

MAJOR ALFRED MORDECAI, THE SHARPS CARBINE AND ITS TEST AND TRIALS

by Edward W. Marron, Jr.



Figure 1. Sharps Model 1851 - Ordnance Issued – serial number 191.

“At the appointed time, June 14th, 1819, I went up the Hudson in a steamboat, of which were not more than two or three, perhaps, then running and was put on shore at West Point from a rowboat attached to the steamer by a line as was the customary manner of making all the principal landings. Having reported myself to Major Thayer was soon quartered with several of my classmates in a room in the old North Barracks”¹

His arrival at West Point marked the beginning of Alfred Mordecai's military career. Born January 3, 1804, in Warrenton, North Carolina, Mordecai was educated in a school founded by his father Jacob. His early education served him well. He excelled in mathematics. A brilliant student, Mordecai graduated from West Point in 1823 at the head of his class (Figure 2). While at West Point, he served as an assistant professor of natural and experimental philosophy (physics and applied mechanics) from 1823 to 1824 and as the Academy's assistant professor of engineering in 1824 and 1825.² Mordecai's intellect, love of mathematics, and intellectual honesty defined his military career.

In 1825, Mordecai was assigned to oversee the construction of military fortifications in Norfolk, Virginia. Promoted to Captain of Ordnance on May 30, 1832, he later commanded the Washington Arsenal (Figure 3) and then the Frankford Arsenal. In 1842, he was named Assistant to the Chief of Ordnance in Washington. From 1839 to 1860, he served on the Ordnance Department's Ordnance Board, including the first board to test a Sharps rifle. For his meritorious service commanding the Washington Arsenal during the Mexican American War, he was brevetted major in 1848, the same year Christian Sharps patented his breech-loading rifle.³

Alfred Mordecai wrote about military technology extensively. In the *“Military Commission to Europe in 1855 and 1856: Report of Major Alfred Mordecai, of the Ordnance Department”*, he voiced serious reservations about adopting breech-loading firearms for military service.⁴ He took a similar view in *“Report on the Art of War in Europe in 1854, 1855, and 1856”*⁵, commonly known as the Delafield Report, written by Major Richard Delafield with Mordecai as co-author. Even so, the report acknowledged that



Figure 2. Alfred Mordecai 1804-1887 (left) as a West Point cadet (right).

breech-loading carbines could provide important advantages for mounted troops. Mordecai's views reflected the military doctrine and conventions of his era. He believed breech-loading systems were mechanically unreliable, encouraged excessive ammunition use, and offered no clear advantage over disciplined, well-trained infantry. Of those involved in the initial testing and trial of Sharps firearms, it is the author's opinion that Alfred Mordecai was ultimately responsible for its initial adoption by the U.S. Army's Ordnance Department.



Figure 3. Washington Arsenal ca 1860, (Courtesy of National Defense University).

Christian Sharps first attempted to interest the War Department in his new rifle before his patent was issued in the fall of 1848. It took several years to persuade the military to conduct a test. The first trial was held by the Marine Corps and the second by the U. S. Ordnance Department during which Major Mordecai was formally introduced to Sharps firearms. The Marine Corps trial was the result of Sharps entering into a contract with Arba K. Maynard, Dr. Edward Maynard's half-brother.⁶ Maynard, an attorney practicing in New York City and Washington, D.C., was responsible for securing "orders from the Marine Corps and Army".⁷ His efforts succeeded, leading Marine Corps Commandant Archibald

Henderson to order a test of the new rifle by his staff. The tested rifle was a Sharps Model 1850 manufactured by Albert S. Nippes of Mill Creek, Pennsylvania.

On October 18, 1850, Bvt. Captain Robert Tansill (Figure 4) carried out the first military trial of a Sharps rifle. Captain Tansill, a Virginia native, was a career Marine who enlisted in 1833. He served during the Second Seminole War and was commissioned Second Lieutenant on November 4, 1840.⁹ Tansill went on to serve during the Mexican - American War. As a result of his "gallant and meritorious conduct in defense of the town of Guaymas, in Mexico" he was promoted to Brevet Captain on November 17, 1847.¹⁰ During the war, he also served as the Military Governor of San Francisco. His report to General Henderson appeared in the United Service Journal on November 16, 1850. Tansill's report of October 28, 1850, noted:

"— The first day of the trial, I had the musket fired fifty times in sixteen minutes; after which it was, in all respects, in as good condition for firing as at the first fire, except that the barrel had become so hot that the hand could not be borne upon it — the second day, it was fired one hundred and five times in thirty minutes, without any change, except the heating of the barrel as on the first day — the third day, without having been cleaned, it was fired fifty times in fifteen minutes; after which it was in as good condition for service as when the firing began on the first day's trial. It is perfectly safe at all times; it can be loaded and fired nearly as well lying or sitting down as standing. The result of this trial has been such as to entirely convince me and the officers who witnessed it of the vast superiority of Sharp's [sic] musket over the ones now in use. — the inventor is anxious to have a more severe, protracted, and varied trial, and especially to have its advantages of range and accuracy more thoroughly shown, I respectfully recommend that a board of officers may be appointed for that purpose. "

Captain Tansill served in the U.S. Marine Corps until August 23, 1861. After returning to Boston aboard the frigate USS Congress, he submitted his resignation to the Navy Department, stating that he

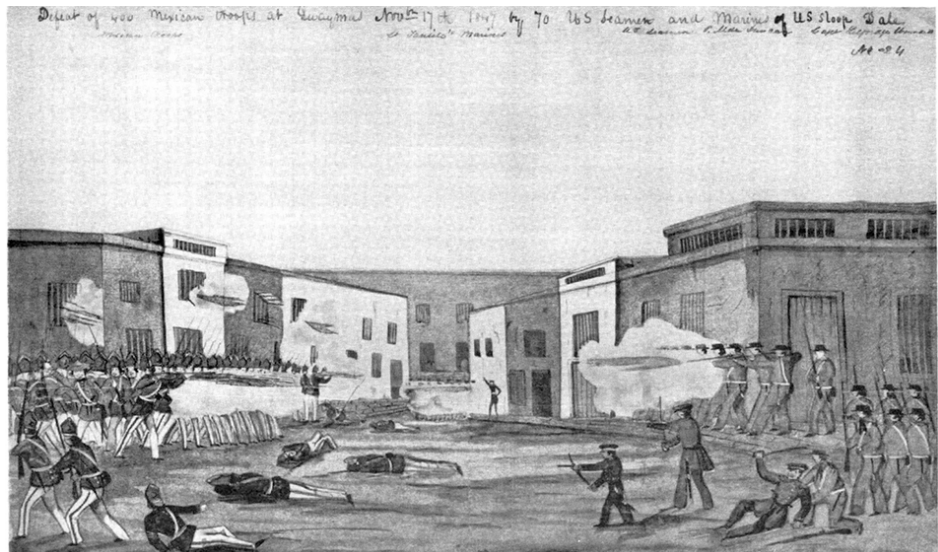
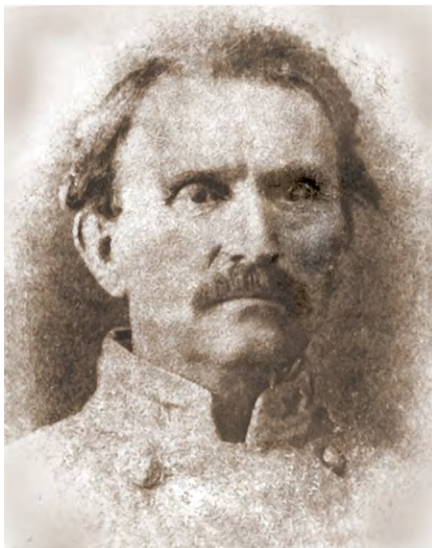


Figure 4. Captain Robert A. Tansill United States Marine Corps & Confederate States Marine Corps (left, Marine Corps Archives and Special Collections). "The Surprise Attack on the Dale's Landing Force in the Streets of Guaymas, 17 November 1847," by William H. Meyers, gunner of the U. S. Sloop-of-War Dale (right). Lt Robert Tansill's Marines are in the center. (Franklin D. Roosevelt Library, Hyde Park, New York).⁸



Figure 5. Bvt. Brigadier General George Talcott.



Figure 8. Colonel Henry K. Craig, Chief of Ordnance 1851 – 1861.

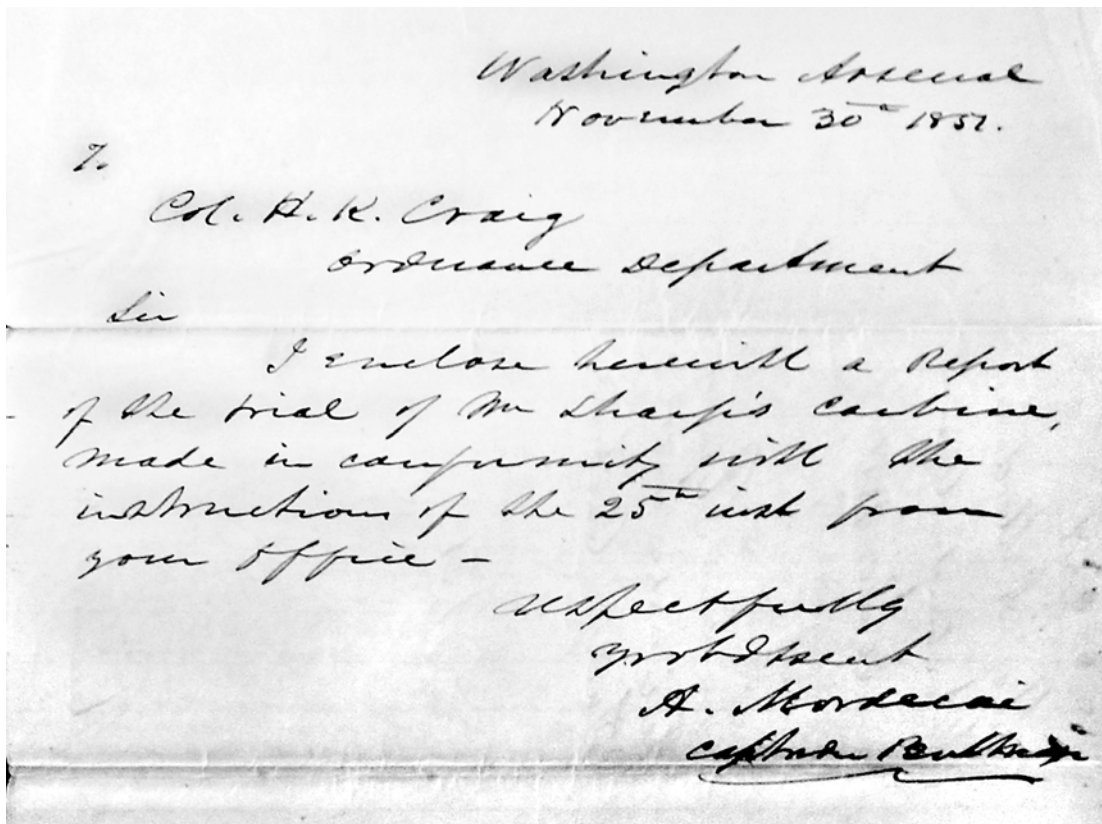


Figure 9. Report: Trial of Mr. Sharp's [sic] Cavalry Carbine with Maynard's Lock; at Washington Arsenal: November 26th + 27th 1851, (Courtesy of the Manuscript Division, Library of Congress).

could not "join in unnatural war against his blood relations, kindred and friends".¹¹ When *Scientific American* reviewed the Sharps Model 1850 rifle on March 8, 1851, it found Tansill's endorsement accurate.

The Ordnance Department's Board of Ordnance Officers' small arms trial scheduled for the month following Tansill's report was then expanded to include breech loading firearms. Christian Sharps

REPORT
Of Board of Ordnance Officers on Patent Small Arms other than Repeating Pistols.

WASHINGTON, D. C., November 27, 1850.

In addition to their report on the trial and examination of repeating pistols, the Board have agreeably to their instructions, to report the result of their examination of the following arms, being all that were presented for that purpose :

- | | |
|--------------------------------|------------------------|
| 1st. Sharp's Rifle and Musket. | 4th. Jennings' Rifles. |
| 2d. Klein's Prussian Rifle. | 5th. Perry's Rifle. |
| 3d. Jenks' Carbine. | 6th. Welch's Rifle. |

1st. Sharps' Rifle and Musket.

This is an arm loading at the breech, which is opened and closed by a vertical slide or shear cutting off the end of the cartridge. This arm has withstood all the trials the Board has considered necessary to make with it. It was fired several hundred times without cleaning, during which the movements of its machinery was not obstructed. The arm is loaded with great ease and rapidity by using a simply prepared cartridge which Mr. Sharp has arranged; and also the ordinary rifle and musket ammunition with its percussion caps can be used with facility.

The penetration, range and accuracy of fire from the rifle thus arranged, with a cartridge and conical ball prepared for it, were superior to that of any other breech loading piece offered to the board. With Maynard's primer (which, as well as the cap, may be used) this arm was fired ten times per minute, and when discharged over the water, a second charge was fired before the *ricochet* of the first had ceased.

From their observations of the use of this rifle, the Board are of opinion that it is superior to any of the other arms loading at the breech, and think it would be well to have further trials made, and to put some of them in the hands of troops to determine whether they are suitable to the military service.

Figure 6. Report of Board of Ordnance Officers on Patent, Small Arms and other Repeated Pistols. Washington D.C. November 27, 1850.

was invited to submit a gun for testing on October 15, 1850.⁴ The relevant section of the Board of Ordnance Officers' report and Brevet Brigadier General and Chief of Ordnance George Talcott's (Figure 5) summary as sent to then Secretary of War, Charles M. Conrad, is presented in Figures 6 and 7.

General Talcott was less than supportive of Sharps' efforts. This was in part due to Sharps having contacted the War Department

directly and not through the Ordnance Department. It wasn't until Talcott was directed by the War Department to include breech loading rifles in the trials that Sharps was invited to take part. Talcott confirmed the invitation to Sharps to the War Department on October 12, 1850. His letter was addressed to Major General Roger Jones, Adjutant General U.S. Army.¹² In his report to the Secretary of War, Talcott recommended purchasing a small number of Sharps carbines, "say two hundred", for field service "on the Western

**ORDNANCE DEPARTMENT,
Washington, December 17, 1850.**

SIR: When the board of Ordnance Officers was convened to examine and try repeating pistols under the resolution of the Senate of the 30th of September last, there were various arms, other than those specially mentioned in the resolution, which had been presented to the notice of the War Department by their inventors, who claimed for them many advantages over those in use. The meeting of the board presented a good opportunity to make trial of such arms; they were accordingly directed to do so and to report the results of their examination and experiments. I respectfully inclose a copy of that report, from which it will be seen that but one of the arms tried, viz, Sharp's, with Maynard's lock and primer, is considered suitable for the public service. My opinion of Sharp's gun, formed from an examination of its construction, is favorable to its superiority over all other breech-loading arms which have come to my notice, especially when combined with Maynard's improvement for priming, and I think it may prove a valuable arm for the military service. But the only sure way to establish or refute this opinion is practical trial of the arms in the hands of troops in active service in the field. I therefore recommend that the purchase of a small number of these arms, say two hundred, be authorized, and that they be issued to the troops on the Western frontier. After they shall have been in use by them for a sufficient length of time to test their practical utility, an arrangement may be made for introducing them regularly into the military service to such an extent as experience may render advisable. The cost of purchasing 200 of these arms will not exceed \$4,000, which may be paid from the appropriation for "the purchase of ordnance, ordnance stores, and supplies."

Respectfully, your obedient servant,

GEO. TALCOTT,
Bvt. Brig. General, Colonel of Ordnance.

Hon. C. M. CONRAD,
Secretary of War.

[Indorsement.]

frontier." The order was not issued while Talcott remained Chief of Ordnance.

Despite any prejudice Talcott held about Sharps as an individual, and breech loading firearms in general, other factors delayed the testing and adoption of the Sharps rifle. They included the military's structured and bureaucratic approach to decision-making, budgetary constraints, political influence or the lack thereof, and the wave of new firearms technology. Equally important, the 1850 Sharps rifle appeared too fragile to withstand the rigors of military service. Gas leakage from the rifle's breech was another problem that had yet to be resolved. More important to the future of Sharps' efforts than the Ordnance Board's published report was the composition of the Board as it included Bvt. Major Alfred Mordecai who was able to fully assess a Sharps rifle and to consider its potential. Although not the most senior officer on the Board Mordecai's conclusions were often the basis of the Board's ultimate recommendations. Although the Board's published results were positive, the Board's members had reservations resulting in their collective statement that "it would be well to have further trials made."¹³

During 1851, Bvt. Brig. Gen. Talcott, who had served as Colonel of Ordnance since 1842, was dismissed from the service and replaced by Col. Henry K. Craig (Figure 8).¹⁴ The Ordnance Department was in a period of transition and "first in importance was the adoption of the rifled musket in place of the smoothbore".¹⁵

Firearms technology was moving at a rapid pace: rifled muskets, the Minie ball, the Maynard Primer and the recent acceptance and improvements of the Colt revolver were a lot for a tradition bound military to absorb, much less to adopt and implement. Add the concept of a new breech-loading carbine to the mix and it is easier to empathize with the military's recalcitrance.

Colonel Craig appreciated the potential of Sharps firearms and called on Mordecai, who had initiated the use of scientific methods in the analysis of weapons and munitions, to conduct another test and trial. A pioneer in rocketry and heavy ordnance, his skills were so respected that he was sent to Europe to study and report on weapons technology. Mordecai authored *The Ordnance Manual*¹⁶ in 1841 and co-authored *Artillery for the United States Land Service* in 1849,¹⁷ which remains in print, as well as at least five other monographs or books on related topics. He was a farsighted man who embraced technology and viewed the rifled musket as the ultimate military weapon of its time. Breech-loaders posed problems with gas leakage and actions that were subject to fouling and possible mechanical failure. Mordecai continued to hold strong reservations about breech loading arms but authored an objective report on the redesigned Sharps carbine. It was sent to Col. Craig on November 30, 1851. His report follows (Figure 9):¹⁸

"This carbine is made to carry a ball of the same size as the common Rifle in Hall's carbine. The bore is just large enough

Figure 7. General Talcott's Report to Secretary of War Conrad.

to admit the ball to be fired through without cutting its patch. The length of the barrel is 21 inches, the same as Hall's carbine; but the chamber being included in this length, the area is shorter than Hall's – The barrel is rifled, having six shallow grooves, the width of which is the same as that of the lands. The grooves have a gaining twist beginning at the breech with 1 turn in 6 feet + ending with one turn in 4 feet.

The arm complete weighs 6 lbs. 10 oz. The conical balls used by Mr. Sharps are of the weight of 380 grains, or about 18-1/2 the pound. The cartridge for this ball contains about 65 gn; but a part of it being cut off by the sliding breech plug, the charge receiving in the chamber is about 55 grains. With the common rifle cartridge, which is made on a former a little larger than Mr. Sharp's [sic], the charge remaining in the chamber is about 62 grs.

The carbine has a bridged sight capable of being raised for various ranges, from 150 yds to 800 yds.

To try the range + accuracy of fire, + to compare the effect of the conical ball with that of the round ball, the carbine was fired by Mr. Sharps, at a target as follows:

The largest is 16 feet long + 8 ft high; the mark was a sheet of white paper, 28 in long + 20 in high. The carbine was held always at the mark or near it, the height of the back sight being raised according to the distance. The fixed sight corresponds to a range of about 150 yards.

The direction of the line of fire was North. On the first day the wind was very brisk, blowing in gusts from N.W., on the second day, there was a gentle breeze from S.W. On the latter day the center part of the target 6 ft wide + 7 ft high was covered with blue paper, having a white mark as before.

It was not considered necessary to try the round ball at a greater distance than 300 yards. The result of the comparison between the round + conical ball is the same that I have often before found in firing with rifles of various kinds. Pretty good practice may be made with the round ball at 200 yards, but beyond that distance the superiority of the conical ball is manifested in a striking manner – at all distances the conical ball requires a up elevation than the round one – I had no means of ascertaining the extreme range of the carbine; but the conical

ball at a high elevation reached an object on the water estimated to be at least 1000 yards distant, whilst the round ball fell very far short of it.

The force of the charge used with the conical ball is considered amply sufficient – at 500 yards the balls penetrate through more than two thickness of pine boards 1 in thick + are flattened against a brick wall – They uniformly strike the target point foremost, at all distances.

It was observed that even at 200 yards the part of the patch which is choked and tied over the ball, in our rifle cartridges, was carried with the ball into the target; this circumstance alone accounts in a great measure for the great inferiority of the round ball in these trials + shows the imperfection of our present mode of patching; but this inferiority is also observed, and as I have already remarked (though in a up degree.) in firing the round ball at great distances, even when loaded with the greatest care.

In order to test in same degree the solidity of the arm, the liability of the moveable part of the breech to become choked, etc. The carbine was fired altogether 394 times, of which 300 with the round ball, using the rifle cartridge, + 94 with the conical ball in Mr. Sharp's [sic] cartridge.

Sixty rounds were fired in 12 minutes without cleaning or cooling the arm, and there was no serious impediment to the motion of the breech piece – the barrel became of course very hot + the dirt dried hard on it; but the inconvenience caused by the dirt in the motion of the breech piece was quickly removed, after firing about 30 rounds, by slightly moistening the part with spittle—In slower firing, where the moisture of the air is absorbed by the residuum of the powder, this inconvenience is not felt. After firing these sixty rounds, the breech piece was taken out + cleaned, + the barrel also washed + cleaned, + the arm ready for firing again in 4 minutes – 20 rounds more were then fired; the barrel wiped in 1 minute + discharged again 20 times; making 100 rounds in 24 minutes, including cleaning; the carbine being always brought to the shoulder + aimed.

Mr. Sharp [sic] has made a very convenient + effective wipe for the barrel, being a spiral brush, formed of bristles twisted into iron wire. There is no rod to the carbine + he proposes to

Date	Ball	Distance	No. of Rounds	Hits on Target	Remarks
1851		Yds.			
Nov. 26th	Conical	200	10	8	2 Lost.
"	Round	200	10	8	Nearly All Low — 1 short
"	Conical	300	10	9	3 in White Paper
"	Round	300	10	3	1 Short — 6 Wiped
"	Conical	400	10	10	3 in White
"	"	500	16	5	1 in White
Nov. 27th	"	500	20*	11	Without wiping the Barrel 7 in Blue Paper
Total	Conical Round		66 20		

have only one of these wipers to 10 carbines; supposing that it will never be necessary to fire so many rounds at once as to require cleaning in the field. But I think it will be found expedient to have a wiping rod for every carbine. The rod need not perhaps be attached to the arm, but may be hung on the saddle or accoutrement, as in the French Cavalry musketoon of the same length as this carbine.

This wiper may be dipped in water + the barrel washed with it, without preventing the piece from being immediately fired again. The powder being inserted enveloped in paper is protected from the moisture. If a considerable quantity of water is poured in the barrel + lock, after loading, the first primer which is fed out will snap, but the second fires the charge.

The communication of fire from the primer to the charge appears to be perfect; except when water was poured on, as just mentioned, there was no instance of the primer exploding without firing the charge. The primers used were made at the arsenal about 2 years ago; they have been kept in a dry storehouse. In two of the strips I found that 3 inch primers at the end failed to explode, from what cause I know not; but with these exceptions, there was no failure in the whole number fired. The cone of this carbine was a little too short + too flat on top to fire the common copper caps at the first fall of the hammer; it was necessary to cock the piece and let the hammer fall a second time – this can easily be remedied by making the upper part of the cone of the same form as the regulation cone; but Mr. Sharp [sic] mentioned an objection to this form in using Maynard's primers. He says that on account of the large opening in the cone the escape of flames from the vent reach with such force on the hammer as to throw it up + to fire one of the primers in the magazine. For this reason, he makes the opening of his cone small + places the throat of the magazine further from the top of the cone than in the muskets altered to Maynard's plan. This change may lead to another inconvenience, which I understand has been experienced in some of the first arms made on Maynard's plan; that the primer escapes, especially in windy weather, before it reaches the cone. In firing several rounds, with both the round + pointed ball, I found that the recoil of the carbine is not inconveniently great, either for comfort or for accurate shooting. After the firing of 394 rounds the carbine appeared to be in perfect firing order, as at first. The carbine was taken to pieces + carefully examined as to the effect of the firing on the barrel and breech piece.

By the escape of gas between these two parts, the end of the barrel + the face of the breech piece immediately around it are cut into numerous little striae, + the platinum ring which is inlaid in the breach piece + back against the end of the barrel, is also etched, as it were from the same cause. It would require probably a very great number of discharges for this action to produce such an effect as to impair seriously the efficiency of the piece; but an arrangement is made in the construction of the barrel to remedy any inconvenience which may result from it or from the necessity of wiping off the face of the breech piece – for this purpose the end of the barrel is lined with a bouche of steel which fits very tight, but which may be driven back, by the use of proper tools, + ground off again to suit the altered state of these parts. At the front end of this steel bouche or lining, a cylindrical space or ring is left in the chamber, from which the inventor

apprehends no inconvenience in practice.

I ought to have mentioned before that, in firing, a small piece of the cartridge paper is apt to be left in the chamber; which will have the effect for the flight of the ball, by pressing it towards one side of the bore. It is therefore expedient, in accurate firing, to withdraw this bit of paper, by inserting the cartridge + taking it out again, so as to bring the paper with it.

The examination of the hammer shows that its face is sensibly depressed or countersunk by the action of the primer; + the inner side of the lip of the hammer is cut away by the same action. This effect + also the action on the end of the barrel + face of the breech, may perhaps be greater than usual, in this trial, because the cartridges used were charged with our very quick, strong rifle powder (DuPont) instead of the slower + coarser powder which Mr. Sharp [sic] uses for his cartridges; + also because the charge remaining in the chamber, from the rifle cartridge, is sensibly greater than from Mr. Sharp's [sic], as shown in the beginning of this report.

The barrel of this carbine is made of cast steel, + the advantage of using this material is exhibited in the great facility which its high polish affords for cleaning the bore, + in the perfect condition of the barrel after firing.

The arrangement of the lock + other moving parts is ingeniously combined, + I suppose is as simple as the numerous operations to be performed will admit of. Many of these parts are, of necessity, much more delicate in their construction than the locks of our ordinary fire arms; but such parts are in general protected from external injury in service, + the arm, taken altogether, appears to have sufficient strength for use. (Some very slight modifications in details have been suggested by the trial + pointed out to Mr. Sharp [sic] but they are too unimportant to require mention here.

In conclusion, I am of opinion that this carbine possesses the power of range + accuracy of fire amply sufficient for a cavalry arm, for which it is well adapted by the great facility with which it may be loaded + fired on horseback; and that it is sufficiently strong + safe from ordinary accidents to justify it being placed in the hands of the troops for trial in actual service. In that case, the cone should be arranged so as to permit the use of caps.

At the same time, I desire to be distinctly understood as not expressing any opinion as to the ultimate fitness of this arm for the service of troops, either in regards to the manner of loading or to the manner of priming. Placed in the hands of careful + expert men, such as Mr. Sharp [sic], I should have little hesitation in expressing an opinion on this point, but I conceive that that fitness of any arm for general service can be tested only by exposing it to all the accidents of such service.

A. Mordecai
Captain Bvt. Maj.

The Major's report is a concession to the quality of the Sharps carbine and underscores Mordecai's impartial analytics. Christian Sharps was present at the trial demonstrating his carbine and encouraged its adoption by the military. The trial's timing leaves uncertain which Sharps model underwent Mordecai's extensive testing. It was either a late variant of the Model 1850 carbine or an unknown prototype of the Model 1851 carbine (Figure 10).

Sharps' activities at the time would have permitted either possibility. The Model 1851 carbine did not enter production until October 1852 and weighed approximately seven and a half to eight pounds. When the trial was held, the Model 1851's design had not been completed.



Figure 10. Sharps Model 1850 and 1851 Carbines (Ron Paxton photography).

The carbine tested by Mordecai weighed six pounds and ten ounces. The Model 1850 in Figure 9 weighs six pounds seven ounces. Mordecai also noted that the gun was 30 bore and had a twenty-one-inch barrel, both common elements with the Model 1850 and the Model 1851 carbine. Mordecai's report states: "*The carbine has a bridged sight capable of being raised for various ranges, from 150 yds to 800 yds.*" Civilian Model 1851 carbines were often configured with a tang sight, but the writer has not seen a Model 1850 Sharps with a tang sight or bridged sight original to the gun. The bridged sight used was either a leaf or ladder sight. This is believed unique to the Hartford built Model 1850 Sharps.¹⁹ Mordecai also wrote, referring to the chamber: "*the end of the barrel is lined with a bouche of steel which fits very tight, but which may be driven back, by the use of proper tool, at the front end of this steel bouche or lining, a cylindrical space or ring is left in the chamber, from which the inventor apprehends no inconvenience in practice.*" Bouching or a bushing is used to limit gas escaping from the breech and is found on the Model 1851 and all percussion Sharps; the Model 1850 carbine in Figure 9 is not so equipped. The last known Model 1850 examples incorporated bouching. The system was not incorporated into the first of the two 1850 transitional rifles pictured in Sellers's *Sharps Firearms*.²⁰ This system is described in the following way: "*The rear of the bore contains an adjustable bouching, and the space between its forward end and the base of the ball [front of the chamber and to the rear of where the bullet is seated] admits the clamp and rod, with which the bouching is driven back in adjusting it*"²¹ and forcing it against the breech block. The system limited the gas leakage problem

and was effective enough to be incorporated into the Confederate Sharps manufactured by S. C. Robinson and then the Confederate Government after the acquisition of Robinson's factory in Richmond. Several other features of the Sharps then being produced were omitted by the Confederacy.

Mordecai was impressed with the mechanics of the carbine tested and was satisfied with its accuracy. Despite the concerns mentioned in his report, Mordecai saw the advantages of Sharps' carbine for use by mounted troops. He effectively recommended that it be given "a trial by fire" and be tested by the Army under field conditions.

The report was well received by Col. Craig as: "*The first solid offer of a government contract came on December 2, 1851. Colonel Craig wrote to the Company, telling them, that the Ordnance Department had decided to buy 200 carbines and asking the price*".²² The Colonel's letter was answered by John Palmer, President of the Sharps Rifle Manufacturing Company. A transaction was agreed to, and the first government contract was signed on January 2, 1852.²²

Several questions still remain. The Ordnance Department placed an order for Sharps carbines without a model or written specifications. The second is that Major Mordecai commented on the carbine's configuration but did not discuss the use of a "box lock" with the hammer fitted behind the lock plate which significantly differed from the lock and action of the Model 1850 he had tested a year earlier. The change in the Sharps' action would have warranted mention. The third is the question of when bouching or a barrel bushing was introduced. The carbine Major Mordecai tested had a bushing, and the trial occurred in November 1851, shortly before George Penfield sold the remaining Model 1850 inventory of parts and completed rifles to the Sharps Rifle Manufacturing Company; those guns and parts were later sold by the Company to William Robertson in December 1852.²² This would confirm that the system was introduced after the production of the Model 1850 was moved from Philadelphia to Hartford. Examples of William Robertson-built Sharps Model 1850 rifles have a barrel bushing, raising questions as to whether Robertson "borrowed" and utilized the system or purchased the rights to it. The fourth: What was Christian Sharps' role? The Sharps Rifle Manufacturing Company had been formed. Sharps' relationship with the Company was, at best, strained. He was not involved in the final design of the Model 1851, and he left the Company within a year.

Nevertheless, it was Sharps who was dispatched to Washington to perform the test of his carbine with Major Mordecai.²³ Knowing that the outcome of the trial was so critical to the Company it is surprising that either George Penfield, as a Company agent, or Sharps Rifle Manufacturing Company's President John Palmer was not present. The carbines ordered were Model 1851 Sharps. Yet because the Model 1851 design remained incomplete when the order was placed, the exact Sharps carbine evaluated remains uncertain. When originally ordered by the Ordnance Department the Model 1851 was simply referred to as the carbine tested by Major Mordecai. The Model 1851's nomenclature appears to have been introduced approximately 50 years after the Model's introduction.

Two distinct stages shaped the Model 1851's design evolution. The first was the manufacture of a carbine for Major Mordecai's test and trials of November 1851. The carbine was made at James T. Ames' Massachusetts Arms Company in Chicopee Falls, Massa-

chusetts. Built by Christian Sharps and Lewis Lippold—a former Nippes gunsmith and employee of the Sharps Rifle Manufacturing Company — the carbine’s development also involved Ames, who is referenced in both Sharps’ litigation and Ordnance Department correspondence. After the test, Major Mordecai requested several modifications, which the Ordnance Department later cited when placing its first order.²⁴ The carbine’s next stage of development came when Richard Lawrence of Robbins & Lawrence, Robbins & Lawrence gunsmith William Jones, and a reluctant Christian Sharps made the modifications required to prepare Mordecai’s test carbine for mass production.²⁵

The first Sharps Rifle Manufacturing Company contract with Robbins & Lawrence dated June 25, 1851, was for 5,000 Sharps Patent Rifles... to be made and finished in a good and workmanlike manner, and in every respect to be like the model furnished to Robbins & Lawrence.²⁶ A production prototype was to have been built by Christian Sharps, but Sharps refused to do so. Instead, he gave Robbins & Lawrence a set of drawings, instructing them to build the production prototype from his plans. Robbins and Lawrence built the model, which was rejected by Sharps, who provided another set of drawings for the proposed Model 1851. Sharps disenchantment and personality were again evident as he refused to work at the Robbins & Lawrence factory in Windsor. Sharps would not return to Winsor until January of 1852 even though he remained an employee of the Company through October of 1852.



Figure 11. Trooper Abram Schoonmaker of the 1st U.S. Cavalry, Company E, holding a Model 1851 Sharps carbine. (David Carter Collection).

The prototype changes Sharps requested were extensive and included, altering the barrel’s counterbore, changing the rifling depth, adjusting the trigger’s position and length, revising the lever, butt plate, lever key, stock fastening, lever catch, trigger, hammer, patch box, and guard strap and modifying the breech block.²⁷ Richard Lawrence also approved additional modifications without consulting Christian Sharps. This further strained Sharps’ relationship with the Sharps Rifle Manufacturing Company, an unresolved dispute that helped lead him to sever ties with the Company. Sharps later sued to regain control of his patent. As modified and manufactured, the carbine became the Sharps Model 1851 Military Carbine (Figure 11).

After Mordecai’s report was sent to Colonel Craig, he began negotiations with the Sharps Rifle Manufacturing Company to purchase 200 carbines. The order was finalized during February of 1852. It was then changed with 150 carbines to be fitted with Maynard tape primers and 50 with the Sharps pellet priming system.²⁸ The 50 carbines with the pellet primers evolved into the Sharps Model 1852.

Production and tooling issues at the Robbins and Lawrence factory delayed delivery of the first 150 carbines until January 18, 1853²⁹ at which time the Ordnance department promptly issued them to frontier units. Following the issuance of the 150 Sharps Model 1851 carbines Ordnance ordered that “field reports” be sent to the Department by unit commanders. Numerous reports were received, including one from Major Mordecai—arguably the “Dean of Ordnance”—and another from Major Kendrick, a seasoned field officer and commander of Fort Defiance in New Mexico. Unlike Kendrick, Mordecai was not serving as a field commander; his review of a Model 1851 Sharps carbine arose incidentally from Jefferson Davis’s order that he undertake a covert mission into Mexico. He was assigned to examine the validity of Dr. George Gardiner’s claim, and Mexico’s payment of it, concerning a silver mine Gardiner alleged had been seized by the Mexican government. Mordecai “traveled with a small entourage into Mexico to investigate the Gardiner claim, paid under protest by the Mexican government under the peace treaty that followed the Mexican War.”³⁰ Davis’s order read:³¹

War Department, Washington, D.C.

23rd May 1853

Major A. Mordecai

U.S. Army

Sir, you will repair to New York without delay and embark with the party organized as heretofore directed, on board of the U.S. Steamship Vixen, bound for Tampico. Thence you will proceed by the most eligible route to Lagunillas in the State of San Louis [sic] de Potosi, Republic of Mexico. Having reached your destination you will promptly enter upon the investigations and explorations, as advised by the Counsel of the United States for the prosecution of Geo. A. Gardiner and others, to ascertain the real or fictitious character of the claim for indemnity on account of the alleged expulsion of the said Gardiner and the seizure and destruction of his property at and in a mine described as being in the Municipality of Lagunillas, Department of Rio Verde, and state of San Luis de Potosi.

Before leaving Tampico, you will take measures to secure the prompt transmission to you of intelligence of any arrival

there which might affect the success or safety of your expedition. Confiding in your general discretion and professional knowledge to use the means at your command in a manner not objectionable to other authorities of the government of Mexico, it is hoped that all officers of that government whether civil or military will give you the necessary aid and protection to affect those purposes of justice which it must be equally their desire as ours to promote. Upon the conclusion of your examinations and inquiries you will return by such route as judgement may then indicate and as promptly as possible report yourself at this place.

Very Respectfully
Yr. obt. servt.
Jefferson Davis
Secretary of War

With Mordecai's findings, the Gardiner claim was proven fraudulent and \$500,000 was refunded to the government of Mexico. Mordecai took two of the newly issued Sharps carbines on his journey and felt compelled to review them while "in service." His selection by Davis for the mission is a reaffirmation of the confidence that the Ordnance Department had in him.³²

October 21, 1853, Letter from Major A. Mordecai, Washington Arsenal, to Colonel H.K. Craig

Re: Reports result of experience with Sharp's Carbine + Colt's Pistols on recent trip to and from Mexico.

Sir:

In my late journey in Mexico, I took with me two of Sharp's Carbines fitted for Maynard's primers, + I think it proper to report to you the remarks which I made on them. On the second day of my journey on horseback, a heavy rain was falling almost incessantly, during our ride of 13 hours; the lock, + removable breech of the carbine were covered with pieces of India rubber cloth tied securely over them. The arms were carried hanging at the saddle bow + covered as much as possible by the India rubber cloak of the rider. Notwithstanding these precautions, I found, on examining the arms the next

morning that the movable part of the carbines were stuck fast with rust + could not be moved without a great effort, + not at all by means of the lever alone. The arms were cleaned + oiled, + being afterward examined every evening + occasionally oiled, no further difficulty was experienced in this aspect.

After the second day's journey just mentioned, the Maynard's primers in the magazines of the carbine, were found to be softened by the moisture, so that they could not be fed out by the action of the springs + were perfectly worthless—the same result was observed on other days, under similar circumstances. When the weather was clear + dry, the same strip of priming would remain uninjured for several days in the magazine – some of them were tried, by snapping the lock, every morning, some of these primers were made at this arsenal; others at Chicopee, by the Mass. Arms Co., both kinds were tried, with like results.

Four of my party were also armed with Colt's pistols, of what is known as the "Navy size". The usual practice was to try the revolving apparatus of these pistols every night or morning, by working the hammer + the receiver, without firing, + when necessary to wipe off the rust + oil -the moveable parts; in this way they were easily kept in good firing order. On the march they were carried on the person in a small holster attached to a waist belt, in which position they were well protected by the coat + cloak of the rider. They were primed with Ely's caps, in which the composition is protected by a little plate of brass instead of varnish, + the pistols were always in good firing order. That which I carried was loaded + capped at Tampico on the 19th of June; it was not discharged until I was at sea, on the 10th of August, when none of the charges missed fire. I fired off at the same time two other pistols which had been loaded + carried under similar circumstances, + but one cap failed in fire in the whole number.

Respectfully,
Obt. Sevt.
A. Mordecai Capt. [Brevet Maj.]



Figure 12. Major Henry L. Kendrick (left). Fort Defiance, New Mexico Territory, 1873 by Seth Eastman (right, United States Senate Collection of Fine Art, Washington, D.C.)

April 16, 1854, Letter from Brevet Major H.L. Kendrick, Fort Defiance, New Mexico (Figure 12) to Major W.A. Nichols:³³

Re: Headquarters, Fort Defiance --- Reports results of trials with Sharps' Carbine

Sir, Pursuant to instructions from the Head Qrs. of this Department, under date of March 29th, 1854, calling for the result of our experiment with, "Sharps Carbine" I have the honor to report that although we were at first, from insufficient practice, prejudiced against this Carbine, the effect of more numerous trials, has been to thoroughly convince us (waiving the consideration of the pistol) of its great superiority over every other fire arm that we have yet seen for the use of mounted Corps, and especially for such use in Indian warfare. It is incomparably superior to the Musketoons in every respect, except its balance; its range and accuracy are greater than those of Hall's Carbine, while it is certainly no more liable to get out of order; its "hold up" [it's rounds] better than the service Rifle does, its accuracy is superior to the latter (especially at large distances / while it loads far more rapidly, with less display of the [person] and with less liability to accident. From its manner of loading there is no objection to giving its barrel a length equal to that of the Musketoons (an increase of about 2 inches, which would only slightly add to its weight but would increase in range and accuracy, and improve its balance. In our trials we observed no tendency to get out of order from its manner of loading—that seemed to be perfect, and all danger of having a ball "stick" in the barrel, from want of coolness in loading, is obviated.

In relation to the Primer (Maynard's) the mechanical contrivance works admirably, but the primers themselves, which were furnished to us, were bad. Out of 200 which we tried, only 40 exploded the charge; but whether this was due to a deficiency in the quality or quantity of the fulminate, or to the paper being driven into the vest of the cone, or to some other cause, we cannot tell as yet. Not one of the common service caps failed to ignite the charge. The primers apparently were quite uninjured, their covering was perfect, but their real character rendered it impracticable to test their power of resisting moisture and rough usage. I believe the officers here, who have been witnessed the trials, fully concur with me in these opinions.

Very Respectfully
H.L. Kendrick Capt., Brevet Major, Cm. Ft. Defiance



Figure 13. Major Alfred Mordecai - circa 1855. At the onset of the Civil War, Mordecai requested a transfer to California to avoid the conflict with the South. His request was denied. To avoid waging war on his own family, Mordecai resigned his commission and refused a commission offered by the Confederacy. Mordecai spent the war years teaching mathematics in Philadelphia.³⁴

Major Mordecai was a scholar and a scientist. Though well acquainted with war, he was not a combatant and hoped the Union would be preserved (Figure 13). He hoped for a peaceful resolution to the national crisis and believed the North and South might "yet see the utter madness" of their opposing positions. In a letter to his brother, he suggested avoiding conflict by hanging "a dozen or twenty politicians—without being very particular in the choice of either of them."³⁵

In his report to Col. Craig, Mordecai put aside his doubts about the reliability of breech-loading firearms and showed a clear understanding of cavalry requirements. His support, together with that of Col. Craig, secured the adoption of Sharps carbines, which became a principal weapon of Union mounted troops during the Civil War.

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