A Musket in a Privy

(Text by Jan K. Herman)

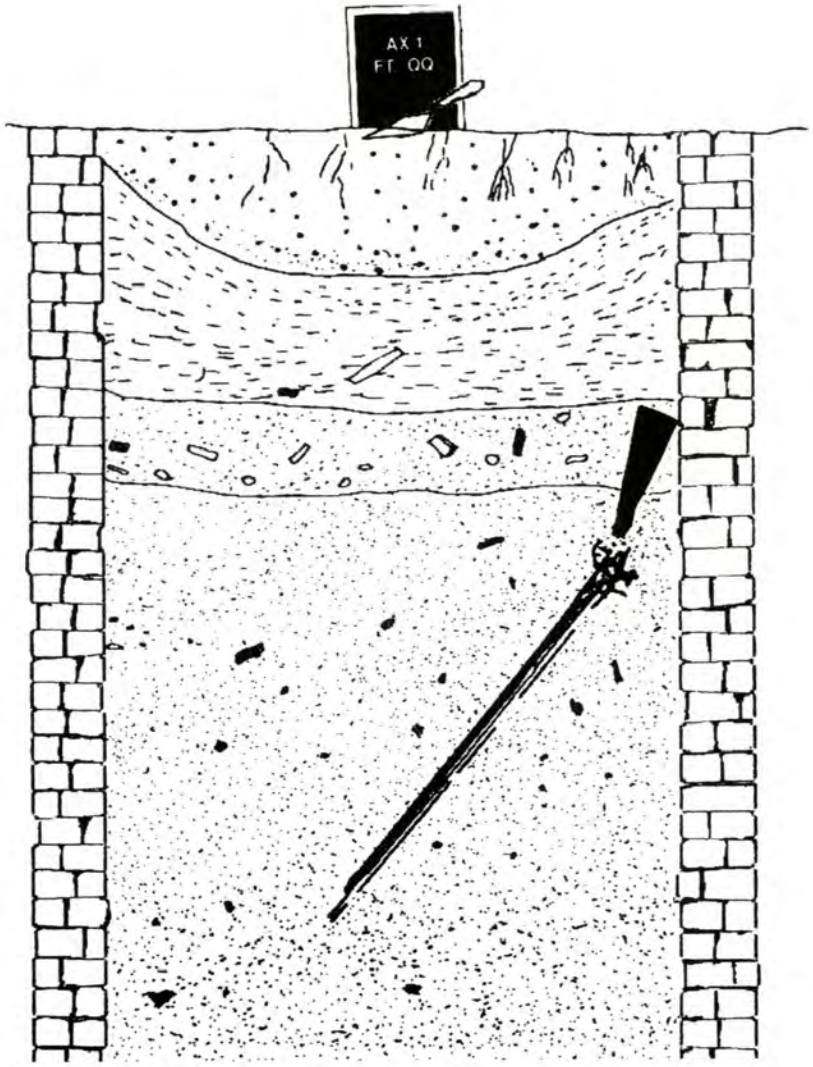

Fig. 1: A Musket in a Privy (not to scale: ALEXANDRIA ARCHAEOLOGY COLLECTION).

To the casual observer who first saw it emerge from the privy muck on a humid June day in 1978, the battered and rusty firearm resembled little more than a scrap of refuse. The waterlogged stock was as coal black as the mud that tenaciously clung to it; corrosion and ooze obscured much of the barrel and lock. What was plainly visible and highly tantalizing to the archaeologists on the scene was the shiny, black flint tightly gripped in the jaws of the gun's cocked hammer. At the time, no one could guess that many months of work would be required before the musket's fascinating story could be told.

Recovery:

The musket's resting place was a brick-lined shaft containing black fecal material and artifacts datable to the last half of the 19th century (see Site Map [link to "Site Map" in \\sitschlfilew001\DeptFiles\Oha\Archaeology\SHARED\Amanda - AX 1\Web]). Vertically imbedded in the sediments muzzle down, the gun resembled a chunk of waterlogged timber. It was in two pieces, fractured at the wrist. The archaeologist on the scene wrapped the two fragments in wet terry cloth, and once in the Alexandria Archaeology lab, the parts were sealed in polyethylene sheeting to await conservation.

Fig. 2: "Feature QQ," the privy where the musket was found (ALEXANDRIA ARCHAEOLOGY COLLECTION)

Conservation

Fig. 3: The Musket before conservation (ALEXANDRIA ARCHAEOLOGY COLLECTION)

Preliminary study revealed a military firearm of early 19th century vintage with the metal components badly corroded. An undamaged flint and leather cushion were clamped in the jaws of the fully cocked hammer.

The wood had survived the privy environment in much better shape. Although years of submersion in the privy had stained it black, the stock remained firm and had maintained its shape remarkably well.

Once in the lab, the musket was always kept in a moist environment to prevent dehydration and shrinkage. Much of the privy material and iron oxide encrustation came loose with the gentle prodding of dental instruments. The conservator then carefully recorded all specifications (including screw heads) for later identification.

Fig. 4: Jan Herman carefully cleaning the musket in the lab (ALEXANDRIA ARCHAEOLOGY COLLECTION)

At second glance, the musket appeared to be a conservator's dream – a largely intact firearm at least 150 years old and made of several materials. As with rare, few-of-a-kind artifacts, the conservator would have to rely upon intuition, endless patience, and the collective experience of others.

Fig. 5: Cleaning the lockplate with a dental instrument (ALEXANDRIA ARCHAEOLOGY COLLECTION).

For proper conservation, the gun first had to be disassembled to enable separate treatments for wood and metal (more below about wood and metal preservation).

The lock was found to be intact with manufacturer's marks clearly visible on several internal parts. The mainspring, used for triggering the lock, however, was fractured – the apparent reason for the failure of the gun to fire its last time.(More below about musket mechanics).

The ramrod, badly corroded in its channel beneath the barrel, had to be sectioned and removed in three pieces.

The possibility of a loaded musket existed. The hammer was frozen at full cock and the frizzen snapped back in firing position. A suspicious black-yellow substance in the pan, believed to be the remains of priming powder, was removed and sent to a lab for analysis.

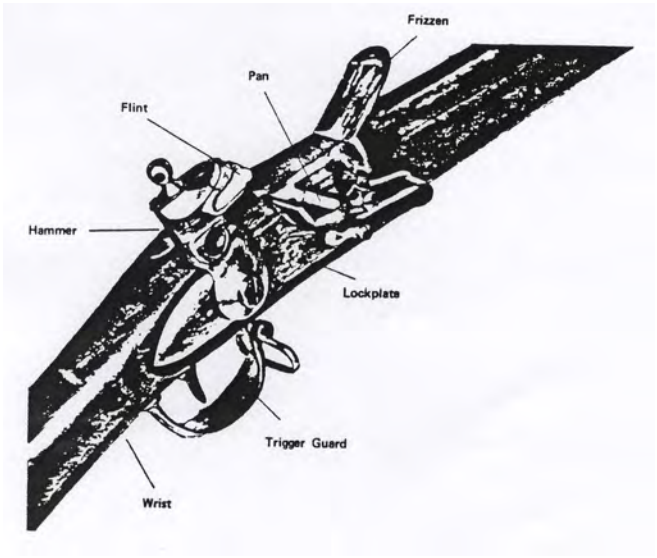

Fig. 6: Detailed drawing of the central portion of the musket (ALEXANDRIA ARCHAEOLOGY COLLECTION).

A high penetration industrial x-ray camera verified the presence of a musket ball and what appeared to be wadding and a powder charge just a few millimeters behind a large hole in the barrel.

Fig. 7: Bullet found in the barrel of the musket (ALEXANDRIA ARCHAEOLOGY COLLECTION)

Using a carbide cutting disc, the conservator extended the hole, exercising great care in exposing the ball and powder charge because there was a remote possibility that the charge might still be explosive.

After some effort, out popped the undamaged .69 caliber bullet, a cloth patch, and three grams of what appeared to be black powder. Fears about its potency were groundless as the charge behind the lead bullet had fared badly in the wet privy. A laboratory assay showed the powder to have completely deteriorated.

Identification

Fig. 8: Closeup of the musket after restoration (ALEXANDRIA ARCHAEOLOGY COLLECTION).

As conservation proceeded, efforts to identify the musket were also underway so that it could accurately be restored. The firearm closely resembled the Model 1816 U.S. Musket manufactured at both the Springfield and Harpers Ferry armories. Yet there were minor variations indicating the gun had its origin elsewhere.

With almost every metal component suffering serious corrosion, positive identification seemed too much to hope for. Certainly, the customary lockplate manufacturer's inscription had long since disappeared – or had it? A big break came after the lockplate was electrolytically treated. Close examination revealed three badly pitted but legible letters – "KHA" – on the lockplate. In the first quarter of the 19th century, private contractors were called upon to augment the supply of weapons coming from the two national armories. Such names as Whitney, Waters, North, Starr, Pomeroy, Deringer, and Wickham appeared on the lockplates of U.S. contract muskets.

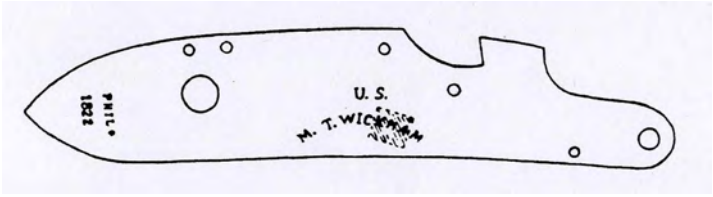

Fig. 9: Drawing of the lockplate (ALEXANDRIA ARCHAEOLOGY COLLECTION)

A quick scan of the list verified the gun's identity; the KHA belonged to Marine T. Wickham, gunmaker from Lancaster County, Pennsylvania, Master Armorer at the Harpers Ferry Armory for several years, and from 1816-1834, a Philadelphia manufacturer of muskets for the federal government. By its features, the Wickham musket, as it was now called, resembled the 1822 variation of the Model 1816 Springfield.

Restoration

After the gun parts were fully cleaned and stabilized, they were reassembled using some reproduction components. Turned wooden replacement parts were substituted for missing or extremely corroded sections of the barrel and ramrod.

Fig. 10: Portion of the restored barrel (ALEXANDRIA ARCHAEOLOGY COLLECTION)

All non-original pieces were painted gray to visually distinguish them from the unearthed artifact. Ultimately, the musket was put on display at the Alexandria Archaeology Museum in a special case provided by the Friends of Alexandria Archaeology.

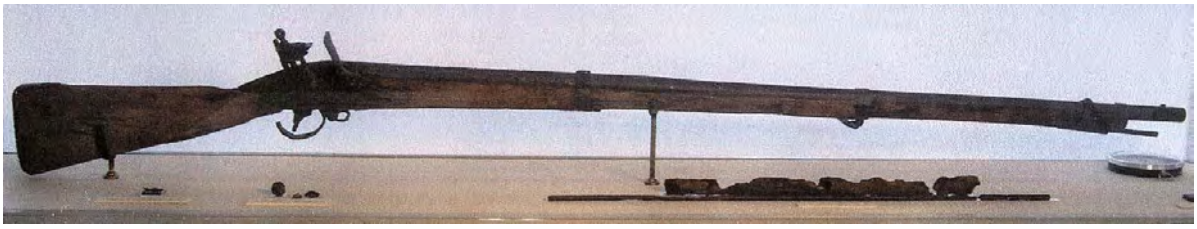

Figure 11: The musket after conservation and restoration. The foreground shows the bullet to the left and the original barrel to the right (ALEXANDRIA ARCHAEOLOGY COLLECTION)

A Musket in a Privy

Although the question of the musket's origin was solved to our satisfaction, other obvious questions remain unanswered. Why was a U.S. military firearm found in a privy on private property? And why was it loaded and cocked when discarded? Many visitors have offered their own theories, sometimes involving crime, potential slave rebellion, or fear of the Federal occupation during the Civil War.

The most ordinary answer may be the most likely one . From artifact found nearby, the City archaeologists surmise that the musket was thrown away at about the time of the Civil War. Many old weapons, including 1822 pattern muskets, were retrofitted with modern percussion locks at the time of the war. Because these were smooth-bore guns, however, they were notoriously inaccurate and unpopular with the troops. It is also known that militia weapons and gunpowder had been stored in Alexandria for many years at a powder magazine near Queen and Fayette streets. It may be that one of these obsolete firearms, while being tested by Confederate militia or Union troops, was found to be inoperable because of a broken mainspring and was discarded as unworthy of repair.

The well/privy from which the musket was retrieved was on a property once owned by silversmith and watchmaker Benjamin Barton, Jr. Might Barton have also occasionally repaired guns? Perhaps further research will shed light on these questions.

More about Musket Mechanics

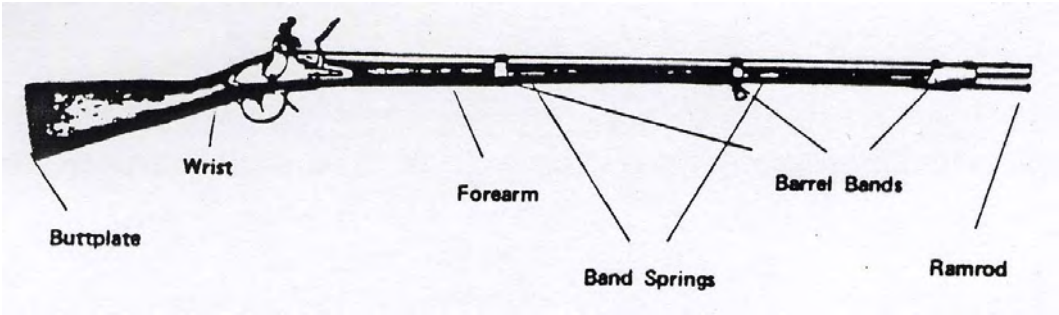

Fig. 12: Drawing of a flintlock musket (ALEXANDRIA ARCHAEOLOGY COLLECTION)

The flintlock musket, developed toward the end of the 17th century, consisted of a smooth, unrifled iron tube set in a wooden stock. At the breech, the barrel was pierced by a flash hole

beside the pan and under where the hammer and flint would fall.

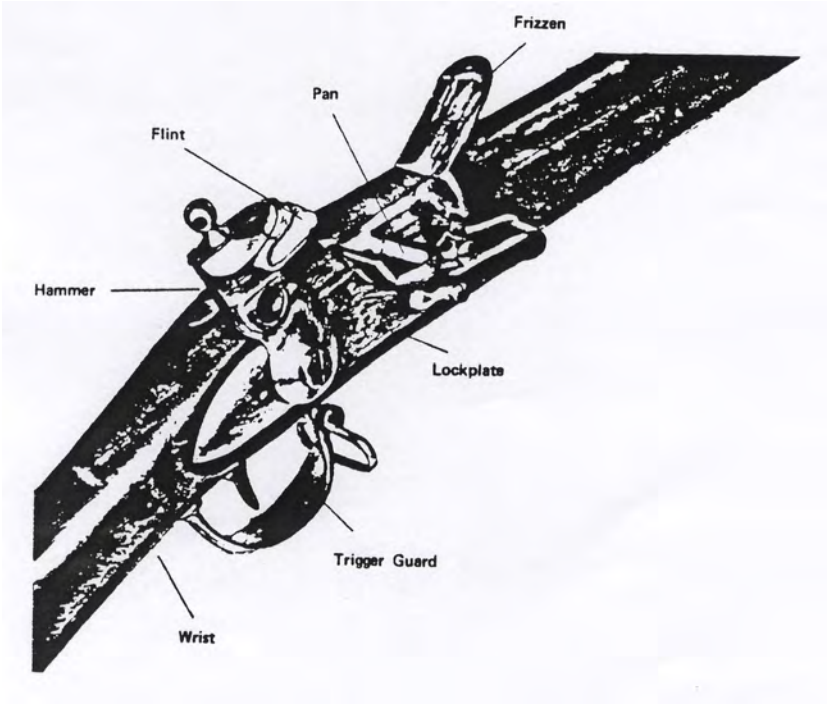

Fig. 13: Detailed drawing of the central portion of a flintlock musket (ALEXANDRIA ARCHAEOLOGY COLLECTION)

Loading the musket required many steps:

1. The soldier placed the hammer at half cock and snapped open the frizzen.
2. He took a paper cartridge from his cartridge box, bit off the end, poured some of the powder into the priming pan, and snapped the frizzen shut.
3. The remaining powder was then poured down the muzzle.
4. The soldier stuffed the paper and then the musket ball into the muzzle and rammed them home with the ramrod.
5. The weapon was then cocked, aimed, and the trigger pulled.

With the pull of the trigger, a powerful mainspring snapped the hammer and flint against the frizzen, forcing it forward, exposing the powder-filled pan, and sending a shower of sparks into the priming powder. The powder ignited and some of the fire found its way through the flash hole to ignite the main powder charge. Since the inside of the barrel was smooth and not rifled, the musket was inaccurate beyond 50 yards.

<u>More about Conservation</u>

Wood Treatment:

The stock was solid and in good condition, even though badly stained. Close examination showed wood pores clogged with privy debris and a hard surface shell of iron oxide coating large sections of the forearm.
Stock treatment essentially had two goals – the removal of stain-creating impurities and the replacement of water in

Fig. 14: Jan Herman removing stains from the stock (ALEXANDRIA ARCHAEOLOGY COLLECTION)

the wood with a permanent and stable substance that would preserve the stock's shape.

First the gun was cleaned in successive water baths for six weeks. Each week, when the water was changed, the stock was gently scrubbed with a soft brush and special detergent.

The replacement procedure was by far the more important of the two treatments. Waterlogged wood, if allowed to dry untreated, splits, warps, shrinks, and eventually disintegrates. Waterlogged wood cells with their weakened cellulose walls can be compared to water-filled balloons; remove the water and the cells collapse. By replacing the cell water with a substance that solidifies at normal room temperature, the wood will stabilize and maintain its structural integrity.

The treatment of choice was the preservative polyethylene glycol. In solution, this substance passes through the wood cell walls and gradually replaces the water within. Gradually may be an understatement; in the case of the excavated musket, the process took six months!

Metal Treatment:

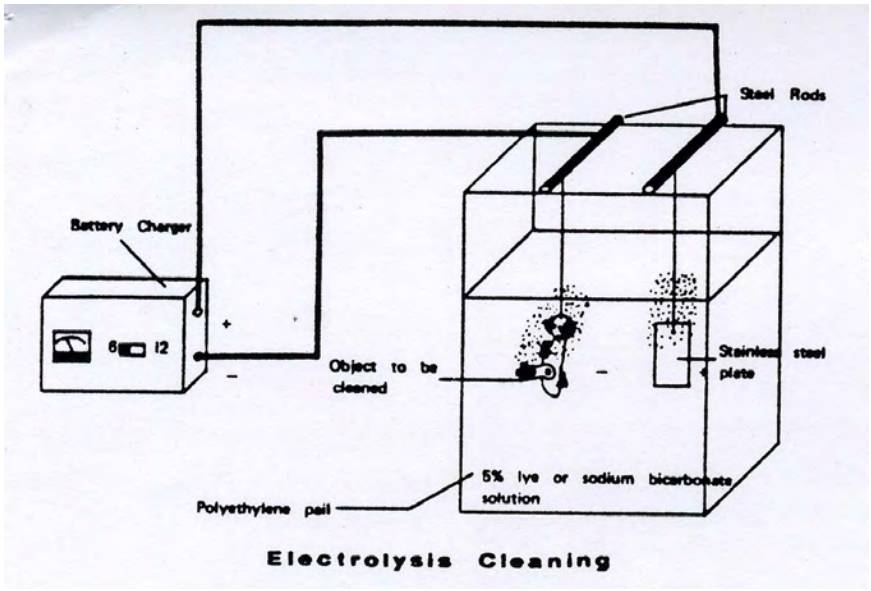

Fig. 15: Drawing of the Electrolysis Cleaning process (ALEXANDRIA ARCHAEOLOGY COLLECTION)

The sound condition of most of the gun's iron and steel components, verified by x-ray at the local hospital, justified the careful use of electrolysis to remove surface corrosion.

The apparatus was a 6-12 volt 6 ampere battery charger, a polyethylene pail, and a stainless steel plate to act as the positive electrode. The metal part to be cleaned was attached to the negative electrode. Common baking soda dissolved in water offered a cheap, safe, efficient electrolyte.

All salvageable parts were treated using this process. After wire-wheeling any remaining rust, the conservator selectively applied various coatings including microcrystalline wax and a thinned, non-gloss varnish.

(Written by Jan K. Herman, N.D. Pictures added by Amanda Iacobelli, 2006).

[The conservation and restoration of the musket was done under the direction of Jan Herman, assisted by Lynn Arden. The conservation of the wooden parts alone required six months.]

Fig. 16: Conservator Lynn Arden varnishing the metal (ALEXANDRIA ARCHAEOLOGY COLLECTION)