that the elongated ball was for use in rifled arms and not in smooth-bore arms. Apparently the ignorance of officers, some of them of high rank, was boundless when dealing

with the small arms carried by their troops.[63]

Many of the criticisms of the Ordnance Bureau and Department were accurate and valid, but to consider their inefficiency as totally the result of incompetence is not only unjust but historically inaccurate. Considering the administrative structure within which the bureau and department had to operate, the lack of personnel ranging from officers to clerks, the unprepared nature of the government, and the shortages which existed at the beginning of the war, it must be concluded that within the conventional duties assigned to the bureau and the department, they acted with as much efficiency and achieved as much success as could be expected.

Ordnance performed the herculean task of arming the troops and steadily upgrading their arms. This allowed the United States to put forces into the field who were equipped with at least serviceable weapons. It did so in as short a time as could be expected. This in itself was a considerable accomplishment.

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[63]Ripley to Neill, May 29, 1861, ibid.; Ripley to Neill, May 30, 1861, ibid.; Ripley to Delafield, June 6, 1861, ibid.; Ripley to Delafield, June 15, 1861, ibid.; Ripley to Williams, June 24, 1861, ibid.; Ripley to Hastings, August 8, 1861, ibid.; Ripley to Perrine, September 15, 1861, ibid.

CHAPTER II

DOMESTIC ARMS SHORTAGES AND FOREIGN PURCHASES

The United States Army was well armed at the beginning of 1861. The infantry had received the .58 caliber rifles and rifle muskets. The cavalry was being rearmed with the Sharps carbine, and the Burnside carbine was in the hands of mounted troops for trial. Colt revolvers, though still purchased in limited numbers because of legal and fiscal limitations, were available in sufficient numbers to meet the needs of the War Department. The small American army, with its excellent quality and sufficient quantity of personal weapons, was armed at least as well as any army in the world. But the United States did not fight its wars with its regular army alone, and there were not enough of these arms for a volunteer force of any size.

The new minie rifles and rifle muskets had been in production for only about five years, and the two Federal armories, whose capacity was not more than 22,000 arms per year, never produced up to capacity.[1] The greater part of the American arms reserve was made up of the .69

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[1]Craig to Davis, June 26, 1855, and Davis endorsement thereon, July, 1855, Ordnance Collection, 1812-1889, Vol. II, pp. 557-559; Craig, "Annual Report of the Chief of Ordnance, September 4, 1855," ibid., pp. 565-566; Davis, "Annual Report of the Secretary of War, 1855," Senate Executive Document Number 1, 34th Congress, 1st Session, p. 9; Ripley, "Annual Report of the Chief of Ordnance, November 21, 1862," Ordnance Collection, 1812-1889, Vol. III, p. 442.

caliber smooth-bore muskets, a few of them still equipped with flint-locks. The government decided in the mid-1850's to alter all arms to the percussion lock and, in addition, to rifle many of the .69 caliber smooth-bore muskets to make them into acceptable rifle muskets. Some of the work of transformation was contracted with private firms, but completion of this project went slowly. By 1860, most of the flint-locks in Federal arsenals had been altered into percussion locks, with only 23,894 muskets and 652 rifles still unaltered to the new locks. The production of new rifled arms and the rifling of older smooth-bore muskets came more slowly. Craig reported in November of 1859 that the government supply of all rifles and muskets was as follows:

Smooth-bore Muskets

Altered to percussion, cal. .69		275,744
Altered to Maynard lock, cal. .69		14,765
Made as percussion, cal. .69		213,155
	Total	503,664

Rifled muskets

Percussion, since rifled, cal. .69		33,631
Rifled muskets, cal. .58		24,105
	Total	57,736

Rifles

Altered to percussion, cal. .54		1,385
Made as percussion, cal. .54		43,375
New Model rifle, cal. .58		4,102
	Total	48,862

The number of first class arms, which consisted of the .58 caliber rifles and rifle muskets, was only 28,207 out of the total of 610,598 shoulder arms. The War Department by alteration hoped to make all arms serviceable, and for the most part all of the weapons were in good

condition. None of them had been manufactured prior to 1822, and most of them, 333,133, or over fifty percent, were produced since 1842.[2]

In the year between the time these figures were reported and the beginning of the Civil War, the number of first class .58 caliber arms increased, but the total in reserve in Federal arsenals still numbered only 35,335 in January of 1861. However, the Federal reserve of all shoulder arms had declined to 576,800. This decline is explained by the fact that, in addition to the quota issues to the states of 11,399 long arms, 31,610 of the .69 caliber smooth-bore muskets were sold to private arms dealers and to the states. The total of the arms issued to the states and sold was more than double the arms produced by the national armories.[3]

Although Chief of Ordnance Craig registered displeasure about the decline of the arms reserve, there was little alarm prior to 1861. Since the War Department planned to phase out the older smooth-bore rifles and rifle muskets and replace them with a uniform .58 caliber rifle musket, the reduction of the number of obsolete arms aroused little fear. The secession crisis in December of 1860 and January of 1861 resulted in the revocation, however, of an order by the Secretary of War to sell "from 100,000 to 250,000" smooth-bore muskets.[4]

During the last year of John B. Floyd's administration of the

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[2]Craig to Floyd, November 12, 1859, Official Records, Ser. iii, Vol. I, p. 1.

[3]Craig, "Annual Report of the Chief of Ordnance, October 12, 1860," Ordnance Collection, 1812-1889, Vol. II, pp. 688-689; Craig to Holt, January 8, 1861, Official Records, Ser. iii, Vol. I, p. 33; Maynadier to Floyd, December 21, 1860, ibid., pp. 18-22; Craig to Holt, January 21, 1861, ibid., pp. 42-43.

[4]Craig to Holt, January 21, 1861, ibid., pp. 51-52.

War Department, a substantial number of muskets and rifles passed from the northern arsenals into United States arsenals in the Southern states. This transfer, which consisted of 105,000 smooth-bore muskets and 10,000 .54 caliber rifles, did not include any of the first-class .58 caliber arms. There were protests at the time that this constituted a conspiracy to arm the potential secessionists for civil war against the United States. The charge was repeated during and after the war, but there was no substantial evidence that Floyd was involved in a conspiracy. He was pro-Southern, and he undoubtedly gave in to pressure from the Southern governors, but even with the transfers, Federal depositories in the South contained something less than a quarter of the government's arms.[5]

At the beginning of the war, the Ordnance Bureau listed its stock of arms as 437,433 rifles and muskets, and 4,076 carbines. Of these arms, no more than about 40,000 were of the new Model 1855 rifles and rifle muskets. Nearly all of the 1855 rifles, between 13,000 and 15,000, were stored at the Harpers Ferry Armory, and most of these were damaged or destroyed by fire, while those remaining were captured by Confederate troops. Nearly all of the 1855 rifle muskets were stored at the Springfield Armory, thereby leaving them in Union hands.[6]

The Union officials could at least be thankful that very few of the first-class .58 caliber arms fell into the hands of the Confederate government. Major Josiah Gorgas, the Confederate Chief of Ordnance,

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[5]Floyd to Craig, December 29, 1859, ibid., p. 44; Craig to Holt, January 18, 1861, ibid., pp. 59-60.

[6]Ripley, "Annual Report of the Chief of Ordnance, November 21, 1862," Ordnance Collection, 1812-1889, Vol. III, p. 448.

could list only 1,765 of the .58 caliber rifle muskets, 8,990 caliber .54 rifles, and 972 .69 caliber rifle muskets as having fallen into the hands of the Confederate Ordnance Department when the United States arsenals in the South were seized. At the very most, the Southern government could not have had more than 20,000 rifled arms of all kinds on hand. The Union had about 100,000 rifled arms of all types in its arsenals. This would be little consolation, however, to the Northern leaders who wanted arms of the best type.[7]

On these small Federal supplies, plus the limited number of arms held in the state arsenals, the Union army would have to rely. Not only did the regular and volunteer units in service demand arms, but the governors, state quartermasters general, unmustered militia, the "Union men" in the border states, home guards, powder mill guards, and even the Yale alumni requested that they be supplied from Federal stores. These requests were usually for the new rifle muskets or for some first-class patented arms, such as Sharps rifles and carbines.[8]

The early Union war effort was marked by mass confusion. The governors were overwhelmed by volunteers in such great numbers that they could be neither armed nor mustered into Federal service. The states rewarded their early volunteers with the better arms in their arsenals, and then hoped that the national government could supply

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[7]Gorgas to Bartow, May 7, 1861, Official Records, Ser. iv, Vol. I, p. 292; Frank E. Vandiver, Ploughshares Into Swords: Josiah Gorgas and Confederate Ordnance (Austin: University of Texas Press, 1952), pp. 60-61.

[8]Patterson to Cameron, April 23, 1861, Official Records, Ser. i, Vol. II, pp. 594-595; Ripley to Lillman, June 5, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Ripley to Washburn, August 22, 1861, ibid.; Ripley to Dennison, October 24, 1861, ibid.; Maynadier to Perrine, November 9, 1861, ibid.

other first class rifles and muskets to the later volunteer regiments. The first regiments into service, drawing on the good arms immediately available, would be better armed than the others which would follow them during the first two years of war.[9]

The states' stocks of arms disappeared almost immediately, and the full burden of arming fell on the Ordnance Department. It was impossible to provide good rifle muskets—particularly the new .58 caliber rifle muskets—in the numbers demanded by commanders. The Ordnance Bureau's policy was to reserve the rifle muskets for the three year volunteers, but even with this regulation, all of the rifle muskets had disappeared by May.[10]

Brigadier General Ripley was displeased with this disappearance because high political officials, the Secretary of War, and the President, succumbed to pressure from the influential and had ordered many of them issued without regard to planning by the Ordnance Bureau. "The entire supply," Ripley wrote, "was early exhausted, by requisitions mostly not under the control of this office." Nor did the Chief of Ordnance offer encouragement that rifle muskets could be supplied in the near future: "There are no arms of this kind on hand except

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[9]Martin A. Haynes, History of the Second Regiment New Hampshire Volunteers: Its Camps, Marches and Battles (Manchester, N. H.: Charles F. Livingston, 1865), pp. 50, 71. An early enlisted Maine regiment had no difficulty in obtaining first-class arms: "April 28 /1861/ Sunday. Muskets enough were taken from the State Arsenal to-day to give every man one without borrowing." The entry from he previous day identifies the arms as Springfield rifle muskets, Model 1855. John M. Gould, History of the First-Tenth-Ninth Maine Regiment (Portland, Me.: Stephen Berry, 1871), p. 20.

[10]Ripley to Kingsbury, August 27, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives.

such as are made day-to-day."[11]

After the .58 caliber rifle muskets disappeared, the .69 caliber rifle muskets soon followed. By the end of May, Ripley had to inform the field commanders that the best arms he could provide, even for the three year volunteers, were unaltered smooth-bore percussion muskets. The government had a few stands of the .69 smooth-bore muskets which had been rifled, but only 3,354 of these were in condition for issue. The remainder, 22,776, were rifled but had no sights, and most of them were on the west coast. Thus, by the early summer of 1861, rifled arms of American manufactory had virtually disappeared from Federal arsenals, and Ripley could only answer requisitions by saying: "I regret that I have not rifled arms to give."[12]

By the midsummer even the smooth-bore muskets, originally manufactured as percussion, were nearly gone. Ripley summed up both the plight and condition of the arms supply when he wrote:

> Our supply of Muskets is so nearly exhausted it is impossible to furnish other than mustered troops; and there is not enough for this, without issuing the arms altered from flint to percussion. I would most cheerfully furnish such Arms as the Troops prefer, if it were in my power. They are not on hand, however, and cannot be procured without waiting 'til they can be manufactured, which we are having done, both at the National Armory, and by contract with private armories, as rapidly as is possible . . . . I regard [altered muskets] as in all respects, serviceable and efficient, and the prejudice against them as

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[11]Ripley to Tait, March 26, 1861, ibid.; Ripley to Stead, May 29, 1861, ibid.; Ripley to Dennison, June 28, 1861, ibid.; Ripley to Rosecrans, November 28, 1861, ibid.

[12]Ripley to Mansfield, July 5, 1861, ibid.; Ripley to Sickles, July 22, 1861, ibid.; Ripley to McMillan, August 14, 1861, ibid.; Ripley to Washburn, August 21, 1861, ibid.

> not founded on any just grounds. But be that as it may, it is the best we can do now.[13]

A number of private armories were tooling for the manufacture of arms, and the Springfield Armory, the only national armory after the destruction of the Harpers Ferry Armory, was in the process of expansion. All of this would take time, but demand on the Ordnance Department as well as criticism of it, would continue.[14]

Lincoln considered it of utmost priority to hold the border states. From Missouri on the west to Maryland above the national capital, men were arming against their neighbor in a bitter civil war within a civil war. Maryland was held in the Union by force of the Federal troops in the area, but in Missouri and Kentucky, the "Union men" were calling on the Federal government for arms. Lincoln, a Westerner himself, was anxious to meet their needs to the best of the government's ability.

Lincoln's problems in these states were difficult. The officials of the border state capitals were often out of sympathy with the aim of the national government to repress the rebellion of their sister Southern states. "Kentucky," wrote Governor Beriah Magoffin, "will furnish no troops for the wicked purpose of subduing her sister Southern States." The governor of Missouri called Lincoln's requisition for troops "illegal, unconstitutional and revolutionary in its objects, inhuman and diabolical, and cannot be complied with."[15]

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[13]Ripley to Buckingham, July 15, 1861, ibid.

[14]See Chapter III.

[15]Carl Sandburg, Abraham Lincoln: The War Years (4 vols., New York: Harcourt, Brace, 1939), Vol. I, p. 227.

These attitudes made it necessary for Lincoln to work around or without the governors. He must have reliable and loyal men to hold these states within the Union. In Kentucky, he could work through men such as Senator Garrett Davis, Dr. Robert Jefferson Breckinridge, Joshua Speed, Brigadier General Robert Anderson, and Lieutenant William Nelson. Nelson, a navy officer, was most adept at getting arms into the hands of loyal Kentuckians and organizing them to fight. More than any other person, he was responsible for distributing more than 10,000 arms in his home state.[16]

A similar situation existed in Missouri, where Governor Claiborne F. Jackson insisted on Missouri neutrality. Here again, Lincoln had to work outside the regular procedures of the established state government. His instruments here were Frank P. Blair, Jr., and the fiery Brigadier General Nathaniel Lyon, both of whom would take the situation into their own hands. Together with Major General John C. Fremont, they would hold that critical border state in the Union. And here, too, Federal arms would pour into the state in the early days of the war.[17]

Although Lincoln seldom ordered Ripley to issue guns, and although the President paid due deference to the crusty old Chief of Ordnance, there could be little doubt as to the President's intentions. Ripley knew that the courtesy shown him would evaporate if he defied the Commander in Chief's wishes. The President did not intend to lose the

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[16]Bruce, Lincoln and the Tools of War, pp. 45-46; Daniel Stevenson, "General Nelson, Kentucky, and Lincoln Guns," Magazine of American History, Vol. VII (August, 1883), pp. 118-121.

[17]Benjamin P. Thomas, Abraham Lincoln (New York: Alfred A. Knopf, 1952), pp. 274-279.

border states: "To lose Kentucky is nearly the same as to lose the whole game. Kentucky gone, we cannot hold Missouri, nor, as I think, Maryland." Political intervention to circumvent the normal procedures and practices was necessary.[18]

Not all political intervention could be equally justified. One official of the Treasury Department tried to use his influence to get Enfield rifle muskets for the First Vermont Infantry Regiment. The War Department sent him to Ripley, who was insulted by the impertinence of such influence peddling, and refused to issue other than the smooth-bore muskets with which all volunteers were then being armed. The Vermonter then went to President Lincoln, who consented to have the regiment armed with Enfields.[19]

Simon Cameron, the Secretary of War, clearly favored the Pennsylvania troops with good rifled arms. Secretary of State William H. Seward intervened on several occasions to use his prestige on behalf of arms seekers. John C. Fremont used the prestige of his name and his wife's family name, Benton, to get arms. And the governors of the states brought constant pressure on the Chief of Ordnance, or any other important official who might be able to provide arms. Too many times these pressures prevailed over any reasonable military planning, and made the work of the Ordnance Bureau all the more difficult.[20]

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[18]Lincoln to Browning, September 22, 1861, Abraham Lincoln, The Collected Works of Abraham Lincoln, Roy P. Basler, ed. (9 vols., New Brunswick, N. J.: Rutgers University Press, 1953), Vol. IV, pp. 531-533.

[19]Lucius E. Chittenden, Recollections of President Lincoln and His Administration (New York: Harper, 1891) pp. 151-154.

[20]Ibid.; Thomas, Abraham Lincoln, pp. 151-154.

Ripley set up a reasonable plan to arm the troops in the best fashion possible. The regulars and the three year volunteers were to receive the better arms, starting with the .58 caliber rifle muskets and working down to the less desirable arms. But because of political pressure and disorganization in the War Department, he often was not consulted about issues and often not informed about them after they were made. Consequently, he was unable to make plans concerning who should get arms.[21]

The governors demanded that all of their troops be armed with only the best weapons, even if the duties of these troops were far from the front. The arms supply soon became exhausted, and troops were sent on their way to the front, many of them still unarmed.[22]

By the middle of the summer of 1861, the arms situation was critical. By fall it was desperate. The complaints about the shortages of arms increased rapidly. "We have plenty of men," wrote Fremont in July, "but absolutely no arms." Fremont continued to bombard officials about his plight: "We are not losing a moment, but distressed by the rawness of troops and the want of arms." Fremont was not the only officer with such problems. Major General Robert Patterson was in contact with Senator John Sherman, whom he hoped would plead his case for more and better arms. Brigadier General U. S. Grant, at Cairo, wrote: "My cavalry are not armed . . .; the infantry

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[21]Ripley to McClellan, June 21, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Ripley to Morton, June 26, 1861, ibid.

[22]Letters Received, March 26, 1861 - September 17, 1861, Ordnance Office Records, National Archives.

is not well armed."[23]

The governors, chief among them Oliver P. Morton of Indiana, complained constantly that they could not get arms, and that they could field a much greater number of regiments if only Washington would cooperate by furnishing them. Morton became so desperate that in late August he asked Assistant Secretary of War Thomas A. Scott to send him altered muskets, a weapon which he had previously despised. In September, Morton even wrote to Fremont: "We are out of arms. Can you not lend us 5,000 for the time?"[24]

Brigadier General William T. Sherman, at Louisville, was also suffering from the same shortages. "Arms are coming forward very slowly," he complained in September, and then he ordered one of his subordinates to gather up all the arms previously issued to the home guards. "We are moving heaven and earth to get arms," he wrote, "but McClellan and Fremont have made such heavy drafts that the supply is scant." Finally Sherman advised the President of his predicament: "All the men in Indiana and Ohio are ready to come to Kentucky, but they have no arms, and we cannot supply them arms."[25]

The government was left little choice. It has to have arms, any arms, and at almost any cost. The United States arsenals and the state

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[23]Fremont to Seward, July 28, 1861, Official Records, Ser. i, Vol. III, p. 410; Fremont to Nicolay, August 6, 1861, ibid., p. 427; Patterson to Sherman, August 2, 1861, ibid., p. 420; Grant to McKeever, October 27, 1861, ibid., p. 556.

[24]Morton to Scott, August 29, 1861, ibid., Vol. IV, p. 255; Morton to Fremont, September 22, 1861, ibid., p. 266.

[25]Sherman to Davis, October 8, 1861, ibid., p. 298; Sherman to Ward, October 8, 1861, ibid., p. 299; Sherman to Lincoln, October 10, 1861, ibid., p. 300.

arsenals were virtually empty, and the production at Springfield was far too slow to keep up with demands. Private armories required time to tool for the production of all kinds of small arms. The government must purchase arms ready-made from any source available.

First the American sources were exhausted, as the government took everything from Colt pistols to sporting rifles to surplus condemned arms, which had been sold only a few months before as unfit or unsuited for the service. In all cases, it paid a premium for these weapons. All makes, all conditions, and all calibers were quickly taken by the national and state governments, and businessmen made huge profits in the seller's market created by the crisis. Even so, the domestic market yielded only about 30,000 rifles and muskets during the first fourteen months of the war.[26]

Samuel Colt could not resist the prospects for a quick profit, and he charged the government $25.00 for his army size pistol at a time when Remington, producing an arm fully equal in every respect to the Colt, was charging only $15.00.[27]

One of the biggest coups of the arms market occurred when A. M. Eastman purchased from the government 5,000 Hall carbines with all appendages and packing boxes for $3.50 each. These arms had been condemned, largely because they were unpopular with the officers of the

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[26]Ripley, "Annual Report of the Chief of Ordnance, November 21, 1862," Ordnance Collection, 1812-1889, Vol. III, pp. 445, 448.

[27]Remington & Sons to Holt, April 5, 1861, "Report of The Commission on Ordnance and Ordnance Stores," United States Senate Executive Document Number 72, 37th Congress, 2nd Session (Washington: United States Government Printing Office, 1862), pp. 134-135; Ripley to Colt, July 5, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives.

regular service, and because they were of .52 caliber and considered not worth the expense of converting them to .58 caliber. Nearly all of these guns were in first-class condition. They had been manufactured between 1849 and 1852, and were of the latest improved pattern adopted prior to their discontinuence. Craig had offered the Hall breech-loaders as early as 1857, but many still remained on hand at the New York City Arsenal at the outbreak of the war.

Everyone in the Hall carbine deal made a profit. Eastman made $9.50 per arm when he passed them on to Simon Stevens, who was being financially backed by J. P. Morgan. Stevens and Morgan had the arms bored up to .58 caliber and rifled, and then sold them to Fremont, who desperately needed them. The bargain was very complex, since Fremont and Eastman had made an agreement before the carbines were actually in Eastman's hands or ready for delivery. Fremont paid $22.00 per gun and had to pay extra for the appendages; he was even charged $4.00 each for the packing crates. The appendages and crates were those furnished by the government, and were included in the original price of $3.50. A number of reputations were damaged by this affair, including both Morgan's and Fremont's.[28]

A third example of arms bungling is the curious case of P. S. Justice. Justice started in the arms business by importing some Model 1859 Enfields, which he sold to the government at a reasonable price. But as the arms market became more competitive, he found it difficult

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[28]"Report of the Commission on Ordnance and Ordnance Stores," Senate Executive Document Number 72, 37th Congress 2nd Session, pp. 485-495; R. Gordon Wasson, The Hall Carbine Affair: A Study in Contemporary Folklore (New York: Pandick Press, 1948), pp. 7-81; Edwards, Civil War Guns, pp. 133-141.

to compete, and turned to the manufacturing of rifle muskets and rifles. These arms would acquire the worst reputation of any American made arm during the war.

In August of 1861, Justice agreed to furnish 4,000 rifle muskets equal to a sample arm which he deposited at the Ordnance Office in Washington. The price was to be $18.00 with bayonet and appendages. It was generally recognized at the time that the arms would not be first-class, but that they would be serviceable. The rifle muskets which Justice eventually delivered were of .69 caliber and the rifles of .58 caliber. They were assembled of a hodgepodge of parts fitted together to complete the arms. Most of the barrels were those condemned by the Springfield Armory and sold. The mountings were mostly of brass. The lockplates were a mixture, but many of them seemed to be condemned or surplus locks sold by the armory. The sights were of the long Enfield type soldered to the barrels, with only the head of a screw filling the screw hole in the sight base.

The complaints against Justice's arms were so great that large numbers were recalled from the field and replaced. Although they had passed inspection when they were accepted by the government, another inspection was ordered for them, and the accusations made against them were investigated.

It was charged that the guns rusted because the stocks were of green wood and therefore moist. The locks did not properly fit, and parts, including the hammer, broke easily. The barrels were crooked and poorly rifled. Depth of riflings varied from arm to arm, and even within the same arm. In addition, it was erroneously charged that Justice tried to pass off these arms as Springfields or Enfields.

Justice, in testifying before the Ordnance Commission in 1862, defended his product by saying that they had passed inspection and were accepted. The poor reports on inspections came only when the arms had been recalled after hard use in the field. He admitted that troops were not pleased with the arms, and that soldiers intentionally abused them, hoping that they would be made unserviceable and replaced with the Springfield rifle muskets. He maintained that he had never claimed the arm to be equal to the Springfield, but that they had been manufactured with care, and within the limitations of the resources available, were a good and reliable arm.

The arm was unquestionably poor, but much of what Justice said was undoubtedly true. Ordnance officers, including the Chief of Ordnance constantly complained that soldiers armed with second and third class weapons abused them and intentionally damaged them. Inspections of condemened arms which had been exchanged revealed that this was the case beyond doubt. The reputation of Justice was damaged beyond repair, but it is difficult to determine precisely the truth about his muskets. Were these arms the products of fraud, or were they the products of a totally inexperienced arms manufacturer in a hurry to catch the market? Whatever the case, the government, in its haste, had purchased poor quality arms at a price far above their actual value.[29]

After the exhaustion of the home market, the next step was to look abroad for arms. Secretary of War Cameron was reluctant to pur-

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[29]"Report of the Commission on Ordnance and Ordnance Stores," Senate Executive Document Number 72, 37th Congress, 2nd Session, pp. 434-455.

chase European arms because he believed, at least at first, that home production would rise quickly enough to meet the demands of the army. Early estimates for arms were based on a belief that an army of 250,000 would be sufficient to quell the rebellion. This proved not to be the case, and by the early summer of 1861 it became increasingly clear that it would be some time before even Colt's efficient weapon works at Hartford or the National Armory at Springfield would be able to meet the demands of the war.[30]

The War Department was no better organized in its attempts to buy foreign arms than it was in its search for domestic weapons. It would seem obvious, at least to the twentieth century historian, that a central purchasing agency should have been created to facilitate the procurement of the tools of war. Such an agency, supervised by the War Department and staffed by experienced ordnance officers and arms experts, would have been able to acquire a better quality of arms and keep prices at a less extravagant level. Agency members could have been sent to Europe and the arms purchased could have been examined with care. The better of the European arms could have been obtained, and it could have been ascertained if they were at least serviceable. All of these arms would not have been of the highest quality, but at lease the worst of the European refuse could have been eliminated.

Criticism of this failure to create some kind of central arms agency should not be overemphasized. Such ideas are largely twentieth century. The role played by administrative and staff units was never fully appreciated by armies in the nineteenth century.

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[30]Ripley to Cameron, June 11, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives.

Historians of the nineteenth century must deal with possible alternatives of the time rather than desirable alternatives perceived at a future date. Such criticisms are unrealistic, and they are nothing more than "parlor games," in which all too many historians participate.[31]

A more organized procedure of arms procurement was, nevertheless, possible. More inspectors, from among the trained officers of the Ordnance Department, could and should have been sent to Europe. This would have eliminated some of the poor quality of arms coming into the United States. This, however, would have required more officers for the Ordnance Department, and as has been pointed out previously, Congress and the War Department were unwilling to increase the size of the Ordnance officer corps and, as a consequence, it could not function properly. Again, it must be stated that many of the failures in the arms policy of the government can be traced to two fundamental causes: first, the failure to recognize the basic necessity of large numbers of trained, skilled specialists, and second, the small size of the Ordnance Department. As the arms procurement system developed, the department played only a limited role in early European purchases.

For the first three months of the war, the government remained largely inactive in purchasing foreign arms. Both Cameron and Ripley underestimated the necessary size of the Union army and, therefore, the number of arms needed. Ripley wrote to Secretary of War Cameron in June, shortly before the first battle of Bull Run: "We have supplies of all [arms and equipments] to meet immediate exigencies,

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[31]Shannon, The Organization and Administration of the Union Army, Vol. I, pp. 107-148.

except of rifle muskets, and our supply of this arm, smooth-bored, of good and serviceable quality, will for the present meet this deficiency." The unforeseen disaster at Bull Run in July, and the apparent threat to the capital which followed it, shattered the myth of a short war, and led Cameron to throw the finances and agents of the United States into the European market with reckless abandon. Never at any time, however, did he seem to seriously consider using ordnance officers in the foreign market.[32]

In the early days of the war, the European market proved less fruitful than the War Department expected. Purchasing agents and arms speculators found that first class arms, particularly the Enfield rifled muskets, were in extremely short supply. Even the better class French and Austrian rifle muskets were not at first available, and the agents and buyers turned to lesser arms. European weapons began to come into the country in large numbers in the late summer of 1861. Many of these arms entering American ports during the next four or five months were inferior, and some were completely unserviceable. To make matters worse, the states and the private arms brokers sent purchasing agents to Europe who competed with United States agents and each other to drive up the prices of these weapons.

The first agent appointed by the War Department for purchases in Europe was Colonel George L. Schuyler, who was commissioned on July 27, 1861. Schuyler was without technical knowledge of arms, and the

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[32]Ripley to Cameron, July 2, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Totten to Ripley, July 29, 1861, Letters Received, Ordnance Office Records, National Archives; Meigs to Cameron, June 21, 1861, Ordnance Collection, 1812-1889, Vol. III, p. 845; Ripley to Cameron, June 8, 1861, Official Records, Ser. iii, Vol. I, p. 260.

inspector who was sent with him, Adam Rhulman, fell ill shortly after his arrival in Europe. At about the same time, the War Department offered Boker and Company of New York a contract to deliver 100,000 arms from Europe. The competition between these two sources, plus additional competition from the American minister to Belgium, H. S. Sanford, who was also furiously buying arms, had the effect of having the government bid against itself in the market.[33]

The War Department failed totally to take advantage of a possibility to corner the market on the highly prized Enfield. F. H. Morse, the United States Consul at London, informed Secretary of State Seward in August of 1861 that the government could secure all the production of Enfield rifle muskets, perhaps 15,000 per month, from the London Armory Company and the Birmingham Arms Company. Morse was politely but firmly informed that all arms would be purchased by the regularly appointed agents of the War Department. This may have been one of the prime arms blunders of the entire European operation.[34]

The purchases of foreign arms did not, at the first stages of transaction, involve the Ordnance Bureau. But something should be said about the often-censured purchases of Colonel Schuyler. Schuyler purchased 126,661 rifles, rifle muskets, and carbines, along with

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[33]Sanford to Seward, May 25, 1861, ibid., pp. 277-278; "Contracts Made by the Ordnance Department," United States House of Representatives Executive Document Number 99, 40th Congress, 2nd Session (Washington: United States Government Printing Office, 1868), pp. 661, 979; "Report of the Commission on Ordnance and Ordnance Stores," Senate Executive Document Number 72, 37th Congress, 2nd Session, pp. 69-93.

[34]Daniel M. Roche, "The Acquisition and Use of Foreign Shoulder Arms in the Union Army, 1861-1865," (Unpublished Ph.D. Dissertation, Boulder: University of Colorado, 1949), pp. 40-41.

10,000 revolvers and 21,850 sabres. Although Schuyler overpaid for many of these weapons, the charges that all were grossly inferior and even unserviceable is not indicated by the lists of his purchases.[35]

Part of the disappointment with the Schuyler mission was a result of his failure to get as many British Enfields as had been hoped for. This failure rested more with the United States Treasury, however, than with Schuyler. The failure to send the proper credits to Schuyler lost him a contract with the Birmingham manufacturers for from 3,000 to 7,000 Enfields per month, and allowed Caleb Huse, the Confederate purchasing agent, to induce the Birmingham makers to sell him the arms at a price fifty cents above Schuyler's contract price. Somewhat later Scuyler did manage to get 15,000 Enfields from these same armories.[36]

In addition to the 15,000 first-class Enfields, Schuyler also purchased over 70,000 Austrian Lorenz rifles. These were strong, reliable, and accurate arms. They were well liked by the troops who carried them, and were often given the name "Austrian Enfields." These arms had two principal weaknesses. They had an a tige breech, in which was set a short spike parallel to the axis of the bore, and designed to allow a sharp blow with the ramrod to expand the base of the bullet during loading. This feature was unnecessary and inconvenient, since it collected fouling and was difficult to clean. A

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[35]"Contracts Made by the Ordnance Department," House Executive Document Number 99, 40th Congress, 2nd Session, p. 979.

[36]Schuyler to Cameron, September 5, 1861, Official Records, Ser. iii, Vol. I, pp. 484-486; Caleb Huse, The Supplies for the Confederate Army: How They Were Obtained in Europe and How Paid For (Boston: T. R. Marvin, 1904), pp. 19-24.

second objection was that their caliber, originally .54, varied because of the inconsistent reaming when there was an attempt to enlarge the bore to the standard United States .58 caliber. But they were certainly strong serviceable weapons. It should be pointed out that some of these arms may not have been the rifle, but the rifle musket which did not have the objectionable breech design.

Schuyler also purchased over 27,000 arms at Dresden, which he described as "Dresden rifles." These arms were probably a mixture of Saxon and Austrian rifles. They were somewhat clumsy in their design, and also had the a tige breech, but again they were strong and serviceable weapons, and were of .577 caliber which was the same as the Enfield and close enough to the American bore to use standard service ammunition.[37]

The revolvers which he purchased were French Lefaucheaux 12 millimeter pinfires. These arms loaded at the breech end of the cylinder with a metallic, self-contained cartridge, to which was fixed a straight pin which was driven into an internal detonator. These arms were accurate and reasonably powerful; and they could be loaded far more rapidly than any American percussion revolver.[38]

American authorities, including the Ordnance Bureau's Ripley, were not pleased with the Schuyler mission, charging both extravagance and incompetence. There was a tendency to consider all continental arms inferior. Thus, anyone who purchased them in large numbers be-

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[37]Cameron to Chase, October 24, 1861, Official Records, Ser. iii, Vol. I, pp. 593-595; "Contracts Made by the Ordnance Department," House Executive Document Number 99, 40th Congress, 2nd Session, p. 979.

[38]Ibid.

came guilty by association. Of the more than 150,000 firearms which Schuyler purchased, only 10,000 old tubelock carbines could be labeled unserviceable. Nor does the charge that all of these arms were old seem to be borne out by the evidence. Of all the rifled shoulder arms purchased, none could have predated 1849. The Saxony rifle was a model 1849 and the Austrian rifles and rifle muskets were the models of 1854 and 1855. Further, many of the locks bore the dates 1858, 1859, and 1860. All but the 10,000 carbines were rifled arms.[39]

By comparison, the arms procured by Sanford were generally of low quality. Of the approximately 56,000 Belgium arms purchased, over half were smooth-bore muskets and most of the remaining rifle muskets were generally of low quality.

The firm of Herman Boker and Company of New York was given a contract for 100,000 European arms. Boker and his European agent supplied this number, and a good many more. The arms varied greatly in style, make, caliber, and quality. They ranged from good quality rifle muskets to nearly worthless ancient smooth bores, many of them converted from flintlock and tubelock. Some were left in original calibers and some were bored up to .58 caliber. By the time of the contract commission report in 1862, the Ordnance Bureau already had thirteen separate examples and models of Boker arms. Of the three active purchasers for the United States government, Sanford and Boker provided many of the poor quality and even useless arms.[40]

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[39]Ibid.; Ripley to Hagner, December 6, 1861, Letters Sent to Ordnance Officers, Ordnance Office Records, National Archives; Edwards, Civil War Guns, pp. 68-70.

[40]"Contracts Made by the Ordnance Department," House Executive Document Number 99, 40th Congress, 2nd Session, p. 979.

Boker, Sanford, and Schuyler, all authorized by the War Department to purchase for the United States, were bidding against each other and against the many private arms speculators. The price of continental and British arms was completely out of proportion to their real value. In addition, the states sent their own purchasing agents abroad, and at first the national government did nothing to discourage state purchases, which added to the competition and confusion. Indeed, the federal government actually encouraged state activity in the arms market by lifting the duties on arms imported by the states, and encouraged the governors' reckless speculation and spending by guaranteeing that state expenditures for military supplies would be assumed by the Federal government.[41]

None of the three purchasers acting officially or under contract for the War Department pleased Washington officials, but much of the problem was not the fault of the agents. While admitting that none of the three was well suited for the task, it must also be pointed out that Washington directed mismanagement and encouraged competition. The delays in financing by the Treasury Department lost the Union advantage in securing ready-made Enfields, and a change to contract for most of the future production of them over and above the demands of the British government.

When Stanton replaced Cameron as Secretary of War in 1862, he decided to appoint a purchasing agent who was more experienced than

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[41]Ibid., pp. 94-97, 661, 728-729, 979; Ripley to Stanton, June 7, 1862, Official Records, Ser. iii, Vol. II, pp. 112-113; Holt and Owen to Stanton, July 1, 1862, "Report of the Commission on Ordnance and Ordnance Stores," Senate Executive Document Number 72, 37th Congress, 2nd Session, p. 14; United States Statutes at Large, Vol. XII, pp. 274, 276.

Schuyler in the arms market. On July 14, 1862, Marcellus Hartley of the firm of Schuyler, Hartley, and Graham, a gun dealing house in New York, was chosen. In Hartley's letter of appointment, he was instructed to confine his purchases to the better arms available in the European market. Those considered acceptable by the War Department were listed and ranked in order of preference:

1. The machine-made English Enfield, with interchangeable parts, manufactured only by the London Armory Company.
2. The hand-made Enfield.
3. The Prussian or Dresden Enfield.
4. The St. Etienne and the Liege Enfield.
5. The Vienna and Austrian Enfield.

The bore sizes were to be either .577 or .580 caliber. Hartley was to buy all of these arms available, and all that could be made before the first of November, 1862. The arms were to be rigidly inspected in every part: "All arms which on inspection are found not to be fully equal to contract standard must be mercilessly rejected." Hartley was advised to take special precautions against fraud and substitution after the weapons had been inspected.[42]

Hartley's mission was by and large a success. He purchased over 200,000 rifles and muskets, most of them sound, and over half of them British Enfields. In the areas where Hartley erred, it was because he failed to adhere to the limitations placed upon him by the War Department. He believed that part of his job was to control the market and keep arms out of the hands of the Confederates. As a result, he purchased 45,000 Prussian and Belgian muskets, many of them of questionable value. Actually many of the 30,000 Prussian muskets,

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[42]Stanton to Hartley, July 14, 1862, "Contracts Made by the Ordnance Department," House Executive Document Number 99, 40th Congress, 2nd Session, pp. 166-167.

according to Hartley, were unused. They were of the 1839 model, and their production coincided with the beginning of the introduction into the Prussian service of the "needle gun." The War Department took particular objection to the Belgian smooth bores. Assistant Secretary of War P. H. Watson had ordered Hartley not to buy anymore .69 and .71 caliber arms. Hartley was further warned against his practice of purchasing arms to take them out of the market: "Buy no more inferior arms. I expected you to put a strict construction upon orders for arms of inferior quality. The arms you are sending with block sights [Belgian muskets] we cannot issue, until we fit them with elevating sights, and the .72 caliber we cannot issue at all." The success of Hartley's mission can be measured by the large number of Enfields he purchased, and because he was able to induce arms manufacturers to deal with him rather than Confederate agents.[43]

The Ordnance Bureau insisted that the Enfield was the best of the foreign arms, and the troops seemed to fully agree with them. This made the Enfield the most sought after of all of the foreign arms. Of all European arms, the Enfield most closely resembled the American Springfield. It was considered a first quality arm, and was so designated by the Ordnance Bureau. There were some differences between the various makes of Enfields, and some were more desirable than others. First in priority was the Enfield produced by the combination of firms known as the London Arms Company. These were all machine made with interchangable parts. All grooves in the bore were cut simultaneously, and the wood was a dense walnut. The other principal

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[43]Ibid., p. 764; Watson to Hartley, September 9, 1862, Letters Received, Ordnance Office Records, National Archives.

supplier of the Enfield was the Birmingham Small Arms Company, also an association of small firms, which produced a weapon of good quality, but its parts were not always interchangeable. This was sometimes called the "hand-made" Enfield, but the Birmingham association was rapidly introducing larger amounts of machinery so that, in fact, many of the parts were interchangeable.[44]

When the arms purchasers arrived in Europe, they found a shortage of Enfields. The two large producers were under contract for the British government, and had little time to spare for the Americans. They could meet the demands only by extending the hours of production. This was quickly done, but it took somewhat longer to increase the productive capacity of their works. The Enfield producers began expansion immediately, and by middle and late 1862, were producing them in great numbers.

In the early days of the war, however, arms dealers and agents could pick up only the day-to-day production in excess of the British government contract orders, plus some obsolete Enfields. The next step by Schuyler and Hartley was to try to place the Birmingham and London works under long-range contracts. The competition with the Confederates, particularly Caleb Huse, was intense, but Hartley, at least, got something more than his share of the contracts. The official agents of the United States and Confederate governments were not the only ones attempting to secure these contracts. Private firms also were able to secure contracts for Enfields. Schuyler, Hartley,

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[44]Stanton to Hartley, July 14, 1862, "Contracts Made by the Ordnance Department," House Executive Document Number 99, 40th Congress, 2nd Session, pp. 166-167; Edwards, Civil War Guns, pp. 242-250.

and Graham were able to contract for or otherwise purchase over 28,000 Enfields, and Howland and Aspinwall over 35,000, but the largest private supplier of these weapons was Naylor and Company.[45]

Over 436,000 of the Enfield patterns were purchased by the United States government during the war, and in numbers of arms in use by the Union, it ranks second only to the Springfield. Several firms supplied these arms to the United States. Howland and Aspinwall, Colt, and Schuyler, Hartley, and Graham, among others, delivered significant numbers of them, but the major sources were Hartley, when acting as United States purchasing agent, who purchased over 100,000, and the firm of Naylor and Company, which furnished over 190,000.[46]

The arms purchased by government agents abroad were inspected there, and so there was little that the Ordnance Department could do to accept or reject these arms. But all private arms, including Naylor's, delivered to the government, whether by contract between the broker or by open purchase, were subject to inspection by ordnance officers before they were accepted. It was in this area that the Ordnance Bureau could exercise its authority, and make an effort to eliminate at least the worst of the foreign imports.[47]

Most of the work of handling and inspecting these arms fell to

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[45]Dyer, "Annual Report of the Chief of Ordnance, October 23, 1866," Ordnance Collection, 1812-1889, Vol. IV, p. 1572; "Contracts Made by the Ordnance Department," House Executive Document Number 99, 40th Congress, 2nd Session, pp. 764, 284-285, 845-848.

[46]Schuyler to Cameron, September 5, 1861, Official Records, Ser. iii, Vol. I, p. 485; "Contracts Made by the Ordnance Department," House Executive Document Number 99, 40th Congress, 2nd Session, pp. 562, 953-958, 151, 756-757.

[47]Ibid., pp. 94-97, 151, 562.

ordnance officers in New York City. Major Peter V. Hagner was there in the early days of the war, and Captain Silas Crispin succeeded him in 1862. This duty was extremely difficult. Like all other offices and posts of the Ordnance Department both the New York agency and arsenal were hopelessly understaffed. In addition, the large number of arms which arrived daily, starting in the early fall of 1861, varied so greatly in style, pattern, and caliber, that almost no standard for measurement could be set. Except for barrel gauges, little else of the standard gauging equipment could be used on foreign arms, except for the Enfields.[48]

Everyone was demanding arms, and any serviceable weapon, regardless of how rough, was accepted. Everybody in the War Department, from the Secretary to the Chief of Ordnance, found it necessary to lower the standards. Once the standards had been lowered to accept all serviceable arms, those weapons falling into a marginal category were often accepted. Close inspection was not always possible, and therefore many very poor quality arms received their inspector's mark and were sent on to the arsenals, from which they were issued to the hapless troops.[49]

If the wishes and plans of the Chief of Ordnance had been followed, this situation might have been less critical. Ripley wanted to institute a set of rigid procedures in which the better arms would be issued to the troops most likely to see a great deal of action.

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[48]Ripley to Holt, May 26, 1862, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Crispin to Ripley, February 5, 1862, Letters Received, Ordnance Office Records, National Archives.

[49]Ibid.

If this had been done, most of the Union army in combat would have been better armed than it was. But political pressures and the governors' insistence that their mustered troops be armed before they left the state made it impossible to efficiently operate this plan.

Both Hagner and Crispin at New York reported that many of the Belgian, Austrian, and Prussian smooth bores were inferior. Many of the older rifle muskets and rifles were worn and in some cases inferior in design and manufacture. The decision which they had to make, however, was not whether these were good quality arms, but whether they were serviceable. Hagner, who was advisor to the arms contract commission in 1862, testified that many of the arms were inferior, but pointed out the necessity of lowering standards. If the arm appeared rugged enough to withstand the rigors of combat conditions; if it were considered reliable and not subject to an unusual amount of malfunction or breakage; and if a sufficient number of arms of a type were available to equip a unit of regimental size, the arm was usually passed. Poor arms were considered better than no arms at all.[50]

The inspection methods at the New York agency were poor and incomplete. Inspection by disassembly was not possible with all weapons. Detailed inspection was therefore done by sampling, and the remainder of the arms were passed by external inspection. Hagner and Crispin constantly pointed out that the staff of inspectors was too

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[50]Hagner's statement to this effect appears in perhaps thirty cases. "Report of the Commission on Ordnance and Ordnance Stores," Senate, Executive Document Number 72, 37th Congress, 2nd Session, passim; Hagner to Ripley, August 2, 1861, Letters Received, Ordnance Office Records, National Archives; Crispin to Ripley, January 8, 1862, ibid.; Ripley to Stanton, August 8, 1862, Ordnance Collection, 1812-1889, Vol. IV, pp. 855-856.

small and that more inspectors were needed, but such personnel was not available, and arms inspection remained incomplete. As a result, many thousands of arms, whose pattern and type were sound, but which were individually defective, were passed.[51]

The problems of ordnance purchase and inspection was made more difficult by the constantly fluctuating arms policy by both the Ordnance Bureau and the War Department. The Chief of Ordnance and the officers under him seemed to have a clear set of goals. They wanted arms that were serviceable, of a military pattern and caliber, in good condition, at a reasonable price, and which could be delivered in the shortest possible time. The Chief of Ordnance as well as the Secretary of War, preferred American manufactory; the early policy was to refuse foreign arms, even Enfields. Ripley wrote Howland and Aspinwall in June, 1861, that the Ordnance Bureau was not interested in purchasing Enfield rifles, "as the caliber of these Arms differ from that of our regulation rifled arms." This insignificant difference of .003 of an inch was sufficient in the early days of the war to lead to the refusal of first-class British arms.

The mood quickly changed. In July, Ripley telegraphed the same firm: "Your telegram of this date received. Major Hagner of the Ordnance Department is directed to call on you in relation to the ten thousand minie rifles." By late July, the Ordnance Bureau was accepting even Belgian smooth-bore muskets, which, even at inflated prices, were valued at no more than $7.00. By August the bureau was willing to accept as many as 32,000 smooth-bore muskets, provided they

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[51]Hagner to Ripley, August 21, 1861, Letters Received, Ordnance Office Records, National Archives.

passed Hagner's inspection. The War Department and the Ordnance Bureau by late July and early August were willing to offer large contracts on the delivery of foreign arms, "provided they pass inspection."[52]

The blood pressure of Washington can be charted by the letters and telegrams of the Ordnance Bureau. In June, 1861, there was general confidence, and therefore apathy toward the purchase of foreign arms. By later July this had turned to dismay and confusion. By August it was panic. From there it steadily moved back toward normal, which it reached by late January of 1862. A good illustration of this is the rise and fall of the price on Enfields. In June and early July, these arms were valued at $18.00; by late July, $19.00; by late August, between $22.50 and $25.00. From there the price declined to about $18.00 by February of 1862, and eventually lower.[53]

The problems of policy were compounded by the constant intervention of civil officials. Cameron ordered some arms accepted even though they had failed to pass inspection. Assistant Secretary of War Thomas A. Scott insisted that the standards of the Ordnance Bureau be drastically lowered, or the army "would have no guns at all." President Lincoln pursued the same practice when he ordered the payment of outrageous prices to Dingee and Company, who delivered large numbers

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[52]Ripley to Aspinwall, June 12, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Ripley to Howland and Aspinwall, July 10, 1861, ibid.; Ripley to Poultney, July 25, 1861, ibid.; Ripley to Yerby, August 10, 1861, ibid.

[53]Ripley to Howland and Aspinwall, July 10, 1861, ibid.; Ripley to Mitchell and Jones, July 26, 1861, ibid.; Ripley to Colt, August 23, 1861, ibid.

of low quality arms to the government.[54]

Nonetheless, a great number of poor arms were refused, and others were ordered altered before the ordnance officers would accept them. Contracts for foreign arms were less easily obtained after September of 1861, and the government moved toward a policy of open purchasing. Throughout the remainder of 1861, it became increasingly clear that the contract system of bringing arms from abroad was not a complete success. Many of the contractors defaulted, or tried to substitute inferior arms for the contracted arms. The contract system placed the government on the defensive, and, as Lincoln pointed out in the Dingee controversy, under something of an obligation to the contractors.[55]

The increasing use of the open purchase system gave the government important advantages. It assured inspection officers, particularly at the New York Ordnance Agency, more control over quality. This, in turn, led arms buyers and dealers to be more selective in what they purchased and tried to sell to the government. The ordnance officers by the spring and summer of 1862 did not have nearly as many inferior weapons to inspect. By that time, they were able to choose between respectable arms. The standards required of arms, which had been lowered so drastically in 1861, were gradually raised, starting

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[54]James Duffy's testimony before the commission, April 5, 1862, "Report of the Commission on Ordnance and Ordnance Stores," Senate Executive Document Number 72, 37th Congress, 2nd Session, pp. 40-41; Lincoln to Ripley, April 23, 1862, ibid., p. 116.

[55]Ripley to Blunt, September 10, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Ripley to Murray, September 17, 1861, ibid.; Ripley to Murray, September 19, 1861, ibid.; Ripley to Merrill, Thomas & Company, October 1, 1861, ibid.; Ripley to Curtin, October 2, 1861, ibid.; Ripley to Ilbotsen, October 23, 1861, ibid.

in January of 1862; by the end of that year, only good quality arms were being passed and accepted.

The quality of these European arms has often been called into question, and it is appropriate to examine them in this respect. The United States purchased about 1,165,000 European rifles and muskets during the war, nearly all of these in the first two years. Of these, about 110,000 were smooth bores, and although reports indicate that many of these were in good or at least serviceable condition, they, like all smooth bores regardless of quality, had a limited range. The figures, however, indicate that less than ten percent of the purchases were unrifled weapons.[56]

Of the remaining arms, the Enfields accounted for over 436,000, the French minie rifle for about 45,000, Austrian Model 1854 for 226,000, and Jagers, also Austrian, for about 30,000. In addition, the Boker rifles which total about 187,000, and were listed as a separate rifle, were in fact a mixture, but at least half of them were of the Austrian or French pattern. Some of the Saxony and Prussian rifles were also of good quality. When a rough approximation is made, one must conclude that eighty percent of these arms were accurate, dependable, and of good quality.[57]

If the unfortunate reputation of European arms is undeserved, it is nonetheless easy to understand how they got their reputation. Examination of ordnance purchases reveals that nearly all of the smooth-bore muskets came into the United States during the first few

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[56]Dyer, "Annual Report of the Chief of Ordnance, October 23, 1866," Ordnance Collection, 1812-1889, Vol. IV, p. 1572.

[57]Ibid.

months of war. It is also beyond question that the European governments and businessmen tried to sell the worst of their arms first, depending on the desperation of their American purchasers. The bad reputation of European arms was established early, and once established, was impossible to change.

An argument that most European arms were sound would have been of small consolation to the soldier who happened to be armed with an old Austrian smooth bore, or a weapon with a barrel too thin because it had been reamed from a lower caliber and then rerifled, or one which had a cracked cone, or a cone which did not take a standard cap. Even so, most of the arms placed in the hands of troops would at least shoot and were adequate to perhaps 100 yards on individual targets for the smooth bores and 400 yards and beyond for rifles and rifle muskets.

Foreign rifles and muskets created a nightmare for ordnance officers in charge of keeping them in good order and supplying ammunition for them. They varied in calibers from one type of British rifle of .44 caliber to Austrian and Belgian smooth bores of .79 caliber. It required over twenty-five different cartridges to supply these arms. In addition, many of the arms were not provided with spare parts, making it impossible to repair many in the field. If a sight was damaged, often it could not be replaced with a new sight, but because of a lack of replacement sights for a particular arm, the whole sight assembly, including the base, might have to be replaced. Damage to any part of the lock might mean that the arm would be out of action for weeks, since it might be necessary to return it to an arsenal for repair. Threads on the breech plugs might differ from the United States standard, and even from other European arms, and therefore a replacement

breech plug might be hard to obtain.[58]

During the first two years of the war, it was necessary for the Ordnance Bureau to cannibalize these arms in order to keep some of them in issue. The department would take the parts of two or three damaged weapons to make one complete arm. When the arms shortage eased, this practice was discontinued and the poorer arms were junked, but this was a luxury which the Union could not afford in the early days of the war.

The quality of European arms steadily improved from the beginning of 1862 until foreign purchases were discontinued during the summer of 1863. The European manufacturers were turning out new arms to make profit in filling the American demands. After the worst of the early purchases had been relegated to the storerooms of the arsenals, these newer foreign arms gave a good account of themselves, and many soldiers came to have a very high regard for the Enfields and the Austrian Lorenz arms in particular.[59]

The speculators and government purchasing agents also purchased sabres, pistols, and carbines in Europe, but these played a relatively insignificant role since they were limited in numbers. Records indicate that less than 14,000 pistols and revolvers came into the country, most of these being the French Lefaucheaux. Only about 12,000 carbines, nearly all muzzle loading smooth bores, came in, and most of these were

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[58]Berkeley R. Lewis, Small Arms and Ammunition in the United States Service (Washington: The Smithsonian Institution, 1956), p. 159.

[59]Last entry dates for purchases of foreign arms indicate that none was imported or purchased by the government after the summer of 1863. "Contracts Made by the Ordnance Department," House Executive Document Number 99, 40th Congress, 2nd Session, passim.

soon retired from service. The sabres which came into the country differed very little from the standard American edge weapons, and went largely unnoticed by the troops who carried them. The light French sabres were popular, but American troops had little regard for the sabre as a weapon, and hence were not inclined to use it. Any sabre was culturally alien to most Americans.[60]

The shoulder arms imported into the United States made the most significant contribution to the Union war effort. It was absolutely necessary to import them in large numbers, and continue them in use until domestic arms production was sufficiently expanded to meet the needs of the army. The increased production of the Springfield would cause all but the best of them to be phased out by the end of the war, but in general, they served their purpose reasonably well.

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[60] Dyer, "Annual Report of the Chief of Ordnance, October 23, 1866," Ordnance Collection, 1812-1889, Vol. IV, p. 1572.

CHAPTER III

DOMESTIC ARMS

The Springfield rifle musket was the pride of the service in 1861, and the regular infantry had been totally rearmed with it, but there were almost no reserves to fill the requisitions of the incoming volunteers who were to constitute the bulk of the Union army. The loss of the Harpers Ferry Armory early in the war cut production of rifled arms approximately in half and left the Springfield works as the only remaining Federal armory. The national government would have to rely upon its production to furnish the only publicly manufactured regulation infantry arm.

The Springfield Armory in Massachusetts, located in the geographic heart of the arms manufacturing industry of the United States, afforded both advantages and disadvantages. The concentration of gunsmiths and other experienced skilled industrial workers was an advantage. Also, skilled shops such as those of Lamson, Goodnow, and Yale could furnish tools, and the machine industry could provide some of the heavy equipment necessary for the expansion of the Federal works. There were disadvantages as well, such as the heavy competition for materials and labor which drove up production costs higher than they might have been in some other areas. Generally, however, the advantages far outweighed

the disadvantages.[1]

During the 1840's and 1850's the armory had undergone steady improvement. Ripley himself had commanded the armory from 1841 to 1854, and had wrought vast improvements in the plant, its grounds, machinery, and efficiency. He had prepared the way for the manufacturing of the new rifle musket. In the later 1850's the superintendency became a patronage position, but under the able guidance of E. S. Allin, Springfield's master armorer, the armory continued to expand and improve.[2]

Yet, there was no urgency for expansion. The service was steadily rearmed with the new rifle musket and reserves of the arm were being built up. Congress saw no need to appropriate large sums of money for expansion; even the Secretary of War, the commanding generals, and the Chief of Ordnance preferred to move at an economical and leisurely pace. Indeed, there is no reason to criticize these attitudes. The nation was at peace; no foreign aggressor was at the threshold. Congress could hardly justify the expansion of the arsenal on the grounds that the nation would soon break apart. Such a proposal would have only aggravated the situation.

The outbreak of war and the loss of Harpers Ferry placed a full burden on the Springfield Armory. The first order was to expand production as rapidly as possible. Brigadier General Ripley, who had never liked the concept of a civilian superintendent at the armory,

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[1]Derwent S. Whittlesey, "The Springfield Armory," (Unpublished Ph.D. Dissertation, Chicago: University of Chicago, 1920), pp. 218-221.

[2]Ibid., pp. 207-208: Abbott, "The Springfield Armory," Harpers Monthly, Vol. V, pp. 143-161.

suggested to the Secretary of War in August that the War Department ask Congress to pass legislation placing the superintendency of the armory back into military hands. Congress did so immediately, and Ripley chose Captain Alexander B. Dyer as superintendent.[3]

When Dyer took charge of the armory in August of 1861 its capacity was about forty arms per day. He immediately set out to expand the works by hiring new men, building new buildings, and ordering new equipment. All of these things took a considerable amount of time, because Dyer was competing with local arms producers.

By the summer of 1862, the plant's capacity had doubled, but the greatest increase was yet to come. In November of 1862 the Chief of Ordnance informed the Secretary of War that the capacity of the armory had risen to 200,000 rifle muskets per year. This figure, though apparently accurate, is somewhat misleading. It was based on the daily production capacity multiplied by the number of work days. The total production of the armory for the period ending June 30, 1862 was about 110,000 rifle muskets, which in itself was a very impressive figure. The figure for the following year was almost 220,000.[4]

In September of 1863, Dyer was asked to prepare estimates of what new equipment, how many men, and how much space was needed to expand the production of the armory to 500 rifle muskets per ten hour day. Dyer submitted his assessment quickly and it was accepted; the money

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[3]Ripley to Cameron, August 5, 1861, Ordnance Collection, 1812-1889, Vol. III, p. 572; Ripley to Cameron, August 16, 1861, ibid., p. 572.

[4]Ripley, "Annual Report of the Chief of Ordnance, November 21, 1862," ibid., pp. 442-443; Ramsay, "Annual Report of the Chief of Ordnance, October 27, 1863," ibid., p. 456.

was appropriated and the expansion made. By 1864, when the new facilities were available, the armory, working a double shift, could produce more than a thousand arms each day—300,000 per year.[5]

Shortages of labor, coal, and occasionally of iron, caused vexation. The natural aging of stocks became impossible, and kiln aged wood had to be used. Though no serious plots by Confederates or their sympathizers were uncovered, sabotage to the armory was always a possibility and a constant worry to Dyer and the chiefs of ordnance. The destruction of one building, in which some part of the gun was made, might cause considerable delay in the production. It was in part this fear, together with the need for great numbers of arms, which led Ripley and his successors to suggest that another armory be built, located at Rock Island, Illinois. Congress approved the new armory in 1864, but it did not become operational before the close of the war. The Springfield Armory remained until the end of the war the only public manufactory of small arms.[6]

During this period, the armory set a standard of efficiency and economy seldom matched by any factory prior to that time. Labor was subdivided and specialized even more than it had been before the war. At a time when American industry was becoming increasingly dirty and dangerous, the armory's machinery and facilities were exceptionally clean and safe. Figures on production and cost were so carefully kept that Major Dyer could give an accurate accounting on the efficiency

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[5]Ramsay to Dyer, September 21, 1863, ibid., Vol. IV, pp. 857-858; Dyer to Ramsay, February 4, 1863, ibid., pp. 858-877.

[6]Whittlesey, "The Springfield Armory," pp. 228-229; Ramsay to Stanton, June 3, 1864, Ordnance Collection, 1812-1889, Vol. IV, pp. 884-889; United States Statutes at Large, Vol. XII, p. 537.

of the night shift as compared with the day shift; he could also give the difference in production costs for both the armory and for individual pieces of the muskets between the two shifts. At the end of the war, the Chief of Ordnance, who by that time was Dyer himself, could inform the Secretary of War that the Springfield rifle musket produced at the armory had cost the American people an average of $11.97 each.[7]

Under Dyer's leadership and management, the Springfield works became the largest armory in the world in both total production and capacity. By the time the conflict had ended, Springfield had produced 802,000 rifle muskets, and by supply gauges, patterns, and advice, had aided private manufacturers in tooling for hundreds of thousands more.[8]

The production of the Springfield armory was augmented throughout the war by privately produced rifle muskets. These private arms were extremely important to the Union war effort, and constituted a major source of armament for the Federal armies. Without them it is doubtful whether the Ordnance Bureau would have solved the infantry arms shortage problem during the war.

Both Brigadier General Ripley and Secretary of War Cameron realized early that the United States would have to contract for privately produced rifle muskets. By early July of 1861 the War Department was issuing contracts to private firms for the production of the rifle muskets. The Union disaster at Bull Run soon reinforced these opinions.

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[7]Ripley to Cameron, June 11, 1861, Ordnance Collection, 1812-1889, Vol. IV, pp. 844-845; Dyer, "Annual Report of the Chief of Ordnance, October 22, 1864," Official Records, Ser. iii, Vol. IV, p. 801; Dyer, "Annual Report of the Chief of Ordnance, October 22, 1865," ibid., Vol. V, p. 142.

[8]Dyer, "Annual Report of the Chief of Ordnance, October 23, 1866," Ordnance Collection, 1812-1889, Vol. IV, p. 1572.

The first contracts were issued to the most reputable and experienced industrial firms with at least some experience in arms making. These firms, such as Alfred Jenks and Son, Providence Tool Company, Colt, Remington, and Lamson, Goodnow, and Yale, proved to be worth the trust which Ripley placed in them. Although all suffered delays in preparation, each delivered large numbers of first-class rifle muskets by the end of the war. Jenks, the largest producer, manufactured over 98,000, and furnished large numbers of parts and locks for other government contractors. Colt delivered 75,000; Providence Tool Company, 70,000; Lamson, Goodnow, and Yale, 50,000; and Remington, 40,000.[9]

As successful and reliable as these firms were, they could not be expected to deliver all of the private arms needed. Other firms were also seeking contracts. Some of these were businesses of solid reputation, while others were newly formed companies or partnerships designed to get the government contracts. Some of these firms were willing to put out bribe money for the contracts; it should be remembered that this was not an uncommon practice of even reputable firms.[10]

The reports of the Ordnance Commission reveals no attempt at out-and-out fraud, in that all contractors intended to deliver the arms called for in the contracts. Many of these contractors and con-

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[9]Ripley to Colt, July 5, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Ripley to Jenks, July 13, 1861, ibid.; Ripley to Anthony, July 13, 1861, ibid.; Ripley to Remington, August 20, 1862, ibid.; "Contracts Made by the Ordnance Department," House Executive Document Number 99, 40th Congress, 2nd Session, pp. 730-736, 861-863, 818-823, 923-930.

[10]Holt and Owen to Stanton, July 1, 1862, "Report of the Commission on Ordnance and Ordnance Stores," Senate Executive Document Number 72, 37th Congress, 2nd Session, p. 17.

tract seekers were overly optimistic about their ability to deliver the numbers of arms within the specified time.[11]

Contractors such as John Rice of Philadelphia took contracts for rifle muskets when he had no plant in which to manufacture them. His plan was to subcontract for the parts and assemble them to the army's specification. From all indications Rice was well-meaning, but he completely miscalculated his potential to get the parts which he needed. He received a contract for 36,000 rifle muskets in November of 1861, but failed to deliver a single gun.[12]

Other contractors, pursuing much the same technique, had more success. Casper D. Schubarth planned to assemble his arms from parts manufactured by other companies. This was a tricky and difficult business operation because the failure of one of his subcontractors would have delayed the production of an entire arm. Schubarth, however, was able to deliver only 9,500 rifle muskets on a contract for 50,000.[13]

It was the problems of the non-manufacturing contractors which led the Ordnance Bureau to favor the manufacturing firms. In the early stages of the war it was not possible to be quite so discriminating, but as pressure eased and as the potentials of the manufacturers became known, the ordnance chief was able to make sound decisions on the firms receiving contracts. From the beginning of the war, Ripley

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[11] "Report of the Commission on Ordnance and Ordnance Stores," Senate Executive Document Number 72, 37th Congress, 2nd Session, passim.

[12] Ibid., pp. 247-253.

[13] Ibid., pp. 509-520; "Contracts Made by the Ordnance Department," House Executive Document Number 99, 40th Congress, 2nd Session, pp. 962-963.

tried to encourage the larger and better firms to produce quickly and in large numbers. He told the Jenks firm that their contracts would be enlarged if they proved dependable. Colt, Remington and Providence Tool received similar information. Such promises led to the expansion of facilities upon which the Union was able to draw throughout the conflict.[14]

Ripley realized that there would be difficulties in meeting the early deadlines, and if he felt an excuse was reasonable, he allowed extension on the contract. He also understood that the desperate need for rifle muskets would not permit the rejection of good and serviceable arms because of dented stocks or marred finishes. He wrote the Secretary of War that some of the rigid standards applied to the Springfield rifle muskets would have to be eased.[15]

Brigadier General Ripley also made it clear to the manufacturers that he did not insist that stocks be naturally cured by aging, since kiln cured wood was sufficiently strong and considerably faster to produce. While he preferred American iron and steel, any foreign iron or steel was acceptable, provided that it met the standards. Barrels could be made any way that the maker chose. Barrels made from forgings were, of course, better, but welded barrels would be accepted at no reduction in the government price if they met all standards of

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[14]Ripley to Jenks, October 14, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives.

[15]Ripley to Stanton, October 26, 1862, Ordnance Collection, 1812-1889, Vol. IV, pp. 855-856.

inspection and proof.[16]

Ripley continued to insist, however, that the standard patterns and gauges be followed, and that all parts be interchangeable. To have done otherwise could have created long-range problems and even greater confusion than already existed in ordnance. Some contractors insisted that these standards be relaxed, but Ripley steadfastly refused. Some manufacturers pleaded that they could not produce an unaltered rifle musket at a reasonable price or in a reasonable time if they were not given special dispensation. Ripley wisely turned them a deaf ear.[17]

Even with relaxed standards and special concessions, some of the contractors turned in disappointing performances. The old and established firm of Eli Whitney had contracts totaling 55,000 rifle muskets, but produced only 15,000. Schubarth had a contract for 50,000, and produced fewer than 10,000 rifle muskets. James Mulholland, with a contract for 50,000 Springfields, produced only 5,500. In addition, eight contractors with total orders of 351,000 rifle muskets delivered none at all. Some of these had contracts canceled for nondelivery, others simply gave up their claims altogether, or

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[16]Ripley to Bodine, January 17, 1862, Miscellaneous Letters Sent, Ordnance Office Records, National Archives: Ripley to Hoard, July 29, 1862, ibid.

[17]Ripley to Whitney, January 7, 1862, ibid.; Ripley to Whitney, June 18, 1862, ibid.

handed them over to other contractors.[18]

Among the companies which failed to meet any schedule and make any deliveries was the Union Arms Company. Among the 65,000 rifle muskets which they failed to deliver were 25,000 which had the Marsh breech-loading attachment, which might have proved the feasibility of breech-loading conversions for the rifle musket. Working on limited capital, they had not even begun production at the time of the commission hearings. The commission took away Union contracts for the 40,000 standard rifle muskets and reduced the order for Marsh breech-loading rifle muskets to 12,500. The company failed to deliver even this modest number.[19]

In its desperation, the government gave out large orders for Springfields in 1861. By the end of the year the government was under obligation with twenty-two contractors to take 854,000 Springfield rifle muskets. In December alone the War Department ordered 580,000 rifle muskets from private arms makers. It was in these first year contracts that the greatest failures occurred. The government's yield on these contracts was less than one-fourth. Only 205,000 rifle

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[18] Ripley to the Contractors, December 24, 1861-January 7, 1862, ibid; a list of the contractors is contained in Ripley to Stanton, February 4, 1862, ibid; figures compiled from an analysis of contracts and deliveries in "Report of the Commission on Ordnance and Ordnance Stores," Senate Executive Document Number 72, 37th Congress, 2nd Session, and "Contracts Made by the Ordnance Department," House Executive Document Number 99, 40th Congress, 2nd Session, passim.

[19] "Report of the Commission on Ordnance and Ordnance Stores," Senate Executive Document Number 72, 37th Congress, 2nd Session, pp. 256-274.

muskets were eventually delivered under these contracts.[20]

The Ordnance Bureau, no doubt, expected a low yield, and there is no indication that its officers were surprised by these failures. As the reliability of these firms was established, the ordnance office became more selective in the awarding of contracts, and the results improved vastly. The Ordnance Commission of 1862 did much to clean up the contract scandals and, therefore, were of immense aid to the bureau.

The conditions among the private manufacturers improved greatly as the war progressed. By 1863, they were delivering rifle muskets in large numbers. By this time also the Ordnance Bureau raised its standards for acceptance. It did not refuse to accept arms with blemishes, scratches or dents, but it did downgrade the price paid for them. The quality of these arms generally matched the quality of those turned out at the Springfield Armory, although they cost the government an average of $19.72 per arm, considerably more than the $11.97 cost of government produced arms. These privately made, sturdy, dependable arms were delivered to the government to a total of almost 650,000, and were of immeasurable aid to the Union war effort.[21]

The spectacular growth of both public and private rifle musket production, totaling together almost one and a half million, made it

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[20]Figures compiled from an analysis of contracts and deliveries in "Report of the Commission on Ordnance and Ordnance Stores," Senate Executive Document Number 72, 37th Congress, 2nd Session, and "Contracts Made by the Ordnance Department," House Executive Document Number 99, 40th Congress, 2nd Session, passim.

[21]Ramsay to Hagner, October 26, 1863, Ordnance Collection, 1812-1889, Vol. IV, pp. 1063-1064; Dyer, "Annual Report of the Chief of Ordnance, October 23,1866," ibid., p. 1572.

possible by 1863 to begin the rapid withdrawal of all but the best of the foreign arms, and to replace them with the new rifle muskets.

The acquisition of breech-loading and, later, repeating rifles and carbines presented an entirely different set of problems from the production and expansion of the supply of rifle muskets. Since breech-loaders were ideal for easy loading on horseback, the first military breech-loaders appeared in their greatest numbers as cavalry carbines. The transition from muzzle-loading to breech-loading guns had begun in the 1850's. Muzzle-loading carbines had virtually disappeared from the United States service by the time of the Civil War, and none was manufactured at the national armories.

Because the 1850's was a transitional period in arms and cartridge design, many different breech-loading models appeared from which the army had to choose. By the time of the war the military had already examined a number of these arms and had submitted to tests the Hall, Jenks, Colt, Sharps, Burnside, Perry, Greene, Maynard, and Merrill breech-loading designs. The Sharps had received the most favorable reports, and was being issued in significant numbers. The Burnside had also been given general approval, and was being placed in the hands of the troops for field trials. Yet, the army did not regard any of these arms as the ultimate weapon, and was waiting for improvements in arms and ammunition. Sudden change and rapid improvement made the standardization of breech-loading carbines undesirable prior to the war. Heavy demand and limited plant size of the producers made it impossible after the beginning.[22]

The war brought an end to the luxury of awaiting the improvements.

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[22]See Reports of the Testing Board, 1854-1860, Ordnance Office Records, National Archives; see also Chapters IV and V.

Immediate deliveries of breech-loading carbines were needed. Any sound and safe arm had a ready-made market with the government, and arms designers and manufacturers began to court the Ordnance Bureau. By the end of the war, the Ordnance Department had tested more than sixty different designs.

With standardization impossible, the best the Ordnance Bureau could do was to try limiting the number of designs in service to only the more serviceable arms. Early in the war the Sharps and Burnside appeared to be the best, with the Smith next in general approval. These firms could not meet the demands of the service, and the Ordnance Bureau had to look for additional sources. Ripley did not regard breech-loading rifles as desirable for infantry, and he tried to exclude them from service. Beyond this, however, he had a very practical reason for objecting to the manufacture or purchase of breech-loading rifles by the government. They reduced the production of carbines by private manufacturers who were the government's only source of cavalry arms. When Major General Benjamin F. Butler asked for Sharps rifles, Ripley attempted to dissuade him, and recommended instead either the rifle musket, and failing that, the Sharps carbine. He failed with Butler, who bought Sharps elsewhere and charged them to the government.

Ripley also wanted to limit the numbers of designs in the military. He tried to exclude the Merrill, probably in part for the same reason, by denying them a contract because of prewar delinquencies in deliveries. The War Department overrode his decision. He denied Colonel Hiram Berdan's request for Sharps rifles, but the President intervened. He denied a contract for the Marsh breech-loading musket,

but the President again forced Ripley to accept it. The Chief of Ordnance was undeniably skeptical about, and even prejudiced against, breech-loading arms, but had other reasons for many of these actions. He was trying to increase the production of desperately needed cavalry arms, and trying to standardize arms as much as possible. Given the early assumptions that the army would be kept inside half a million men, the attempt was not so unreasonable as it later appeared.[23]

The increased size of the army, the heavy demands by field commanders and governors for a favorite arm, lobbying by arms producers, and the limited capacity of even the largest breech-loading arms firms, forced the ordnance office to purchase and issue different patterns of breech-loading rifles and carbines. By the time the war had ended, the government had purchased nineteen different breech-loading carbines and eight patterns of breech-loading rifles. Although there was overlap, as some manufacturers furnished both carbines and rifles, there were no less than twenty-two separate patterns of breech-loading arms purchased directly by the government. Within these patterns there were many model changes which would run the breech-loading arms to perhaps fifty variations.[24]

To make the confusion worse, many units, some of them as small as company size, purchased their own arms. Of the breech-loaders bought, only the Lindner, of which the government purchased less than

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[23]Ripley to Butler, June 8, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Ripley to Cameron, June 3, 1861, Ordnance Collection, 1812-1889, Vol. IV, pp. 842-843; see Chapter V.

[24]Dyer, "Annual Report of the Chief of Ordnance, October 23, 1866," Ordnance Collection, 1812-1889, Vol. IV, p. 1572.

a 1,000, fired the standard .58 cartridge. Most of the breech-loaders differed not only from the standard caliber, but from the caliber of other breech-loaders. This great variety of ammunition caused both procurement and supply problems. Guns of approximately the same bore might require a completely different cartridge. The government, with only limited facilities to manufacture nonstandard cartridges, had to rely on private sources.[25]

The lack of standardization in carbine parts meant that the government could not supply parts for these arms out of their own manufactures, and thus had to rely on the private companies for replacements. In some cases the names of the parts of the arms had not been standardized. It became necessary for the Ordnance Bureau to request that the companies furnish the names of each part so it would be possible to reduce the confusion in ordering.[26]

The names of the arms could also be confusing. The Gwyn and Campbell carbine, the Union carbine, the Ohio carbine, and the Cosmopolitan carbine were, in fact, the same arm. There was a Smith carbine and a Wesson carbine, but the firms which manufactured these arms had no relation to the Smith & Wesson firm which manufactured revolvers. The Sharps rifles and carbines were not made by the same firm which manufactured the Sharps and Hankins carbines, although Christian Sharps designed both arms. Sharps had sold his interest in the Sharps company in 1853, and had later formed the Sharps and Hankins firm. The two arms were in no way alike, and each used a different caliber

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[25] Ibid.

[26] Ramsay to Fisher, July 18, 1864, Miscellaneous Letters Sent, Ordnance Office Records, National Archives.

and type of cartridge.[27]

The belief that the war would not last long caused needless delays in putting the breech-loading arms firms under contract. The Ordnance Bureau and the War Department were hesitant to place themselves under heavy obligation which would leave them with large numbers of unused arms at the end of a short conflict. Ripley hoped to confine purchases of breech-loaders largely to the Sharps carbines, but even there he moved slowly. His natural disinclination toward the breech-loaders may have caused some of this delay, but with the increased numbers of cavalry troops entering the service, Ripley was finally forced into action. In late June of 1861, he telegraphed J. C. Palmer, president of the Sharps firm at Hartford, asking: "For what price will you deliver 10,000 Sharps carbines and how fast can you deliver them? reply at once by telegram." Palmer answered that it would take a considerable time to produce that many arms, but that he had a number of carbines in various stages of completion. Ripley, upon the receipt of Palmer's telegram, asked Palmer to "Please furnish for this Department, in the shortest time possible, three thousand (3,000) Sharp's [sic] carbines." Ripley also tried to encourage the Sharps firm to expand its production by adding: "It is expected that further orders for these carbines will follow."[28]

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[27]Ripley to White, June 8, 1863, ibid.; Claud E. Fuller, The Breech-Loader in the Service, 1816-1917 (Topeka, Kan.: Arms Reference Club of America, 1933); Edwards, Civil War Guns, pp. 293-303.

[28]Ripley to Palmer, June 25, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Palmer to Ripley, June 25, 1861, Letters Received, Ordnance Office Records, National Archives; Ripley to Palmer, June 29, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives.

The Sharps Rifle Company was the largest producer of breech-loading long arms in the country. Yet it could not meet the heavy demands made by the war. The Ordnance Bureau was under pressure from the War Department and field commanders for cavalry arms, and Ripley in turn passed the pressure on to Palmer. In July he wrote to Palmer: "It is essential that these articles should be delivered as soon as possible." Sharps was to continue with the 3,000 carbines already on order and begin 3,000 more. Despite the frantic pleas of the Ordnance Bureau and the desperate efforts of the company, the first Sharps were not delivered to the government until September of 1861. At the end of the year, the Sharps firm had delivered only 5,800 carbines and 100 rifles. This figure constituted about three-fourths of all breech-loading carbines for the year.[29]

Field commanders, learning that the government had no breech-loaders to issue to their troops, began to look around for something other than the Sharps. In July of 1861, Major General N. P. Banks wrote to Ripley asking about the possibility of procuring Merrill carbines. Ripley replied that the Merrill Company had defaulted on two contracts for experimental arms, and that the Secretary of War had annulled all contracts with the firm. He offered Banks no hope. Ripley was forced to purchase some Merrills in October, but did not issue a contract to

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[29]Ripley to Palmer, July 4, 1861, ibid.; Palmer to Ripley, July 9, 1861, Letters Received, Ordnance Office Records, National Archives; "Contracts Made by the Ordnance Department," House Executive Document Number 99, 40th Congress, 2nd Session, pp. 945-946.

the firm until near the end of December, when he ordered 5,000.[30]

In July of 1861, the governor of Rhode Island, William Sprague, requested that two regiments of the Rhode Island Volunteers be armed with the rifle invented by a native of the state, Ambrose E. Burnside, and manufactured at Providence. The Secretary of War ordered it done and Ripley informed the governor of the decision. At the same time that Sprague was active in procuring the Burnside rifle, Isaac Hartshorn, agent and later president of the Burnside Rifle Company, was lobbying for a government contract. Aided by the Union's desperate need for arms, and by the support of Sprague, state Adjutant General T. J. Stead, and the Rhode Island congressional delegation, Hartshorn got a contract for 7,500 Burnside carbines.[31]

Other agents had flocked to Washington to lobby for their firms to produce all kinds of arms from breech-loaders to Springfields to pistols. Among the most capable of these was Thomas Poultney, who represented the Massachusetts Arms Company of Chicopee Falls, which controlled the rights to the Smith carbine. Poultney talked with everyone who might be able to help him, and finally got a contract for

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[30]Ripley to Banks, July 8, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Ripley to Banks, August 2, 1861, ibid.; Merrill to Ripley, May 27, 1861, Miscellaneous Letters Received, Ordnance Office Records, National Archives; Ripley to Merrill, May 27, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Ripley to Merrill, May 28, 1861, ibid.; Ripley to Merrill, Thomas and Co., October 25,1861, ibid.; Ripley to Merrill, Thomas, and Co., December 24, 1861, ibid.

[31]Ripley to Sprague, August 1, 1861, ibid.; Ripley to Stead, August 5, 1861, ibid.; Ripley to Hartshorn, August 27, 1861, ibid.; Ripley to Hartshorn, August 28, 1861, ibid.

10,000 of the Smiths.[32]

The Ordnance Bureau and the War Department were flooded by agents and politicians; they were inundated with letters and telegrams from arms companies and their influential friends. Although Ripley was able to refuse some of the arms, such as the Terry carbine and the Burton rifle, many others succeeded. Richardson and Overman of Philadelphia got a contract for 5,000 Gallager carbines. Lindner, Starr, and Gibbs were all to get contracts before the end of the year. All of these firms were given definite figures, usually between 5,000 and 10,000 arms. It appears that the Ordnance Bureau regarded all of these firms as suppliers of second line arms to fill only the needs which the Sharps Company could not. The Sharps was still the preferred arm, and Ripley wrote Palmer to "continue to supply this Department with Sharps' carbines to the utmost capacity of your factory, until further orders." Ripley wanted no rifles manufactured; nor did he want Sharps to fill orders for anyone except the national government.[33]

Ripley reported to the Secretary of War in December of 1861, that some 73,000 breech-loading arms were on order by contract, but these firms and the firms selling by open purchase had been able to deliver only a little over 9,000 by the end of the year. Of the arms delivered, almost 6,000 were Sharps, and most of the remainder were Burnsides and some Colts. Cavalry arms were in desperately short

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[32]Ripley to Poultney, August 27, 1861, ibid.

[33]Ripley to Callisher and Telrry, December 18, 1861, ibid.; Ripley to Burton, June 6, 1861, ibid.; Ripley to Richardson and Overman, September 17, 1861, ibid.; Maynadier to Smith, November 4, 1861, ibid.; Ripley to Clapp, November 27, 1861, ibid.; Ripley to Brooks, December 12, 1861, ibid.; Ripley to Palmer, December 21, 1861, ibid.

supply. Ripley was in constant touch with the firms making cavalry carbines and pistols and he wrote them frequently about the state of their preparation and production. In February of 1862, with deliveries slow and uncertain, Ripley reflected the urgency of the situation when he telegraphed the contractors, asking: "How many carbines per week can this Department depend upon receiving from you? Please answer at once."[34]

On the following day the Chief of Ordnance reported to the Adjutant General's Office the results of his inquiry. By this time there were seven different carbines being made for the government. Six of these, Burnsides, Gallagers, Smiths, Starrs, Gibbs, and Merrills, carried total contracts of 47,500, and each firm was able to deliver between 120 and 250 per week. The other firm, Sharps, had a capacity of 500 per week, but could at the time produce none of the carbines because they were filling the 1,000 rifle contract for Colonel Hiram Berdan's First United States Sharpshooters. The carbine situation was not very encouraging, and the problem worsened the next day when Ripley had to order another 1,000 rifles. Sharps would lose almost three months of carbine manufacturing.[35]

Ripley registered his clear displeasure at the Berdan order for rifles. He wrote Kingsbury, at Army of Potomac Headquarters, explaining why he could not deliver the carbines Kingsbury had requi-

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[34]Ripley to Cameron, December 9, 1861, Ordnance Collection, 1812-1889, Vol. IV, pp. 851-852; Ripley to the carbine contractors, February 4, 1862, Miscellaneous Letters Sent, Ordnance Office Records, National Archives.

[35]Ripley to Thomas, February 5, 1862, ibid.; Ripley to Palmer, January 27, 1862, ibid.; Ripley to Palmer, February 6, 1861, ibid.; Ripley to Post, February 6, 1862, ibid.

sitioned. "The receipts of carbines," Ripley wrote, "are slow and uncertain, and the main and surest source of supply, the Sharp's [sic] manufactory, by recent orders to furnish 2,000 rifles for the Berdan Sharpshooters, will be interfered with and delayed, to the extent of the same number, in delivery of carbines." Ripley said he had submitted the question to the Secretary of War, but had received no answer.[36]

Production on the Sharps rifles went slower than expected, and Ripley again had to put pressure on the firm. The problems included Berdan himself, who tried to instruct the company on how to build the rifles. Ripley took up the matter with the Secretary of War, and Palmer was told to ignore the Sharpshooter commander. The rifles began to arrive in April of 1862, but it would be May 24 before the entire order was delivered. Thus, from February 21 until May 31, 1862, the Sharps Company delivered no carbines for the desperate Union cavalry. Berdan had his 2,000 rifles, but the cavalry was deprived of over 6,000 carbines. To appease the politically connected Berdan, the Union had paid a fearful price.[37]

The Ordnance Bureau and the War Department did not duplicate the mistake. No more contracts were issued for Sharps rifles until September of 1864, and only then on the assurance that carbine deliveries would not decline. About every three months, the Chief of Ordnance, whether Ripley, Ramsay, or Dyer, would inform Palmer that the govern-

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[36] Ripley to Kingsbury, March 9, 1862, ibid.

[37] Ripley to Palmer, March 12, 1861, ibid.; "Contracts Made by the Ordnance Department," House Executive Document Number 99, 40th Congress, 2nd Session, p. 946.

ment would take all the carbines the company could deliver in the following three months. The last contract was issued in September of 1864 for 15,000 carbines. Only when it was filled, did the company deliver rifles to the government. By the end of the war, Sharps had furnished 90,000 breech-loaders over 80,000 of them carbines. The Sharps were used more than any other breech-loading arm in the Union army.[38]

All of the firms which furnish these new arms had to expand or build new facilities. The Union was fortunate in that much of the mechanical and gunsmithing skills in the United States, and most of the private arms capital, was located in the North. Although the government might regard the expansion of the arms industry as agonizingly slow, the increase in facilities and production were quite rapid by standards of the nineteenth century. The production of all breech-loading rifles and carbines could not have numbered more than 5,000 per year in the period just prior to the war. Rapid expansion followed, and the production of the private armories of the North reached more than a million rifles and carbines during the war, about forty percent of them breech-loaders.[39]

The concentrations of arms skills and capital had its disadvantages as well as its advantages, because even the North had a concentration of these in a relatively small area. In 1860, more than eighty percent of the arms industry was concentrated in the Connecticut Valley, when the greatest demands for expansion occurred. This even-

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[38]Ibid., pp. 945-949.

[39]Dyer, "Annual Report of the Chief of Ordnance, October 23, 1866," Ordnance Collection, 1812-1889, Vol. IV, p. 1572.

tually led to shortages of skilled workers in the region, and served as a limitation of increased productivity. But these shortages were not confined to the Connecticut Valley. In Pennsylvania, New York, and Maryland, some of the same pressures were felt. As a result, few of the contractors delivered their products on schedule during the first year of the war. Their expectations exceeded their accomplishments.

By the spring of 1862, only Sharps and Burnside could deliver their breech-loaders with any degree of regularity. These slow deliveries, plus the elimination for the three month period of Sharps carbines, forced the Ordnance Bureau toward the acceptance of different models from additional manufacturers. These new firms faced the same problems as the older ones, and they too found it difficult in tooling their plants and meeting delivery schedules. Deliveries for the remainder of 1862 and the first half of 1863 remained slow. Some firms failed completely to meet their contracts. Marsh failed to deliver a single arm on his 25,000 arms contract. Gibbs carbines, manufactured in New York City, were delivered to a total of 5,000, when the plant was burned in the draft riots of 1863 and never rebuilt.[40]

Ripley tried to block the proliferation of breech-loading models. He wrote President Lincoln about one of them which the President had suggested be examined. The group ordnance officers who examined it, he wrote, "considers this arm novel and ingenious in its construction, but at the same time, they do not perceive that it possesses those

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[40]Ibid.; Edwards, Civil War Guns, pp. 123-124.

advantages, over other arms of established merit, which would warrant its adoption into the United States service." Ripley went on to point out one of his most serious objections:

> I avail myself of this opportunity to inform your Excellency that there are several kinds of breech-loading arms, at present, used in the service; and in consequence of the confusion and inconvenience arising therefrom, particularly in supplying ammunition I do not deem it advisable to increase their number.[41]

He expressed his desire to limit the types of arms in the service to the Ordnance Commission as well, but it was clear that the government was fighting a losing battle. Ripley could stand against many of the arms offered to the government, both on theoretical and practical grounds, but he could not resist the rising tide of demand for arms, and for breech-loading arms in particular. Sharps and Burnside, the preferred arms manufactories, could not keep pace, and many other producers had failed to deliver their quotas. It was necessary by 1862 to increase the hodgepodge of arms in the government arsenals.[42]

Once the Ordnance Bureau found itself with a great number of breech-loading arms models, each having its own separate set of problems, it found the setting of standards very difficult. It required that all parts of the action be of hardened metal to protect against wear, and that the system of sealing the breech against the escape of hot gasses be adequate and safe. A high degree of durability was required also in both fixed and moving parts. It suggested, and often ordered, changes in the arms by the manufacturers. For this

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[41] Ripley to Lincoln, May 5, 1862, Miscellaneous Letters Sent, Ordnance Office Records, National Archives.

[42] Ripley to Wise, May 13, 1862, ibid.

reason, some arms went through minor changes and others major alterations during the war, as did the Burnside. The Cosmopolitan, or Gwyn and Campbell, went through four different model changes. The Sharps was simplified by the removal of the mechanical priming mechanism and magazine, and by the removal of the patch box from the stock. Nearly all breech-loading arms underwent some minor modification or deviation from the pattern submitted to the Ordnance Bureau.[43]

Each company wishing to sell to the government deposited a model which would serve as a pattern in the Ordnance Bureau in Washington. These were carefully examined and changes suggested. Once the pattern had been approved, the manufacturer had to adhere to it; any change desired by the manufacturer had first to receive the approval of the Ordnance office.

Defects, particularly those brought on by wear, often would not be discovered in examination and trial. Once in the hands of the troops, the defects of the arms might appear and require modification. Although these were usually minor, they delayed deliveries and further complicated the supply problems. Merrill's carbine gave difficulty in the lock works and a number of them had to be recalled for repair. There were complaints about the mechanism of the Gwyn and Campbell, which also called for minor alterations in the action. The Smith carbine had difficulty with its latching system which closed the breech. Troopers with sweaty hands found it difficult to open the action under combat conditions, and a slight modification had to be

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[43]Edwards, Civil War Guns, pp. 110-119; Jones to Ramsay, October 17, 1863, Letters Received, Ordnance Office Records, National Archives.

made. These problems kept the ordnance officers and the arms manufacturers in an almost constant state of anxiety. The Ordnance Department did not have enough officers to keep a constant check on all arms. They had to rely on field officers who had little experience with arms, and who often could not accurately describe the source of difficulty. With the great number of arms systems in use, such difficulties were inevitable.[44]

The shortages of arms forced an even more radical change than the purchases of large numbers of breech-loaders. It compelled the introduction of the repeating rifle. Political influence, favorable tests, and popularity with the men who used these arms, helped, but if there had not been such a desperate need for all kinds of arms, particularly cavalry arms, the delay in accepting them might have been longer and the numbers purchased would have been much smaller. Once accepted, the demand for them increased and their numbers grew.

There were far fewer patterns of repeaters from which to choose; during the war, only three were considered sound in design. They were the Spencer, the Henry, and the Ball. Colts were used early in the war and continued to see some action through the entire conflict, and although they were better arms than their army critics believed, they failed to measure up to the standards of the other three.

The three repeaters had a number of things in common. All were designed around a metallic, self-contained cartridge. All were fed from a spiral spring tubular magazine. All extracted and ejected

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[44]Ripley to Thomas, August 12, 1863, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Ripley to Merrill, Thomas and Company, August 27, 1863, ibid.

their spent cartridge cases and chambered the next round from the magazine by means of a lever trigger guard, which operated a movable breech block or bolt. And all were essentially sound in their design.

The military's choice of a repeater was made essentially on strength, power, and durability, rather than on rate of fire. The Ball entered the competition too late to make serious inroads into the military market. The other two arms were available in the early days of the war, and it was between these arms that the military eventually made its selection. Any lengthy comparison is unnecessary, but it is clear from reports that the Spencer was heavily favored by military men.[45]

The Spencer had a well-protected magazine located in the butt stock, whereas the Henry magazine was under the barrel, where part of the magazine spring was left exposed. The Spencer frame and breech block were thick and sturdy, whereas the frame and bolt of the Henry, while strong, was less so than the Spencer. The Spencer fired a heavier .56 caliber bullet with a heavier powder charge. The Henry produced only the rifle which was shorter than the Spencer rifle and longer than the Spencer carbine. Some officers considered the Henry too long for cavalry and too short for infantry.

The Henry had four principal advantages. It had a greater magazine capacity, holding sixteen rounds, compared to only seven for the Spencer. Its magazine was somewhat easier to load since, unlike the Spencer, it did not have to be withdrawn for loading. The Henry had a greater rate of fire because, in addition to easier loading and

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[45]Dyer to Hancock, March 17, 1865, ibid.

greater magazine capacity, each reciprocation of the bolt for ejection and reloading cocked the hammer, whereas the Spencer had to be manually cocked before each shot. In addition, the .44 caliber ammunition for the Henry was lighter, and the soldier could carry more rounds. These advantages, however, were of slight importance to the Ordnance Bureau and the professional military men of the era, when compared with the strength and durability of the Spencer. It was the ruggedness of the Spencer repeating rifle which made it the best military choice, and put the Henry at a disadvantage.

The Henry had another disadvantage. Oliver Winchester's New Haven Arms Company, which produced it, was never able to manufacture rifles in the volume required for army contracts. Perhaps if Winchester and his associates had been better salesmen, or more fortunate in obtaining government contracts, they would have been able to expand their plant and increase their efficiency and production. Even so, the Henry rifle was a difficult and expensive arm to produce, and probably could not have competed on equal terms with the Spencer. Prior to 1863, the Henry could be turned out of the factory at a rate of about 200 a month. By 1865, the rate was only about 260 per month, and could not have exceeded 300.[46]

The government purchased 1,730 Henry rifles during the war. The total number manufactured could not have exceeded 10,000 for the war period. Probably the vast majority of these arms found their way into the hands of Union troops, but even so, the number in use was not large. On the other hand, the government contracted for over 105,000

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[46]Harold F. Williamson, Winchester: The Gun that Won the West (Washington: Combat Forces Press, 1952), pp. 32-41.

Spencer repeating rifles and carbines, of which the Spencer Repeating Rifle Company produced over 75,000 at its own works in Boston. More than 60,000 of these Spencers had reached the troops by the end of the war, the remainder being delivered after the close of the conflict.[47]

The number of cartridges purchased for the repeaters during the war also gives a good comparison of the relative use of the two repeating carbines and rifles. The Ordnance Bureau purchased about 4,600,000 Henry rifle cartridges, and over 58,000,000 cartridges in Spencer caliber. Even considering that late in the war several carbines were chambered for the Spencer cartridge, the difference is striking. The chambering of other guns for the Spencer cartridge is indicative of its popularity, and of the Ordnance Bureau's preference for both the cartridge and the gun.[48]

Christopher Spencer was more than an inventor and a machinist. He was a mechanical genius who understood machine tools as well as their products. Spencer, twenty-seven years of age when the war came, was already a man of wide industrial experience. He had been associated with Lawrence and Robbins, and worked with Colt in arms manufacturing, and with Charles Cheney for whom he designed silk cloth manufacturing machinery. He had already been at work several years on perfecting the design for his repeating rifle. The story of the sale and manufacture of the Spencer arms is all the more remarable, because at the beginning of the war Spencer had no plant for their production.

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[47]"Contracts Made by the Ordnance Department," House Executive Document Number 99, 40th Congress, 2nd Session, pp. 843, 963-965.

[48]Dyer, "Annual Report of the Chief of Ordnance," October 23, 1866," Ordnance Collection, 1812-1889, Vol. IV, p. 1573.

The early Spencer models, and perhaps the ones he displayed early in the war, were probably produced by Lawrence and Robbins at Hartford.[49]

Spencer was a good and persistent salesman. He was, as John Hay, the President's secretary, described him, "a splendid little Yankee." Spencer, like most other arms manufacturers, had some political friends, not the least of whom was Charles Cheney. Cheney, a close personal friend and neighbor of Gideon Welles, the Secretary of the Navy, may have been responsible for getting the early navy tests of the gun. But, essentially, it was the arm which sold itself--"A wonderful gun," Hay called it.[50]

In the days when the Ordnance Bureau and the War Department were besieged with inventors and would-be manufacturers, Spencer and his chief business associate, Warren Fisher, had something else to sell. They had to market the idea that they could produce the arm quickly, economically, and in sufficient numbers. They had to convince the War Department that Spencer's superior skill as a gun designer was equaled by his skill as a manufacturer. His quiet self-assurance surely helped.

The Spencer Repeating Rifle Company leased quarters in the Chickering Piano Company building on Tremont Street in Boston and began to tool for the production of its rifles and carbines. The first order of 700 from the navy came in July of 1861. The army ordered 10,000 the following December. These were heavy orders for Spencer

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[49]Edwards, Civil War Guns, p. 144-145.

[50]John Hay, Lincoln and the Civil War in the Diaries and Letters of John Hay, Tyler Dennett, ed. (New York: Dodd, Mead, 1939), p. 82.

to meet at such an early time.[51]

Spencer, with his machinist's eye for production shortcuts and design simplicity, patterned the machinery for the Boston works. The machines were designed not for the production of arms in general, but exclusively for the production of Spencer arms. This specialized machinery, Fisher later testified, could produce no other kind of arm. Failure to get contracts would have resulted in a loss of more than $75,000 in machinery alone.[52]

The company, wrote Fisher, recruited workers "on account of their superior skill, to come from distant parts of the country, and to give up situations in which they might have continued had we not made them offers of permanent employment and liberal compensation." Including the salaries of these workers, the building, and $135,000 in machinery, the company had already invested $200,000 by May of 1862. Fisher's claim that the armory was exceeded in size by only the government armory at Springfield and the Colt armory at Hartford was very close to the mark.

Fisher had promised that deliveries on the government contracts would begin in March of 1862. This optimistic date could not be met, and the Ordnance Commission reduced the Spencer contract from 10,000 arms to 75,00 in June of 1862. All of the skill and careful preparation could not have allowed such an early delivery of these arms. "Some unexpected but unavoidable delays in the requisite perfection

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[51]Ripley to Fisher, December 26, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives.

[52]Ibid.; Fisher to Commission, May 27, 1862, "Report of the Commission on Ordnance and Ordnance Stores," Senate Executive Document Number 72, 37th Congress, 2nd Session, p. 420.

of our machinery," Fisher wrote Ripley in April, 1862, "postpone somewhat the earlier delivery we hope to make."[53]

In late December of 1862, the arms for the navy contract were filled, and the first 500 on the army contract were delivered. The 7,500 arm contract with the Ordnance Department was completed in June, of 1863, by which time the plant's production had risen to about 1,500 arms per month. A second contract, this one for carbines, was issued to the company in July of 1863, with deliveries to begin in October. The delay between contract date and delivery date was probably due to other contracts, perhaps with Massachusetts, which the company had to fill.[54]

These carbine deliveries began on schedule, and the company had no difficulty in filling them. Even before the contract was completed, the Ordnance Bureau, in December of 1863, issued Spencer another contract, this one for 34,500 carbines, with delivery schedules to run as high as 3,500 per month. Again, the company had no difficulty in meeting its contract obligations.[55]

With growing demands in the army for Spencers, and with increased approval of the arm by ordnance personnel, the reluctance to purchase them faded. In May of 1864 the company was given an open-end contract to deliver to the government all the Spencer carbines they could

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[53]Ibid., p. 419.

[54]"Contracts Made by the Ordnance Department," House Executive Document Number 99, 40th Congress, 2nd Session, pp. 963-964.

[55]Ramsay to Warren, December 24, 1863, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; "Contracts Made by the Ordnance Department," House Executive Document Number 99, 40th Congress, 2nd Session, p. 964.

make until September 1, 1865. The company was allowed a grace period in which they were required to deliver only 1,500 per month, probably to let them fill other contractual obligations, but after September of 1864 they were required to deliver not less than 800 carbines per week.[56]

With the popularity and demand for the Spencer overwhelming, the War Department decided to give the Burnside Rifle Company a contract for up to 30,000 Spencer carbines. Burnside would discontinue the production of its own carbine and convert to the production of the repeater. Burnside would pay the Spencer Company a royalty on each gun they produced. The first deliveries under the contract were to begin in November of 1864. Burnside, too, had difficulty in retooling for the Spencer, and none was delivered to the government until April 15, 1865.[57]

The production of Spencer rifles and carbines during the Civil War is a remarkable accomplishment. With no plant or production facilities in 1861, the Spencer Repeating Rifle Company grew to be the largest producer of government carbines by 1864, and ranked second only to Sharps for the entire war period.

It is not definitely known how many Spencers were produced during the war. Some estimates run to 200,000 or better, but this

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[56]Ramsay to Warren, May 24, 1864, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; "Contracts Made by the Ordnance Department," House Executive Document Number 99, 40th Congress, 2nd Session, pp. 964-965.

[57]Ramsay to Hartshorn, June 27, 1864, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; "Contracts Made by the Ordnance Department," House Executive Document Number 99, 40th Congress, 2nd Session, pp. 723-724.

seems on the basis of delivery figures to be much too high. The ordnance purchase list shows that by the end of the war the company had delivered just under 60,000 rifles and carbines. In addition, some state contracts were filled. By looking at the government delivery figures for the war, it is logical to assume that while the government contracts were in force that the govdrnment took most of the plant's production. These figures suggest that the plant's capacity for 1863 could not average over 2,000 arms per month; for 1864 it would not have averaged more than about 3,500 per month; and for the first three months of 1865, not more than 4,000 to 4,500 per month. From these figures, it must be concluded that Spencer's wartime production could not have exceeded 100,000. This figure, although failing far short of some estimates, is still spectacular, and it gave the Union, particularly its cavalry, a decided advantage in the last eighteen months of the war.[58]

The production of all breech-loaders and repeaters by private American industry was an important contribution to the war effort. The figures given by the Chief of Ordnance at the close of the war indicated that the government had purchased about 430,000 breech-loading rifles and carbines, of which about 350,000 had been delivered to the government before the close of hostilities. In addition, there were those privately purchased and state purchased breech-loading arms which were not included in these figures. The impact of their fire-power was even greater than their numbers would indicate. When

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[58]Ibid., pp. 964-965; Dyer, "Annual Report of the Chief of Ordnance, October 23, 1866," Ordnance Collection, 1812-1889, Vol. IV, p. 1572.

distributed throughout the entire Union army, these arms perhaps doubled its firepower in the last two years of the war, and hastened the end of the conflict.[59]

The other major category of small arms with which the Ordnance Department had to deal was pistols, or more specifically by the time of the Civil War, revolvers. The revolver became the standard American side arm, civilian and military, in the 1850's; Samuel Colt, its inventor, had a virtual monopoly on the American market until his patent expired in 1857.[60]

The advantages and popularity of Colt's "patented repeating pistol" spelled the doom of the single-shot holster pistols, including the Model 1855, the last of these pistols to be manufactured at the Springfield Armory. The government never tried to compete with Colt, and the Chief of Ordnance did not recommend that the government seek permission to manufacture revolvers at the national armories. The patent royalties and the expensive machinery necessary for their production made it doubtful that the government could economically produce the limited numbers of revolvers needed for a peacetime army.[61]

Colt was a remarkable businessman, part Yankee mechanic, and part sideshow huckster. In the mid-1850's, he built the world's largest private arms factory at Hartford, Connecticut, and began devoting all

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[59]Ibid.

[60]Charles T. Haven and Frank A. Belden, A History of the Colt Revolver (New York: William Morrow, 1940), p. 86.

[61]United States Senate Committee Report Number 296, 30th Congress, 1st Session (Washington: W. M. Belt, 1849); United States Senate Committee Report Number 257, 31st Congress, 1st Session (Washington: W. M. Belt, 1851); George Talcott, "Annual Report of the Chief of Ordnance, December 3, 1850," Ordnance Collection, 1812-1889, Vol. II, pp. 353-354.

of his considerable energies to the making and selling of his revolving pistols and rifles.[62]

From the time Colt settled in Hartford, he relied on efficiency of production and volume of sales to earn profits. His great "H" shaped armory was designed from the ground up to facilitate the production and assembling of his revolvers. He hired the most skilled mechanics and technicians to staff his plant; with the help of his chief assistant, E. K. Root, he designed specialized machines and tools for the manufacturing of his arms.

The central power facilities were among the largest in the world; the power was transmitted by means of overhead rods to all parts of the plant. Long buffalo hide drive belts connected the machines on the floor to the power rods. The shops were laid out to accomplish specialized tasks, and each performed a limited number of operations. The parts of each weapon arrived at a central assembling room, where the final finish and inspection were accomplished. Such efficiency was highly praised at the time, and the Colt system of production became a model for other great armories of the world. So large were the Colt facilities, that Secretary of War John B. Floyd stated in 1857 that they had reached almost the status of a "national works."[63]

When Congress refused to renew the Colt patent in 1857, other

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[62]Haven and Belden, A History of the Colt Revolver, p. 88; Ellsworth S. Grant, "Gun Maker to the World," American Heritage, Vol. XIX (June, 1968), pp. 4-11, 86-91.

[63]United States Magazine, "A Day at the Armory of Colt's Patent Fire Arms Manufacturing Company, Hartford, Connecticut," United States Magazine, Vol. V (March, 1857), pp. 4-27; John B. Floyd, "Report of the Secretary of War, 1857," United States Senate Executive Document Number 1, 35th Congress, 1st Session (Washington: Cornelius Wendell, 1858), p. 7.

firms began producing revolving pistols. Remington, Starr, Whitney, and Smith & Wesson became the best known of the new manufacturers, but none of them approached the revolver production capacity of Colt. Remington and Whitney were attempting to improve upon the Colt pattern of percussion revolvers by adding strength and simplicity. Both soon developed strong and reliable belt and holster pistols, and sold them profitably, but neither firm had approached Colt in sales and popularity in 1861.[64]

The Smith & Wesson firm concentrated on the production of small caliber arms of a radically new design; their pistols were the first revolvers on the American market to load and fire a metallic self-contained cartridge. They held the patent on cylinders bored through, thus eliminating any competition, but they never produced a large revolver sufficient in strength and power needed for practical military use until after the war. Their small caliber .22 and .32 revolvers had neither the range nor the striking power to make them adequate self-defense or military arms; although some officers and enlisted men bought them, they were generally considered a second gun for emergencies only. Smith & Wesson never showed any inclination to modify their arms to meet military standards, nor did they seriously seek military contracts. They did not figure into the ordnance-industrial equation of the Civil War.[65]

None of these major firms, nor the half dozen or so smaller ones, was prepared to produce revolvers in the numbers sufficient to meet

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[64]Haven and Belden, A History of the Colt Revolver, p. 86.

[65]John E. Parsons, Smith & Wesson Revolvers: The Pioneer Single Action Models (New York: William Morrow, 1957), pp. 25-32.

the demands of the army. In addition, the army, which regarded the revolver as a special purpose, limited weapon, had few reserves at the beginning of the war. The cavalry, in particular, needed revolvers and the Ordnance Department had none to issue. The Ordnance Bureau underestimated the need and demand for revolvers; the first order to manufacturers did not go out from Washington until three weeks after the firing on Fort Sumter. About the same time, the government began to purchase pistols from any source which had them for sale, including hardware firms and sporting arms stores. Even so, the supply from all sources was so small that the regular Second Cavalry Regiment under Colonel George H. Thomas could be supplied only 131 revolvers and 170 single shot pistols at the end of May, 1861. In early June, Ripley answered requisitions for revolvers by saying that the department had "No revolvers on hand," and that he could send only "percussion pistols, single barrel."[66]

Colt was the most nearly prepared revolver supplier in 1861, and it is not surprising that the Ordnance Bureau looked first to the Hartford complex for its supply of revolvers. The army, in 1861, preferred Colt revolvers for another reason. In the late 1850's, the Ordnance Bureau sought another design of revolver, asking Colt for a lighter weight army pistol of the same bore as the heavier .44 caliber dragoon revolvers. Colt complied by using the lighter frame of the .36 caliber navy revolver, and modifying it to accommodate the larger diameter cylinder chambered to .44 caliber. With a lengthened grip

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[66]Ripley to Colt, May 4, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Ripley to Colt, May 15, 1861, ibid; Ripley to Thomas, May 30, 1861, ibid.

and a streamlined barrel and loading lever group, this became the Model 1860 Army, the only medium weight, large bore revolver on the market in 1861. At the time of these modifications, Colt had not expected to rely on the army for all, or even most, of his orders. Civilians had sought the same modifications, and Colt expected them to be his major customers. The war would make it otherwise.[67]

Although other makers were seeking army orders, and some would get favorable contracts, the Ordnance Bureau regarded Colt as the principal supplier of army pistols. On May 4, 1861, Ripley wrote Colt asking for "500 Colt's Army pistols, new pattern." He repeated the order for an additional 500 on May 15, but the first deliveries did not arrive until June 4. The shortage of pistols became increasingly critical in the summer of 1861. "Pistols for arming Cavalry now here are much wanted," wrote Ripley to Colt in September, "and they come too slowly. I wish you to hasten your deliveries, and to increase the number to the utmost ability. Don't let any of your new pattern Cavalry revolvers go to any applicants, but deliver all for government use." Three days later the Secretary of War acceded to Ripley's wishes to give Colt an open-end contract. Ripley informed Colt of the results by telegram: "Deliver weekly until further orders as many of your pistols, holster new pattern, as you can make."[68]

The Colt factory increased its production rapidly. By the winter

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[67] "Report of the Board, May 18, 1860," Reports of the Testing Boards, Ordnance Office Records, National Archives.

[68] Ripley to Colt, May 4, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Ripley to Colt, May 15, 1861, ibid; Ripley to Colt, September 14, 1861, ibid.; Ripley to Colt, September 17, 1861, ibid.

of 1862, Colt was able to deliver 1,000 pistols per week, and 2,000 per week by the spring of 1862. Colt's additional facilities for producing rifle muskets did not curtail revolver production, since a separate plant and new employees were added for the musket armory.[69]

When the government most needed revolvers in the first year of the war, Colt was the only producer who could furnish them in large numbers. Colt, without any serious competition, was able to make large profits by charging $25.00 for each gun, approximately double its production cost. Nevertheless, Colt delivered 145,000 revolvers to the hard pressed government during the first two and one-half years of the war. This was about two-thirds of all Union revolvers up to that time; it represents a remarkable achievement for Colt and his chief assistant, E. K. Root, who took charge of the company after Colt's death in early 1862.[70]

The last Colt contracts for revolvers were filled in November of 1863; no more Colt revolvers were delivered to the government thereafter. It is not known why no new contracts were made with the firm, nor why purchases of the revolvers stopped at that time. In June of 1862, increased competition, particularly from Remington, forced Colt to reduce the price on revolvers to $14.50, but profits were still high. The burning of the revolver production facilities in 1864 followed by some months the final Colt deliveries, and, therefore, cannot account for the lack of contracts. It may be that the Ordnance Bureau felt that Remington revolvers were superior, and that this

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[69]"Contracts Made by the Ordnance Department," House Executive Document Number 99, 40th Congress, 2nd Session, pp. 730-733.

[70]Ibid., p. 735.

opinion was verbally communicated to Root, but if the company was contemplating modification in its army revolver, there is no clear indication from the records. When the Colt Company resumed production after the rebuilding of the pistol armory, they continued with the same model. For whatever reason, Colt discontinuance of deliveries handed over the lion's share of government revolver contracts to its chief rival, Remington Arms.[71]

When the war broke out, the old established firm of Remington, which still remained largely a family concern, was not fully prepared to meet military demands. It was not yet producing an army caliber revolver, and apparently had not anticipated the substantial military market. Remington produced a pistol in navy caliber, and during the first year of the war sold a number of them to the army, but it would be 1862 before production of army caliber revolvers would begin.[72]

Remington's greatest advantages in breaking into the military market were the superior strength and lower cost of their revolvers. Major Hagner of New York City was favorably impressed with the Remingtons, although they were still in .36 caliber. He set about to get as many of them as he could for the Western forces. "I have seen no revolver I like as well," he wrote Ripley, "and the price is nearer the cost than with some others." Major William A. Thornton at the Watervliet Arsenal also thought highly of the Remington revolvers and recommended that Samuel Remington deliver his samples in person to Brigadier

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[71]Ibid., p. 735.

[72]Alden Hatch, Remington Arms (New York: Rinehart, 1956), pp. 70-79; Charles Lee Karr and Caroll Robbins Karr, Remington Handguns, (Harrisburg, Pa.: Stackpole, 1947), p. 37.

General Ripley. Presented with the specimens in July, 1861, Ripley was favorably impressed and responded immediately by ordering 5,000 in army caliber. Ripley understood the manufacturing of arms as well as any soldier of his time, and the Remington had features which greatly appealed to his knowledge and experience.[73]

Central to Remington's design was its solid frame with a topstrap. The frame, which included the grip, was made from a single forging which was then machined to the proper specifications. It required less machining than the more complicated Colt; it was stronger, and it was more economical to manufacture than its Hartford competitor. The base pin which held the cylinder in line was an independent steel rod, itself held in place by the butt end of the loading lever, and required no screws or wedges, as did the Colt. The barrel was a straight tube screwed into the frame, and was in no way part of the housing for the loading lever. The army and navy revolvers were built alike, except the army was larger in size and caliber. Both were well below the price of the Colt.[74]

It took some time to get the Remington .44 caliber army revolver into production; although the firm continued to deliver about 250 navy revolvers per week, it did not deliver its first army revolver until March of 1862. Remington asked $15.00 for its army pistol, only sixty

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[73]Hagner to Ripley, July 18, 1861, Letters Received, Ordnance Office Records, National Archives; Thornton to Ripley, July 2, 1861, ibid.; Ripley to Remington, July 29, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives.

[74]Remington before the Commission, April 24, 1862, "Report of the Commission on Ordnance and Ordnance Stores," Senate Executive Document Number 72, 37th Congress, 2nd Session, pp. 133-134.

percent of the price of the Colt.[75]

Remington was one of the few firms to gain from the Ordnance Commission hearings of 1862. Samuel Remington testified before the commission that on large contracts he could produce the revolver and sell it profitably for $12.00, and that his firm could produce the Colt or any other pistol for about the same price, with not more than a dollar difference on each gun. He made similar claims on the production of the rifled musket. Remington's testimony was in large part responsible for the major change in pricing policy on government arms. Colt, for example, was forced to negotiate new contracts, dropping the price of their army pistol from $25.00 to $14.50 each. After the commission hearings, Remington's contracts were considerably modified. The new contracts of June 13, 1862, called for 5,000 navy revolvers, 5,000 Model 1861 army revolvers, and 15,000 new model army revolvers, the latter being modified to add safety notches to the cylinders and more securely anchor the base pins. Remington Arms had broken the Colt monopoly.[76]

Remington's already large firm rapidly expanded, and by 1863 was producing revolvers in numbers comparable to Colt. By the end of the war, it had delivered over 125,000 of its army revolvers, and more

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[75]Ibid., p. 133; "Contracts Made by the Ordnance Department," House Executive Document Number 99, 40th Congress, 2nd Session, pp. 730-731, 922.

[76]Remington before the Commission, April 24, 1862, "Report of the Commission on Ordnance and Ordnance Stores," Senate Executive Document Number 72, 37th Congress, 2nd Session, pp. 133-134; Ripley to Colt, June 6, 1862, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Ripley to Remington, June 13, 1862, ibid.; Karr and Karr, Remington Handguns, pp. 15-17.

than 133,000 revolvers of all types to the government. In total sales for the period it ranked only slightly behind Colt; by the end of the war, it was the largest producer of pistols in the world.[77]

The third principal supplier of revolvers for the government was the Starr Arms Company of Binghamton and Yonkers, New York. Starr Arms had started as a small firm in the late 1850's, almost as soon as the Colt patent was not renewed. By the start of the war, they had produced only about 1,500 revolvers, all in .36 caliber, of which they had delivered 1,000 to the army under an 1858 contract.[78]

The Starr revolver was a double action pistol, but its complicated action was not delicate nor subject to unusual breakage. At the beginning of the war, it was still produced in only the navy caliber. The double action feature, although not invented by Starr, had been refined until it was unusually smooth and even. Because of the arm's complexity, the Ordnance Bureau, quite naturally, was reluctant to purchase it, but shortages of pistols forced its acceptance, and Starr, too, would get contracts.[79]

At the opening of hostilities, the Starr Arms Company began expanding its works, hoping to get military contracts. A new carbine and musket factory was built in Yonkers, but the revolver works remained at Binghamton. With the revolver shortage becoming critical in the summer of 1861, and with the war taking on the prospect of being

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[77]Dyer, "Annual Report of the Chief of Ordnance," Ordnance Collection, 1812-1889, Vol. IV, p. 1572.

[78]Everett Clapp before the Commission, April 10, 1862, "Report of the Commission on Ordnance and Ordnance Stores," Senate Executive Document Number 72, 37th Congress, 2nd Session, p. 287.

[79]Edwards, Civil War Guns, p. 197.

longer than anticipated, the Ordnance Bureau's reluctance to contract for Starr revolvers evaporated; on September 23, 1861, Ripley offered the Starr Arms Company a contract for 12,000 of its new .44 caliber army pistols.[80]

H. H. Woolcot, the company's president, and Everett Clapp, its treasurer, had underestimated the time required to get into full production. Desperately behind schedule, the firm was still expanding and tooling when a second order, this one for 8,000 army pistols, arrived in January of 1862. Under its first contract, the company had been expected to deliver its first 500 revolvers in October of 1861. The same number were to be turned over in November, with deliveries rising in December to 1,000 per month. Starr had been unable to ship any of these arms by the end of 1861.[81]

Although the company delivered substantial numbers of arms in January of 1862, the early delays proved costly to Starr, at least in the short run. The Ordnance Commission declared forfeit the early delivery failures, and reduced the order on Starr pistols from a combined total of 20,000 to 15,000, and the price from $25.00 to $20.00 in June of 1862.[82]

By the time this decision was handed down, Starr was in full

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[80]Ripley to Clapp, September 23, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives.

[81]Ibid.; "Contracts Made by the Ordnance Department," House Executive Document Number 99, 40th Congress, 2nd Session, p. 958.

[82]Ripley to Clapp, June 12, 1862, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Holt and Owen to Ripley, May 6, 1862, "Report of the Commission on Ordnance and Ordnance Stores," Senate Executive Document Number 72, 37th Congress, 2nd Session, pp. 291-292; Holt to Stanton, June 30, 1862, ibid., pp. 292-293.

production. Thereafter, Starr began delivering their pistols at a regular rate of 1,000 or more per month, and eventually increased their capacity to more than twice that amount. In December of 1863, the price of the company's service revolver was dropped to $12.00 per gun, indicating the beginning of the deliveries of the new model Starr single action army pistol, which was simpler and more economical to manufacture. By the end of the war, Starr had delivered almost 50,000 revolvers to the Ordnance Department, making Starr the third largest producer of Union pistols, behind only Colt and Remington.[83]

Other manufacturers furnished revolvers to the government, but the combined total of all of these arms represents a relatively small proportion of the total pistol purchases during the war. Some of these were mechanical failures, and were purchased only because of desperate needs early in the war. The best example was the Pettengill, a clumsy double action, hidden hammer revolver, of which the government purchased 2,000. When Dyer tested the arm in 1862, he found that it repeatedly failed to revolve smoothly when clean, and almost not at all when fouled. In his mild, bureaucratic language he declared it "not 'suitable in all respects' for the military service." Another such arm, though somewhat better than the Pettengill, was the Savage revolver. The weapon was operated by a double ring in the shape of the figure "8" inside of an oversized trigger guard. The lower ring of the "8" operated the mechanism by rotating the cylinder and cocking

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[83] Ripley to Clapp, September 22, 1863, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; "Contracts Made by the Ordnance Department," House Executive Document Number 99, 40th Congress, 2nd Session, pp. 958-959; Dyer, "Annual Report of the Chief of Ordnance, October 23, 1866," Ordnance Collection, 1812-1889, Vol. IV, p. 1572.

the hammer; the trigger inside the upper ring was used to fire the arm. In its need for pistols, the army bought or contracted for over 11,000 of these arms, but they were liked by few, and were dropped from issue as soon as they could be replaced.[84]

Among the better pistols bought by the government was the Whitney, a solid frame .36 caliber revolver much like the Remington. Although the army purchased only slightly over 11,000 of these, most of the 30,000 produced by Whitney during the war found their way into the hands of the Union forces, particularly the navy. The army's only real objection to the Whitney was its small caliber. Another well designed and well built revolver was the Rogers & Spencer, produced by the same firm which had made the ill-fated Pettengill. It too resembled the Remington. The Ordnance Bureau contracted for 5,000 of these arms, but they were delivered too late to see service. The high opinion held of the Whitney and the Rogers & Spencer made it clear that the Ordnance Bureau preferred the solid frame revolvers, of which the Remington was the most prominent. After Colt filled its last contract in late 1863, the Ordnance Bureau contracted only for revolvers of the solid frame design.[85]

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[84]Ripley to Rogers, Spencer & Co., December 26, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Dyer to Ripley, May 20, 1862, Letters Received, Ordnance Office Records, National Archives; Dyer, "Annual Report of the Chief of Ordnance, October 23, 1866," Ordnance Collection, 1812-1889, Vol. IV, p. 1572; Ripley to Dyer, October 16, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Ripley to Wheelock, November 28, 1861, ibid.; Dyer, "Annual Report of the Chief of Ordnance, October 23, 1866," Ordnance Collection, 1812-1889, Vol. IV, p. 1572.

[85]Ibid.

Colt, Remington, and Starr, together,produced about ninety percent of all domestically produced revolvers listed in the acquisitions of the Ordnance Department for the period of the Civil War. The purchase list of revolvers reveals that the government acquired almost 359,000 domestically manufactured revolvers and only about 14,000 foreign revolvers. These figures do not include all revolvers, nearly all of which were American manufactured, acquired by officers as personal weapons or by individual soldiers as added insurance, nor do they include all sidearms purchased by the states. They do represent the bulk of revolvers in the hands of Union troops—the largest number of handguns ever issued to troops up to that time.[86]

The power of industry in the United States is nowhere better revealed during the Civil War than in its production of firearms. New techniques of both production and management were developed during the war and passed on to other industries. The Union, whose public and private arms manufacturers probably produced less than 50,000 firearms in 1860, produced between 2,500,000 and 3,000,000 during the Civil War, a figure never before matched. This accomplishment, which helped save the Union, is one of the most remarkable industrial achievements in the history of technology.[87]

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[86] Ibid.

[87] Ibid.

CHAPTER IV

THE BREECH-LOADER CONTROVERSY, 1811-1861

No weapons controversy in American military history prior to the Civil War had the duration and intensity of feeling equal to the long-standing dispute over the virtues of breech-loading arms. The Civil War would reopen the old, never fully resolved controversy. Time and technology would finally settle the disagreement which the tactical arguments could not. The roots of this controversy go far back into the nineteenth century, and one has to look back over four decades before 1861 to find the first American military breech-loading arm. This weapon faced the same problems that its successors would face forty years later—technical problems and the attitudes of a conservative officer corps.

The first American military breech-loading arm was a rifle invented by William H. Hall and patented in May of 1811. The ignition system was flintlock, but the method of loading was quite different from that of the common musket. The weapon could take either cartridge or loose ammunition, and the loading procedure was simple. To the front of the trigger guard was a lever, when pulled directly to the rear, allowed a short section of the barrel to pivot enough to expose the forward end. This tilted section of the barrel, the breech, served as the chamber, which was then charged. This section was next pushed back in line with the barrel, where it was securely locked. The

priming was as in all conventional flintlock weapons.[1]

Hall's weapon was first submitted to the military in 1813. At that time the Secretary of War, John Armstrong, ordered some of the rifles for future tests, but apparently no action resulted. Again, in 1816, the weapon was presented for inspection. The preliminary trials were such that, in January of 1817, the government placed an order for 100, which were delivered within the year. The first test, held at Greenleaf's Point in late 1818 and early 1819, was significant in that the officers were immediately impressed with the results. The Hall was fired over 7,000 times with no difficulty developing. The inspection board felt that this was at least equal to the usage of fourteen or fifteen campaigns. In his report, Colonel Nathan Towson, president of the board, stated:

> The advantages of these guns over the common ones now in use are, the celerity and ease with which they may be loaded in all situations. It is of great consequence in the rifle; the difficulty of loading is of the greatest objection to its more general introduction into service; second, greater accuracy and less recoil (in the musket;) third, less weight (in the rifle).[2]

On March 19, 1819, the government agreed to pay Hall a royalty for the rights to manufacture the weapon at the national armory at Harpers Ferry. Hall was to receive $1,000, with the government having the right to produce not more than 1,000 arms. By May the armory was tooled, and production of the arm began. It was the first military weapon with interchangeable parts produced in the national armories,

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[1] Bomford to Barbour, January 21, 1827, Ordnance Collection, 1812-1889, Vol. I, p. 150.

[2] Ibid., pp. 151-152; "Report of the Board of Officers," as quoted in Bomford to Barbour, January 31, 1827, ibid., p. 159.

and indeed in the world.[3]

It was not until July of 1826 that the arms reached the troops for further tests, when at that time, two companies at Fortress Monroe received them. Finding the Hall to be more than twice as effective as either the rifle or the musket, the board of officers at Fortress Monroe stated in December, 1826:

> In reporting its opinion of the general utility of Hall's rifle, the staff of the school expresses its perfect conviction of the superiority of this arm over every other kind of small arm now in use; and this opinion has been formed after . . . contrasting them in various ways with common rifle and musket, in all which trials their great and general superiority has been manifest.

To these words of praise concerning the Hall rifle, Colonel George Bomford, of Ordnance, added his own:

> The convenience, safety, and celerity with which these are loaded and fired, and the accuracy and effect of their fire, and the durability of the arms, have been most effectively tested, and have proved not inferior in any of these respects to the common arms, but generally superior in all of them, and particularly so in all that relates to celerity and effect.[4]

The army appeared to have found an all-purpose arm. It could be loaded rapidly and would thus eliminate the need for the smooth-bore musket. The Hall also made the widespread use of a military rifle practical. The rifle had always had objectionable military features. Unlike the musket ball, the rifle ball had to be full-bore size in order to take the riflings and give the ball the spin necessary for accuracy. This meant that in loading the common military rifle the

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[3]The Hall contract, March 19, 1819, as quoted in Bomford to Barbour, January 21, 1827, ibid., p. 152.

[4]Ibid., p. 150; "Report of the Board of Officers at Fortress Monroe, December 17, 1826," as quoted in Bomford to Barbour, January 31, 1827, ibid., p. 159; Bomford to Barbour, January 21, 1827, ibid., p. 152.

ball had to be driven the length of the barrel from muzzle to breech against the friction and tight fit of the bore. During firing, the rifle bore became increasingly fouled and the ball increasingly hard to drive. After about twenty rounds or so, it was a virtual impossibility to load the arm without first cleaning it. The Hall, by receiving the charge directly into the chamber, eliminated this problem.

Some officers, including Colonel Bomford, seemed to consider the Hall rifle for general adoption. When asked, in 1836, by James I. McKay of the House Committee on Military Affairs, how many of these rifles would be produced in the next twenty years, Bomford answered that at the present rate of 3,000 per year at the national armory and 1,000 by private armories, it would be 80,000, but if they were generally adopted, "as its great advantages fully justify," it would be 820,000. His sentiments about general adoption came out again when he noted: "In all trials and comparisons with other firearms, to which it has been submitted, whether by private or official persons, it has invariably maintained its superiority over all other firearms; and in short, there is no longer any doubt of its being the best small-arm now known." Bomford was not unaware of the prejudice against any drastic change in the military arm, for in the same communication he added: "Yet it might be hazardous to introduce so great a change into the principal weapon of the country, (though in all human reason it would be accompanied with signal advantages), its adoption, therefore, it is believed, should be gradual." This gradual adoption would mean that the Hall would take up one-fourth of the production of mili-

tary shoulder arms or about 205,000 for the twenty-year period.[5]

Bomford and the other officers who held his view on the Hall rifles were not, however, strong enough to turn back the tide against the breech-loading piece. Despite the high praise given it by the testing boards and the head of the Ordnance Bureau, the Hall rifle's proponents were fighting a futile battle. They faced a hostile group of conservative army officers. It is somewhat surprising that the Hall, which was ideal in loading for mounted men, met the most resistance from the officers of the United States Dragoons.[6]

Other inventors of breech-loading weapons were also trying to place their arms in the service, but for the most part, they made no permanent impression upon military leaders. For example, in 1834 Captain Alfred Mordecai, in Europe, informed Bomford that "a Mr. Robert, in Paris, has invented a fusil of great ingenuity, to load at the breech." Mordecai claimed that it had fired 393 times in three-quarters of an hour, and 25,000 round without need for repair. He asked for money and authority to purchase two of them for the purpose of tests, but although his request was granted, nothing more was heard of Robert's fusil.[7]

Pressure against the breech-loading arm, particularly by the Dragoon officers involved in the Indian campaigns in Florida, had grown very strong by 1840, when the question of the Hall rifles and carbines came to a head. Because of this pressure, Secretary of War

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[5]Bomford to McKay, February 8, 1836, ibid., pp. 303, 305.

[6]Talcott to Spencer, March 22, 1842, ibid., pp. 335-336.

[7]Bomford to Cass, April 1, 1834, ibid., p. 273.

Joel Poinsett inquired of George Talcott, the Chief of Ordnance, as to the past view of the Ordnance Bureau that the Hall was superior to all other military weapons. Talcott replied that the Ordnance Department's views were "unchanged" since it was based on trials and reports. He was also careful to point out the advantages of the Hall in loading on horseback.[8] Nevertheless, Poinsett included in his annual report a statement based on the money already invested in the arms and on the threat to national safety by the adoption of new inventions without trial or experiment which

> . . . has induced me, generally, to discountenance their introduction into the service. I fear that every attempt to increase the rapidity of firing, such as facilitating the loading by opening the breech, or multiplying the chambers of the gun, will fail as they have hitherto done, after involving the government in great expense.[9]

The use of the Hall smooth-bore carbine in Florida, and complaints against the arm as being inferior and dangerous, led to a letter of inquiry from Senator William S. Archer of Virginia. He wanted to know if there was considerable rust and wear at the joint between the chamber and the barrel, and if this wear produced all of the evils claimed. Talcott answered, "No." Archer then asked if a great deal of firing caused a wearing at the joint. Talcott again answered, "No." Archer further wanted information concerning the use of the Hall rifle in Florida and of the danger in using them. Talcott replied that "the dragoons are armed with carbines which have failed

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[8]Talcott to Poinsett, January 25, 1840, ibid., p. 373.

[9]Joel Poinsett, "Annual Report of the Secretary of War, 1840," United States Senate Executive Document Number 1, 26th Congress, 2nd Session (Washington: Blair and Rives, 1841), p. 21.

in the stocks, but without any hazard to the soldier." Talcott never changed his mind, and even after the Hall went out of production, the Chief of Ordnance informed the Secretary of War that Hall's invention was "still considered a valuable one."[10]

The effort to save the Hall from being discarded was futile, and production of the arm at the National Armory at Harpers Ferry was discontinued in 1844, two years after Hall's death. The officers who had led the attack against the Hall rifles and carbines had thus won their fight. They had been greatly aided by the fact that the weapon had not always functioned as it should have even though their reliability was still greater than any other arm of their time. The Dragoon officers complained that the Hall did not always fire. This was true, no doubt, because the cartridge was not driven home with a rod, and because the carbine was carried muzzle down, which tended to separate the components of the unrammed cartridge even further. However, the chief problem may have been that the garrison soldier tended to polish his weapon until it shone, using a harsh abrasive which cut away the surface of the metal. On the Hall, this would remove the face of the chamber, thus allowing gas to escape and making firing unpleasant. The increased distance between the chamber and the barrel also permitted a much greater amount of moisture to enter the chamber to dampen the powder of the cartridge.

Chief of Ordnance Talcott pointed out that the First Dragoons had been "armed with carbines of this model and they had received the most

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[10]Talcott to Spencer, May 13, 1842, Ordnance Collection, 1812-1889, Vol. I, pp. 442-443; Talcott to Wilkins, January 14, 1845, ibid., Vol. II, p. 3.

unqualified approbation." The reasons for the change in this opinion, he thought, were that no attempt was made to keep the arms in good condition or to instruct the soldiers in their use. These are the most logical reasons, because the arm, despite the claims of the Dragoons, was simple and had little to go wrong. Talcott further stated: "If my honor and life were at stake and depended on the use of firearms, I would sooner take one of these carbines than any other weapon." His exclamation fell upon deaf ears.[11]

Although the Hall was the most important breech-loading arm during the period from 1820 to 1850, it was not the only one to face the scorn of the officers opposed to this type of weapon. In 1838 the Jenks gun, another breech-loading arm, was submitted to a board of officers for tests. The weapon was fired 4,500 times and performed well. Then, to determine the life of the arm, it was fired another 10,313 times, when the nipple split. This total of 14,813 rounds was considered the life of the gun. The board reported that "it is well adapted to and capable of performing all the requirements of the service . . . [but] that in common with all other arms loading at the breech the machinery necessary to its operation is objectionable."[12]

In 1841, Jenks and Colt revolving carbines were taken by Captain Edwin V. Sumner of the First Dragoons to Florida "with no prejudice for or against either of them." Sumner reported that the "Colt's

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[11]Official Report of Colonel George Croghan, Inspector General of the United States, Fort Des Moines, October 26, 1836, as quoted in Francis Paul Prucha, ed., Army Life on the Western Frontier (Norman: University of Oklahoma Press, 1958), p. 97; Talcott to Wilkins, January 14, 1845, Ordnance Collection, 1812-1889, Vol. II, p. 3.

[12]Ibid., p. 5.

carbine will not do for military purposes," but he felt that the Jenks, with minor alterations, "would be by far the best piece we have ever had." The minor alterations which Captain Sumner suggested was the institution of a "whole barrel," which, of course, would change these weapons from breech-loading to muzzle-loading arms. "No time of any consequence is saved," said Sumner, "by loading at the breech." This "unprejudiced" officer went on to say that breech loaders were "more liable to accident . . . and . . . eventually these 'broken back' guns will be pronounced imperfect and disregarded altogether. Guns loading at the muzzle can be fired more rapidly; and . . . [are] infinitely better in all respects." Sumner was not alone in this view. Major T. T. Fauntleroy of the Second Dragoons refused to take these carbines into the field because his men were ignorant of their use; Captain Enoch Steen, Company E, First Dragoons, said that the Jenks were "not worth the store room they occupy."[13]

The attitudes of the military were apparent to all, even to the officers themselves. In 1842, Talcott, in speaking of the testing of the Jenks carbines in Florida, informed the Secretary of War that "prejudice against all arms loading at the breech is prevalent among the officers, and especially the Dragoons." In late 1848, Talcott, in reply to a letter from William H. Hubbell, a Philadelphia arms inventor, said: "As breech-loading arms have fallen into disrepute of late years, I do not consider it probable that those of your construction will be found an exception whenever trial is made."[14]

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[13]Ibid., pp. 5-6.

[14]Talcott to Spencer, March 22, 1842, ibid., Vol. I, p. 336; Talcott to Hubbell, December 26, 1848, ibid., Vol. II, p. 258.

Talcott, although a champion of the breech-loader, nevertheless agreed with the majority of the army officers in denying any great advantage in increased firepower. In 1848, he expressed the opinion that repeating weapons, with the possible exception of "the double barrel gun, which for the general purposes of the service appears to be a sufficient extension of the repeating principle," were of no value. In 1852, Colonel Henry Knox Craig, who replaced Talcott after his disgrace and removal from service, revealed a similar opinion on firepower. "Rapidity of fire," he wrote, "may well be regarded as of doubtful utility," and might even injure without coolness of the men in the ranks. Perhaps in the final analysis, the tactical concepts of the period, as much as anything, defeated the breech-loading arms.[15]

In 1848, a new breech-loader, invented by Christian Sharps who had worked with Hall at Harpers Ferry, began to change the minds of many. This arm, in contrast to the Hall, was not a "broken back" gun, but opened the breech from the rear by means of a downward thrust of the trigger guard. This action dropped the breech block out of line with the chamber and barrel. Talcott spoke of "its superiority over all other breech-loading arms which have come to my notice," and was of the opinion that it was suitable for the public service. Upon Talcott's recommendation, 200 were purchased for further tests.[16]

Talcott's successor, Craig, was not of the same opinion. He included the Sharps when he said that the tests were "in condemnation

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[15]Talcott to Marcy, April 5, 1848, ibid., pp. 220-221; Talcott, "Annual Report of the Chief of Ordnance, October 1, 1852," ibid., p. 500.

[16]Winston O. Smith, The Sharps Rifle (New York: William Morrow, 1943), pp. 4, 16; Talcott to Conrad, December 17, 1850, Ordnance Collection, 1812-1889, Vol. II, p. 260.

of all breech-loading arms." He seemed to be in complete agreement with Colonel David E. Twiggs of the Second Dragoons who refused in advance to accept any patented breech-loading arms. Craig placed a good deal of faith in Sumner's report of 1841 that breech-loaders were "more liable to accidents." Yet, in the same communication, Craig defended the musketoons, short, light muzzle-loading carbines designed to replace the Hall, as being good arms despite some "slight shortcomings." These shortcomings were that their ramrod swivels broke off easily; they were inaccurate over fifty yards; they were less powerful; and one-third of them failed when they were first fired.[17]

It may be partially because of the Sharps rifle that Congress, on August 5, 1854, appropriated $90,000 "for the purchase of the best breech-loading rifles." Preliminary tests of several breech-loading arms lasted from 1854 to early 1857, at which time a board of officers was convened to make more extensive tests. The board passed favorably on several, including one invented by Ambrose E. Burnside, a former army officer, and one invented by George W. Morse, an employee of the Harper's Ferry Armory, but it particularly favored the Burnside carbine. These favorable reports were given from West Point under the dates of March 6 and August 17, 1857, but the board added:

> In submitting this opinion the board feels it their duty to state that they have seen nothing in these trials to lead them to think that a breech-loading arm has yet been invented which is suited to replace the muzzle-loading gun for foot troops. On the contrary, they have seen much to impress them with an opinion unfavorable to the use of a breech-loading arm for general military purposes.

Craig apparently concurred with the opinion of the board, for in

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[17]Craig to Jones, July 12, 1851, ibid., pp. 361-362.

October of the same year he informed Secretary of War John B. Floyd that it would be unwise to purchase the Burnside patent. Furthermore, he stated, the national armories should be confined "to the manufacture of the established model, which are known to be good and serviceable."[18]

After this series of tests, Craig, on October 24, 1857, refused to consider any more breech-loading arms, although he had earlier admitted that improvement was still going on. Realizing the impossibility of analyzing the attitude of the entire United States Army through one man's opinion, it is still a reasonable assumption that the average officer generally agreed with Craig. The opinion of the ordnance testing boards always reflected the views of regular line officers on the question of weapons. If Craig did not express the prevailing opinion of the officers, they, at least, gave no sign of disagreement.[19]

During 1858, Craig showed some signs of relenting, admitting that breech-loading carbines were valuable to mounted troops, but still making no concessions as far as the infantry was concerned. During that year many of the troops of the United States mounted units had been armed with Sharps and Burnsides breech-loading carbines. It was the performance of these weapons that caused Craig to change his mind, since it could not have been because of a change in the arms themselves. The breech-loader made even more progress in September, 1858, when the

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[18] United States Statutes at Large, Vol. X, p. 579; Benet to Belknap, March 6, 1875, Ordnance Collection, 1812-1889, Vol. IV, p. 919; Craig to Floyd, October 22, 1857, ibid., Vol. II, pp. 616-617.

[19] Craig to Floyd, October 24, 1857, ibid., p. 618.

government agreed to pay Morse a royalty to convert some of the arms in the national armories to his plan, which used the metallic cartridge.[20]

In his annual report of 1859, Craig showed an even more significant change when he wrote:

> With the best breech-loading arm, one skillful man would be equal to two, probably three, armed with the ordinary muzzle-loading gun. True policy requires that steps should be taken to introduce these arms gradually into our service, and to this end preparation ought to be made for their manufacture at the public arsenals.

In his report of 1860, he revealed a further change in attitude. He now felt that the breech-loaders were "by far the most efficient arms ever put into the hands of intelligent men," and that light troops should be armed with them immediately. He went further by saying:

> I hold it to be an inhuman economy which sends a soldier into the field, where his life is constantly in danger, without furnishing him with the best (not the most expensive) arms that are or can be made . . . . as certainly as the percussion cap has superseded the flint and steel, so surely will the breech-loading gun drive out of use these that load at the muzzle.

These statements are significant not only in that they represent a change in attitude toward a particular type of weapon, but also in that they indicate, however slightly, a realization of the importance of an increase in firepower.[21]

The Morse conversions had been produced in only limited numbers

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[20]Craig to Floyd, June 5, 1858, ibid., p. 642; Benet to Belknap, March 6, 1875, ibid., Vol. IV, p. 920.

[21]Craig, "Annual Report of the Chief of Ordnance, October 23, 1859," ibid., Vol. II, p. 672; Craig, "Annual Report of the Chief of Ordnance, October 30, 1860," ibid., pp. 691-692.

when Congress, under the leadership of former Secretary of War and then Senator Jefferson Davis of Mississippi, restricted the government from producing any more arms for which royalties must be paid. This decision by Congress may have been an important factor in causing Craig to back away from the breech-loader issue, at least as it applied to the infantry.[22]

There were, however, other factors in the decline of the breech-loader's importance in the minds of military men. The new rifle muskets during the five years since their introduction had undergone extensive testing; they had proven remarkably rugged and about as easy to load as any muzzle-loading gun could be. In addition, they were impressively powerful and superbly accurate. In short, the new muzzle-loading musket had become the darling of the service. The situation may also reflect the old military prejudice against patented arms being manufactured by the national armories. Craig gave a strong indication of this view when in February, 1861, he praised the new Springfield and stated that repeating rifles, referring to the Colt, were undesirable for infantry. "[The] musket and rifle of the present model . . . are unsurpassed for military purposes," he continued, "and the repeating arm should be restricted to the . . . [pistol]."[23]

In summation, at the beginning of the Civil War the breech-loader had been accepted only for the use of mounted troops, but the form it was to take was still undecided. It seemed to have been rejected not only for its defects, but in principle by the other arms of the service.

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[22]United States Statutes at Large, Vol. XI, p. 335.

[23]Craig to Holt, February 6, 1861, Ordnance Collection, 1812-1889, Vol. IV, p. 842.

In all fairness to military men, not all of the problems associated with breech-loading arms had been solved by the period just preceding the Civil War. But a higher standard of performance and reliability was required of the breech-loading arms than of their muzzle-loading rivals. These standards were in large part the result of prejudice, but there was also the fear that the rapid technological development of the mid-nineteenth century might quickly relegate to obsolescence any arm which did not meet the standards of the service, leaving the government with large numbers of imperfect and expensive weapons.

Any military arm must meet certain standards if it is to be useful. It must first of all be rugged and simple. This, in the period prior to the Civil War, was even more important to the United States Army than it was to European armies. The United States service was in large measure a frontier army in which an armorer at one of the many small posts could make the repairs necessary to keep the arm in service. This would preclude large numbers of moving parts or parts subject to a great deal of wear by movement. It also should be simple enough that many ordinary difficulties could be repaired in the field by the soldier.

Of equal importance was the reliability of the weapon. The soldier must know that the weapon will fire when called upon to do so. The arm must be such that the soldier has implicit faith that it will perform its task. There was a fear with many of the early breech-loaders that the powder might become wet if carried with a charge in the chamber for a period of several days. Usually the soldier, whether armed with the muzzle-loader or the breech-loader tried to clear the chamber

before any military action. But if this was not possible, he still wanted to know that the charge could be expected to fire. The opening at the joint on the face of the chamber of the Hall and the rear of the chamber on the Jenks and the Sharps clearly made them more susceptible to the danger of moisture.

The army expected the arm to be operated easily. Here the breech-loaders, despite the protests of some army officers, had a distinct advantage. They required fewer and shorter motions. The gun was also easier to clear and the chamber was accessible to examine the condition of the cartridge.

Another test was that of accuracy and power. Here the breech-loaders, which were seriously tested, proved to be adequate, but generally not as powerful as the Springfield rifle musket. Until the 1850's, accuracy was not considered of high priority, but the breech-loaders, nonetheless, met the tests. In the matter of safety, all of the breech-loaders which got as far as field trials in the hands of the troops appear to have been safe. Gas leakage at the breech occasionally caused discomfort, but rarely injury.

Gas leakage at the breech proved to be the most difficult problem of the early breech-loader. Although the Hall and the Jenks were clearly superior to their muzzle-loading competitors, they clearly did not solve the problem. Even the highly prized Sharps rifles and carbines suffered from the same defects. As long as this problem remained, the breech-loading gun could not be considered perfected.

The mid-1850's saw the beginning of the solution, when several arms and cartridges for them were patented for the purpose of reducing or eliminating this leakage. Several inventors seem to have come upon

the answer about the same time. They reasoned that the defect lay not in the arm but in the cartridge. It was not possible to make an arm with a self-sealing chamber; even if it were possible, the expense would make it impractical. The answer lay in the cartridge which could be made to seal the breech upon the discharge of the arm. Only two arms in this category reached the stage of field trials in any numbers. They were the Burnside, patented by Ambrose E. Burnside in 1856, and the Smith, patented by Gilbert Smith in 1856 and 1857. The Burnside used a paper wrapped metallic cartridge, and the Smith used a rubber cartridge. Neither, however, had internal priming, and both used a percussion cap external of the chamber for ignition. These two arms, particularly the Burnside, which was first to be favorably received, marked an important milestone in the development of military arms.[24]

The next step in developing the breech-loading arm was the waterproofing of the chamber. Here again, the solution lay with the cartridge and not the arm itself. In 1857, George W. Morse patented an arm using a completely self-contained metallic cartridge. The priming was within the brass case, and the hammer struck a firing pin, which in turn struck and detonated the primer and the charge. The Morse system, which was to be used to convert existing military rifles, received two favorable reports from the Navy Bureau of Ordnance in 1857, and was the choice of the army testing board in 1858. The law

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[24]National Rifle Association, Civil War Small Arms (Washington: National Rifle Association, 1959), pp. 20-21; Fuller, The Breech-Loader in the Service, 1816-1917, p. 102; "Report of the Board of Officers, March 6, 1857," Reports of the Testing Boards, Ordnance Office Records, National Archives; "Report of the Board of Officers, March 17, 1857," ibid.

restricting royalty on arms, and the growing feeling that the Springfield muzzle-loading rifle musket called for no further development, ended its production.[25]

At this point in the development of military firearms, the chamber had been sealed and waterproofed. The cartridge for simplified loading and extraction had been perfected. These accomplishments made possible not only a practical breech-loader, but also a practical repeater. At this point the official policy of the peacetime regular army seemed to move away from the development of new arms.

Interest, however, would not wane for long. The four tragic and bloody years of the Civil War which soon followed led to the rapid development of the interest of regulars, volunteers, and draftees alike in more rapid firing small arms.

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[25]"Report of the Board of Officers, July 31, 1858," ibid.

CHAPTER V

THE BREECH-LOADER CONTROVERSY, 1861-1865.

The long-standing breech-loading controversy was intensified by the coming of the Civil War. Both the magnitude of the issue and the number of problems involved in purchasing and distributing these arms increased as a result of the conflict. Although the army had already accepted the principle of breech-loading carbines for cavalry, it had not decided on the system or model to be adopted. At the outset of the war, the Sharps was favored, and the Burnside, which had received a number of favorable reports, ranked second to it. In addition, the Ordnance Bureau had taken under advisement the questions of several other breech-loading arms. Although the breech-loading principle had received some praise from the Ordnance Bureau, few army officers seriously considered the adoption of breech-loading rifles for the infantry in the foreseeable future.

The selection of Ripley to head the Ordnance Department brought to that office an implacable foe of breech-loading arms for infantry. Ripley accepted breech-loading cavalry arms, but his acceptance was based entirely on the ease with which they could be loaded by mounted troops. The concept of increased firepower did not impress him at all. Indeed, he found the increased rate of fire produced by the breech-loading arms objectionable. He believed that this new increased fire-power would have a detrimental effect on the soldiers' marksmanship

and discipline, and lead to vast wastage of ammunition, thereby increasing supply problems.[1]

Ripley made his opposition to breech-loading infantry arms clear in June of 1861 when he wrote that "some . . . [were] unfit for use as military weapons, and none as good as the U. S. musket." He went further: "The U. S. Muskets as now made have no superior in the world." Ripley, while superintendent at the Springfield Armory, had helped design the rifle musket and prepared the armory for its production. He was justly proud of the arm, regarding it as not only the best, but the ultimate infantry arm. With such an attitude, it is no surprise that the Chief of Ordnance was inclined to disregard any breech-loading infantry weapon. Ripley's stubborn inflexibility closed his mind to the possibilities of these new arms.[2]

Some of Ripley's arguments were sound from the standpoint of logistics and procurement, but often it is clear that he was using such arguments to buttress his prejudice. He was rightly concerned about the introduction of many types and calibers of small arms into the service, but he used hyperbolic arguments about this problem to retard the purchase and issue of breech-loading arms in general. "This evil," he wrote, "can only be stopped by positively refusing to answer any requisition for or propositions to sell new and untried arms."[3]

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[1] See Chapter VI.

[2] Ripley, "Notes on Contracts, June 11, 1861," Official Records, Ser. iii, Vol. II, p. 264.

[3] Ripley to Cameron, December 9, 1861, Ordnance Collection, 1812-1889, Vol. IV, pp. 851-852.

Ripley was also concerned with the cost of the breech-loading arms, and pointed out to the Secretary of War in December of 1861 that the government was under contract for 73,000 of these expensive arms, and that any addition to this number would be a needless and wasteful expense. Thus, while ordering large numbers of privately produced muzzle-loading arms, he was discouraging the expansion of contracts even for breech-loading cavalry carbines. Ripley used both the cost and the multiplicity of arms types and calibers as excuses to refuse contracts for breech-loaders. These actions prevented many firms from tooling for production and delayed for several months the delivery of their arms. The loss of these months of preparation and production lost the Union 100,000 or more arms, and made the consideration of large numbers of breech-loading infantry arms nearly impossible.[4]

Ripley's lack of interest and positive resistance to the breech-loaders are reflected in the purchase and contract records of the Ordnance Bureau for the calendar year of 1861. Of the 236,157 rifles and muskets purchased between April 12 and December 31, 1861 only 2,676, or just over one percent, were breech-loaders. For the same period, the purchases of breech-loading carbines, which Ripley admitted were the best weapons for cavalry, amounted to only 6,645, or about forty-six percent of the total of 14,380 carbines purchased. Thus, of all shoulder arms purchased during the period, only about three and a half percent were breech-loaders.[5]

The small number of breech-loading arms purchased can be explained

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[4]Ibid.

[5]Ripley to Scott, August 17, 1862, Official Records, Ser. iii, Vol. I, p. 423.

in part by the lack of productive capacity of the firms in the early days of the war. But Ripley's hostility to the breech-loader is clearest in his refusal to let contracts to the firms manufacturing them. By the end of 1861 the government had contracted for hundreds of thousands of foreign rifles and muskets and over 600,000 of the privately produced Springfield rifle muskets in addition to the production of the national armory. Yet, the total figure for breech-loading arms, both rifles and carbines, for which the government was under contract was but 73,000, a figure which Ripley considered to be adequate.[6]

Insofar as possible, Ripley clearly was attempting to block the introduction of the newer arms into the service. He used a number of techniques to avoid or delay ordering the arms which he found objectionable. Almost all of these methods were strictly within the letter of army regulations. Ripley's conservatism, and his belief that breech-loading arms were of only limited use, led him to use bureaucratic methods to oppose their procurement in large numbers.

In mid-1861 he refused the Marsh breech-loaders on the ground that they were of no military value, and because they were expensive. When President Lincoln forced the acceptance of these arms, Ripley issued the contract, but added a severe clause calling for the cancellation of the entire order if the arms were not delivered at the scheduled rate. In the contract the due date of the first delivery was impossibly early, and therefore, if the contract had been allowed

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[6] Ripley to Cameron, December 9, 1861, Ordnance Collection, 1812-1889, Vol. IV, pp. 851-852.

to stand, undoubtedly there would have been an early cancellation. The President again intervened and the contract was modified. The Chief of Ordnance took an equally hostile view of the Merrill breech-loading carbine. He refused to order them on the grounds that the producer, Merrill, Thomas & Company, had failed to deliver on two pre-war contracts. In November of 1861, McClellan asked for Colt revolving rifles. His requisition was not filled. Ripley replied that the department had "none on hand." Only under pressure did Ripley later order the arms from the Colt factory.[7]

The shortage of officers was a reason, but also an excuse for delaying the examination of arms. On numerous occasions, Ripley replied to an offer of a contract or of a sample weapon by saying that because of the pressing business of the Ordnance Department there were no officers available to test these inventions. Often he added that the arm was undesirable for military use, or that the arm offered no advantage over models already in service.[8]

One of the best examples of Ripley's delaying tactics is the case of Colonel Hiram Berdan's First Regiment of United States Sharpshooters. In June of 1861, Berdan received permission to raise a special force of marksmen. Having promised his men breech-loading and

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[7]Ripley to Marsh, September 20, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Ripley to Marsh, October 14, 1861, ibid.; Ripley to Merrill, Thomas & Company, May 27, 1861, ibid.; Ripley to Kellogg, October 12, 1861, ibid.; Ripley to Merrill, Thomas & Company, October 25, 1861, ibid.; Ripley to Merrill, Thomas & Company, December 24, 1861, ibid.; Ripley to McClellan, November 5, 1861, ibid.; Ripley to Colt, January 27, 1862, ibid.

[8]Ripley to Denny, October 4, 1861, ibid.; Ripley to Colisher & Perry, December 18, 1861, ibid.; Ripley to Lincoln, May 5, 1862, ibid.

heavy telescopic sighted rifles, he wrote to Ripley requesting his cooperation in obtaining these arms. Ripley informed the colonel that his men would be armed with first-class Springfield rifle muskets. Berdan seemed to accept Ripley's position, but in early September he again agitated for breech-loading rifles. His men had been asked their preference, and they had chosen the latest model Sharps rifle. Berdan's actions caused animosity between himself and Ripley. Ripley was making an all-out effort to prevent the multiplying of different types and calibers of arms among the infantry; in addition, he failed to see any advantages in breech-loading weapons for infantry.[9]

In September, President Lincoln visited the camp of the Sharpshooters. While there he was entertained by demonstrations of marksmanship and was favorably impressed with what he saw. As he prepared to leave, he told Berdan: "Colonel, come down tomorrow and I'll give you the order for the breech-loaders."[10]

Even the pressure from the President did not force Ripley to issue Berdan the weapons he had requested. The greenclad Sharpshooters were becoming impatient, and in December Company A informed their congressmen of the situation and asked for their assistance. The congressmen passed the request on to the War Department, but Assistant Secretary of War Thomas A. Scott, who also disliked Berdan and who held some of the same view toward infantry arms as Ripley, replied: "They will be

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[9]Hamilton to Berdan, June 17, 1861, Official Records, Ser. iii, Vol. II, p. 270; Berdan to Ripley, July 22, 1861, Letters Received, Ordnance Office Records, National Archives; Ripley to Berdan, July 27, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Bruce, Lincoln and the Tools of War, pp. 108-109.

[10]Charles Stevens, Berdan's United States Sharpshooters in the Army of the Potomac (St. Paul: Price McGill, 1892), pp. 10-11.

provided with first-class Harpers Ferry rifles—and new pattern Springfield Rifles."[11]

McClellan decided to arm the Sharpshooters with Colt revolving rifles, but found the Ordnance Bureau uncooperative. His request for these arms in early November was refused. After a month of no results, Colonel R. B. Marcy, McClellan's Chief of Staff, wrote Secretary of War Cameron, requesting that the Colt rifles be sent. Cameron passed the letter on to the White House, and Lincoln endorsed the letter by saying that the request for these arms should be considered an order. The Ordnance Department purchased the arms from Colt and a private dearler. The deliveries were made in December, and the arms were issued to the Sharpshooters.[12]

Although Berdan's men preferred the Colts to the muzzle-loading rifle muskets, they were not placated. Their agitation for Sharps continued. The Colts proved not to be dangerous, as some had charged, but they were not as sturdy as Berdan's men had hoped. In January, after growing pressure from the White House, McClellan, and Berdan, the War Department acquiesced to the Sharpshooters. Berdan's men received the first issue of Sharps in May, but were not completely rearmed until June of 1862. Thus, Ripley and other members of the War Department were able to delay the delivery of Sharps for one full

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[11]Bruce, Lincoln and the Tools of War, p. 112.

[12]Marcy to Cameron, December 2, 1861, with Cameron's endorsement to Ripley, December 7, 1861, Letters Received, Ordnance Office Records, National Archives.

year after they had first been requested.[13]

The incident involving Berdan's rifles is perhaps the best illustration of how well Ripley used the red tape of bureaucracy to defy the wishes of officers, public officials, and even the President. It is not, however, proof that Ripley was totally wrong in the Berdan case. Ripley's decision involved a number of questions which include more than simply whether the Sharpshooters would receive Sharps rifles. There was a question of priorities. Given the limited productive capacity of the Sharps Rifle Company, the purchase of rifles would mean a loss of carbines. The government could not have both. The conflict between Ripley and Berdan, however, was not decided by a careful evaluation of these priorities. It was decided as it was because Berdan had influential friends.[14]

Berdan was not the only commander who wished to arm his foot soldiers with breech-loaders. McClellan and Rosecrans had been impressed by the Colt revolving rifles, and had tried to secure them for their men. Many commanders of all branches in the field found breech-loading arms highly desirable. Officers, from lieutenant to general, requisitioned them when they could find an excuse to do so. Cavalry commanders would not take muzzle-loading guns if they could avoid it; after early stop gap measures which led the government to purchase some muzzle-loading carbines, no others were purchased during

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[13]Stevens, Berdan's United States Sharpshooters, p. 163; H. W. S. Cleveland, "Rifle Clubs," Atlantic Monthly, Vol. X (September, 1862), p. 306; Ripley to Palmer, January 27, 1862, Miscellaneous Letters Sent; Ordnance Office Records, National Archives; "Contracts Made by the Ordnance Department," House Executive Document Number 99, 40th Congress, 2nd Session, pp. 551- 946.

[14]See Chapter III.

the remainder of the war.[15]

A few state volunteer infantry regiments were armed with breech-loaders. Whenever they were used, and wherever they were seen by other troops, their fame and popularity spread. The best chance to secure these arms was to be a special unit or a unit with special duties. Many units were formed calling themselves "sharpshooters," hoping the name would be sufficient to have their requisitions filled. Any pretext or special duty, such as skirmishing or guarding supply boats, was used to secure these better arms. Thus, from the outset of the war, there was an almost overwhelming demand from the troops and their commanders for the purchase and issue of breech-loading arms.[16]

The slowness and unwillingness to contract for great numbers of breech-loaders, and the lingering deficiencies which resulted, stemmed partly from Ripley's underestimation of the use and numbers of cavalry. In early 1862, he submitted his estimate of the needs of his department for the coming year. His projections included 500,000 Springfield rifle muskets and 50,000 Harpers Ferry rifles, but only 30,000 breech-loading carbines and no breech-loading rifles.[17]

In examining Ripley's resistance to the breech-loading arms, particularly infantry arms, it must be seen that his objections were

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[15]Dyer, "Annual Report of the Chief of Ordnance, October 23, 1866," Ordnance Collection, 1812-1889, Vol. IV, p. 1572.

[16]Maynadier to Morton, April 8, 1863, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Wright to Ripley, March 10, 1862, Letters Received, Ordnance Office Records, National Archives; Ripley to Wright, March 13, 1863, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Ripley to Wright, March 20, 1863, ibid.

[17]Ripley to Wise, April 28, 1862, ibid.

both theoretical and practical. Since it is not always possible to distinguish between a practical and a theoretical complaint, they must be examined together. These complaints cannot be lightly dismissed.

First, there was the fear that soldiers equipped with breech-loading arms would have a tendency to rely totally on the firepower of their weapons, and would place less reliance in accurate deliberate fire. This, it was argued, would decrease the soldiers' effectiveness and harm their discipline. Later evidence did not bear out these fears, but these views were widely held among both professional and volunteer officers in the early days of the war.

Second, there was the fear that soldiers would fire vast quantities of ammunition, much of it wasted, and that this would create supply problems. While military men greatly exaggerated this argument, there is little doubt that troops armed with breech-loading arms fired a great deal more ammunition than those armed with muzzle-loading rifle muskets. A good deal of ammunition was fired unnecessarily, and to some degree this did create a supply problem, but it was never of the magnitude opponents of the newer arms had anticipated. On the other hand, it is clear that the increased rate of fire was far more effective in combat than any of the officers opposed to the breech-loaders had believed that it could be.

Third, it was generally believed that the breech-loaders were more complex and that their mechanism was fragile. It was thought that these arms were more subject to failure and parts breakage than the rifle muskets. In the event that the arm failed or was damaged, parts replacement and repair would be more difficult, since the orders on the private manufacturers would lead to complications and delays.

The danger resulting from a greater number of moving parts was exaggerated. While breech-loaders were somewhat more subject to parts breakage, they were no more likely to become inoperable in combat. Breech-loaders could not be double loaded, as the muzzle loaders. Multiple loading of the muzzle-loader was the chief cause of the arm becoming unusable. Breech-loaders were far from delicate; except for a few cases, they were quite rugged.

There were problems with replacement parts for many of these arms. Some of the manufacturers, particularly early in the war, did not keep adequate stocks of replacement parts on hand. Some parts had to be fitted by hand, and on occasion arms had to be returned to arsenals for repair of small parts. This did not constitute a hazard to the Union army, but it was a serious inconvenience to an overworked and harrassed Ordnance Department. Another inconvenience with the breech-loaders arose because of this newness; no system of parts naming had been fully achieved, and this made the ordering of parts difficult and confusing. The Ordnance Bureau sent out circular letters to the suppliers of these weapons, asking for the naming of the parts of their arms to facilitate faster replacement.

Fourth, the different breech-loaders required ammunition which differed not only from the standard .58 caliber service cartridge, but from each other. In many cases, government arsenals were not equipped to manufacture these cartridges. The government was required to buy them from private manufacturers who could not always deliver on schedule. Cartrdiges for some of these arms were manufactured by only a single firm; any breakdown in production could cause crippling delays. This problem, while potentially serious, seldom materialized;

when it did, it constituted a nuisance rather than a hazard to the service.

It was the issuing and supplying of these cartridges to the troops in the field which caused the Ordnance Department great delays. Officers often called for ammunition by bore diameter without specifying the arm in which it was to be used. A number of arms were of the same caliber, but used different cartridges. Even if requisitions were clear, it was easy for arsenal officers to become confused. It was also a problem to keep the right ammunition, in the right proportions, on hand in the arsenal where it was most needed. In a theatre of war, more of one kind of carbine might be used than of others. When troops exchanged arms, they get a completely different kind of weapon, and thereby change the proportions of arms in the area served by the arsenal. Procuring the cartrdiges from the manufacturers was far less difficult than supplying them to the troops who needed them.

The fifth objection applied to breech-loading rifles for infantry rather than to carbines. Because the carbine shortage remained serious throughout most of the war, the Ordnance Bureau was reluctant to permit the private arms manufacturers to take up their time and plant capacity with the production of infantry arms, which, although they were not breech-loaders, could be supplied by the Springfield Armory or some other manufacturer of rifle muskets. This situation explains part of the bureau's hesitancy to adopt a breech-loading musket for infantry.

Another objection, wholly theoretical, weighed heavily against breech-loading infantry arms. Military men tended to believe that

there was no significant tactical advantage to the greater rate of fire from breech-loaders in the hands of infantrymen. The breech-loader was justified for cavalry because of its convenience of loading while mounted. It was also vindicated because there was a tactical concession that firepower had some importance in cavalry actions. Heavy firepower over short periods of time might allow mounted units to breach an infantry line or skirt a flank. Cavalry engagements were expected to be short and sharp, and therefore firepower might be of significant advantage. No such justifications were made for infantry; tactics called for them to advance in disciplined ranks and close with the enemy. If musket fire failed to break the enemy or drive him back, the infantry was expected to carry the battle with the bayonet. This was the most fallacious argument of all: the assumption that weapons must be tailored to tactics. Tactics should be developed around the best weapons available, rather than designing weapons to implement older tactical concepts.

The criticism of the breech-loaders was magnified many fold when discussion turned to repeating magazine arms. Although the patent dates on these arms slightly preceded the war, none of them had been offered to the government until after the beginning of the conflict. These arms were considered even more delicate and unreliable, and Ripley's resistance increased proportionately. Ripley and other conservative officers considered their greater firepower a positive disadvantage. From his first contact with repeaters, Ripley's opposition was total. Pressure from civil officials, including President Lincoln, and pressure from within the Union army would force him to accept and order some of the repeaters, but he never changed his low

opinion of them.

The invention of practical repeaters and the heightened demand for them only stiffened the resistance of Ripley. A man of honor, integrity, and conviction, his entire life had been spent in using his skills and abilities "for the good of the service." Now, at the age of sixty-seven, this old soldier of the Republic would not compromise his principles. If the world had gone mad for firearms gadgetry, he, at least, had remained calm. He would use his considerable bureaucratic skills to delay action on the repeaters until the world again came to its senses. He knew that he had few allies in the War Department or in the army, and he knew that his actions would win him none. But his love of the Republic and his devotion to the interests of its military service left him no choice as to his course of action.[18]

He argued the delicacy of the new arms; he complained of their excessive cost; he informed that they were of no significant advantage; and he argued that the early tests were incomplete and inconclusive. Ripley wrote Oliver Winchester in early 1861 that his department had neither time nor officers to test the Henry repeating rifle, but that, in any event, he doubted its usefulness as a military arm, despite its "singular beauty and ingenious design."[19]

Ripley's remarks about the repeaters were as derogatory as his opinion of them was low. His first comment about the Henry repeating rifle was so scathing that Oliver Winchester, its manufacturers, took offense and communicated his displeasure to the Secretary of War.

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[18]Bruce, Lincoln and the Tools of War, pp. 99-117.

[19]Ripley to Winchester, June 28, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives.

Christopher Spencer, inventor of the most popular of Civil War repeaters, tried on numerous occasions in 1861 and 1862 to get an audience with the Chief of Ordnance. In the fall of 1861, R. S. Denny, Spencer's agent, managed to submit a sample arm at the Ordnance Bureau office, but Ripley was not interested in purchasing them. He wrote Denny that the Ordnance Department had sufficient arms under contract and that the price of the Spencer was too high. He also rejected the repeating Spencer in principle. "The samples, which you have presented," Ripley wrote, "are not the kind of arms, which I should be willing to adopt for the military service."[20]

Spencer continued to be persistent in attempts to get contracts with the War Department, but with only limited success. Time and technology, however, were on the side of Spencer and the other arms inventors. President Lincoln, that devoted gadgeteer, also looked with favor on any mechanical device or improvement which might speed the end of the war. As the conflict continued, Lincoln's allies in this matter grew, including soldiers from private to general.

Ripley took his stand early in the war, and never changed his mind. In response to a request of his opinion of the Henry and Spencer repeaters, Ripley replied that he saw a number of objectionable features. He felt that the requirement for special ammunition was a considerable disadvantage. Defective metallic cartridge cases might fail to feed from the magazine into the chamber he complained and that the inside priming of the round might be dangerous under field

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[20]Ibid.; Ripley to Denny, October 4, 1861, ibid.

conditions. He objected to the repeaters' weight, to their spiral spring in the magazines, which he thought might weaken, and to their cost. As to their firepower, Ripley wrote: "I do not discover any important advantage of these arms."

Ripley expressed another serious complaint when he wrote that "the multiplication of arms and ammunition of different kinds and patterns, and working on different principles, is decidedly objectionable, and should, in my opinion, be stopped by the refusal to introduce any more unless upon the most full and complete tests." He strongly recommended against either the Henry or the Spencer repeating guns.[21]

By the time Ripley wrote his letter, the evidence for the repeater and against Ripley's position was mounting. The repeaters received several tests by boards of both the navy and the army. It was these reports to which Ripley referred when he suggested that trials were inconclusive.

A board of naval officers at the Washington Navy Yard in 1861 tested a number of breech-loading and repeating arms, including the Spencer and Henry. The board reported that the Henry rifle was fired one hundred and twenty times in five minutes and forty seconds, including loading time, and that the action worked well throughout the test.[22] In June of 1861, navy Captain John A. Dahlgren reported the findings of the navy officers board on the Spencer:

> The mechanism is compact and strong. The piece was fired five hundred times in succession; partly divided between two mornings. There was but one failure to fire, supposed to be due to the absence of fulminate. In every other in-

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[21]Ripley to Cameron, December 9, 1861, Ordnance Collection, 1812-1889, Vol. IV, pp. 882-884.

[22]Williamson, Winchester: The Gun that Won the West, p. 33.

> stance the operation was complete. The mechanism was not cleaned, and yet worked well throughout as at first. Not the least fouling on the outside and very little within.
>
> The least time of firing seven rounds was ten seconds.[23]

It was shortly after these tests that Lincoln appeared in the Spencer question. In June, he visited the Washington Navy Yard, where he spoke with Captain Dahlgren. No record of the conversation exists, but, given the character of the two men, it is probable that Dahlgren mentioned the spectacular results of the Spencer trials. Whether this was the first contact the President had with the Spencer cannot be known for sure, but shortly after that Lincoln fired the gun, and even carved out a new experimental front sight to improve its performance. This incident occurred a full two years prior to the President's meeting with the inventor, Christopher Spencer. Lincoln, with the Spencer under his arm, wandered the halls of the Winder Building in search of a shooting companion, and was much impressed with the arm.[24]

Other tests soon followed those of the navy. In August, Captain Alexander B. Dyer, stationed at Fortress Monroe, fired the Spencer eighty times and reported it strong, reliable, and the best breech-loader he had ever seen. In November the navy rendered another favorable and even laudatory report on the weapon. In November, also,

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[23]Charles B. Norton and W. J. Valentine, Report on the Munitions of War (Washington: United States Government Printing Office, 1868), p. 20.

[24]William O. Stoddard, Inside the White House in War Times (New York: C. L. Webster, 1890), p. 42; Bruce, Lincoln and the Tools of War, pp. 114-115; Edwards, Civil War Guns, pp. 151-152; J. O. Buckeridge, Lincoln's Choice (Harrisburg, Pa.: Stackpole, 1956), pp. 15-19; J. O. Buckeridge and Ashley Halsey, "Abe and His 'Secret' Weapon," Saturday Evening Post, Vol. CCXXVIII (March 31, 1956), pp. 97-98.

McClellan appointed a board of officers under Captain Alfred Pleasanton to test and evaluate the Henry and Spencer repeating rifles. These reports were highly favorable to both arms, but favored the Spencer over its competitor largely because it was "less liable to get out of order than any other breech-loading arm now in service."[25]

Pressure mounted for the purchase and use of the repeating weapons. The President favored the Spencer. The Henry had been tested three times, and the Spencer no less than four. The trials indicated that the Henry was far from delicate and that the Spencer was particularly rugged. Indeed, the Spencer was considered not only the strongest and best of the repeaters, but of all of the breech-loaders.[26]

The navy had already ordered 700 of the Spencers in the summer of 1861; an impressive set of tests results were already available when the Secretary of War asked Ripley's opinion. Ripley's unfavorable response may have made the Secretary cautious, but it did not stop an order for Spencers. Ripley's letter notwithstanding, Cameron, perhaps urged by the President, decided to follow the recommendations of the Pleasanton board, with which Kingsbury, McClellan's chief of ordnance, concurred. Ripley was told of the decision, and he acted on it immediately. On December 26, 1861, he wrote the Spencer Repeating Rifle Company, ordering 10,000 of the rifles. In February of 1862, Warren Fisher, secretary and agent of the company, deposited

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[25]Dyer to Ripley, August 17, 1861, Letters Received, Ordnance Office Records, National Archives; "Report of the Board, November 22, 1861," Reports of the Testing Boards, Ordnance Office Records, National Archives.

[26]Ibid.

a sample arm at the Ordnance Bureau office in Washington.[27]

Spencer's problems did not end there. The company could not meet its delivery deadlines because of early production delays. In the summer of 1862, the commission established to review ordnance contracts cut the order for Spencers to 7,500. There were more production delays, and the first Spencer rifles were not delivered to the government until December 31, 1862. With this first order filled by the summer of 1863, Spencer was able to secure another contract for 11,000.[28]

With his factory in full operation by the summer of 1863, Spencer sought larger orders for his guns. He had little success in getting an appointment with either the Secretary of War or the Chief of Ordnance, but he had an appointment with President Lincoln. Spencer and Lincoln fired the rifle which the inventor had brought with him, and Lincoln expressed his approval. Later in the year, Spencer got a government contract for 35,500 of his carbines. From that time on he would be the largest producer of breech-loading arms.[29]

Lincoln probably contributed to the wider adoption of breech-loading and repeating arms, but it was, to a large degree, the arms themselves which presented the best argument for their adoption.

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[27]Ripley to Fisher, December 26, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Ripley to Fisher, February 4, 1862, ibid.

[28]"Report of the Commission on Ordnance and Ordnance Stores," House Executive Document Number 72, 37th Congress, 2nd Session, pp. 428-429; "Contracts Made by the Ordnance Department," Senate Executive Document Number 99, 40th Congress, 2nd Session, pp. 573-574, 963.

[29]Ibid.; Dyer, "Annual Report of the Chief of Ordnance, October 23, 1866," Ordnance Collection, 1812-1889, Vol. IV, p. 1572.

From the first day that soldiers saw the new breech-loading and repeating arms, they would do anything to get one of them. They lied to their commanders, to the Ordnance Bureau, the Secretary of War, and even to the President to get them. Men who were normally honest would steal one at the first opportunity. Many individuals and regiments bought these arms, paying for them out of their own pockets. From the early days of the war, the adoption of the breech-loader had become a matter of time, selection, and productive capacity of the American arms industry. Production time might delay deliveries; varieties of models and ammunition might perplex the service and confuse the issue. But the principle of faster loading and greater firepower was winning converts among all ranks of the army. No man, least of all, Ripley could have prevented the victory of the breech-loader; his best efforts could do no more than delay the inevitable. But this delay was probably paid for in human carnage.[30]

Ripley could not save the principle of muzzle-loading guns, and in the end could not save himself. Always unpopular with the governors and many soldiers, he had fallen into increasing disrepute with the President and Secretary of War Stanton. Stanton had threatened to remove him on several occasions. Both the Secretary and the President had decided to remove him as early as the spring of 1862, but their hands were stayed because they feared the damage to the morale of the Ordnance Bureau. Thereafter, Assistant Secretary of War Peter H. Watson assumed the role of watchdog of the Ordnance Bureau, and Ripley's authority steadily declined. Watson reviewed most im-

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[30]See Chapter III.

portant decisions of the bureau and checked some of the conservativism of the old chief. Ripley still exercised a restraining influence, but it was considerably diminished. Finally on September 15, 1863, Ripley was placed on the retired list with the note of his "having been borne on the army register for more than 45 years." He left his post as proud and unbroken as the day he came; he was praised for his honesty and courage, but the war had passed him by.[31]

The President's choice for the next Chief of Ordnance was not easy. In 1862, when Ripley's removal had been first considered, Lincoln's choice was Major Alexander B. Dyer, then superintending the Springfield Armory. Stanton had concurred, Major Dyer was reluctant, and the President did not press the matter. The army seniority system was rigid, and to violate it might cause damage to the morale of the Ordnance Department's officers.[32]

When the post became vacant in 1863, it was decided to appoint the senior man in the Ordnance Department, Lieutenant Colonel George D. Ramsay. Although lacking in both leadership and imagination, Ramsay was a hardworking and dedicated officer who was more amenable to the will of the President and the members of the War Department. Ramsay's long career in the Ordnance Department was neither impressive nor disgraceful. He had spent twenty-five years as a captain prior to the outbreak of the war, when he was promoted to major. Lincoln liked the old colonel, but had no illusions about him. He had done

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[31]William E. Doster, Lincoln and Episodes of the Civil War, (New York: G. P. Putnam's Sons, 1915), p. 119; Bruce, Lincoln and the Tools of War, pp. 167-169, 264; Biographical Register of the U. S. Military Academy, Vol. I, p. 119.

[32]Bruce, Lincoln and the Tools of War, p. 168.

excellent work at the Washington Arsenal on Greenleaf's Point. The President had visited him on a number of occasions when he had some new arm or invention which he wanted tested.[33]

The appointment came as something of a surprise to Ramsay, for he had not sought it, and apparently did not want it. Although choosing his principal assistant was normally the prerogative of the Chief of Ordnance, it was Secretary of War Stanton who chose the energetic and ambitious Captain George T. Balch to assist the new chief.[34]

Although Ramsay, like Ripley before him, was a conservative, particularly in matters of heavy ordnance, he admitted that breech-loaders using metallic cartridges were superior to muzzle-loading guns. The copper cartridge, he wrote, gave "perfect security against injury by water and the absence of all necessity for caps . . . [which is] of the highest importance in marches and exposure in the field." Ramsay also stated that breech-loading guns had been proven superior in the field and in trials by Major Dyer at Springfield. The Chief of Ordnance went on to point out that the department was making rapid strides in putting these weapons into the hands of the troops. He reported on April 5, 1864, that during the next six months, 90,000 of the 110,000 breech-loaders and repeaters on contract would be delivered to the government. This would be "a supply which will arm all the new regiments and keep up current wants." He then recommended the gradual withdrawal of all linen and paper cartridge guns from service. Watson, the Assistant Secretary of War, replied that he

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[33]Ibid., pp. 265-266; Biographical Register of the U.S. Military Academy, Vol. I, pp. 259-260.

[34]Bruce, Lincoln and the Tools of War, p. 169.

"cheerfully approved" the recommendation.[35]

In the same communication, Ramsay spoke in favor of an even more revolutionary advance in military small arms. "The repeating arms," he wrote, "are the greatest favorite with the army . . . . the demand for them is constant and for large quantities. It seems as if no soldier who has seen them used could be satisfied with any other." The Chief of Ordnance then gave his recommendation for the best of the repeating arms:

> Spencer's is at the same time the cheapest, most durable, and most efficient of any of these arms. [It will] . . . throw eight shots in continuous succession, a quantity . . . by means of which bodies of our troops have been enabled at various times to completely rout superior numbers of the enemy . . . . [The] Spencer Company should be encouraged to produce as many as possible.[36]

In August, Ramsay reported that during the first eight months of 1864 there was delivered to the government 20,182 Spencer carbines, 11,470 Spencer rifles, and 2,000 Henry rifles, a total of 33,652 repeaters. During the same period, only 15,051 breech-loading single shot arms had been delivered. As of that time, Ramsay reported, the government had on order 78,000 repeaters and 89,950 single shot breech-loaders.[37]

Ramsay's advanced thinking concerning the use of breech-loading and repeating small arms did not extend to other fields of ordnance. He had never been highly regarded by the President and Secretary

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[35]Ramsay to Stanton, April 5, 1864, Ordnance Collection, 1812-1889, Vol. IV, pp. 882-884; Ramsay to Stanton, January 18, 1864, ibid., pp. 880-881; Watson to Ramsay, April 7, 1864, ibid., pp. 882-884.

[36]Ramsay to Stanton, April 5, 1864, ibid., pp. 882-884.

[37]Ramsay to Stanton, August 17, 1864, ibid., p. 890.

Stanton; he too was forced into retirement in September of 1864. He was replaced by Major Dyer, who had previously been offered the post.[38]

Dyer, at forty-nine, was considerably younger than either of his two predecessors. He had long since overcome his Richmond, Virginia, birth and any questions of loyalty. His considerable reputation earned at the Springfield Armory made him an ideal choice. Promoted over the heads of several officers senior to him, he nevertheless quickly won the confidence and even admiration of Ordnance Department personnel; he had a quick mind and the ability to grasp details. Although justly proud of his accomplishments at the Springfield Armory and of the rifles produced there, he realized that the era of the muzzle-loading gun was passing, and he showed no inclination to prolong it.[39]

Dyer was probably the first officer to test the Spencer; he reported it the best breech-loader he had ever seen. In the three years since that time, the battle record of the Spencer had proved that Dyer's assessment was valid. It was no secret that Dyer favored the Spencer when he called for a board to assemble in January of 1865 to test breech-loading arms. He did not cite manuals and outdated tactical theories to justify the change in the pattern of military arms. Dyer's arguments were practical and to the point. "The experience of the war," he wrote, "has shown that the breech-loading arms are greatly superior to muzzle-loaders for infantry as well as for cavalry, and

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[38]Bruce, Lincoln and the Tools of War, pp. 137-183; Biographical Register of the U.S. Military Academy, Vol. I, p. 260.

[39]Ibid., Vol. I, pp. 665-667; Dyer to Ripley, August 17, 1861, Letters Received, Ordnance Office Records, National Archives.

that measures should immediately be taken to substitute a suitable breech-loading musket in place of the rifle musket which is now manufactured at the National Armory and by private contractors for this Department."[40]

The reports of the ordnance board meetings over the months ahead registered a clear victory for the breech-loader. No muzzle-loading guns were considered; the repeaters, however, lost. The defeat of the repeating principle was based not upon efficiency or reliability, but upon economy. The decision forced upon the ordnance boards by an economy minded Congress dictated that a system for converting the muzzle-loaders be chosen. By the time a model was chosen and put into production, the war had ended. None of these arms saw action in the Civil War, and repeaters would wait for another day. The war proved their value, and the government, by the time the last war contract repeaters were delivered in 1866, would purchase almost 110,000 of them. They had helped make history in the sanguinary conflict, but they were an expense the peacetime government felt it could not afford.[41]

During the war years themselves, the breech-loading single shot was clearly superior to the muzzle-loader; the repeater proved to be superior to both. Superiority was not based on tactical theories, but on practical experience. The reputation of more advanced arms was not won in the Ordnance Bureau nor in the General-in-Chief's command post, but in the furnace of battle. The Ordnance Bureau, however,

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[40]Dyer to Stanton, December 5, 1864, Ordnance Collection, 1812-1889, Vol. IV, pp. 893-894.

[41]Ibid., p. 1572.

acted with dispatch in acquiring them; after 1863, it insisted on the most advanced designs.

Firepower appeared on the Civil War battlefield as it had never been seen before. Both the range and rate of fire of small arms increased drastically during the conflict, forcing modifications to meet these new conditions. During the Civil War, firepower came of age, and the first priority of modern warfare was created.

CHAPTER VI

WEAPONS EVALUATION AND POTENTIAL

In the 1850's, when the new rifle muskets were coming into general adoption in the United States, there was considerable discussion of the assets of the new rifled arms over the older smooth-bore muskets. There were many officers who were not altogether convinced that the rifle musket answered the needs of the service; while praising its accuracy and range, they regarded it as being best for certain special duties such as skirmishing or defense of flanks. For general use there were still a number of defenders of the smooth-bore musket.

Those for whom the old smooth bore still represented the best general purpose arm, based their favoritism on the assumption that the vast majority of combat situations would take place at close ranges of seventy-five yards or less. When used at these short distances, the smooth-bore musket proved to be quite adequate, as the tests of 1860 proved. At unusually close ranges, the troops armed with these weapons could then charge their arms with the buck and ball load, a cartridge which contained one round .69 caliber ball and several buck shot of about .30 caliber. This load was devastating at close range. On the other hand, the rifle musket was limited because

of its riflings to firing its single projectile even at close ranges.[1]

The arguments in favor of the smooth-bore musket were best expressed by Major G. L. Willard in 1863, when he defended the musket as not only adequate, but superior in most respects to the rifle musket. After studying European combat experience and after two years of service in the Union army, he came to the conclusion that the rifle musket was more limited in its uses than the smooth-bore musket.

Willard discounted the usefulness of the rifle musket's extreme range because its sights had to be reset after each firing on advancing cavalry or infantry. Most troops, he contended, were not skillful or composed enough under combat conditions to effectively accomplish this. The example Willard used was infantry fighting on a square against oncoming cavalry. The cavalry would cover the last 1,000 yards in four minutes, but because of sighting problems, Willard believed it to be pointless to fire at them when they entered the theoretical range of the rifle musket. He contended that the troops must hold their fire until the cavalry was close, and therefore, the rifle musket was of no great advantage. Indeed, he believed that the soldier armed with the rifled weapon was at a disadvantage because he needed to change his sights. The infantryman was also at a disadvantage because he could fire only a single bullet from the rifle musket, and not the buck and ball load as in the smooth-bore musket.

Willard's solution was to arm only one regiment in each brigade with the rifle musket. These special troops would be instructed in

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[1] "Records of the Firings, and Opinions of the Board for the Trial of Small Arms, February 1, 1860," Reports of the Testing Boards, Ordnance Office Records, National Archives.

light infantry tactics and skirmishing. Otherwise, the elevated sight should be eliminated from all other infantry arms which should also be smooth bores. The attempt to standardize rifled arms, he believed, was a mistake. "Grave doubts of the advantages claimed for the [rifle musket]," he wrote, "have entered the minds of many while some of our best officers who have had every advantage upon which to form an opinion, are convinced that we are laying aside manifest advantages in discarding the smooth bored musket with the buck and ball cartridge."[2]

There are clear indications that on occasion this deadly cartridge fired from the smooth-bore musket was highly effective. At short ranges it was essentially comparable to a powerful shotgun spreading its shot pattern over a wider area and inflicting several wounds from the same round. So effective was buckshot at short ranges, that one New Jersey regiment at Antietam tore apart their buck and ball cartridges to add more buckshot to each charge which they fired. The effect was devastating.[3]

Other officers agreed with Willard that all past experience favored the smooth-bore musket. Yet there is a fallacy to this argument. Willard assumed that infantry tactics remained constant, and that arms served the purpose of complementing established tactical rules. "Battles," he continued, "must be fought and won, as in times past; decisive victories cannot be gained by firing at long ranges . . . and it is susceptible to proof that it is a grave error, to

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[2]G. L. Willard, Comparative Value of Rifled and Smooth-Bored Arms (Washington: Privately Published, 1863), p. 10.

[3]Ibid., pp. 12-13.

adopt for an army, rifled, to the entire exclusion of the smooth bored arms." With a technological myopia, Willard saw little possibility of arms causing changes in tactics. Such protests against the rifled arms proved fruitless. Except for extremely short ranges, where the smooth-bore musket could use a special cartridge, the rifle musket was superior in every respect to the old common musket.[4]

The development of rifled military arms had been a long and difficult task. The idea of rifling arms for accuracy was centuries old before a rifled arm was developed for general military use. The problem of rifled arms lay not with the arm itself, but with the projectile it fired. Numerous designers experimented with systems which would permit a bullet smaller than the bore to be used. All of these systems required some means of expanding the base of the bullet while in the barrel after the ignition of the propellant charge.[5]

It was learned that an elongated bullet with an iron or wooden plug set in its base caused sufficient expansion. This was the minie ball, named after a French army officer partially responsible for its development. The minie ball was imperfect in design at first, and was expensive to manufacture.[6]

The elongated ball famous with the troops of the United States, the Confederate States, the European powers, and the British Empire, was the Burton or Harpers Ferry bullet. Designed by James H. Burton, assistant master armorer at the Harpers Ferry Armory, it had a deep

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[4]Ibid., p. 13.

[5]Edwards, Civil War Guns, pp. 15-20.

[6]Ibid.

hollow cavity in the base. No iron or wooden plug was used, since the thin walls at the base expanded sufficiently upon the ignition of the charge. The base then served as a gas check and allowed the wall of the long lubricated bearing surface of the bullet to expand into the riflings. Both theory and trial and error were used in determining the configuration, cavity size, weight, and the number of lubrication grooves on the bearing surface of the bullet. This projectile could be loaded with relative rapidity even if the arm had considerable fouling from previous firings. It was extremely accurate when mated to the proper barrel, and it was economical. It made possible the use of the powerful and accurate rifle musket of the Civil War.[7]

The .58 caliber rifle muskets and rifles, along with the machinery for their manufacture, were developed at the United States armories in the 1850's. Among the champions of these new arms were Jefferson Davis, the Secretary of War in the Franklin Pierce Administration, James H. Burton, and James W. Ripley, later Chief of Ordnance.[8]

The first of these arms, the Model 1855, had an automatic priming device, designed by Dr. Edward Maynard, but this was dropped from later designs. Otherwise the Model 1855, with but minor changes, such as ramrod head, furniture, hammer shape, and other minor details, would remain the basic weapon. The updating of models is not indicative of significant new designs.[9]

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[7]"Reports and Recommendations of the Board, October 18, 1853," Reports of the Testing Boards, Ordnance Office Records, National Archives.

[8]Claud E. Fuller, The Rifled Musket (Harrisburg, Pa.: Stackpole, 1958), pp. 3-8.

[9]Ibid., pp. 19-20.

The rifle musket had adjustable sights, angular bayonet, and all parts were interchangeable. The barrel, which was the heart of the arm, was forty inches in length; it was rifled with three grooves, which became shallower at the muzzle, and with one uniform revolution of the rifling per six feet of barrel length. The rifle was similar, with the main differences being a shorter barrel of thirty-three inches, a patch box in the stock, and a muzzle equipped to take a sword bayonet.[10]

The high standards of performance required of these arms was met in mechanical functioning, durability, and accuracy. The accuracy standards required the rifle musket to place all of its shots in a four inch bullseye at 100 yards, a nine inch bullseye at 200 yards, an eleven inch bullseye at 300 yards, and eighteen and a half inch bullseye at 400 yards, and a twenty-seven inch bullseye at 500 yards. In addition, the rifle musket could place all of its shots in a company front target, which measured six feet high by fifty-two feet wide, at 1,000 yards. It was this accuracy and range which made the rifle musket a revolutionary weapon, and forced changes in the tactics of the battlefield.[11]

With the coming of the war, the government purchased many rifle muskets of other than United States design and manufacture. The Enfields performed similarly. The Saxony and Austrian rifle muskets, which saw much use in the early years of the war, and which many troops damaged, lost, or destroyed because of their rough stocks and

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[10]Craig to Davis, June 26, 1855, Ordnance Collection, 1812-1889, Vol. II, pp. 557-559.

[11]Fuller, The Rifled Musket, p. 5.

crude appearance, performed to about the same standards.[12]

Civil War combat testifies to the deadly accuracy of rifle muskets in the hands of soldiers on both sides. Terrible carnage was inflicted at great distances. One Union officer wrote that the Confederates could hit targets at greater distances than they could recognize the objects. A Confederate had one hit and one near miss on a rubber blanket draped over a tree stump at 800 yards. The same officer tells of a Union and a Confederate soldier exchanging fatal shots while each had only a small porthole in the other's log breastworks for a target.[13]

Confederate riflemen made the Union army pay a fearful price to cross the Rappahannock River at Fredericksburg, and once across, exacted even greater toll on the riflemen defending the nearby ridge. The punishment of the Confederates at Gettysburg and of the Union soldiers at Cold Harbor and Spotsylvania again attest to the accuracy of the rifle musket. In all of these cases, the troops had to take enemy fire and casualties at considerable distances even before they were close enough to make the final assault. It was also for this reason that cavalry was consistently dismounted and forced to cover or withdraw.[14]

The implications of the greater range are obvious. Steady infantry armed with accurate weapons could decimate cavalry and shatter its

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[12]Edwards, Civil War Guns, pp. 220-258-259.

[13]Ibid., pp. 13-14.

[14]Bruce Catton, America Goes to War (Middletown, Conn.: Wesleyan University Press, 1958), p. 18; Bruce Catton, This Hallowed Ground (New York: Doubleday, 1956), p. 60.

formations before it could make its final mounted charge. Prior to the widespread use of the rifle musket, cavalry did not expect to start taking fire until within 200 yards. Since this distance could be covered in about thirty seconds, they expected to receive no more than two volleys of musketry. If, however, they began to take fire at 1,000 yards, a distance which requires four minutes to cover, they could take as many as a dozen volleys before they reached the infantry lines. Thus, the rifle musket, by increasing range, increased fire-power, and was making the cavalry charge obsolete. Americans learned this by 1865, although some would forget the lesson in later years. Europeans would not learn this until after the First World War began in 1914.[15]

Artillery, similarly, would lose a good deal of its dash. The light batteries which moved up with infantry lines would no longer be able to duplicate these Napoleonic tactics. The units which tried it, such as the Union batteries on the first day at Gettysburg, would take heavy casualties. Even support artillery often took casualties from musket fire, since the range of muskets was as great as the range of field guns.[16]

Infantry would truly become the "queen of battle" in the Civil War. The rifle musket, and later rifled breech-loading arms, would give infantry supremacy on the battlefields of the world. Infantrymen would pay heavily for this supremacy, since their opponents also had

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[15]Jay Luvaas, The Military Legacy of the Civil War: The European Inheritance (Chicago: University of Chicago Press, 1959), pp. 28, 146.

[16]Bruce Catton, Glory Road (Garden City, N. Y.: Doubleday, 1952), pp. 271-272.

rifled arms.

Infantry tactics, particularly assault tactics, changed more slowly than the nature of the new rifled arms indicated they should. Even to the end of the war, commanders had a tendency to use close order tactics. These packed formations presented compact targets to their opponents at great ranges, because the rifle musket would put all of its shots into a company front at 1,000 yards. The shattering of Lee's final attack on the third day at Gettysburg is an excellent example of the effects, even at long distances, of the rifle musket on close order assault.[17]

Despite the tendency to close order assault, there were officers who realized that it had significant disadvantages. One Union officer observed that the Confederates had less of a herding tendency than his New Englanders. The Confederates, he wrote, "were obviously the best shots, and their open order style of fighting was an economical one. Moreover, when they retreated, they went in a swarm and at full speed, thus presenting a poor mark for our musketry. We, on the contrary, sought to retire in regular order, and suffered heavily for it." By 1865, close order was becoming a thing of the past. The price for this type of disciplined formation yielded low returns when compared with the heavy cost.[18]

It was obvious that the rifle musket offered a greater advantage to the defenders than it did to the attackers. Rifle pits and breastworks gave protection to the soldier, and also allowed him a place to

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[17]Ibid.

[18]Edwards, Civil War Guns, p. 15.

rest the forestock of the rifle musket and improve his accuracy. Troops on the move could not take time for careful aiming, nor could they stop to return their opponents' fire, since to do so would make them an easier target. The muzzle-loading rifle musket was difficult to load while soldiers were moving, and the defenders of a position firing against them could load and fire from safer defensive lines. The added range and accuracy of these rifled arms increased the firepower of defensive forces by several times over the firepower of offensive troops, and created the general combat conditions favoring the defense which would exist in war until the development of armor after the First World War.

The introduction of breech-loading and repeating arms in the Civil War also increased the firepower of troops. This was done in two ways: first, these arms could be loaded and fired more rapidly than could the muzzle-loading weapons; second, since they were rifles, they also had a greater range than smooth bore muzzle-loading guns. Most of these arms were carbines, and therefore they did not match the range of the longer barrel guns, but they far outranged the older smooth bores.

The trials by the Ordnance Department proved conclusively that the breech-loaders were accurate, and that some of them compared either favorably or equally in power and accuracy with the rifle muskets. It was not, however, gilt edge accuracy or extensive range which made the reputation of most of the breech-loaders; it was their ability to deliver a large volume of fire in a short period of time.[19]

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[19]"Records of the Firings, and Opinions of the Board for the Trial of Small Arms, February 1, 1860," Reports of the Testing Boards, Ordnance Office Records, National Archives.

The most widely used breech-loading arm of the Civil War was the Sharps. Although produced in both rifle and carbine models, most Sharps were carbines in the hands of Union cavalry. Carbines were considered to be the standard cavalry arm and were extremely popular. The demand for these weapons was so heavy that most of the production of the Sharps Rifle Company was in the shorter gun rather than the longer rifle. Those infantry units armed with the Sharps were considered fortunate.

Among the infantry units equipped with the Sharps rifles was Berdan's United States Sharpshooters. Although the Sharps was not a metallic cartridge arm, it could be fired rapidly and safely, and could produce accuracy at great ranges. "Being armed with breech-loaders," wrote a Sharpshooter officer, "they could lie low, and without changing position reload and fire ten shots a minute. The superiority of the breech-loaders over the muzzle loaders was plainly manifest." Another example of the effects of rapid fire was given in a skirmish at Rappahannock Station in August of 1862, when some Sharpshooters opened fire on Confederate cavalry as they charged from a wooded area. The fire from the breech-loaders was so effective that the "cavalry at once jumped their horses and escaped through the cornfield."[20]

The yeoman work done at Gettysburg by the Sharpshooters armed with the Sharps rifles proved beyond doubt, if any doubt existed in the minds of the troops by the middle of 1863, the superiority of their weapons. On the second day of the battle, Confederate forces

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[20]Stevens, Berdan's United States Sharpshooters, pp. 119, 167.

under Lieutenant General James Longstreet were hurled against positions on the Union left, principally the Peach Orchard, Devil's Den, and Little Round Top. In the Peach Orchard there were only about 300 defenders, many of whom were from Berdan's regiment of Sharpshooters. As the grey lines came on, the defenders opened with a devastating fire fromtheir "reliable breech-loaders," which threw the Confederates "into confusion" and temporarily held up their attack, thereby giving the Union forces time to strengthen their lines.[21]

Longstreet later reported that he believed this action had delayed him forty minutes. Had he had five minutes more, he felt he could have breached the Federal lines and shattered the Union left flank. Longstreet also stated that his losses were so heavy that even with his reserves he could not have taken the Union positions. If the Confederate general exaggerated his potential for success on the second day at Gettysburg, he did not exaggerate the casualties which he took. During the fight, a Sharpshooter was taken prisoner, and he recorded what he saw as he passed through the lines of his Confederate captors:

> We started for the rear, and passed through where Longstreet's men had halted. It is impossible for me to describe the slaughter we had made in their ranks. In all my past service, it beat all I had seen for the number engaged and for so short a time. They were piled in heaps and across each other. When I got to where the surgeons were dressing the wounded, I found hundreds of wounded men there. The doctor would hardly believe that there were so few of us fighting them, thought we had a corps, as he said he never saw lead fly so thick in his life as it was in those woods.[22]

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[21] Ibid., pp. 300-312.

[22] Ibid., pp. 310-311.

The Sharps Rifles were not the fastest shooting of the Civil War arms, since they used a paper and linen cartridge, and cap priming, but they fired so much more rapidly than the muzzle-loaders of the Confederates that there was no comparison.

The Burnsides and earlier breech-loaders, also using separate priming, received almost equal praise from the troops who carried them. But the popularity of these early breech-loaders would be somewhat diminished with the introduction of newer arms, both the single loaders using completely self-contained metallic cartridges, and the repeaters. Nevertheless, the breech-loaders, even of the earlier models, were preferred by the troops over even the best of the muzzle-loading guns.[23]

The least regarded and oldest model breech-loaders in the service in 1861 were the Hall carbines. These arms had a breech system essentially the same as the first Halls patented in 1811. Yet the Hall was a sound arm even by 1861 standards; although not as desirable as the Sharps or the metallic cartridge breech-loaders, most troops preferred them to the alternative of muzzle-loading arms. In Fremont's western command in the early days of the war, it was the men with these Halls who were called to the front when the fighting was hottest.

The somber legend of the Hall is, in fact, little more than a folktale. Stories were told that their breeches would fly open on firing, and that the escaping gasses would blow off a man's thumb. They were said to be inferior in construction and that their condem-

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[23]Shannon, The Organization and Administration of the Union Army, Vol. I, p. 130.

nation by the Ordnance Department was the result of their being old or badly worn. None of these things were true. The troops who carried them soon learned that these stories were false. The Halls proved to be a positive addition to Fremont's western army, and superior arms in both construction and firepower.[24]

Among the first of the repeating arms were the Colt revolving rifles and carbines. Over long periods of fire, or during the firing of a number of rounds in excess of the arms' chamber capacities, they were no more rapid fire than the single shot breech-loaders, but they were still highly prized. Even their weaknesses, such as gas leakage, relatively slow loading, and the flash of burning powder at the juncture of the cylinder face and forcing cone, were not enough to condemn them in the eyes of the troops. Although some troops would have preferred other breech-loaders or repeaters, few would have traded their Colts for muzzle-loading guns.

There are stories of soldiers who were injured from a failure of a Colt or from the sympathetic ignition of more than one chamber in the cylinder, but there are no recorded incidents of double or triple firing in the Ordnance Bureau letters, reports, or trials of the Colt.

H. W. S. Cleveland, a noted marksman and arms expert, examined the latest model of the Colt revolving rifle in 1862 and pronounced it sound and safe. "With the latest pattern Colt's," he wrote, "we have never known an instance of premature firing of either of the chambers." As to the Colt's accuracy, Cleveland found that it was good

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[24]Wasson, The Hall Carbine Affair, pp. 55-64.

enough for military purposes or hunting—"for anything, in short, but gambling or fancy work."[25] Berdan's United States Sharpshooters were armed with Colt revolving rifles before they received their Sharps; although they never gave up the preference for the Sharps, they found that the Colt stood the heat of battle very well. Those of Berdan's men who were skeptical of the revolving rifles, because of the many tales about them, had their doubts dispelled in a skirmish at Falmouth in April of 1862. "The revolving chambers of the Colts were soon heated up," wrote one Sharpshooter, "and right there a most favorable opportunity was presented to test the heretofore doubtful arms; and the boys were compelled to admit that they were not so bad after all, having done good work with them."[26]

The introduction of repeating magazine arms, which were reaching the army in significant numbers by the middle of 1863, had a profound effect on the troops who carried them and on the order of battle. Their greater firepower, and the ease with which they could be loaded, placed the Union troops who carried them—mostly cavalry—in an extremely advantageous position. The volume of fire from these arms was so great that troops equipped with them were not at any great disadvantage when facing an enemy three times their own number.

The first troops to use Spencer repeating rifles in combat was the brigade under Colonel John T. Wilder at Hoover Gap in Tennessee. Wilder had mounted his troops earlier and had sought repeating rifles. He first wrote the New Haven Arms Company to procure Henry rifles but

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[25]Cleveland, "Rifle Clubs," Atlantic Monthly, Vol. X, p. 306.

[26]Stevens, Berdan's United States Sharpshooters, p. 97.

that firm could not deliver the numbers he needed in any reasonable length of time. He then tried to get Spencer rifles, but his requisition was refused. After that he called his troops together and asked them if they wanted to purchase the arms out of their own pay. They voted unanimously to purchase them at what was a cost of three months' pay. Each signed a note which Wilder guaranteed, and the Spencers arrived in May of 1863.[27]

In June of that year Major General William S. Rosecrans started his movement toward Chattanooga, and ordered Wilder's Brigade to clear Hoover Gap for the main body coming up. The gap was considered a major obstacle, and the Confederates had occupied it in large numbers. The Confederates, greatly superior to the Union forces, were unable to match the firepower of Wilder's "Hatchet Brigade," and were forced to withdraw. Wilder's troops became the first to enter the city.[28]

At Chickamauga in September of 1863, Wilder's rechristened "Lightning Brigade," holding desperately onto the Union right flank, gave a good account of itself by using its Spencers to deliver a great volume of fire into the attack of Lieutenant General Longstreet. Longstreet gave Wilder's Brigade a considerable amount of credit for his failure to penetrate. Not the least of Longstreet's problems resulted from the confusion on the part of General Braxton Bragg, the Confederate commander, who thought the volume of fire coming from Wilder's command indicated a much larger number of Union troops than

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[27]Benjamin F. McGee, History of the 72d Indiana Volunteer Infantry (Lafayette, Ind.: S. Vater, 1882), pp. 88-89.

[28]Buckeridge, Lincoln's Choice, pp. 40-45.

were actually there. It led Bragg to change his tactics and thus weaken the weight of Longstreet's initially successful attack.[29]

In the East, the Spencer was also proving its value. In the Gettysburg campaign, the Michigan Brigade under Brigadier General George A. Custer inflicted extreme punishment on Stuart's cavalry at Hanover Station, driving him off and delaying his return to the beleaguered Army of Northern Virginia. Again, later in the battle, Buford's cavalry armed with the repeaters checked Stuart. At Gettysburg, where there were so many critical factors, Spencer repeaters in the hands of Union cavalry must be considered as one of the ingredients of Federal victory.[30]

The numbers of repeating rifles and carbines in the Union army steadily increased after Gettysburg as the facilities of the Spencer Repeating Rifle Company turned out the rifles and carbines in increasing volume. By early 1864, there were a considerable number of Union cavalry regiments who had turned in their single shot breech-loaders for the fast firing repeaters.

The impact of these new arms on the war was far greater than most army officers believed it would be. The Union forces—particularly cavalry—armed with new fast firing arms would play an increasingly important role. Confederate forces broke in front of Federal forces on numerous occasions, not through lack of courage or from poor leadership, but from the devastating fire of repeaters. At Yellow Tavern, Major General Philip H. Sheridan was able to drive the Confederate

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[29]Ibid.; pp. 73-75; McGee, History of the 72d Indiana Volunteer Infantry, pp. 141-147.

[30]Buckeridge, Lincoln's Choice, pp. 46-60.

forces to cover. At Cold Harbor, he was able to pin down the Southerners in what was an otherwise disastrous Union effort. In the Shenandoah Valley, Sheridan, with nearly twenty regiments armed with repeaters, was able to subdue resistance in just over a month. At Cedar Creek, the final major encounter of that campaign, he was able to use the firepower of the repeaters to check a successful Confederate attack and turn the battle into a victory. At Five Forks and Sailor Creek, Union firepower again proved too much for the Army of Northern Virginia.[31]

In the deep South, Major General James Wilson's cavalry was also making spectacular use of their Spencer seven-shooters. Selma, Columbus, and West Point, all fortified Confederate strongholds in Georgia fell to Wilson in less than a day each. By the end of the war, the superbly armed Union cavalry ranged almost at will in the lower Confederacy. Thus, firepower had established itself as one of the primary factors of the war.[32]

The breech-loading and repeating rifles and carbines led to considerable change in the tactics and combat of the war. Rifled arms began the destruction of cavalry shock tactics, and the age of the mounted combat trooper. But the newer, faster loading, and faster firing guns gave back to the cavalry a place on the battlefield. Cavalry would have to abandon its traditional tactics and become

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[31]Ibid., pp. 99-100, 102-103, 115-138; Philip H. Sheridan, Personal Memoirs of P. H. Sheridan (2 vols., New York: Charles L. Webster, 1888), Vol. I, p. 383; James L. Bowen, History of the Thirty-Seventh Regiment, Mass. Volunteers in the Civil War of 1861-1865 (New York: C. W. Bryan, 1884), pp. 314-317.

[32]Buckeridge, Lincoln's Choice, pp. 215-231; James H. Wilson, Under the Old Flag (2 vols., New York: D. Appleton, 1912), Vol. II, pp. 190-269.

mounted infantry, riding to battle but fighting on foot.[33]

Most breech-loaders were cavalry carbines, and therefore it was the cavalry who was given the greatest firepower on the Civil War battlefield. A series of circumstances, rather than military planning, was largely responsible. As the government produced no carbines, they all had to come from private sources. The ease of loading the breech-loaders made it possible to charge the arm on horseback. The cavalry abandoned its horse tactics, but it did not abandon the weapons which were adopted for use on horseback. Thus, by what was almost an accident, the cavalry, with its privately produced breech-loading and repeating carbines, was given significant advantages once it was forced to dismount and make use of them.

In a sense, the new arms and the tactics adapted to the cavalry allowed it to reclaim its honor. Up until almost 1864, the Union infantry often knew when a bloody firefight was at hand by the stream of cavalry columns going rearward out of harm's reach. In 1864 and 1865, however, the old army cry of "Whoever saw a dead cavalryman?" would be less frequently heard. The powerful Union cavalry would play an important and decisive role in the final destruction of the Confederacy.

Union cavalry leaders, such as Sheridan and Wilson, used tactics which must have mystified their Confederate counterparts. They seldom used cavalry to drive enemy cavalry, and on occasion avoided Confederate cavalry or withdrew from contact with them. The clash of

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[33]Luvaas, The Military Legacy of the Civil War, pp. 54, 90, Louis Philippe Albert d'Orleans, Comte de Paris, History of the Civil War in America (4 vols., Philadelphia: Joseph H. Coates, 1875-1888), Vol. I, p. 300.

horsemen might still carry romance, but this medieval pageantry had little place on fields swept by fire from modern arms. The cavalry was still the screen for infantry columns and flanks, but now it could also be an effective blocking force against either cavalry or infantry by fighting dismounted with their faster firing carbines. Likewise, dismounted cavalrymen made the deadliest of skirmishers.[34]

However, much of the advantage of the Union cavalry in the closing months of the Civil War rested upon their technological advantage of improved arms. They were particularly effective against infantry partly because the infantry usually had only the much slower firing muzzle-loaders. Infantry equipped with similar arms could do as well; the 37th Massachusetts Infantry proved that at Cedar Creek. But infantry regiments so armed were relatively rare.[35]

Yet the officers of the Union army did not see all of the implications of the new firepower supplied them by these new arms. The Union cavalry was armed with breech-loaders from the opening of the conflict, but did not use them with full effectiveness until the last two years of the war. Regulars and volunteers still had some faith in traditional tactics. All mounted troops were issued the sabre, and there were attempts to train them in the use of it. But the cavalry tradition was not strong in either the volunteer service or the regular army, and the troops were therefore easier to condition

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[34]Sheridan, Memoirs, pp. 148-204.

[35]Bowen, History of the Thirty-Seventh Massachusetts, passim.

for the use of the firearm as the principal weapon.[36]

The Ordnance Department still busied itself procuring sabres, but they proved of relatively little use to the troops. The cavalry could have used its firepower against infantry considerably earlier than it did if it had perceived its role as mounted infantry in the early stages of the war. The romantic concepts of war had strong detrimental effects on the efficiency of its fighting. Just as it caused discrimination against staff services in favor of the line, it led many cavalry officers to seek the glory of war in the same way it had been traditionally sought, by the heavy cavalry charge. Only when men of a less romantic view of the role of tactics came to the fore did cavalry concepts change on a wide scale within the army. Grant, Sherman, Sheridan, and Wilson were men who carefully evaluated their experiences, changed accordingly, and had the administrative skills to bring vast changes throughout the entire army.

With infantry tactics the situation was somewhat different. It would have been possible to thin the battle line and to open the order in assault, but it is difficult to see how strong positions could have been carried without the mass weight of infantry in assault. Movement on most battlefields was limited by the speed which men could walk or run. It is possible that a disciplined attack force could have moved out of its own works in open order, and as they approached the defense of their enemy they could have closed the order and thus created the needed weight to carry the enemy's works. This

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[36]An Officer of the Royal Engineers, "A Trip to Meade's Army on the Rappahannock," United Service Journal, Vol. CV (May-August, 1864), pp. 109-111; Luvaas, The Military Legacy of the Civil War, pp. 110-111, 123-124.

would have required a great deal of coordination and discipline, and would have been extremely difficult amid the carnage of a Civil War battlefield.

The breech-loading and rapid fire weapons in the hands of Union infantry, even in packed formation, would have lessened to a great deal the advantage resting with the defense. Since only the Union was capable of producing these arms in significant numbers, they would have been able to attack on somewhat more even terms.

One question remains: how could the Union have supplied its infantry with weapons needed for a total rearming with breech-loaders? There are two possible answers. The War Department might have decided on a private pattern of rifle, say the Sharps, and issued contracts for them to the larger private armories. These companies could have paid the Sharps Rifle Company a fee for their use of its patent. It would have meant that the major arms companies of the North would be producing a standard pattern of service rifle, which, along with the Springfields, would constitute the regulation arms of the infantry service.

The major weakness of this plan rests with the individuals, plant owners, congressmen, and jobbers, rather than with the mechanics of the scheme. American businessmen of the period were extremely individualistic. Each not only wanted a profit, and even the lion's share of the profit, but most believed that the arms they produced were superior to all others on the market. Further, it would have meant scrapping much of the arms machinery already set up for the manufacturing of their own product. In order to sell the scheme, the government would have had to make good the losses entailed by retooling for the Sharps. However, most of the companies which produced the Springfield

rifle musket could have tooled for the Sharps without a loss such as would have been entailed by patented arms producing armories. It would have been a difficult program to administer and an even more difficult one to sell. The producers of Merrills, Burnsides, Cosmopolitans, and other patented arms, would certainly have balked at such a proposal early in the war.

A more logical plan would have been to produce a standard infantry arm which would have called for a minimum change in machinery, and which could be produced at national armories as well as by private manufacturers. This would have been essentially a conversion of the rifle musket to a breech-loader. It might have been a practical approach, and while it might not have provided the troops with the best possible breech-loader, it would have provided them with an acceptable breech-loader.

Such an arm had already been designed in 1861 by S. W. Marsh. His gun was a standard musket with the rear of the barrel milled out and a breech block set in and attached to the breech. It used standard service cartridges and caps, and if the breech mechanism were damaged, a thumb screw could be turned to seal the breech and turn the arm back into a muzzle-loader. Captain Stephen V. Benet had tested the arm at West Point, New York, and felt that it was sound and simple. The Ordnance Bureau did not favor it, and although 25,000 were ordered, none of them were ever delivered. [37]

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[37] Benet to Ripley, August 24, 1861, Letters Received, Ordnance Office Records, National Archives; Ripley to Marsh, October 14, 1861, ibid.; "Report of the Commission on Ordnance and Ordnance Stores," Senate Executive Document Number 72, 37th Congress, 2nd Session, pp. 258-259, 273-274.

If the Marsh was not the arm acceptable to the service, some other simple design could have been used. This would have allowed the private firms and the Springfield Armory to produce identical arms of interchangeable parts; it would have gone a long way toward the standardization of arms in service. It would also have allowed older arms firms to concentrate on cavalry carbines, which likewise might have been standardized. Such a system could have later been used to produce the Spencer carbines and rifles in large numbers. Industry and the Ordnance Department show indications of moving in this direction in the later days of the war when Burnside was allowed to produce over 30,000 Spencer carbines for which Burnside paid Spencer a royalty, but this system came too late to be a factor in the war effort.[38]

It might be too much to expect nineteenth century men to think in such advanced terms as early as 1861. Despite the growing industrial power of the nation, there was little in the way of experience for such cross contracting of arms. While there was subcontracting of arms parts, few businessmen of 1861 would have thought of or approved of manufacturing arms of a rival firm's designs when most had one or more of their own. If these more modern techniques had been used, it is possible that the war would have been shortened by a number of months.

Among the most misunderstood of all battle weapons were the revolvers used by troops during the Civil War. These were seldom em-

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[38]Ramsay to Hartshorn, June 27, 1864, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; "Purchases and Contracts Made by the Ordnance Department," House Executive Document Number 99, 40th Congress, 2nd Session, pp. 85, 723.

ployed to the limits of their capacity. Most revolvers of the Civil War were percussion of either .36 or .44 caliber. These arms were accurate, and although the .36 was barely adequate in force, the .44 was a powerful handgun. With a full charge of powder, these revolvers could easily hit a man-sized target at 100 yards or beyond. While the arm was capable of such accuracy, most men who carried them were not. The spectacular hits at long ranges achieved by the Texas Rangers during the Mexican War were rarely duplicated during the Civil War.[39]

The revolver took on the characteristics of a short range defensive weapon. Powder charges in service cartridges were far below chamber capacity; thus, while shock power remained high in the .44, the range was reduced considerably. Only the cavalry in the early days of the war conceived of the revolver as an offensive arm, and then only for close ranges and for short intervals of time.

It was precisely this defensive character which made the revolver popular with the troops of the Civil War. When men were armed with muzzle-loading arms and an enemy was approaching at very close ranges, the first volley from troops was likely to be their last. It was then that the pistol became the best life insurance available. The trooper with a revolver might hold off an enemy and allow himself time to seek safer surroundings.[40]

Many officers did not wish their men to have pistols because they thought they would likely place too much confidence in them and not

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[39]Walker to Walker, October 5, 1847, quoted in Haven and Belden, A History of the Colt Revolver, pp. 292-293.

[40]Augustus Buell, The Cannoneer (Washington: National Tribune, 1890), pp. 377-378.

develop the skills necessary for the use of the bayonet. These officers, who of course carried pistols, were conspicuously unpopular with their men. Troopers grumbled that it was an example of arrogance and "aristocratic" tendencies which showed a clearly "undemocratic" spirit. Nevertheless, many troopers bought or otherwise acquired pistols of all makes, descriptions, and calibers; numbers of soldiers survived the war only because they did.[41]

The relegation of the revolver to a defensive and secondary role occurred partly because of the development of breech-loading and repeating carbines and rifles. It is this secondary role which helps to explain the relatively slow development of improved military revolvers and their ammunition during the war.

It would have been possible to produce a large frame pistol firing fixed ammunition. Some foreign revolvers, and later an extremely limited number of American manufactured revolvers, were chambered for fixed ammunition, but this ammunition was invariably low in power. Colt, Remington, Starr, and others had a pistol large enough and strong enough to be converted to fixed metallic ammunition. A cartridge, the .44 Henry used in the Henry rifle, was already available, and was an ideal round for a military side arm. Patent royalties could have been paid Smith & Wesson who held the patent on revolvers with cylinders bored through. This would have added to the usefulness and the firepower of the revolvers.[42]

It was in the middle of the nineteenth century that the pistol

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[41]Gould, History of the First-Tenth-Twenty-Ninth Maine Regiments, p. 21.

[42]Edwards, Civil War Guns, pp. 290-291.

began to replace the sabre as a close quarters weapon, and while the War Department purchased many sabres, their usefulness was extremely limited. The Civil War would begin the decline of the sabre as a military arm. The bayonet likewise would suffer a loss of prestige. So drastically was the role of all edged weapons reduced, that the Chief of Ordnance, Brigadier General Stephen V. Benet, in 1878 recommended the discontinuance of both the sabre and bayonet as military weapons. Benet based his recommendation on the Civil War records of the Army Surgeon General who reported that the Medical Department had records of some 263,000 casualties treated, and found that only 957 had been the result of either sabre or bayonet wounds, and only 52 of these had resulted in death. The sabre and bayonet would remain an army issue, but their roles became primarily ceremonial. Improved firearms negated their need.[43]

The technological advances in small arms in the middle nineteenth century had a remarkable impact on the way which Americans fought their Civil War. Indeed, the pattern for many aspects of modern warfare were set in the 1860's, though many were too unobservant or were blinded by their reluctance to believe what they saw. Most European officers, many of whom were observers during the war, accounted for what they saw—the decline of the cavalry charge, the deterioration of closed infantry tactics, and the failure of blade weapons—as singular events, peculiar to American terrain and character, and not as bases for generalizations on the art of war. Only

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[43]Otis to Crane, January 7, 1878, Ordnance Collection, 1812-1889, Vol. III, pp. 100-101; Benet to McCrary, January 30, 1878, ibid., pp. 101-103.

with the bloodletting of the First World War would they fully realize the implications of the firepower first demonstrated on the bloody battlefields of the Civil War.[44]

An examination of priorities in arms policy during the Civil War might give some insight into how well the lessons of the new technology were learned by the contemporaries who fought the war. The higher priorities given to the eastern troops, particularly those of the Army of the Potomac, is well known and was but natural, since the government, regarding the area around the capital as the most critical theatre, would send the best arms there.

A more realistic evaluation of the perceptiveness of army officers and of the Ordnance Bureau would be an investigation of who within each command got what kind of weapons and why. Some statements can be completely misleading, such as the one made by Stoddard that Ripley believed that the smooth-bore musket was good enough for the troops and that it would be less of a loss to the government when panicked soldiers fled the field and deserted them. Even Ripley's contemporary friends and champions, such as Representative Abraham B. Olin of New York, felt that Ripley was defending the smooth bore. Ripley's policy is a better revelation of his views than this statement, which was more a comment on the quality of the raw recruits than on the virtues of the smooth bore.[45]

It is clear from the practices of the Ordnance Bureau in setting priorities that the rifle muskets were much more highly regarded than

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[44]Luvaas, The Military Legacy of the Civil War, pp. 73, 167.

[45]Biographical Register of the U. S. Military Academy, Vol. I, p. 120.

smooth bores. It was also recognized that the superiority of rifle muskets would be better realized in the hands of good and experienced troops. Therefore, it was the regulars who were given first preference. They were trained in the use of sights and shooting at distances; it would be in the hands of these troops that the great range and accuracy of rifled arms would be most telling. In part, this policy may have been inspired by the attitude that the professionals would take care of their own first, but there was a good deal of validity to it.[46]

As the rifled arms were in short supply in the early part of the war, the Ordnance Bureau realized that many times they could not equip bodies of men even of regimental size with rifled guns. The question arose then as to who should get the rifled arms. It was decided by both the Ordnance Bureau and some of the army field commanders to arm first the flank companies with rifle muskets. The range and accuracy of fire would be most advantageous in these positions because there would be no fire support to the outside of the flanks, and they were most vulnerable to turning attacks by either cavalry or infantry. In these locations, the extra range meant that more volleys could be delivered upon an attacking column. These policies indicate that to some degree the Ordnance Bureau and field commanders recognized the value of the new rifle musket.[47]

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[46]Ripley to Sickles, May 27, 1861, Miscellaneous Letters Sent, Ordnance Office Records, National Archives; Ripley to Prime, September 3, 1861, ibid.

[47]Ripley to Buckingham, August 29, 1861, ibid.; Ripley to Marcy, September 9, 1861, ibid.; Ripley to Cross, September 14, 1861, ibid.; Ripley to Morgan, September 27, 1861, ibid.

The rifle muskets were used as incentives for troops. Whenever possible, better arms were given to units with the best records. This, however, did not depend upon the decisions of the Ordnance Bureau, although the bureau suggested that better arms be given to the veterans. This may have been a reenlistment incentive.[48]

The priorities involved in issuing breech-loading and repeating arms are not quite as clear as the priorities in issuing rifle muskets. One reason for this is that breech-loaders were manufactured by private firms, many of whom were operating at full capacity. The government produced no carbines, and so the privately produced arms were largely carbines for cavalry. Thus, it is difficult to evaluate the early opinion of the Ordnance Department toward the breech-loaders and repeaters in the hands of infantry.

There are, however, some indicators. On several occasions, the Chief of Ordnance suggested that breech-loaders and Spencer rifles were reserved for sharpshooters, or the best shots in the regiment. On another, it was suggested that repeating rifles would be of greatest value in the hands of skirmishers. The Ordnance Bureau usually tried to provide breech-loaders or repeaters for troops on special duties if these arms were requested. Wagon train guards occasionally received them. Troopers guarding supply boats on the Ohio River were given Sharps carbines when they requested them. The Ordnance Bureau recognized that there were some situations in which firepower was important or even critical for infantrymen.[49]

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[48]Ripley to Sickles, May 27, 1861, ibid.

[49]Ripley to Wright, March 13, 1863, ibid.; Ripley to Wright, March 20, 1863, ibid.; Maynadier to Morton, April 8, 1863, ibid.

It is also difficult to evaluate the priorities of issuing particular types of carbines to the cavalry. Cavalry arms were in short supply through the entire war, and the Ordnance Department had to issue the arms it had. The cavalry regulars in 1861 and 1862 were generally armed with Sharps carbines. The "Old Army" prejudice may account for that. Lesser rated carbines, when they were available, were issued to state volunteer units. Cavalry units which saw the greatest amount of action were given preference in the issuing of arms. As in the case of the rifle musket, these arms were also used as incentives. It was standard procedure to try to arm regiments or even larger units with a single type of arm, or failing that, with carbines of the same caliber. Here again the eastern cavalry fared better than the horse soldiers in the western theatre, but the discrepancies in arming eastern and western cavalry was never as great as the differences in arming eastern and western infantry.[50]

The evidence that western cavalry was less discriminated against than western infantry in arms policy also seems to have some significance. The proof is not as massive as the historian might wish, but there is a great amount of material on which to theorize and make generalizations. It is necessary to examine the general conception of what conditions are necessary for the use of classic cavalry tactics, and to understand the usual view of topography, ground cover, and vegetation of the West. Cavalrymen believed that mounted troops performed best when they had enough cover to move to within a few hundred yards of an enemy, and then had enough open space in the final

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[50]Ripley to Lowe, April 4, 1863, ibid.; Ripley to Mann, April 16, 1863, ibid.

assault to keep from breaking formation, and also to have some room to maneuver the mass formation. The West was viewed as heavily wooded, with uneven terrain, and therefore not suitable for the heavy mounted charge and sabre tactics.[51]

With the heavy cover which most officers felt characterized the West, it was logical to move toward the carbine rather than the sabre. There was also an early trend of western volunteer cavalry to reject the sabre as a weapon; from the outset of the war, western cavalry also had a tendency to fight on foot.[52]

Thus, western cavalry, unlike western infantry, got a fair share of first-class arms, and as repeaters began to come into the service, westerners got considerably more than an equal proportion. In 1864, when westerners complained that they needed more repeaters, the Chief of Ordnance replied that they had already received four-fifths of all repeaters issued to the army.[53]

When Grant, Sheridan, and others who had been in the West came east in 1864, they demanded and got greater numbers of repeaters. They had been convinced of the advantages of firepower, and they adjusted their cavalry tactics accordingly. Most troopers would fight dismounted with repeating carbines. Union officers had become educated to firepower as a major precept of modern warfare. Therefore, firepower became a key factor in hastening the defeat of the Confederate States.

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[51]Luvaas, The Military Legacy of the Civil War, pp. 4-6, 16-18, 90.

[52]Ibid., pp. 4-6, 90, 146.

[53]Ramsay to Stoneman, December 30, 1863, Miscellaneous Letters Sent, Ordnance Office Records, National Archives.

CHAPTER VII

SUMMARY AND CONCLUSION

The arming of troops was the most difficult military administrative task faced by the Union. The severe shortage of good weapons at the opening of the war made it necessary to equip the United States Army with whatever arms the market could provide. This shortage put the men of the undermanned Ordnance Department and its central headquarters, the Ordnance Bureau in Washington, at a great disadvantage in making arms policy. The rigid standards which the Ordnance Bureau wished to maintain on the acceptance of arms for the service could not possibly be maintained or even defended in light of the army's critical need for weapons.

The domestic market, which consisted of sporting arms and a few hastily manufactured and often inferior rifles and muskets, was soon exhausted. Although the Ordnance Bureau correspondence speaks of the decision to buy foreign arms, there was, in fact, no decision to make. Europe had large reserves of arms which ranged from excellent rifle muskets to the poorest smooth-bore muskets. These arms were almost invariably muzzle-loaders, but so too were the standard United States service arms. Although the British did not have large reserves of Enfield rifles and rifle muskets, they had excellent facilities for their manufacture.

Europeans quite naturally took advantage of American buyers who

were desperate for arms. They tried to sell the old arms first, and in many cases were successful. However, the American purchase of cheap, worthless, or dangerous arms was coming to an end by early 1862. Even in 1861, many of the arms imported into the United States were good, and most were serviceable.

Many of these arms, such as the Saxony and Austrian Lorenz rifle muskets, were rough in appearance or aesthetically offensive to Union soldiers. These characteristics often led the soldiers to draw the unwarranted conclusion that the arms were unsound or inferior. Some of these arms, sound in basic design and workmanship in the original models, were damaged when the contractor had them reamed and rebored to .58 caliber. Even when this work was done well, the thinner barrel which remained might cause problems in strength and accuracy.

Many of these guns had been kept in storage for a number of years prior to American purchase, and undoubtedly suffered from weakened springs or incorrectly adjusted locks. Normally these were minor problems, but to the undermanned Ordnance Department, they were insurmountable. There simply were not enough officers, men, or employees in the department to do even a small fraction of this relatively minor renovation. Indeed, there was not enough personnel to adequately inspect these imported arms to determine which should be rejected and which should be accepted. In many cases, these arms were issued in the condition in which they arrived in port. Nevertheless, most were sound, and the generally poor reputation of these European arms is largely undeserved.

British arms were a different matter. The Enfield rifle muskets had an excellent and deserved reputation for quality, accuracy, and

reliability. They were regarded by even the Ordnance Department as first-class arms. Of all the foreign arms on the market, the Enfield was the most sought after. Union and Confederate purchasing agents, state agents, and private arms dealers competed for the manufactures of the large gun works at Birmingham and London. The British arms makers were only too glad to supply their desperate American customers by expanding their facilities. These factories turned out Enfields in large numbers and supplied the Union with over 400,000 of these excellent arms.

Foreign arms became the major source of supply in the first year and a half of the war. Most of the troops who carried them found them to be acceptable, and many thought as highly of the Saxony rifle, the Austrian rifle musket, or the Enfield, as they did of the Springfield. Whatever their merits respective to the Springfield rifle muskets, the troops generally had confidence in all but the worst of these foreign arms. These British and European arms allowed the Union army to take the field early in the war, and they continued to serve their purpose until American manufacturers could expand the supply of domestic arms.

The Springfield Armory served as the backbone of the arms supply in the United States. Under the able leadership of Major Alexander B. Dyer, the armory was rapidly and efficiently expanded until it produced more than 1,000 rifle muskets per day. But the private American arms industry expanded in a rather helter-skelter manner, much in keeping with the then developing business tradition. Contractors, some of them with either more ambition or more greed than they could possibly satisfy, sought government contracts with everything from pleas to political influence. Some of these contractors

became wealthy, others lost money, and some totally disappeared from the recorded annals of American business after the early days of the war.

Despite the initial reluctance to issue contracts, by the summer of 1861 the War Department and the Ordnance Bureau were almost as anxious to give contracts as the contract seekers were to receive them. Contracts for the Springfield rifle muskets were handed out to men and companies who had no facilities to make them. By the end of 1861, the government was under contract to take over 800,000 rifle muskets; the early contractors delivered only about one-fourth of that number, and many contractors failed to deliver any guns. The number would have been even smaller except for established firms such as Colt, Jenks, Lamson, Goodnow & Yale, and the Providence Tool Company. These firms delivered most of the 205,000 rifle muskets which the government received under these first contracts.

The expansion of facilities to build the rifle musket was, nonetheless, remarkable. By 1862, the Ordnance Bureau had a good knowledge of what firms could be depended upon to deliver arms. The granting of contracts became more selective, and the yield on them much higher. The Springfield Armory remained the principal supplier of rifle muskets, furnishing almost sixty percent of these arms; without the private producers, supplying arms to the Union army would have been much more difficult. The Springfield Armory, together with the private manufacturers, supplied one and a half million rifle muskets of the standard design—a remarkable achievement.

Equally extraordinary was the growth in the production of breech-loading arms, particularly carbines for the cavalry. In nearly all

cases, these arms were patented, and the firms or individuals who held them had exclusive rights to their manufacture. Although most were designed for the civilian market, each inventor hoped for military adoption to enhance his profits. No vast difference existed between civilian and military arms in the nineteenth century, and almost any arm could be modified for military use.

Throughout the country, inventors were at work designing new breech-loading systems which would meet the demands of the civilian and military markets. The pre-Civil War decision by Congress to appropriate money to examine breech-loading arms for the United States services led to spirited competition between gun inventors. This encouragement by Congress, plus the growing demands of civilians seeking better sporting and defense arms, led to the production of a great many weapon designs in the years just prior to the Civil War.

Although the army had purchased and issued significant numbers of breech-loading carbines, particularly Sharps and Burnsides, prior to the war, these had only a semiofficial status. There were three principal reasons why the army remained reluctant to adopt any single design. First, there was a long-standing prejudice against breech-loaders within the army, and particularly with line officers. Second, the breeches on most arms remained imperfectly sealed to prevent the escape of gases. Third, if the army adopted any one of these new and expensive arms, a new development in arms design might suddenly render obsolete the service weapon then in use. In the late 1850's, the army had decided to use breech-loading carbines for cavalry, but it was awaiting the perfection of the principle. The metallic cartridge, which sealed the breech, was coming into use, and developments in

breech design were encouraging. Although military men remained unconvinced of the virtues of breech-loading infantry arms, the breech-loading cavalry carbine was certain of adoption by 1863 or 1864. The Civil War, however, intervened in this orderly process, and forced an earlier decision.

Faced with a shortage of all arms at the beginning of the war, and particularly cavalry arms, the government had no choice but to purchase and use large numbers of privately produced breech-loading carbines of varying designs. Most of the arms adopted, with but minor changes, were suitable for the service, since even during the early days of the war the Ordnance Bureau was able to reject most of the defective or inferior breech-loading designs.

Breech-loading arms were all privately produced, and it took some time for manufacturers to prepare to produce them in large numbers, but by the summer of 1863, significant quantities of them were being delivered to the government. Even so, these companies could not produce the arms in sufficient numbers to meet the demands of the service, and arms for the cavalry remained in short supply until almost the end of the war.

The most productive of Civil War firms making breech-loaders were the Sharps Rifle Company, which produced 80,000 carbines and about 10,000 rifles for the government, and the Spencer Repeating Rifle Company, which produced about 60,000 carbines and 12,000 rifles. In addition, the Spencer firm had still uncompleted contracts from the government, and the Burnside Rifle Company was preparing to deliver large numbers of Spencer carbines when the war ended. The Spencer, with its metallic cartridge and its repeating firepower,

was clearly the favored arm at the conflict's close.

At the end of the war, the government was confining its orders for breech-loaders largely to those using self-contained metallic cartridges. Those using paper or linen cartridges, even the Sharps, were looked upon with much less favor. in addition, the demand for repeaters far exceeded the demand for breech-loading single shot arms during the last eighteen months of the war. By the end of the war, the Spencer Repeating Rifle Company, and the Burnside Rifle Company, which was beginning to produce Spencer carbines, held the largest contracts. These repeaters were the most popular arms with the Union army, and were sought by any unit who thought they could get them.

The acceptance of breech-loading, and later repeating, arms during the Civil War was the culmination of a long controversy. The first breech-loader used by American soldiers was the Hall rifle and carbine invented half a century before the outbreak of the 1861-1865 conflict. This arm, although popular with the troops who used them, met strong resistance from the line officers of the army, particularly officers of dragoons. The Ordnance Department defended the arm for more than forty years, but by the 1850's the line officers had won, and the Hall was phased out in the years after the Mexican War. The last Halls manufactured were delivered between 1849 and 1852, and remained unissued at the beginning of the Civil War. The War Department sold them, but they were purchased by private businessmen and resold to Major General Fremont at a huge profit soon after the war began. But the breech-loader controversy never died, and the new inventions of the 1850's added heat to the discussion.

During the Civil War, necessity forced the acceptance of breech-

loading arms, but the reputation they received on the battlefield made even the more conservative officers regard them with respect. One by one the arguments against breech-loading arms fell away. The objection to their complexity faded when it was realized that this did not mean fragility. Improvement in both arms and ammunition also removed some of the more objectionable features of the breech-loaders, and opened the way for the development of the repeaters. By 1864 and 1865 the Ordnance Bureau was preparing to adopt breech-loading arms for the infantry; thus, the era of muzzle-loading guns passed quickly.

The newer arms of the middle nineteenth century changed many of the concepts and tactics of war. The rifle musket, with its accuracy, range, and power increased the distance at which battles would be fought. It reduced the potential of cavalry shock tactics and gave defensive infantry supremacy in battle. The smooth-bore musket, which the rifle musket replaced, gradually disappeared. The newer rifle musket constituted a far greater change in armament than is often recognized because its range and accuracy had the effect of increasing the amount of fire falling upon attacking columns.

Breech-loading and repeating arms had an even greater effect on the expansion of firepower. Because the breech-loaders of the Civil War were largely cavalry weapons, mounted soldiers were given significant advantages in firepower. Breech-loaders and repeaters did not restore, nor were they adaptable to restoring, classic cavalry tactics. Further, Union cavalry officers seemed to have no desire to return to the dead past. Shock tactics were virtually abandoned, but the dismounted trooper with his breech-loading or repeating carbine could fight effectively against even the best of infantry.

The Union cavalry in the last eighteen months of the war became swift, powerful mounted infantry, using both mobility and firepower to reestablish the role of the mounted service.

Although the new weapons and the concept of cavalry as light infantry made the mounted arm effective fighters, it did not break the supremacy of defensive infantry. The horse, the fastest means of movement, had neither the speed nor the stamina to break through infantry lines; being a living thing, it too was vulnerable to small arms fire. Thus, the new weapons of the Civil War handed over the greatest advantages to defensive forces, a situation which would not change appreciably until the development of armor and armor tactics after the First World War.

Historians often point out that the Civil War was the first of modern wars, and the last of old wars. Nowhere is this fact clearer than in the procurement, manufacture, issue, and development of small arms. New arms made a marked impression on both the battlefield and American industry, but the staff service whose job it was to acquire, test, and manage these arms was left in a hopelessly archaic structure by Congress. Hampered by political influence and interference from outside, and insufficient time and personnel within, the Ordnance Department and Bureau faced an almost unbearable and frustrating burden. They erred on a number of occasions, but their problems were more severe than those facing any other staff service. Those services providing horses, food, blankets, wagons, and medical supplies could draw fairly quickly on existing production, but it took time to build and expand arms factories.

Nevertheless, the Ordnance Department and its central office,

the Ordnance Bureau in Washington, managed arms policy better than might logically be expected, considering the limitations placed upon them. They acquired and constantly upgraded the quality of government arms, and provided new and better weapons when they could acquire them in sufficient numbers. Their tasks were many and arduous, and their rewards were few, but they armed the largest force the United States had ever put in the field.

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