Harpers Ferry and John Hall

by Robert M. Reilly

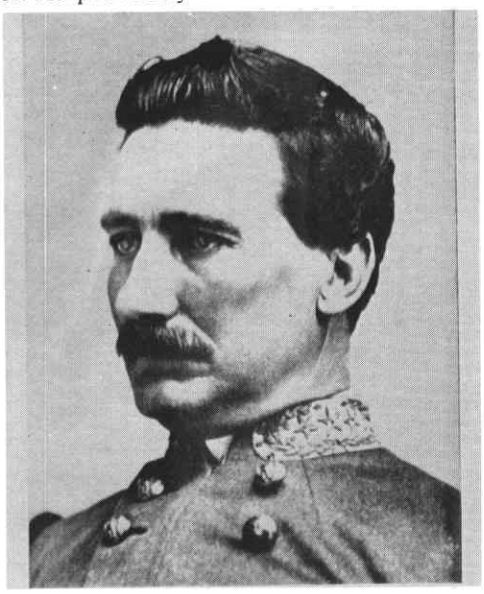
Any discussion of the Harpers Ferry armory means, among other things, to explore a fascinating phase of American history. It means, too, the inclusion of a number of important and colorful personalities, and of course, it requires a glance at a highly diverse group of firearms.

In this latter regard, of which we here are most interested, we include both the flintlock and percussion eras; long arms and handguns. We can even toss in muzzleloaders and breechloaders. Generally, then as you can see, we are talking about a rather broad array of arms.

And so, gentlemen, a brief look at Harpers Ferry. The date is April 16 and the year, 1861. This date has become buried in the obscurity of a week full of electrifying events that Americans will never forget. Just four days prior, in the early morning hours of April 12 at Charleston Harbor in South Carolina, a fledgling nation had been born in the din and flame of cannonfire. Four years later, almost to the day, this same nation would die in a similar manner at a remote village in Virginia known as Appomattox Courthouse.

But, on this particular April 16th, almost 111 years ago to the day, a quiet and highly eventful meeting was held at the Exchange Hotel in Richmond. This gathering would result in a plan which, while often overlooked by future military historians, would become one of the most successful and timely strategic moves of the entire Civil War. Indeed, this small group, led by ex-Virginia Governor Henry A. Wise, formulated the plans for the capture of the armory, the weapons, and machinery at Harpers Ferry in what was then Northwest Virginia. From what we know, fewer than a dozen men were in attendance at this meeting, all volunteer officers in the newly formed Confederate States Army. The plan arrived at was simple. Move against Harpers Ferry as soon as possible. Invest the place and capture it. Based on the correct assumption that the Virginia State Legislature would the next day vote to secede from the Union and join its sister Southern states, it was decided that the movement against Harpers Ferry should begin at once. This proved to be highly significant, because finally in the North, someone had come to the conclusion that possibly Harpers Ferry ought to be reinforced, and a brand-new, freshly-equipped regiment of Massachusetts volunteers, about 1000 strong, was on the way to assist the nearly 50-man garrison at the Ferry under the command of 1st Lt. Roger Jones.

Figure 1
Capt. John B. Imboden (Inter Brigadier General) who led the assault on Harpers Ferry



Confederate Capt. John B. Imboden (Figure 1), who would eventually wind up as a Brigadier General in the Confederate Army, was with the assaulting party and took his place with the other troops on the heights overlooking the armory in those early morning hours of April 19th. He gives this account of what he saw (Figure 2):

> "A brilliant light arose from near the point of confluence of the Shenandoah and Potomac Rivers. General Harper, who up to that moment had expected a conflict with the Massachusetts regiment supposed to be at Harpers Ferry, was making his dispositions for an attack at daybreak when this light convinced him that the enemy had fired the arsenal and fled. He marched in and took possession, but too late to extinguish the flames. Nearly 20,000 rifles and pistols were destroyed. The workshop had not been fired. The people of the town told us of the catastrophe, for such is what it was to us, and that it was owing to declarations made the day before by the Supt. Alfred M. Barbour."

As mentioned, Alfred Barbour was the armory's superintendent, and had been since 1858. It appears that in this regard he was highly competent.

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Figure 2
Harpers Ferry Burning,
April 18, 1861

He was also, however, quite sympathetic to the Southern cause, having previously practiced law in Virginia. In addition, he had been appointed a delegate to the Virginia Secession Convention. While some of the chronology of events here are a little vague and not particularly critical to our story, it appears that at the time the Confederate force was in the process of capturing Harpers Ferry, Mr. Barbour was over in Richmond casting his vote for secession.

Now, word of this had apparently leaked, because on the morning Virginia left the Union, Captain Charles Kingsbury of the U. S. Ordnance Department was ordered to the Ferry with orders to take command and to assume the duties of Superintendent. Technically, then, Captain Kingsbury became the last Superintendent of Harpers Ferry, although he was never able to exercise much authority, taking over as he did only a few hours before its capture.

In that brief period, though, he issued what must be considered the most important order ever given at the place. His was the dubious honor of ordering that the torch be applied, thus forever after terminating operations at the armory.

Under the circumstances, of course, it was the only sensible move since we know the place to have been militarily untenable and facing immediate capture. With every probability that Harpers Ferry's fall was imminent, and that the arms—and machinery to make them—would very shortly be brought to bear against the North, the facilities at the armory should have, in a military sense, been burned. There's another reason, too, not often noted. There is every indication, based on facts subsequently learned, that had the arms themselves been taken intact, Confederate forces planned an immediate assault against both Washington and Baltimore. Had this occurred, and these cities captured, there can be little doubt but that history would have been drastically changed! Recognizing this, and in spite of it, a question of tremendous importance still remains to be answered.

Under the circumstances, those which tell us that by April, 1861, all the states except Virginia had seceded from the Union that were going to, and that the Southern Confederacy, already formed in Montgomery, Alabama, was about to add its final state, the question must be raised as to *why* were the arms allowed to remain at Harpers Ferry at all? Why hadn't they been transported further north to a safer location? And if not that, why was not this very important arms manufacturing facility adequately defended? A glance at a map (Figure 3) of the area shows clearly that the Winchester & Potomac Railway runs through the town, and the railroad could easily have been utilized to transport literally all of the arms and equipment to safety! Or, in the event the Confederates had blocked or destroyed the rails, why not barges? Water transportation was one of the primary reasons for establishing the armory there in the first place! Either way, all of the arms and machinery could have been loaded and shipped out within a very short period, and probably not more than a few days.

It seems to me that the situation could have used an innovator like old General Nathaniel Lyon. Those of you who have spent any time at all with Civil War history will recall that less than a month later, General Lyon, in a genuine cloak-and-dagger episode, literally stole the small-arms out from under the noses of the Confederates at the St. Louis arsenal.

A bold move such as this could have saved the North thousands of stands of arms which would soon become desperately needed, and machinery which the South would have been hard-pressed to duplicate had it not been captured.

This brings to mind another obvious question. How many arms were actually at the armory at the time of the raid, and how many were destroyed? First, though, let me state that there is every indication that Confederate authorities were of the opinion that possibly as many as 100,000 or more arms were stored there. Possibly some were aware of Colonel

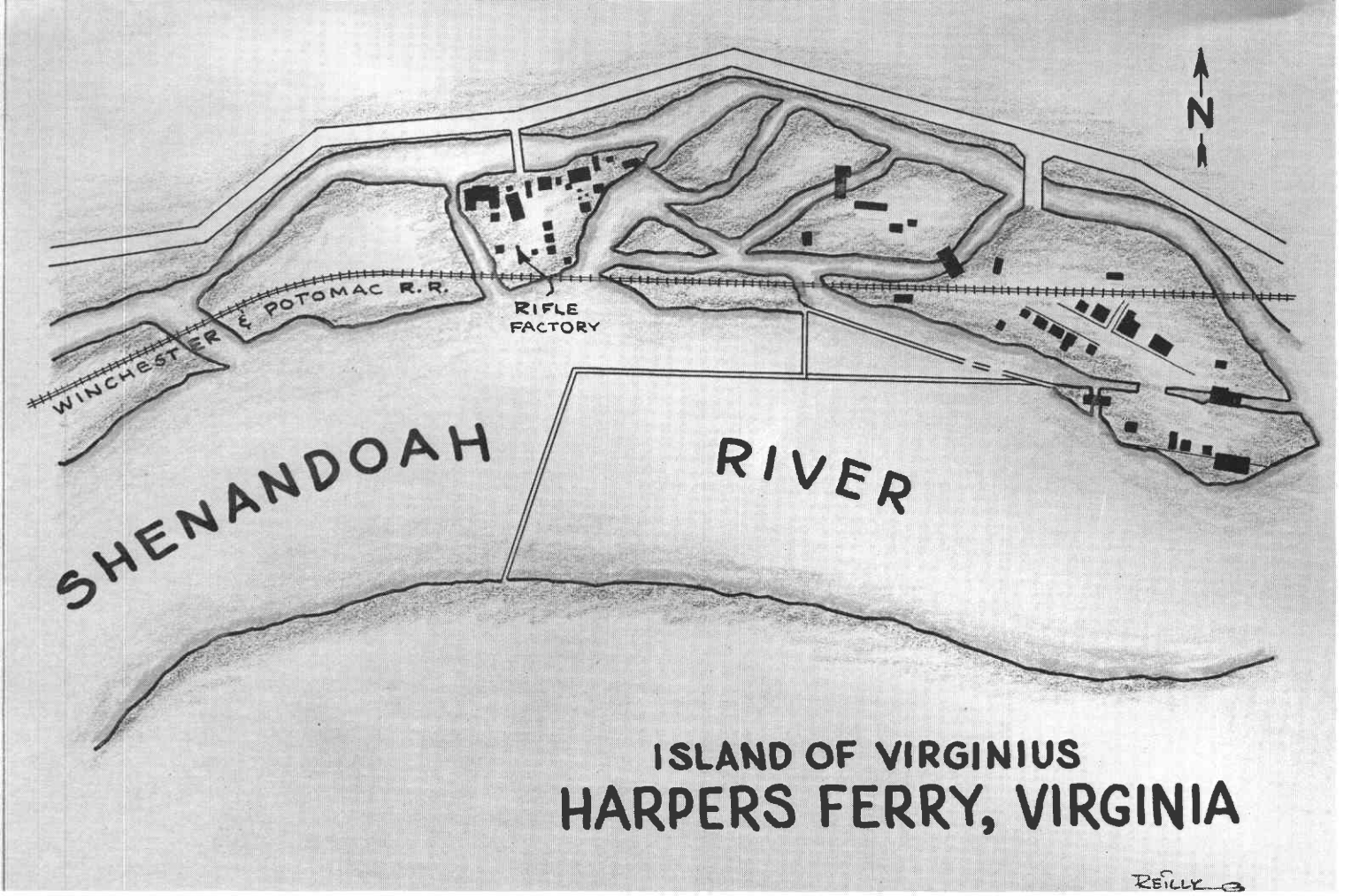
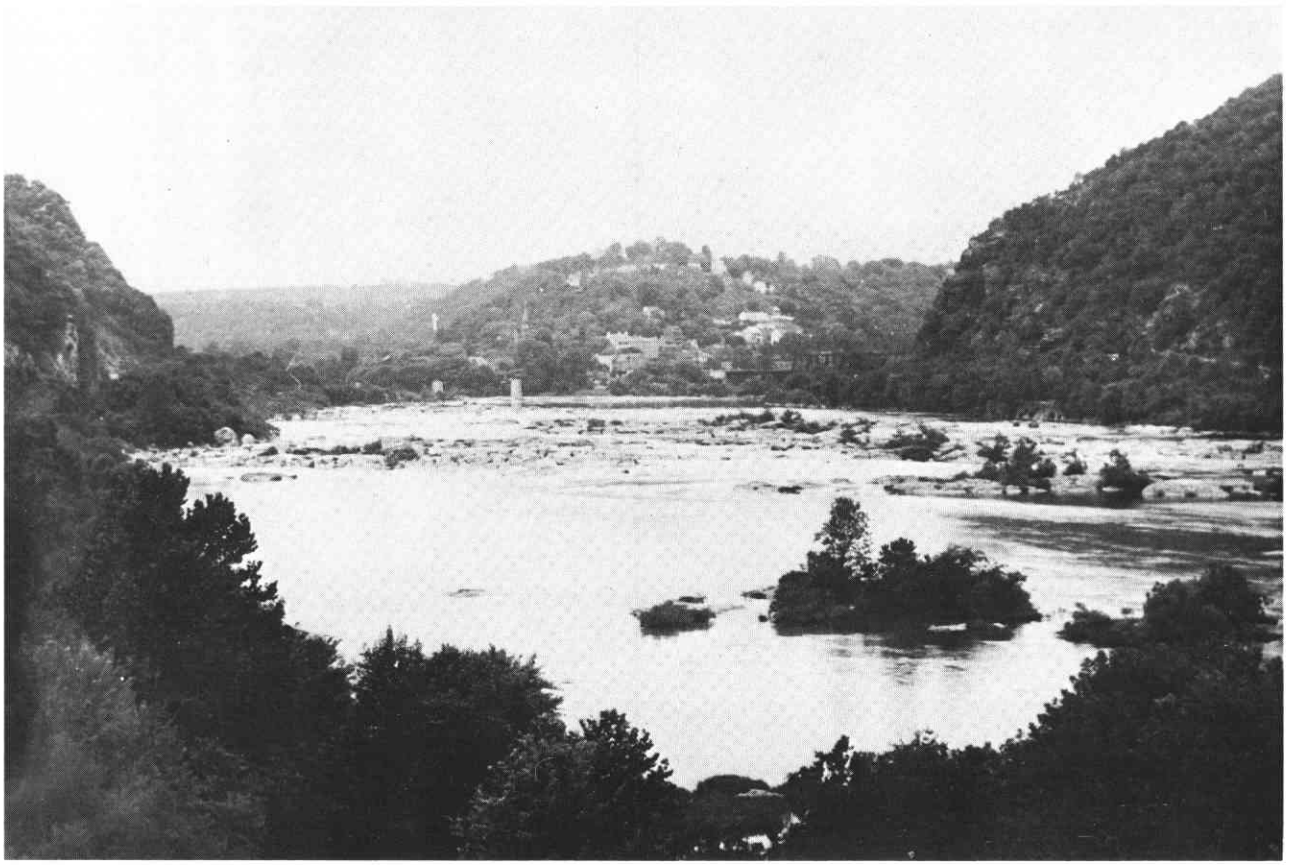


Figure 3
The Island of Virginius, Harpers Ferry, Virginia

Figure 4
A view from down the river made in 1960



H. K. Craig's report to Secretary of War Joseph Holt, which, dated January 8, 1861 had said:

> "...Our store of muskets of all kinds at this time does not exceed 530,000, disbursed amongst the arsenals of the country—nowhere more than 130,000 arms being together."

I'm not sure where those "130,000" were, but it almost had to be Springfield. One might easily assume, though, that possibly the Confederates thought they may have been at Harpers Ferry.

This, we know, was not the case. Lieutenant Jones, of the U. S. Mounted Rifles, mentioned earlier as commanding the garrison, had noted in a dispatch on the morning of the raid and after having heard rumors of the Confederate advance:

> "The steps I have taken to destroy the arsenal, which contains nearly *15,000 stand* of arms, are so complete that I can conceive of nothing that can prevent their entire destruction."

So, a first-hand account tells us that instead of more than 100,000, fewer than 15,000 were actually at hand. Even so, this number would have been a real shot in the arm for the Southern cause had they been able to capture them intact. Their capture might conceivably have ended the war at once with a Southern victory. Come to think of it, 15,000 first-rate arms, which these were, would have been very useful in the North about that time.

It is still extremely difficult to try and understand just how the Union could have allowed such a prize to slip through their fingers. Perhaps we can trace it back to the general concensus in the North. Recall if you will that with a few notable exceptions, there were virtually none who expected a real shooting war, and a great many were of the opinion that not so much as a single shot would ever be fired in anger. As many of you know, when it finally appeared that the situation was going to be more serious than initially anticipated, President Lincoln called up a smashing total of 75,000 volunteers, and these for only 90 days. With this kind of attitude, perhaps we shouldn't be too surprised that reinforcements failed to reach Harpers Ferry in time.

And yet, it is interesting to note that Lieutenant Jones was ready to burn the place in the event of a Southern move to capture it! There is an interesting and ironic note to be interjected here, too. The very gunpowder used to start the fires was exactly that brought to the Ferry two years before by crazy old John Brown—at which time he had planned on using it for precisely that purpose! That, of course, is another story all together. Had it not been for a number of Southern sympathizers, incidentally, the fire damage at the armory would have been far greater than it was. These men managed to wet down some of the powder and put the fires out at several critical locations, however, and for this reason most of the arms-making machinery and a large number of parts including barrels and locks were saved. As most of you know, this was all shipped South with the rifle-musket machinery going

Figure 5
Heights around Harpers Ferry

to Richmond and that on which the Model 1855 rifles had been made, to Fayetteville, North Carolina. Nevertheless, damage *was* extensive, and thousands of arms, parts and raw materials were destroyed.

And so we must logically ask, it seems, what exactly was the real importance of Harpers Ferry? First of all, and quite obviously, a nation about to engage in a major war should, of necessity, be well armed, and for that reason, a few far-seeing Southerners recognized the importance of, not the place, but the product and wherewithal to produce the product.

Let's face it, Harpers Ferry may have had all of the attributes required of an armory as set forth by President George Washington more than 65 years before, but as a military stronghold, it amounted to absolutely nothing. Surrounded as it was by a range of substantial hills, almost mountainous in scope (Figures 4 and 5), the armory and the town itself were, from a military standpoint, completely untenable. All one had to do was to drag artillery to the upper ranges and open fire. By so doing, the armory was defenseless. As a result of all this, Harpers Ferry was never again held seriously by either side during the War, although frequently by both, and after its original capture in 1861 would never again produce so much as a single firearm.

Those of you who have paid any attention to military history at all know, beyond a shadow of doubt, that no nation whose economic base was essentially one of agricultural orientation has ever defeated one whose economy at least included a substantial industrial and technological know-how. There is one extraordinary piece of prophecy that comes to mind in this regard. By mid-January, 1861, Louisiana, along with several other states, had already seceded. At the Seminary of Learning in Pineville, as Louisiana State University was originally called, the superintendent looked at the situation and said to a close associate with Southern sympathies:

> "The North can make a steam engine, locomotive or railway car; hardly a yard of cloth or a pair of shoes can you make. You are rushing into war with the most powerful, ingeniously mechanical and determined people on earth—right at your doors. You are bound to fail. Only in your spirit and determination are you prepared for war. In all else, you are totally unprepared...
>
> "At first you will make headway, but as your limited resources begin to fail and shut out from the markets of Europe by blockade as you will be, your cause will begin to wane and... in the end you will surely fail."

It may come as a surprise to some of you, but this man—recognized now as the first president of Louisiana State University was none other than William Tecumseh Sherman, a man then on the threshold of becoming a national idol and an international celebrity. Hardly any wonder that many years later Sherman's great biographer Lloyd Lewis should refer to him as the "Fighting Prophet."

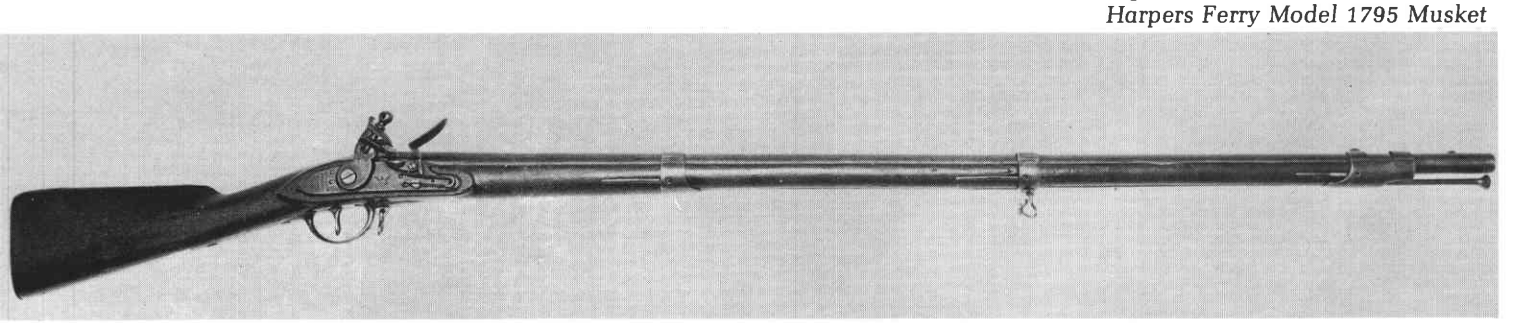
We have thus seen that in the South the significance of Harpers Ferry was certainly recognized. What a shame that it was not viewed in the same light in the North. The result was the death knell for one of America's only two national armories. But what had gone before?

After the establishment of Harpers Ferry in 1796, and initial production in 1801 when 293 Model 1795 muskets (Figure 6) were turned out, every type of firearm in use during the era was produced there, including pistols, carbines, rifles, rifle-muskets and muskets. Muzzleloaders and breechloaders were part of the picture and, of course, both flintlock and percussion arms were produced in large quantity.

As you know, many of these arms would be the product of a single man. In my personal opinion, it would be a serious omission to discuss Harpers Ferry without digressing for a few moments to touch briefly on this man and his product. I refer, of course, to John H. Hall, the Hall Rifle Works, and the arms produced there. To this man goes the distinction of having designed and produced not only the first breechloading arm to be officially adopted by the United States (Figures 7 and 8), but later, the first percussion arm ever officially adopted anywhere in the world. Needless to say, then, this subject in itself could be the basis for a most interesting paper.

We won't go into Mr. Hall's early history now other than to relate a couple of major points probably known to many of you. Not the least of these is a brief mention of John Hall's genius in producing machinery with which to turn out mass-produced and completely interchangeable parts.

Figure 6
Harpers Ferry Model 1795 Musket



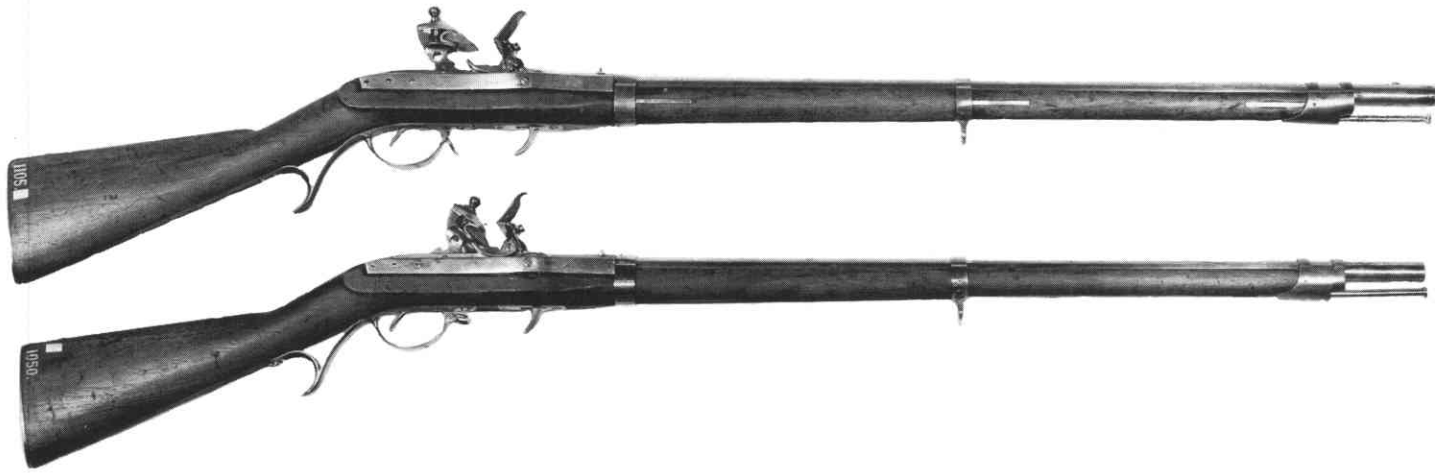


Figure 7
US Model 1819 Rifle

Figure 8
US Model 1833 Carbine

Figure 9
Hall Patent Drawings

Sheet 2 - 3 Sheets

J. H. Hall,

Breech-Loading Firearms,

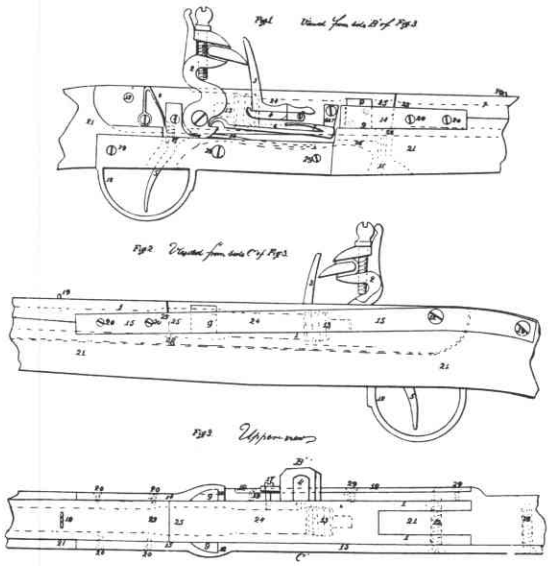
Patented May 21, 1811.

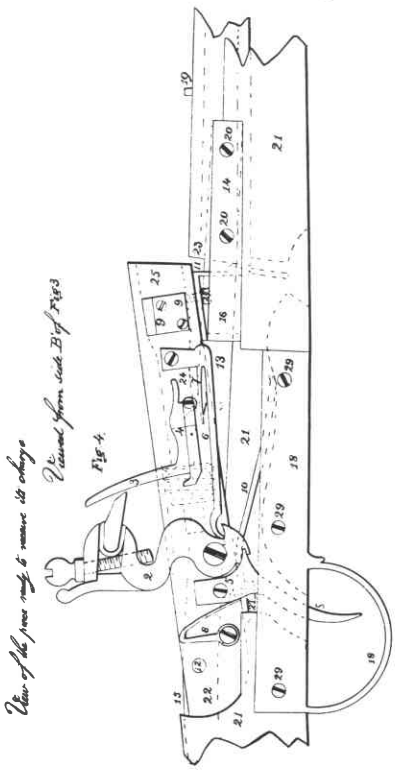
3 Sheets—Sheet 1.

J. H. HALL.

Breech-Loading Fire-Arm.

Patented May 21, 1811.



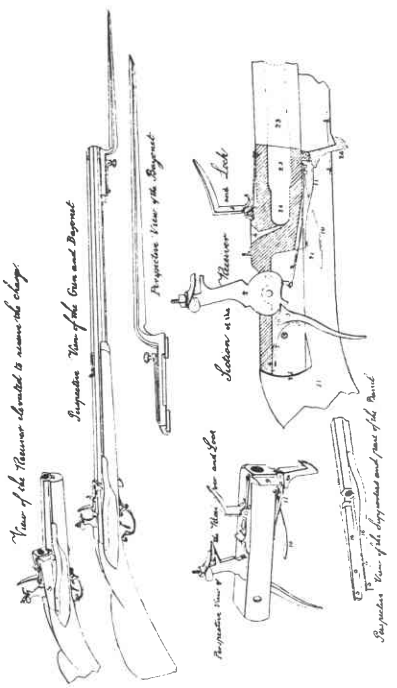


3 Sheets—Sheet 3

J. H. HALL.

Breech-Loading Fire-Arm.

Patented May 21, 1811



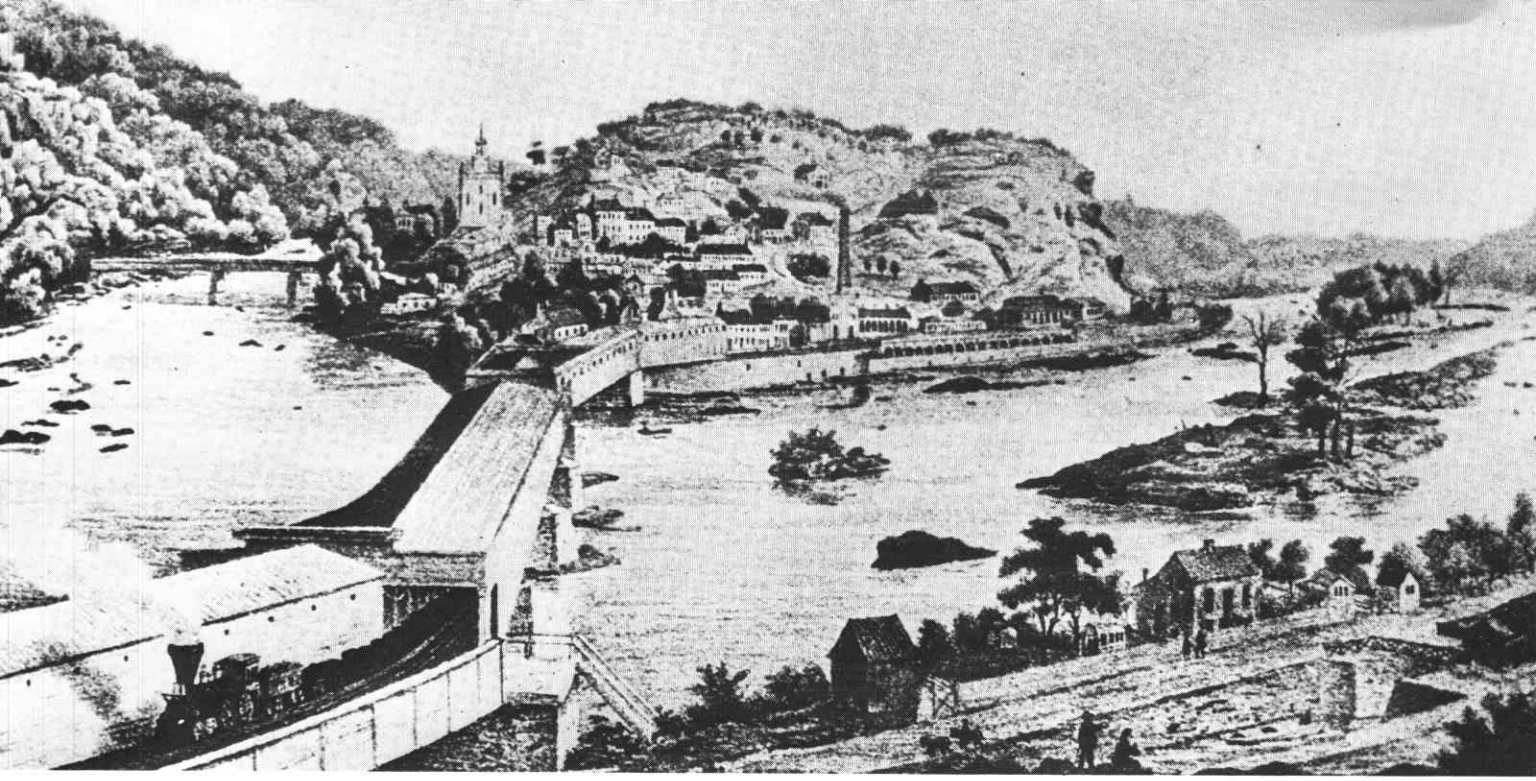


Figure 10
Island of Virginius

Much credit, of course, has always been given Eli Whitney in this interchangeability discussion over the years, and certainly Whitney deserves a great deal of credit for recognizing a most important problem. It was, however, in my opinion, the work and ability of John H. Hall that really brought interchangeability of parts to its early peak. I think this might be illustrated as effectively as any other way by stating that during their years of production, the unit price of Hall arms dropped almost continually from 1817, when the first lot, purchased outright prior to the Harper Ferry days, was $25 per rifle. Later, in the early 1830's the unit cost had dropped to $14.50 per rifle. Not bad, and particularly so at a time when many contractors were complaining bitterly about not being able to deliver arms as a previously determined price.

We know that in 1811 John Hall had received his U.S. patent (Figure 9) for a breechloading arm, and that one year later he commenced production of them in his home state of Maine. In 1817, the government purchased 100 of his rifles, primarily for the purpose of extensive testing. Then, after complete success in the trials of his breechloaders, an additional 1,000 were ordered with the important stipulation that the inventor should personally oversee the construction of the armsmaking machinery and ultimately of the arms themselves.

As a result, the Hall family moved South and into a large brick building on the Island of Virginius overlooking Harpers Ferry. This island (Figure 10), or more correctly, small cluster of islands about 800 yards long and 200 yards wide, would soon become known to many as Hall's Island, and would, indeed, become the site of the rifle works.

During John Hall's remaining years, ending with his death in 1841, he and his family continued residence on Virginius Island. During and subsequent to this 20-odd years, a total of 25,891 arms of Hall's design would be produced at Harpers Ferry.

These included two specific rifle models and two carbines, the former being the models of 1819 and 1841 (Figure 11), and the latter, the models of 1836 (Figure 12) and 1842 (Figure 13). Additionally, of course, were those Hall-designed arms produced by Simeon North in Middletown, Connecticut. These totaled another 30,364, including one rifle—almost a perfect duplicate of the first type Model 1819—and three carbine models (Figures 14, 15, 16, 17). These included the Model 1833, two variations of the Model 1840 and the Model 1843. All told, then, we find 56,255 arms based on Hall's patent manufactured subsequent to 1823 when initial production on them had begun at Harpers Ferry and including those produced elsewhere by Mr. North (See Figure 18). It seems almost ironic, incidentally, that Simeon North should have produced almost 4,500 more Hall-type arms than the inventor. This

Figure 11
Model 1841 Percussion

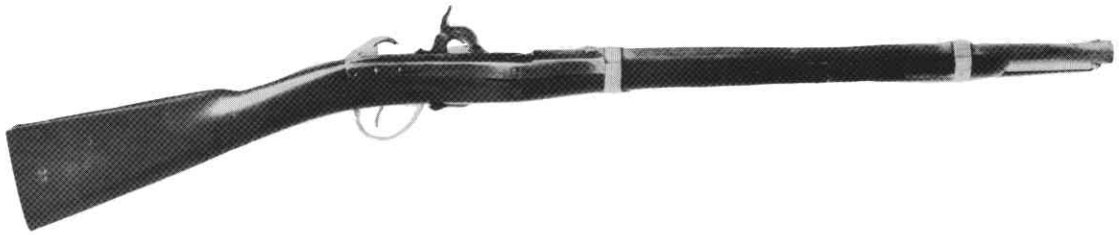


Figure 12
Model 1836

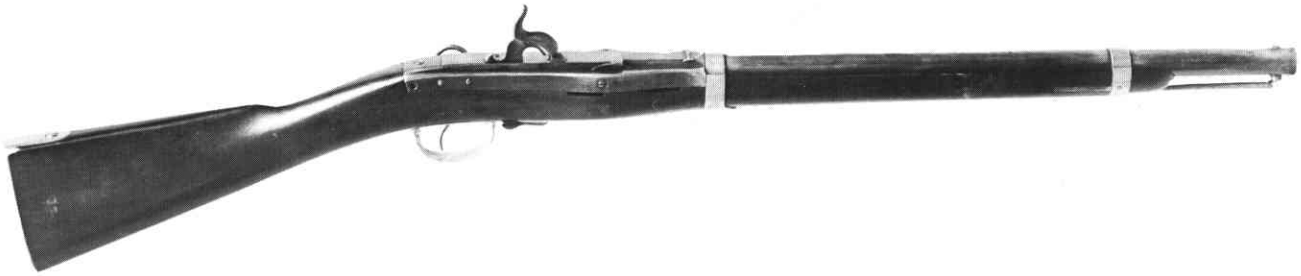


Figure 13
Model 1842

Figure 14
Model 1833 Hall-North

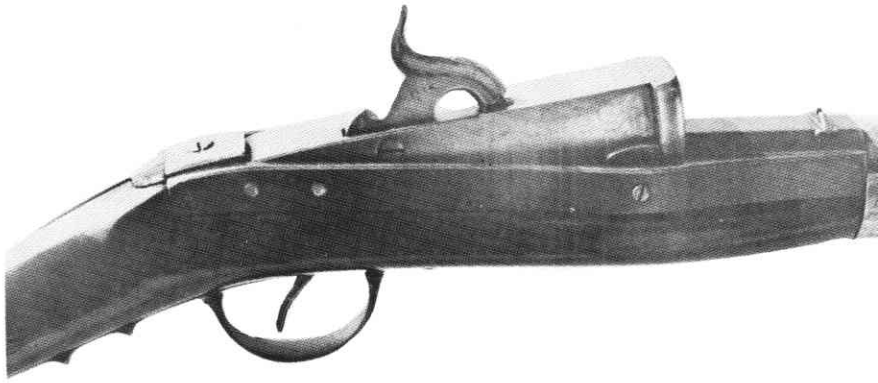


Figure 15
Model 1840, Type I, Hall-North
"Elbow" operating lever

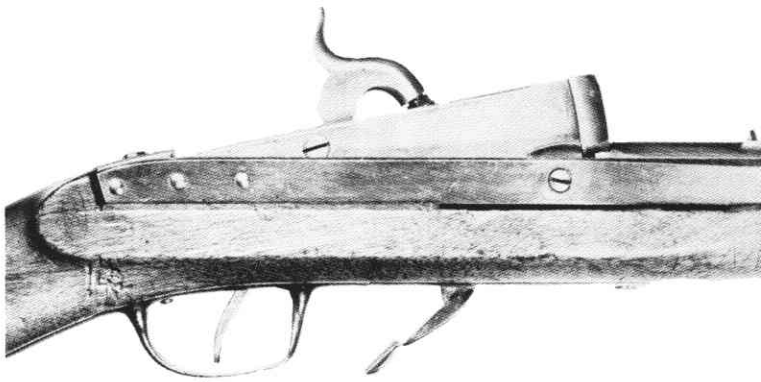


Figure 16
Model 1840, Type II,
Hall-North "Fishtail"
operating lever

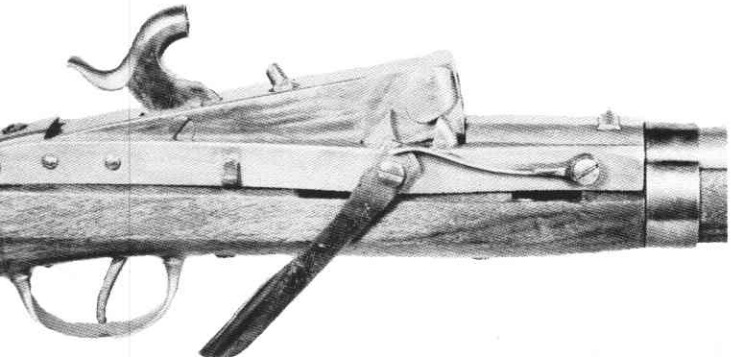


Figure 17
Model 1843, Hall-North

HALL ARMS PRODUCTION (H.F.):

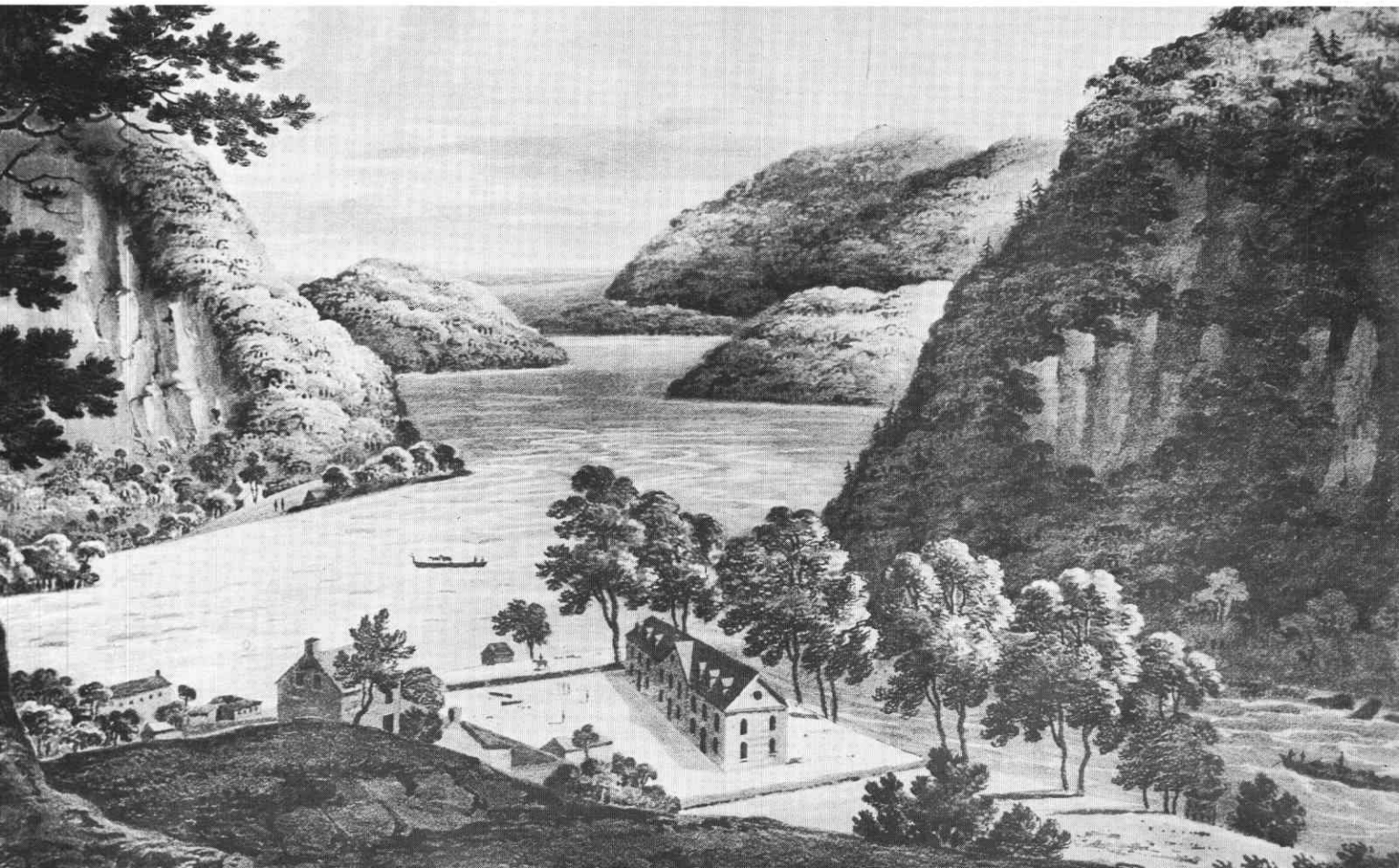
U.S. FLINTLOCK RIFLE, MODEL 1819	19,680
U.S. PERCUSSION RIFLE, MODEL 1841	3,190
U.S. PERCUSSION CARBINE, MODEL 1836	2,020
U.S. PERCUSSION CARBINE, MODEL 1842	1,001
TOTAL	25,891

HALL-NORTH PRODUCTION:

U.S. FLINTLOCK RIFLE, MODEL 1819	5,700
U.S. PERCUSSION CARBINE, MODEL 1833	7,163
U.S. PERCUSSION CARBINE, MODEL 1840 (2)	6,501
U.S. PERCUSSION CARBINE, MODEL 1843	11,000
TOTAL	30,364
TOTAL HALL PATENT ARMS PRODUCTION	56,255

Figure 18

Figure 19
Junction of the Potomac and Shenandoah rivers as drawn in 1806



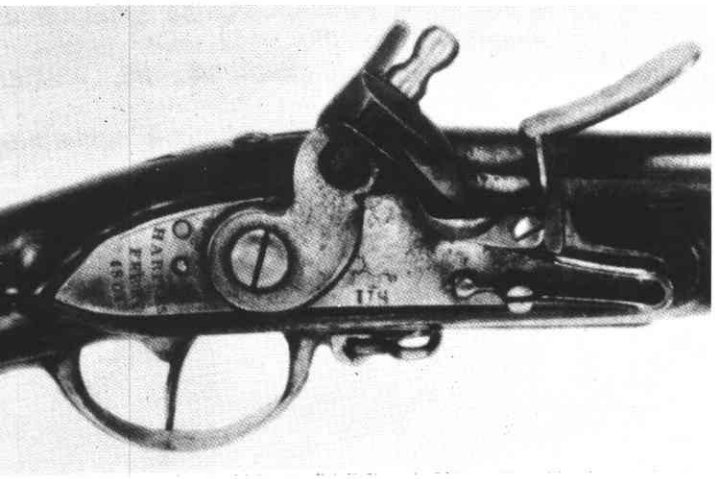


Figure 20
Model 1795 Musket made at Harpers Ferry

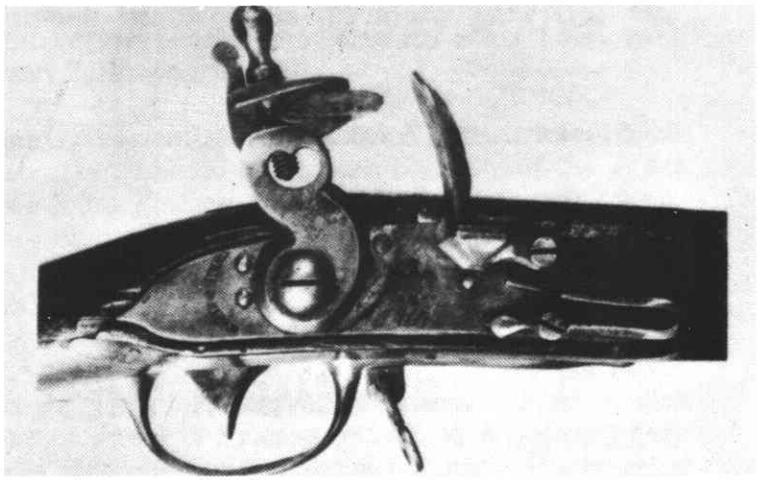


Figure 21
Model 1795 made at Springfield

Figure 22
Model 1816 Harpers Ferry

irony lies in the fact that John Hall had been almost beside himself with concern when the initial contracts were given to North for fear that the latter would not be able to match the inventor's standards of interchangeability and quality. These fears were ill-founded, and those of you who are familiar with the Hall-North arms know that they were every bit as well made as those produced at Harpers Ferry.

I will note here that among the Hall variations produced—one at Harpers Ferry and the other by North in Middletown—we find two of the truly rare U.S. martial firearms. I refer to the brass-mounted Hall Model 1842 carbine (Figure 13) fabricated at Harpers Ferry of which I seriously doubt that more than a dozen of the original 1,001 exist today. The other would be the Model 1840, Type I carbine produced at Middletown which utilized the so-called "elbow" operating lever (Figure 15). Initially, 500 of these were turned out before the change to the so-called "fishtail" operating lever was introduced, and here again we find a very low survival rate.

So, as we can see, John Hall's role at Harpers Ferry was a major one. As stated previously, the story of Hall and his arms is a fascinating one which hopefully we might hear more about at a future meeting of the American Society.

There is another name, too, noted almost incidentally in the production records of Hall arms at Harpers Ferry, and one which should be mentioned. I refer to a gentleman by the name of Christian Sharps, who learned his trade there over a 15-year period. And learned it well, I might add! The multitude of arms which would later bear his name provide ample testimony to this fact!

The last of the Hall arms came off the line at Harpers Ferry in December of 1843. This was the aforementioned Model 1842 brass-mounted carbine. After that time, production in the "rifle works" ceased—and the physical structure began to change rapidly. John Hall had died in 1841, after a long illness, and deterioration of the facilities, many of which had only been wooden structures in the first place, rapidly fell to the ravages of decay, and combined with frequent flooding, required that many of the buildings be razed or rebuilt.

As a result, new, more permanent structures were erected where, oddly, production then reverted from breechloading to muzzleloading rifles. Progress, gentlemen, can sometimes be painfully slow!

But let's go back to early production. Obviously, if the Hall arms played an interesting and colorful

Figure 23
Model 1842, Harpers Ferry

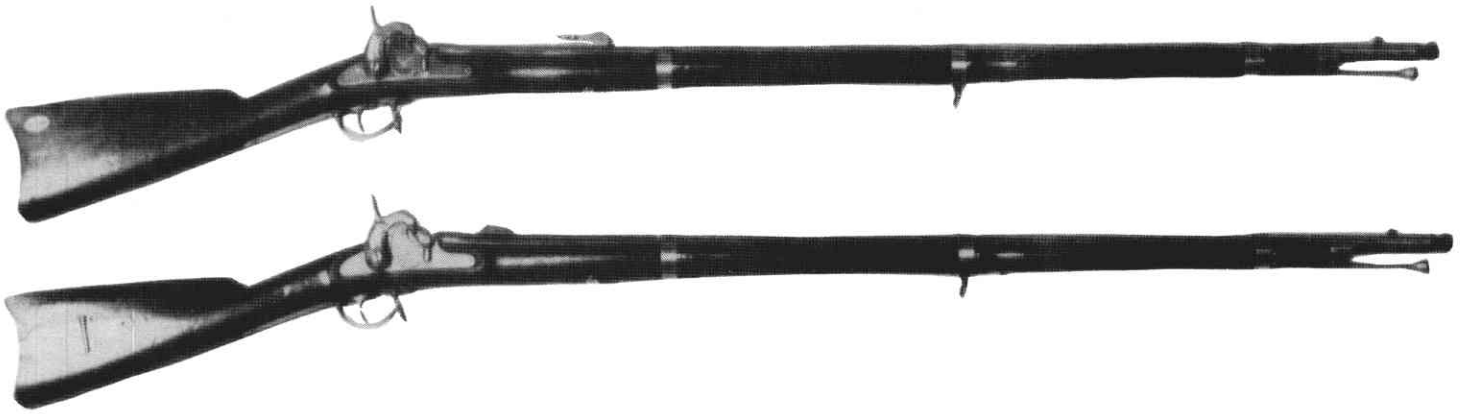


Figure 24
Model 1855 Rifle-Musket variations made at Harpers Ferry

role, they were, after all, a small percentage of total production at the Ferry.

The site for the Harpers Ferry Armory had been chosen specifically by George Washington, and was considered ideal at the time since it was located more or less at the confluence of the Shenandoah and Potomac Rivers (Figure 19). Water power, of course, was at the time completely essential to any manufacturing process. It was also a highly important mode of transportation, and as such, raw materials, finished products and personnel could be moved efficiently and inexpensively.

Official production commenced in 1801 when 293 Model 1795 Muskets (Figures 6, 20) were produced. While this fact is taken from production records, it should be noted that specimens exist dated 1800, perhaps reflecting earlier production of parts. Actually, these muskets were modified Model 1795's, if we accept the Springfield counterpart (Figure 21) as "standard," in that a number of minor differences are to be found on the lock and overall silhouette.

In all, a total of some 336,037 flintlock muskets of two basic models came out of Harpers Ferry. These included only the Model 1795, produced between 1801 and about 1819 and the Model 1816 (Figure 22) which began production about 1818 and continued through 1844. This averages out to roughly 8,000 muskets per year and includes a peak of 14,000 Model 1816's in 1825 and a low figure of only 50 Model 1795's in 1807. No muskets at all were produced in 1805. In addition to flintlocks, records indicate that between 1843 and 1855 just at 103,000 Model 1842 percussion muskets (Figure 23) also came off the assembly lines at the Ferry. This, then, brings total musket production at this armory to just over 439,000 in 55 years. Solely for the sake of comparison, this figure is roughly 203,000 shy of similar production at Springfield.

In 1859, production began on an entirely new arm. This was the Model 1855 Rifle-Musket (Figure 24), and between 1859 and early 1861, a total of 12,158 of them were produced at the Ferry—a figure representing about one-fourth of their Springfield counterpart.

Rifle production at Harpers Ferry included a total of 75,201 arms of five specific models (See Figures 25, 26, and 27): the muzzleloaders of 1803, 1841 and 1855, and Hall's breechloaders of 1819 and 1841.

Two types of the Model 1803 flintlock rifles were produced, varying essentially only in barrel length and accounting for 19,718 of total rifle production. Thus we find that 39,398 flintlock rifles were turned out at the Ferry. The three percussion types added 35,803 more to the total.

An interesting side-note here. Springfield records indicate that from beginning to end, a total of only 3,450 rifles per se, were produced there,

HARPERS FERRY RIFLE PRODUCTION

U.S. MODEL 1803 FLINTLOCK, TYPE I	4,015	
U.S. MODEL 1803 FLINTLOCK, TYPE II	15,703	
TOTAL MODEL 1803's		19,718
U.S. MODEL 1819 BREECHLOADING FLINTLOCK		19,680
U.S. MODEL 1841 BREECHLOADING PERCUSSION		3,190
U.S. MODEL 1841 ("MISSISSIPPI")		25,296
U.S. MODEL 1855		7,317
TOTAL RIFLE PRODUCTION		75,201

Figure 25

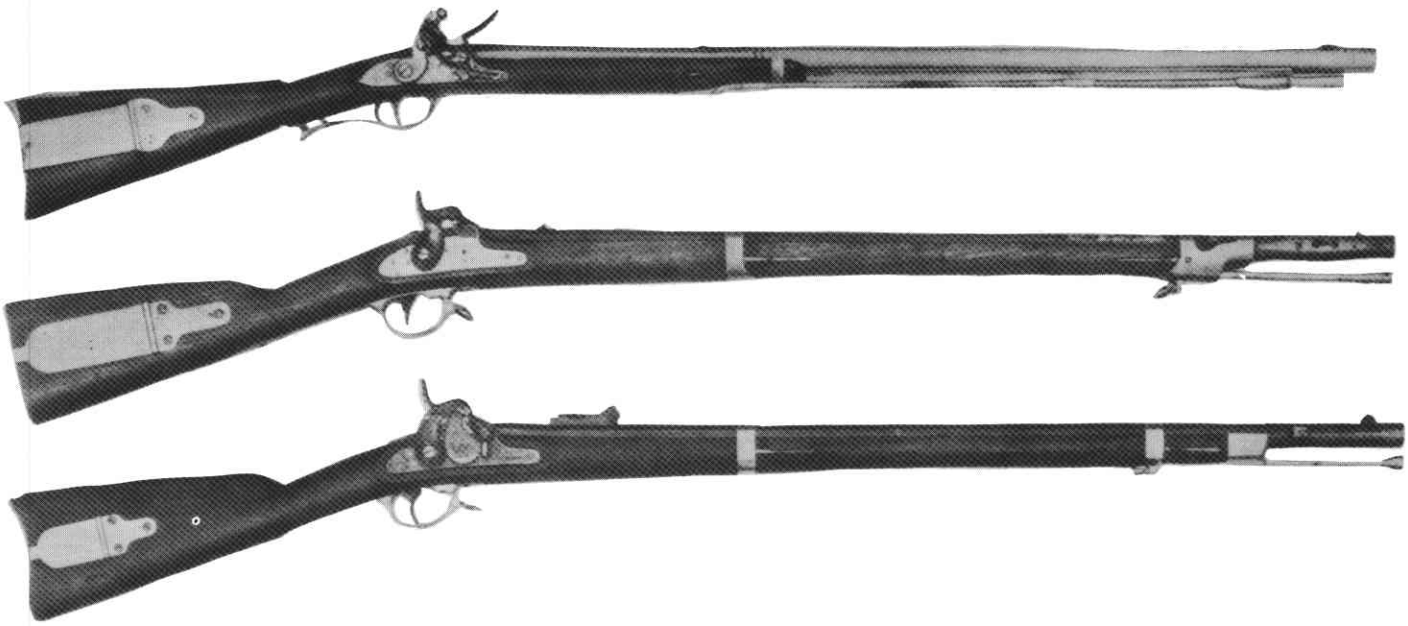


Figure 26
Harpers Ferry Rifles: Model 1803, 1841, 1855 Brass Mounted

Figure 27
Model 1855 Iron Mounted

HARPERS FERRY ARMS PRODUCTION

MUSKETS:		
FLINTLOCK (U.S. M 1795 & 1816)	336,037	
PERCUSSION (U.S. M 1842)	103,000	
TOTAL		439,037
RIFLE-MUSKETS (U.S. M 1855):		
RIFLES:		
FLINTLOCK (U.S. M 1803 & 1819)	39,398	
PERCUSSION (HALL M 1841, U.S. M 1841 & 1855)	35,803	
TOTAL		75,201
CARBINES (HALL M 1836 & 1842):		3,321
PISTOLS (U.S. M 1806):		4,088
TOTAL ARMS PRODUCED, 1801-1861		533,845

Figure 28

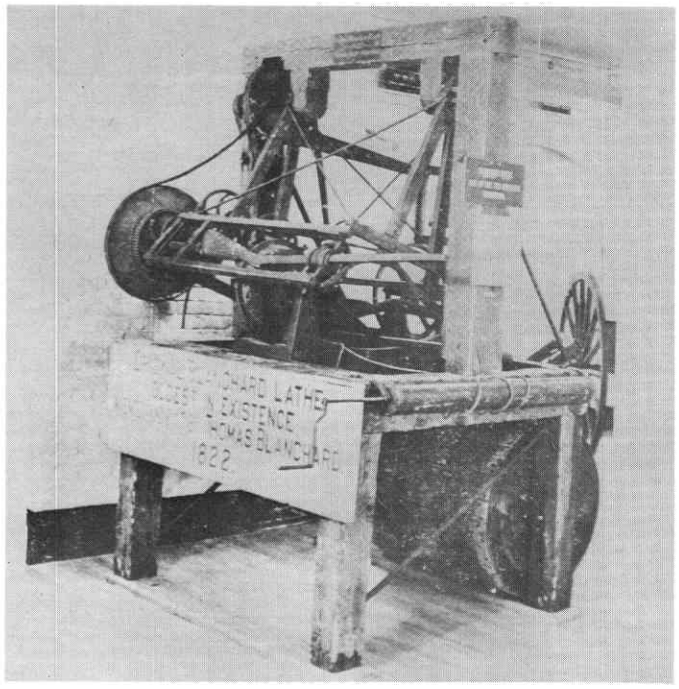


Figure 29
Blanchard's Eccentric Lathe

apparently in both flintlock and percussion types. Of these, 250 were supposedly flintlocks. The remaining 3,200 are believed to have been Model 1842 percussion muskets shortened and rifled for the Fremont Expedition in 1849, and thus not originally "rifles" at all. What I'm getting at is that, for all practical purposes, all U.S. martial flintlock and percussion rifles, discounting the contract arms, were produced at Harpers Ferry.

The carbines produced at the Ferry were, of course, the two breechloaders of John Hall as outlined previously, and total production of these came to 3,321 arms between 1837 and 1843.

I doubt if anyone here needs to be told of pistol production at Harpers Ferry. There was only one arm involved. This, as you know, was the Model 1806 flintlock pistol which totalled 2,044 pair, with each pair having received a single serial number.

This latter fact, of course, was established beyond question only a few years ago when Ralph Arnold added the second of a pair to his collection. To the best of my knowledge, this is the only pair that has actually been brought back together.

And so, we are able to come up with a pretty good idea as to the importance of Harpers Ferry as we tabulate a total of just about 534,000 arms of all types turned out there between 1801 and 1861 (Figure 28). Of this number, well over half—379,563—were flintlocks.

It should be remembered, too, that better than 150,000 of the arms produced at Harpers Ferry came off the line before the days of parts interchangeability, and at a time when it was perfectly acceptable to produce muskets having wide dimensional variations. This was a time when handwork was standard proce-

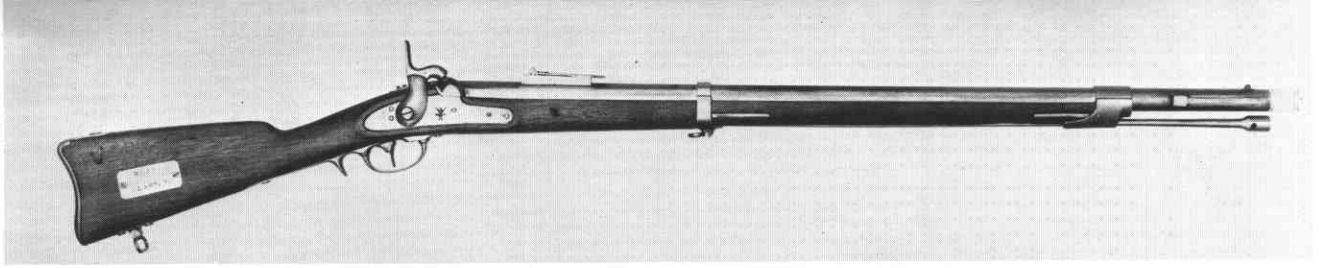


Figure 30
Whitney Model 1861 "Plymouth" Navy Rifle made at Harpers Ferry

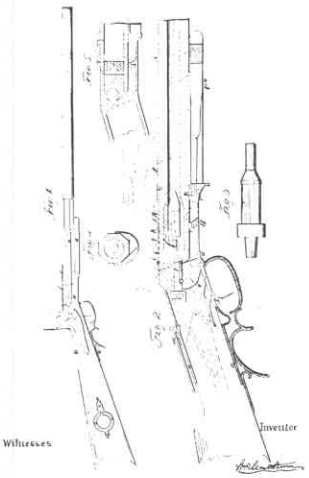


Figure 31
W. M. Storm Patent

dure, and we're talking about almost the first half of the life of the armory. After that, things would improve as technology moved ahead and such magnificent innovations as Blanchard's eccentric lathe (Figure 29) made gunstock manufacture a highly automated function by the standards of the day. Even now, this fantastic engineering feat must be considered among the great technical achievements of all time.

In addition to the standard production arms actually turned out at the Ferry, quite a number of pattern arms were also designed and produced there, including those for the Model 1840 Flintlock Musket, the Model 1855 Pistol Carbine, and the Model 1861 Navy Rifle shown in Figure 30. Pattern pieces were an important function of Harpers Ferry as were the thousands upon thousands of parts, accouterments, bayonets, etc., which were also part of the production picture. The truly astute observer probably won't be satisfied without my noting the fact that a few wall guns were produced at the Ferry, too, and even a small number of harpoon guns. They even experimented with steel bows and arrows!

Anyway, in April of 1861, the whole thing went up in smoke, In that smoke and fire, though, evolves what has always been something of a mystery to me, entailing as it does, a number of things which, open to conjecture even now, appear to have gone with it. One of these is John Hall's browning lacquer. As perhaps you know, Hall had formulated this fantastic browning solution for the primary purpose of protecting his arms from rusting in the event of the frequent flooding at Harpers Ferry. John Hall's formula has never been duplicated, and it is certainly our loss.

Another thing. Production records from the Ferry tell us that of the 7,317 Model 1855 rifles—this is the one, of course, produced with the Maynard Primer in the lock—nearly half, or 3,545 of them appeared to have been brass-mounted with the remaining 3,772 having iron furniture. I don't have to tell any of you who have specialized in martial longarms that the brass mounted Model 1855 is a tough item to come by today. It is the opinion of this speaker that these brass-mounted arms were most assuredly a victim of the Harpers Ferry disaster—that they were either burned or captured by the Confederates. If the latter is correct, they were among the best arms the Southerners had, and were certainly pressed into immediate and hard service. My personal inclination, though is rather to accept the possibility that they were burned.

And finally in this regard, is an arm which, because apparently none exist today, must be considered among the ultra-rare U.S. martial arms. This is the one which, while spending those dozen years trying to dig out data for my book, failed completely to come to light. I refer to the 400 rifles altered at Harpers Ferry to the Mont-Storm breechloading system in 1860. The fact that this quantity was, indeed, converted in this fashion is documented in the production records.

Gentlemen, I won't go into detail on this arm other than to mention that William Mont-Storm's U.S. patents included one in 1856 for alteration from muzzleloader to breechloader and the utilization of a special cartridge. His British patents, incidentally, called for utilization of percussion ignition. The Mont-Storm patent breech was not at all unlike that designed, patented and produced by Erskine S. Allin, which later formed the basis for the long series of post-Civil War Springfield breechloading rifles, the ones we call "trapdoor" models. Anyway, it seems quite certain that all 400 of these Mont-Storm conversions—all of which appear to have been originally Model 1841 rifles—disappeared in the fire, very likely having been stored in the rifle works. With only 400 rifles so altered in 1860, think if you will at the scarcity of them even had all survived. Certainly highly desirable collector's pieces today. Now, though, if one of you came up with one, it may be the only one in existence!

And so we have it, gentlemen. Just a few of the highlights and offshoots that surround a fascinating piece of our country's history during a time when growing pains seem to continually run from bad to worse. This was Harpers Ferry.