**Research and essays on battle tactics, training, organization, arms and equipment of 18th century militia and related miscellany**

**A minuteman’s fowler**

**Herman Karl**

Samuel Dakin, Jr. was a minuteman in the Lincoln, Massachusetts minute company who fought in the Battle of Concord at North Bridge 19 April 1775. His fowler is in the collection of the Concord Museum. Purportedly he carried the fowler at North Bridge, but there is no provenance that documents this claim. The fowler is in relic condition evincing heavy use, but when new was a high quality fowling piece. This article describes the fowler and explores its significance with respect as to how the Lincoln minutemen were possibly equipped at North Bridge.

*Karl, Herman A., 2018, A minuteman’s fowler: Man at Arms, v. 40, n. 2, April 2018, p. 27-30.*

**A question of bayonets at North Bridge 19 April 1775**

**Herman Karl**

The Lincoln militia and minute companies were the first from other towns to arrive at North Bridge in support of the Concord soldiers. In his testimony Amos Baker, the last surviving participant at North Bridge (Hersey, 1930, 35), states that only he among the Lincoln contingent had a bayonet. A recent interpretation disputes Baker's recollection and claims that the Lincoln minute company possessed many bayonets (Wiggin, 2013, 48,49). This essay focuses primarily on the prevalence and use of bayonets and secondarily on cartridge boxes by the Lincoln minutemen on April 19, 1775. This article supports the recollection of Amos Baker that the Lincoln minute company was not among those few units equipped with many bayonets when hostilities broke out April 19, 1775, which is to say that they were typical of many militia and minute companies at that time.

*A question of bayonets at North Bridge 19 April 1775: Military Collector & Historian, winter 2014, v. 66, n. 4, p. 363-372.*

References cited

Hersey, F.W. (1930) Heroes of the battle road: an narrative of events in Lincoln on the 18th and 19th of April 1775, wherein are set forth the capture of Paul Revere, escape of Samuel Prescott, heroism of Mary Hartwell and other stirring incidents. Perry Walton, Boston; reprinted for the Lincoln Historical Society 2010

Wiggin, R.C. 2013. *Embattled farmers: campaigns and profiles of Revolutionary soldiers from Lincoln, Massachusetts, 1775-1783*. Lincoln Massachusetts Historical Society

**Mixed firearms of the American militia: a problem?**

**Herman Karl**

It is not in dispute that American militia on the eve of the Revolution carried a wide assortment of firearms. The variety of guns seemingly would pose a major problem for the Continental Army—the caliber of the bores varied thereby requiring balls of different diameter, which could present a supply problem. However, as will be discussed, although complicating supply of ammunition it was not an insurmountable problem.

*Karl, Herman, Mixed firearms of the American militia: a problem?: Muzzle Blasts June 2017, p. 46-51.*

**Fowlers of two revolutionary war patriots**

**Herman Karl**

Herein I describe a plain fowler attributed to Jacob Man, a Wrentham, Massachusetts militiaman and an elegant fowler attributed to Samuel Dakin, Jr., a Lincoln, Massachusetts minuteman. It is very possible that Man and Dakin carried these guns at the Concord Battle 19 April 1775.

Available for download at: <https://www.scribd.com/document/343928937/Fowlers-of-Two-Revolutionary-War-Patriots>

**Muzzleloader blank black charge pressure: Are double charge dangerous?**

**Herman Karl**

Many reenacting groups have adapted 120-125 grains of FFG black powder as the standard and maximum safe blank load for .69 to .75 caliber muskets. To make more noise at demonstrations some groups “double charge.” Is a charge of 240-250 grains FFG safe in a reproduction flintlock musket? . I have searched diligently for pressure data for blank black powder loads, but have not been able to find any. This paper describes pressure data for blank loads.

Available for download at: <https://www.scribd.com/document/394308060/Muzzleloader-blank-black-powder-charge-pressure-Are-double-charges-dangerous>?

**Comparison of strength of 18th century and contemporary black powder**

**Herman Karl**

There is a great deal of speculation and controversy about the strength (power) of 18th century gunpowder (black powder) relative to contemporary black powder. Devices called eprouvettes were developed as early as the 16th century to test the strength of powder (Kempers, 1998). This paper presents historical data about 18th century gunpowder acquired with an eprouvette and data collected with a replica of it using contemporary black powder. I know of no comparative data other than that reported in this study.

Available for download at: <https://www.scribd.com/document/394271668/Comparison-of-Strength-of-18th-Century-and-Contemporary-Black-Powder>

**What firearms were likely available to Lincoln minute men circa 1774/1775?**

**Herman Karl**

This short note was prepared about 2010 for members of the Lincoln Minute Men as the company transitioned from replica Brown Bess and Charleville muskets to the fowlers and muskets appropriate for militia and minute companies circa 1774/1775.

Available for download at: <https://www.scribd.com/document/343729762/What-firearms-were-likely-available-to-Lincoln-minute-men-circa-1774-1775>

**Interpretation of Lincoln Town warrant 20 March 1775 establishing the Lincoln Minute Company, Part 1**

**Herman Karl and Donald Hafner**

When the town of Lincoln voted to form its minute company in 1775, it seems to have done something odd. Unlike other towns, Lincoln seems to have omitted ammunition from the required items of equipment for its minutemen. We explore this oddity here. Inconsistent punctuation common in 18th century documents muddies the meaning of the resolve. At issue is the phrase “gun stock.” We believe it is evident that a comma should be inserted between gun and stock. Thus, the town resolve stipulates minutemen should equip themselves with a gun (firelock) and stock of ammunition, which is consistent with other towns.

Available for download at: <https://www.scribd.com/document/338053116/Interpretation-of-Lincoln-Town-Warrant-20-March-1775-Establishing-the-Lincoln-Minute-Company-Part-1>

**Interpretation of Town vote establishing the Lincoln Minute Company March 20, 1775, Part 2: When did the company begin training?**

**Herman Karl and Donald Hafner**

Herein we explore the question of when the Lincoln minute company began training. It's not possible to know with certainty when the company began training, but we do know when it was scheduled to end—1 May. Clearly as of 9 January a minute company did not exist. The company, at least in name, was in existence when proposals were presented to the town on 9 March. It seems reasonable they would only start training after the proposals had been discussed and details worked out at the 20 March meeting. Information in the 20 March minutes supports this assumption. According to our interpretation Lincoln minutemen trained as few as 24 hours before the 19 April alarm. March 9, when the company presented some proposals to the town, is the earliest documentation that a company had formed. Even assuming the company started mustering as early as February the soldiers would have trained no more than 72 hours before the Concord Battle. In other words, they trained three to nine days total (defining a day as eight hours).

Available for download at: <https://www.scribd.com/document/338053397/When-Did-Lincoln-Minutemen-Begin-Training>

**In a very military manner: collection of short essays on the discipline, battle tactics, and equipment of New England militia circa 1775**

**Herman Karl**

This pamphlet is a collection of short essays, listed below, on the discipline, battle tactics and equipment of the New England Militia Circa 1775. It is formatted to be printed double-sided. Several of the essays are abstracted from longer articles that are available on Scribd. Level of discipline of minute companies on the eve of 19 April 1775 Battle tactics of minute companies at Concord, Battle Road, and Bunker Hill Muskets, Fowlers, Fusils, and Rifles What firearms were commonly available to minute companies circa 1774-1775 Examples of firearms used by American militia circa the Revolutionary War Mixed firearms of the American militia: a problem? Live fire discipline of a minute company Musket accuracy Accouterments carried by minutemen on the eve of 19 April 1775

Available for download at: <https://www.scribd.com/document/333571556/In-A-Very-Military-Manner-A-Collection-of-Short-Essays-on-the-Discipline-Battle-Tactics-Equipment-of-New-England-Militia-Circa-1775>

**Accouterments of militia soldiers on the eve of the Revolutionary War: powder horns and shot pouches**

**Herman Karl**

This essay focuses on the use of powder horns and shot pouches (bags) by militia and minute companies on the eve of and early in the Revolutionary War. There is a great deal of documentary and artifact evidence that demonstrate that horns and pouches were common on the eve and during the early years of the war.

Available for download at: <https://www.scribd.com/document/333420702/Powder-Horns-Shot-Pouches-Scribd-r>

**Accouterments of militia soldiers on the eve of the Revolutionary War: bayonets and cartridge boxes**

**Herman Karl**

This essay focuses primarily on the prevalence and use of bayonets and secondarily on cartridge boxes by militia (minute companies are considered as a special component of the militia) at the beginning of the Revolution. Four independent lines of evidence are considered: • Documents of the period • Contemporary context • Technical capability and capacity • Militia battle tactics A number of towns organizing militia and minute companies resolved that bayonets be among the accouterments obtained by soldiers. However, these warrants did not necessarily result in the acquisition of the stipulated equipment. The combination of evidence convergences in a way to suggest that few militia units were fully equipped with bayonets and cartridge boxes on the eve of and early during the Revolutionary War.

Available for download at: <https://www.scribd.com/document/333339527/Bayonets-Cartridge-Boxes>

**“In a very military manner”**

**Herman Karl**

The question of how well disciplined (trained or regulated) American minute companies were on the eve of 19 April 1775 is controversial among historians and re-enactors. Some people believe the citizen soldiers were well disciplined in the regulation drill manual exercises and some believe that individuals fought without organization as a rabble—the myth of the ‘embattled farmer’ leaving his plow and running to engage the regulars. Neither of these is true. The title of this essay echoes the report of Lt. William Sutherland, 38th Regiment of Foot, to Sir Henry Clinton, relating the events of 18 and 19 April 1775—the battles of Lexington and Concord. Sutherland was accompanying a detachment of Marines on scouting duty when the British column entered Concord. From his vantage point at the North Bridge, Sutherland describes the colonial militia and minute companies on the morning of 19 April as marching “…down on us by divisions from their left in a very military manner.” The purpose of this essay is to use the descriptor “in a very military manner” as a springboard to explore the level of tactical discipline of the Massachusetts militia and minute companies (unless otherwise noted) on the eve of the Revolutionary War and through the siege of Boston. Apparently on one hand some people believe the phrase “in a very military manner” confirms that the Massachusetts militia and minute companies were well disciplined in the military maneuvers of the period and on the other hand others are surprised that they had any discipline at all thinking they behaved as a rabble. The essay is an overview and not a definitive or seminal report of the level of militia discipline; its intent is to ask questions, generate discussion, and encourage sharing of databases and thoughtful reflection and critical review of the interpretations herein and those presented in other works.

Available for download at: <https://www.scribd.com/document/333338444/In-Very-Military-Manner>

**Live fire discipline of a minute company**

**Herman Karl**

Soldiers of the Lincoln Minute Men, a Revolutionary War re-enacting group in Lincoln, Massachusetts, conducted two live fire experiments the primary purpose of which was to test Col. George Hanger’s statement: "A soldier's musket, if not exceedingly ill-bored (as many of them are), will strike the figure of a man at eighty yards; it may even at 100; but a soldier must be very unfortunate indeed who shall be wounded by a common musket at 150 yards, provided his antagonist aims at him; and as to firing at a man at 200 yards with a common musket, you may just as well fire at the moon and have the same hopes of hitting your object." The soldiers shot at a life-size group of three of the King’s regulars at distances of from 140 to 25 yards. Our results clearly support Colonel Hangar’s assertion. Hitting a human-size target purposefully aimed at 200 yards away with a smooth bore musket would be mere chance.

Available for download at: <https://www.scribd.com/document/333334509/Live-Fire-Discipline-of-a-Minuteman-Company>

**Fowling with a minuteman’s fowler**

**Herman Karl**

An historic fowler reportedly carried by Samuel Dakin, Jr., a Lincoln minute man, at North Bridge resides in the collection of the Concord Museum. I replicated it. This article describes the first time I used it hunting.

Available for download at: <https://www.scribd.com/document/343734090/Fowling-with-a-minuteman-s-fowler>

**How an 18th century gun barrel was made**

**Herman Karl**

This article describes the process of forging, boring, and rifling an 18th gun barrel. A large brick forge is needed to forge a barrel in order to heat the barrel to welding temperature. The barrel is “forge welded,” which is welding at the molecular level. The separate pieces fuse and form one solid piece. Unlike arc welding forge welding does not produce a seam between the joined metal parts. Many “firings” (putting the metal piece into the fire to get it to proper temperature) are necessary to forge weld.

Available for download at: <https://www.scribd.com/document/333570624/How-a-Gun-Barrel-Was-Made>

**Myth of the damascus barrel**

**Herman Karl**

When I was boy in the 1950s and 1960s the prevailing wisdom among firearm authorities writing in the popular gun literature was that old damascus steel barrels were too dangerous to shoot. Damascus barrels are made by spiraling a strip of steel around a mandrel and forge welding it. This process developed into an art and a variety of beautiful patterns was obtained in this way. The authorities assumed that the many welds over the length of the barrel were susceptible to rusting and, thus, the integrity of the barrel would deteriorate over time. What they did not understand and take the time to learn is that the barrels were forge welded. Forge welding, a type of diffusion welding, occurs at the molecular level. There are no weld seams or beads to rust. When done correctly the metal is molecularly bonded into one contiguous piece.

Available for download at: <https://www.scribd.com/document/333570380/Damascus-Barrel-Myth>

**Do dimples make a difference?**

**Herman Karl and George Morrison**

It has been asserted by some in the muzzleloader community that dimpled or frosted (roughed in some way) balls are more accurate than smooth round balls. This article tests that assertion by comparative testing of dimpled and smooth round balls in a series of live fire experiments. We concluded that frosted balls are more accurate when fired from a smooth bore and less accurate when fired from a rifle. However, because of the small number of trials were do not consider our results statistically definitive.

*Karl, H. and Morrison, G., 2015, Do dimples make a difference?: Muzzleloader Magazine, November/December 2015, p. 85-89*

Errata to the published paper:

There is an error in the captions of Table 1, 2, and 3. “Area (square inches)” incorrectly explains the numbers that represent group size. The correct explanation is “Sum of the four sides of the rectangle.” In other words, the numbers listed as group size are not the area in square inches of the group.  They are the sum of the four sides of the rectangular that defines the group.  As explained in the text, horizontal and vertical lines drawn through the center of the widest shots, which define a rectangular enclosing all shots, determine the group size.  For example, “3.12" under ".45 area" in Table 1 is the sum in inches of the four sides of the rectangle that defines the group that measures 1 1/16” x 1/2” listed in the text. The area of that group is 0.53 square inches (A=LxW).  Using the sum of the four sides instead of the area does not change the conclusions of the paper as either used consistently compares apples to apples.