HISTORY OF THE LOWER HALL ISLAND AND
THE U.S. RIFLE FACTORY, 1842 to 1885

A Physical History, Volume II

by

Charles W. Snell

Harpers Ferry National Historical Park, West Virginia

Denver Service Center
National Capital Team
National Park Service
United States Department of the Interior
Denver, Colorado

April 1981
The purpose of this study is to bring together all available documentary evidence relating to the physical history and use of the Lower Hall Island from 1842 to 1885. This volume completes the study of the island from 1751 to 1885. Data presented in this study should facilitate archeological investigation of the U.S. Rifle Factory of the 1842-1861 period, the second U.S. Armory arms plant to stand on the Lower Hall Island.


Charles W. Snell
April 29, 1981
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Preface</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter I</td>
<td>Repair and Improvement at the U.S. Rifle Factory, 1842 - 1844</td>
</tr>
<tr>
<td>1. Construction of the Filers Shop, 1843-44, Bldg. 1</td>
<td>4</td>
</tr>
<tr>
<td>2. Repairs at the Rifle Factory, 1842-44</td>
<td>7</td>
</tr>
<tr>
<td>3. Rifle Factory Dam, 1842-44</td>
<td>8</td>
</tr>
<tr>
<td>4. Shenandoah Canal, 1842 - 1844</td>
<td>10</td>
</tr>
<tr>
<td>Chapter II</td>
<td>Repair and Improvements at the U.S. Rifle Factory, 1845-51</td>
</tr>
<tr>
<td>1. New Proof House, 1845, Bldg. 2</td>
<td>19</td>
</tr>
<tr>
<td>2. New Finishing and Machine Shop, Bldg. 3</td>
<td>20</td>
</tr>
<tr>
<td>3. New New Tilt Hammer and Smiths Shop, Bldg. 4,</td>
<td>27</td>
</tr>
<tr>
<td>4. New Annealing Furnace and Proof House, Bldg. 5</td>
<td>37</td>
</tr>
<tr>
<td>5. Planning a new Machine Shop, Bldg. 6, 1850-51</td>
<td>42</td>
</tr>
<tr>
<td>6. Repair of the Old Buildings, 1845-51</td>
<td>44</td>
</tr>
<tr>
<td>7. Demolition of Old Buildings, 1847-51</td>
<td>46</td>
</tr>
<tr>
<td>8. Grading the Grounds, 1845-51</td>
<td>47</td>
</tr>
<tr>
<td>9. Fencing the Grounds, 1851-52</td>
<td>48</td>
</tr>
<tr>
<td>10. U.S. Shenandoah Canal, 1845-51</td>
<td>52</td>
</tr>
<tr>
<td>Bridges to the Island</td>
<td>50</td>
</tr>
<tr>
<td>11. U.S. Shenandoah Dam, 1845-1851</td>
<td>54</td>
</tr>
<tr>
<td>Chapter III</td>
<td>Repairs and Improvements, 1852 - 1854</td>
</tr>
<tr>
<td>Effects of the April 1852 Flood</td>
<td>55</td>
</tr>
<tr>
<td>1. New Machine Shop, Bldg. 6, 1852-53</td>
<td>57</td>
</tr>
<tr>
<td>Description of the U.S. Rifle Factory Plant, 1852</td>
<td>59</td>
</tr>
<tr>
<td>2. Remodelled Stock House, Bldg. 8, 1854</td>
<td>61</td>
</tr>
<tr>
<td>3. Repaired Old Storehouse, Bldg. 10, 1853</td>
<td>62</td>
</tr>
</tbody>
</table>
TABLE OF CONTENTS

4. New Coal House, Bldg. 7, 1854......................... 63
5. Grading, Street Lights, Hydrants for Fire Protection........ 64
6. Shenandoah Canal, 1852-54.................................. 65
5. U.S. Shenandoah Dam, 1852-54................................ 66

Chapter IV
Repairs and Improvements, 1855 - 1861.......................... 68
1. New Barrel Drilling and Finishing Shop, Bldg. 9, 1859-60...... 70
2. Addition and Repair, Bldg. 3, Finishing and Machine Shop...... 74
3. Repair of Bldg. 4, Tilt Hammer and Smiths Shop.................. 77
4. Repair Bldg. 5, Annealing Furnace and Proof House............... 78
5. Repair Bldg. 6, Machine Shop.................................. 79
6. Plans for a new Workshop, 1861................................ 80
7. Painting and Slating Workshops, 1855-61.......................... 81
8. Erecting Enclosing Walls and Grading Grounds.................... 82
9. Additional Street Lights and Hydrants............................ 85
10. Proposed Alterations to Grounds, 1860-61.......................... 86
11. U.S. Shenandoah Canal, 1855-61............................... 87
12. U.S. Shenandoah Dam, 1855-61.................................. 90
13. Plans to Rebuilt the U.S. Shenandoah Canal, 1861................. 92

Chapter V
The U.S. Rifle Factory During the Civil War....................... 93
Buildings standing on the Upper and Lower Islands, 1866.......... 94

Chapter VI
U.S. Rifle Factory, 1866 - 1884.................................. 96
Disposal of the Upper and Lower Islands........................... 97

Chapter VII
Descriptive Catalog of the Ten Rifle Factory Buildings Standing
On the Lower Hall Island in 1859-61................................ 98

- iii -
TABLE OF CONTENTS

BIBLIOGRAPHY................................................................. 111

APPENDIX

No. 1- Survey of the Hall Rifle Factory Island for the U.S. by S. Howell Brown, February 28, 1885........................................... 121

List of Illustrations

No.

1. Sketch of U.S. Rifle Works, ca. 1853 (HF-794)........................ 60
2. Lithograph of U.S. Rifle Factory, 1857 (HF-490)..................... 67
3. Photograph of U.S. Rifle Factory, May 1865 (HF-37)................ 79

List of Maps

1. 1834 Map of Island.......................................................... 116
2. 1848 Map of Island.......................................................... 117
3. 1869 Map of Island.......................................................... 118
4. 1885 Map of Island.......................................................... 119
5. 1894 Map of Shenandoah Pulp Mill................................. 120
CHAPTER I

Repair and Improvement at the U.S. Rifle Factory, 1842-44:

The Board of Officers inspecting the Harper's Ferry Armory, in their report dated February 22, 1842, recommended that the physical plant should be rebuilt, writing:

From actual examination, and testimony on which reliance is to be placed, the board is fully impressed by the necessity of very extensive improvements, repairs, and additions to the buildings, machinery, &c. allotted to this armory; not only for the increase and quality of its productions, but for the security of those productions and of the other public property and also for the comfort and preservation of the health of the officers and workmen of the armory.

Attached to the original report were estimates for funds for permanent improvements, which have never been located in the National Archives.

Superintendent Henry K. Craig's 1843-44 construction program for the warehouse and proof house at the Musket Factory and also for the new Filer's Shop he was about to erect at the U.S. Rifle Factory on the Shenandoah River, may have been covered by the missing 1842 estimates.

Although the Board recommended generally the rebuilding of the U.S. Musket Factory and U.S. Rifle Factory plants, the Secretary of War and Ordnance Department delayed making any decision with regards to the Hall Rifle Works, perhaps waiting for the last batch of Hall rifles to be completed, which were finished in 1844. Thus during Major Craig's administration of the Harper's Ferry Armory, the vouchers of the Armory Paymaster indicate that from 1842 to 1844 only some $1,595.25 was expended for making repairs and improvements at the U.S. Rifle Factory.

Expenditures on the Physical Plant of the U.S. Rifle Factory,

<table>
<thead>
<tr>
<th>Year</th>
<th>Filing Shop</th>
<th>Repairs</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1842</td>
<td>0</td>
<td>$670.83</td>
<td>$670.83</td>
</tr>
<tr>
<td>1843</td>
<td>206.93</td>
<td>350.23</td>
<td>557.16</td>
</tr>
<tr>
<td>1844</td>
<td>335.01</td>
<td>32.25</td>
<td>367.26</td>
</tr>
<tr>
<td>Total</td>
<td>541.94</td>
<td>1,053.31</td>
<td>1,595.25</td>
</tr>
<tr>
<td>------</td>
<td>---------------</td>
<td>------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>1842</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1843</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1844</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1845</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1846</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1847</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1848</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1849</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1850</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1851</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1852</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1853</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1854</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1855</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1856</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1857</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1858</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1859</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1860</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>$93,010</td>
<td>$4,910</td>
<td>$98,920</td>
</tr>
</tbody>
</table>
FILERS SHOP, RIFLE FACTORY BLDG. NO. 1, 1843-44:

The new brick Filers Shop is Bldg. No. 4 on Map No. 2 (1848) and Bldg. No. No. 1 on the 1859 Historical Base Map. Construction on the new workshop got underway in the summer of 1843. On August 18, the mason George N. Lynch was paid a total of $179.53 for excavating 8.51 cubic yards of rock, constructing 58 perches of mortar stone foundation wall, and 71.32 perches of dry wall for the foundation of the "new workshop at the Rifle Factory." In November 1843, $27.40 was spent to purchase 1,849 feet 9 inches of yellow pine timber for use as joists in the new shop. This expenditure of $206.93 for 1843 apparently covered the total amount of work done on the structure during that year.

Construction resumed in July 1844: the mason Peter Litle received $13.12 for laying 15 more perches of dry wall and Alexander Hunt was paid $108.01 for laying 37,291 bricks in the walls and also 147 feet 7 inches of cornice; Timothy McBrierty and Redmond Burke together provided at least 99 feet 5 inches of cut stone for the building at a cost of $49.65.

The carpenters, whose vouchers have not been found, then put in the floors and framed the roof. In early October, William Bayley was paid a total of $79.23 for providing and slating 814 square feet of the new workshop's roof. Benjamin M. Snook, the tinsmith, received $25.50 for making and putting up the copper gutters and down spouting.

Finally, the ceilings and perhaps the interior walls of the new shop were lathed and plastered by James Bowen for about $85.54.

3. 3rd S., F. 630, V. 22, to Jonas Waham, Nov. 22, 1843, for $27.40.
4. 3rd S., F. 1698, V. 14, dated August 15, 1844, to Peter Litle.
5. 3rd S., F. 1165, V. 88, Aug. 8, 1844, to Alexander Hunt, for $108.01.
   This total also included 50 cents for laying one hearth.
6. 3rd Series, F. 1634, V. 8, to Redmond Burke, Oct. 28, 1844, for $8.00, for cutting 80 feet; F. 1698, V. 35, to Timothy McBrierty, Sept. 13, 1844, $41.65, for 19 feet 5 inches of cut stone and for setting steps to new shop at Rifle Factory.
7. 3rd S., F. 1934, V. 1, to William Bayley, October 10, 1844, for $79.23.
Total recorded expenditures for the files shop in 1844, exclusive of the cost of the brick and work of the carpenters, was about $335.01 and for the period 1843 to 1844, $541.94. With the unrecorded expenses included, the total cost of construction probably amounted to from $900 to $1,000.

In his annual report to the Secretary of War on the operations of the national armories, dated January 6, 1845, Lt. Col. George Talcott, Chief of Ordnance, reported: "The addition to the rifle works on the Shenandoah consist of a filing shop, two stories high, 73 by 24 feet, covered with slate, and several water wheels renewed; the whole machinery has also undergone changes and renewals consequent on the change from the manufacture of Hall's patent arms to that of the new model percussion rifle."

In his first annual report from Harper's Ferry, for the year ending June 30, 1845, Supt. John Symington provided the following description of this new Rifle Factory shop, writing:

"1. A brick workshop, one story over a high basement of stone-masonry, 74 by 25½ feet, covered with slate.

This is a finishing shop for files, and is fitted up with work benches and vices round the sides and end."

Because the relatively small number of bricks (37,291) used in a two story structure, it is probable that Major Symington's description of it as a one-story brick workshop over a high stone basement is more accurate than that provided by Lt. Col. Talcott (as a two-story brick shop).

8. 3rd S. F 1698, V. 61; to Benjamin Snook, October 10, 1844, for $25/50. This cover 14 and 3/4 days labor.

9. 3rd Series, F. 1698, V. 23, to James Bown, September 3, 1844, for $85.00; Some of this work was probably down at the Rifle Factory and the rest at the


## Construction of the Filer Shop
### at the Rifle Factory, 1843-44.

Bldg. No. 1 on 1859 Map.

<table>
<thead>
<tr>
<th>Project</th>
<th>Cost</th>
<th>Description of the Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excavation</td>
<td>$6.38</td>
<td>For excavating cubic yards of rock, foundation of shop.</td>
</tr>
<tr>
<td>Stone Foundation</td>
<td>92.27</td>
<td>for 86.32 perches of dry wall for foundation.</td>
</tr>
<tr>
<td>Stone Foundation</td>
<td>84.00</td>
<td>for laying 58 perches of mortar masonry wall, foundations.</td>
</tr>
<tr>
<td>For cut stone</td>
<td>49.65</td>
<td>For 99 feet 5 inches, including setting 19½&quot; for stone steps, balance of cost included in stone for musket factory structures.</td>
</tr>
<tr>
<td>Making and Delivering Brick ( $300.00)</td>
<td>Estimated for 40,000 bricks.</td>
<td></td>
</tr>
<tr>
<td>Laying Brick</td>
<td>83.90</td>
<td>for laying 37,291 brick</td>
</tr>
<tr>
<td>Cut Stone</td>
<td>23.61</td>
<td>for laying 147 feet 7 inches of cornice.</td>
</tr>
<tr>
<td></td>
<td>.50</td>
<td>for laying hearth.</td>
</tr>
<tr>
<td>Lumber</td>
<td>27.40</td>
<td>for 1,849 feet 9 inches of yellow pine.</td>
</tr>
<tr>
<td>Carpenter work</td>
<td>?</td>
<td>Framing floors and roof.</td>
</tr>
<tr>
<td>Slate and slating</td>
<td>79.23</td>
<td>814 square feet slated and for slate.</td>
</tr>
<tr>
<td>Copper gutter and downspouts</td>
<td>25.50</td>
<td>14 3/4 days work putting up gutters and spouts on roof; also made same, but this may not be included in this charge.</td>
</tr>
<tr>
<td>Lathing and plastering</td>
<td>85.00</td>
<td>lathing and plastering ceilings; this also includes work on workshops at Musket factory</td>
</tr>
</tbody>
</table>

**Approximate Cost** $857.44

(Probable total cost = $900 to $1,000)
Repairs at the Rifle Factory, 1842-1844:

From 1842 to 1844 Major Craig spent a total of approximately $1,053.41 to make repairs to the Rifle Factory buildings. This included $243.42 for slating; $55.11 for painting; $387.06 for zinc and scrap copper to make gutters and downspouts; and $365.82 to the stone masons to erect dry walls. The rate of expenditures for repairs was as follows:

1842: $670.83; 1843: $350.23 and $32.35 in 1844.

George W. Tracey apparently did the slating on the roofs of the rifle factory shops, receiving $226.66 for this work in 1842 and 16.76 in 1844. John P. Kennedy did glazing and painting and in 1842 received $55.11 for putting 402 panes of glass in rifle factory shops windows and for making 664 panes. John McKineize & Sons provided 1,391 feet zinc in 1842 "for covering rifle factory shops" and also 1,000 pounds of scrap copper at a cost of $387.06.

In 1843 the mason Peter Litle was paid a total of $29.61 for building 3 21/25 perches of dry wall for $4.50 and building 41 feet 4 inches of dry wall at a forebay at the rifle factory. The Mason George W. Lynch was paid a total of $320.62 during the period May to August 1, 1843 for work that was perhaps preliminary to the construction of the new filing shop. On May 25 he received $112.50 for excavating 150 cubic yards of rock. On June 17 he was next paid $37.68 for excavating rock and

File 7045, V. 42.

1. R.G.217, 2nd Series, March 28, 1842 to George W. Tracey, $88.75 for repairing slate roofs at rifle factory; 2nd Series 7654, V. 69, To George W. Tracey: October 1, 1842 for $137.91 for work from April 12 to Sept. 23, 1842, repairing roofs, putting 9 square-60 feet slate stock house roof; putting on 11 square, 82 feet slate, Smiths shop, Rifle Factory. 3rd S., F. 1698, V. 17, to George W. Tracey, August 19, 1844, $16.76, for slating rifle factory roof.

2. 2nd Series F. 7045, V. 3, To John P. Kennedy, January 21, 1842, for $55.11.

3. 2nd Series, F. 7654, V. 44, dated September 26, 1842, for $387.06.

4. 3rd Series, F. 630, November 28, 1843, for $29.63.

5. 3rd S. F. 187, V. 109C, May 25, 1843, for $112.50 to George N. Lynch.
building a stone wall." Finally, on August 1, 1843, Lynch received $170.44, for "building a wall at the Rifle Factory" which may have been part of the stone first story of the filing shop, which the vouchers show he was constructing on August 18.

Rifle Factory Dam on the Shenandoah 1842 to 1844:

The vouchers of the Armory paymaster indicate that no work was done on the Rifle Factory dam during the years 1842 to 1844.

6. 3rd Series, F. 187, Voucher 110C, June 17, 1843 for $37.68.
7. 3rd S., F 440, Aug. 1, 1843, for $170.44.
Expenditures for Repairs at the U.S. Rifle Factory, 1842-44

<table>
<thead>
<tr>
<th>Year</th>
<th>Slating</th>
<th>Painting</th>
<th>Plastering</th>
<th>Gutters &amp; Spouts</th>
<th>Carpenters</th>
<th>Masons</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1842</td>
<td>$226.66</td>
<td>55.11</td>
<td>0</td>
<td>387.06</td>
<td>0</td>
<td>2.00</td>
<td>$670.83</td>
</tr>
<tr>
<td>1843</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>350.23</td>
<td>350.23</td>
</tr>
<tr>
<td>1844</td>
<td>16.76</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>15.59</td>
<td>32.35</td>
</tr>
<tr>
<td>Total</td>
<td>$243.42</td>
<td>55.11</td>
<td>0</td>
<td>387.06</td>
<td>0</td>
<td>367.82</td>
<td>1053.31</td>
</tr>
</tbody>
</table>

(1) Slating: 2nd Series, F.7045, V.42, To George W. Tracey for $88.75 on 3/28/42; 2nd S., F.7654,V.69, to George W. Tracey for $137.91 on 10/1/42. 3rd S., F.1698, V.17, To George W. Tracey for $16.76 on 8/19/44.

(2) Painting: 2nd Series, F.7045, V.3, to John P. Kennedy, for $55.11, on 1/21/42.

(3) Gutters and spouting: 2nd Series, F.7654, V.44, to John Moikineize & Sons, for $387.06 on 9/26/42.

(4) Masons: 2nd Series, F.7354, V.20, To Henry Niswanner, for $2.00, 6/10/42, for hauling 2,000 bricks to rifle factory. 3rd Series, F.630, V.27, to Peter Little for $29.61 on 11/28/43; George W. Lynch, for $170.44 on 8/1/43, in 3rd S., F.440, V.19; 3rd S. 187, Vouch. 109C, To George N. Lynch for $112.50 on 5/25/43; 3rd S., F.187, V.110C, To George N. Lynch for $37.68 on 6/17/43. 3rd S., F.1698, To Peter Little, Voucher 14, for $13.12 on 8/15/44; 3rd S., F.1165, V.42, to Peter Little for $2.47 on 6/14/44.
U.S. Shenandoah Canal at the Rifle Factory; 1842-44:

No money was appropriated for making repairs and improvements to the U.S. Shenandoah Canal at the Rifle Factory during the period 1842 to 1844. Major Henry K. Craig, however, spent a total of $298.91 for such work at the Rifle Factory during these years, as follows:

The mason George N. Lynch was paid $170.44 during the summer of 1843 "for erecting a wall at the Rifle Factory for guard lock of Shenandoah Canal to W. & P. Railroad and for lock down same canal". Lynch erected 106.72 perches of stone wall, charging $146.74. He also filled in behind the wall with 118 14/27 cubic yards of earth embankment at a charge of $23.70.

The remaining balance, $111.47, went to William Newton for 2,286 feet 9 inches of locust timber, which was used to repair the wooden bridge over the Shenandoah Canal.

Expenditures on the U.S. Shenandoah Canal
1842 - 1844

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1842</td>
<td>$17.00</td>
</tr>
<tr>
<td>1843</td>
<td>281.91</td>
</tr>
<tr>
<td>1844</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>$298.91</td>
</tr>
</tbody>
</table>

11. 3rd S., F. 440, V. 9, to George N. Lynch, August 18, 1843, for $170.44.
12. 3rd S., F. 630, V. 59, December 30, 1843, $102.90 for the lumber and $8.57 for repairing the bridge.
### SUMMARY CHART - EXPENDITURES FOR REPAIRS AND IMPROVEMENTS AT THE HARPER'S FERRY, 1842 to 1844. Major Henry K. Craig, Superintendent

<table>
<thead>
<tr>
<th>Year</th>
<th>Musket Factory</th>
<th>Rifle Factory</th>
<th>Arsenal Square</th>
<th>Lumber Yard</th>
<th>Canals</th>
<th>Dams</th>
<th>Dwelling Houses</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1841</td>
<td>$1,892.82</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>$1,892.82</td>
</tr>
<tr>
<td>1842</td>
<td>3,353.22</td>
<td>670.83</td>
<td>18.75</td>
<td>0</td>
<td>17.00</td>
<td>1,747.43</td>
<td>606.12</td>
<td>6,413.35</td>
</tr>
<tr>
<td>1843</td>
<td>13,895.61</td>
<td>557.16</td>
<td>12.00</td>
<td>144.31</td>
<td>281.91</td>
<td>0</td>
<td>693.11</td>
<td>15,584.10</td>
</tr>
<tr>
<td>1844</td>
<td>9,351.20</td>
<td>367.26</td>
<td>75.31</td>
<td>475.64</td>
<td>1,907.03</td>
<td>0</td>
<td>745.92</td>
<td>12,922.36</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>28,492.85</strong></td>
<td><strong>1,595.25</strong></td>
<td><strong>106.06</strong></td>
<td><strong>619.95</strong></td>
<td><strong>2,205.94</strong></td>
<td><strong>1,747.43</strong></td>
<td><strong>2,045.15</strong></td>
<td><strong>$36,812.63</strong></td>
</tr>
</tbody>
</table>

(1) cost of foundations for new warehouse, 4th quarter of 1841.
In his annual report to the Secretary of War, dated January 6, 1845, Lt. Col. George Talcott reported that the buildings at the U.S. Rifle Factory on the Shenandoah at Harper's Ferry Armory, were outdated and required replacement. Talcott wrote: "Several buildings at these works require immediate reconstruction, being in a state of decay. They were originally built of perishable or inferior materials, in a cheap manner, placed on insecure foundations, and, from false economy, generally of too small dimensions..."

The estimate for the 1845-46 fiscal year requested the appropriation of $5,000.00 for "rebuilding a shop at Rifle Factory." It was explained that this would be used "For a new shop at the rifle factory in place of one now so decayed as to be unfit for use or repairs, besides being badly arranged." This requested amount was provided by Congress on March 3, 1845.

Major John Symington had replaced Major Henry K. Craig as superintendent of the Harper's Ferry Armory in November 1844. After studying the situation of the plant at the Rifle Factory in more detail, Symington wrote to Chief of Ordnance Talcott on July 24, 1845, and suggested that because of the poor condition of the Hall shops, it would be best either to abandon the site entirely, or in lieu of that, to completely reconstruct the Rifle Factory. Symington suggested:

"...the propriety of suspending the repairs or additions to the buildings at the Rifle Factory, for which funds were appropriated at the last session of Congress. From the dilapidated condition of these buildings, and their singularly inconvenient arrangement for the operations for which they were designed, I should look upon any expenditure repairs or additions to them badly applied. The principal buildings cannot be repaired without going to the foundations, in which case it would unquestionably be better to rebuild than upon a proper and systematic plan. The forebays, which an estimate was made to reconstruct of masonry and for which funds were appropriated, I am having repaired temporarily with wood to serve until some definite determination becomes to relative to the buildings generally of the Rifle Factory.

Though I am strongly inclined to believe that the best arrangement would be to construct new buildings, at the Musket Factory, to carry on the fabrication of arms other than muskets, and abandon the site of the Rifle works altogether there is room enough at the Musket works for such buildings as it would be necessary to construct to carry out such a plan; and with small expense, the water power could be made sufficient for all the operations.

Leaving out the unfit condition of the Rifle Shops, their locality, so distant from the Musket factory and the storehouses, is liable to great objection as you will know upon the source of expense in transporting materials and work back and forth, and from the greater expense of maintaining two establishments instead of one."

One minor building, the Proof House, Bldg. No. 23 on Map 2 (1848) and Bldg. No. 2, on the 1859 historical base map, was erected at the Rifle Factory in 1845 and as the cost of this structure did not exceed $750, the balance of the $5,000 appropriation was either held in reserve by Symington or used to make general repairs.

5. Harpers Ferry NHP Microfilm Reel 23, Vol. 5, p.477

In his estimates submitted to Talcott on November 30,1844, Symington in Estimate No. 7 requested $1,100.00 to rebuild with hammered stones, laid in cement, 'forebay of the turning and boring shop at the rifle factory' plus $100.00 for repairing wood forebays of other shops. Serial No. 464, Document No.43, p.16.
Lieut. Col. George Talcott, the Secretary of War, and Major John Symington arrived at the decision to completely reconstruct the entire Rifle Factory plant at some undetermined date after July 24, 1845, and prior to January 1, 1846, when the estimates for the July 1, 1846—June 30, 1847 fiscal year were submitted to Congress. This estimate included a request for $17,300 to build a huge new Finishing Shop and Machine Shop (Bldg. No. 1 on Map No. 2-1848) at the Rifle Factory. Congress appropriated this desired amount on August 8, 1846, thus launching the program to built the rifle works.

From March 3, 1845 to June 30, 1860, Congress was to appropriate a grand total of $127,943 for improving the U.S. Rifle Factory on the Shenandoah River at Harper's Ferry. This total included $98,370 for buildings, $12,703 for constructing enclosing walls, $1,500 for grading the Rifle Factory yard, $3,320 for building a new main tail race, $11,150 for work on the Shenandoah Canal and $900 for construction on the U.S. Shenandoah dam. (See Chart No. 1, page 3 for details)

**Major John Symington as an Architect:**

Major John Symington continued that practice that had been instituted by Major Henry K. Craig, namely, of insisting that the new buildings being erected at the Musket and Rifle Factories be constructed of the best materials and of the finest workmanship. Thus the 14 major workshops and storehouses designed by Superintendent Symington from 1845 to 1851 had excellent stone foundations of mortar masonry; their solid upper walls were built of brick and were trimmed with cut-stone water table, window and door sills, and coping. The door and window frames were generally of cast-iron. The gable roofs of these structures were covered with either slate or sheet iron to

7. *U.S. Statutes at Large, IX, p.69.*
lesser the danger from fire. The shops were also protected by lightning rods and roofs had copper gutters and down spouts. The exterior brick walls were also painted with two coats of oil paint and the edifices were heated by means of cost-iron coal stoves and tin and sheet iron stove pipes.

Symington applied an uniform architectural style to the exterior of his workshops and storehouses, thus rendering these structures impressive. He further used a basic floor plan that he used, with variations, in designing eight of his largest new workshops. His standard plan was for a rectangular-shaped edifice that was subdivided into three sections consisting of a center and two flanking wings. Each section had a gable roof, but the roof of the center building was set at right angles to the gable roofs of the two wings, and the center section also often projected to the rear. The plan was flexible as to length, width, and height.

Symington’s three-part structures varied length from 60 to 280 feet and in the width of the wings from 35½ to 36 feet. The number of stories in these three-part buildings also varied as follows: All three-sections of Musket Factory Blg. No. 14 and Rifle Factory Bldgs. No. 5 and 6 were one-story in heights. Musket Factory Bldgs. No. 8 and 13 had two-story sec center sections with flanking one-story wings. Finally, Musket Factory Bldg. No. 6 and Rifle Factory Bldg. No. 3 were two-stories in height in all three sections.

The exteriors of these eight-three-part buildings as well as those of the six that he designed on a simpler rectangular floor plan were treated architectural in the same manner. The gable ends of all these edifices as well as the front and rear gables of the centers of the three-part structures, were adorned with brick parapet walls that were crenelated, capped with cut-stone coping, and that rose above the level of the ridges of the roofs.
The first stories of all these Symington-designed buildings were subdivided into arcaded bays. Each bay was comprised of a round arch that was supported by capped brick pilasters. Recessed within each bay was a brick panel that usually contained either a round-arched window or door. The second stories of the two-story edifices were subdivided in rectangular bays with flat arches which were also set between brick pilasters. Recessed within each of these bays was a brick panel that contained a window that was topped with a flat arch.

All of the later major structures to be erected at the U.S. Musket and Rifle Factories at Harpers Ferry from 1852 to 1861 were to be designed in this same architectural style.

At the Musket Factory, Major Symington designed and constructed 10 major and one minor buildings. At the Rifle Factory he designed four major shops, erected three of them, and also built one minor edifice. The detailed appropriations and recorded expenditures for the construction of Rifle Factory buildings from 1845 to 1851 are given on Charts No. 2 and 3, which follow:
### Chart No. 2

**Appropriations for Repairs and Improvements at U.S. Rifle Factory, 1845-1851**

(Includes Machinery earmarked for definite shops).

<table>
<thead>
<tr>
<th>Year</th>
<th>1847-48</th>
<th>1848</th>
<th>1849-51</th>
<th>1851-52</th>
<th>1852-53</th>
<th>Total</th>
<th>Repair Bldgs, Mac</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Proof House</td>
<td>Finishing Shop</td>
<td>Main Tilt Race</td>
<td>Hammer &amp; Smiths shop</td>
<td>Furnace-Proof House</td>
<td>Machine Shop</td>
<td>Fencing, Force Pump</td>
</tr>
<tr>
<td>1845</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1846</td>
<td>17,300.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1847</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1848</td>
<td></td>
<td>3,320.00</td>
<td>22,130.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1849</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1850</td>
<td>9,580.00</td>
<td></td>
<td></td>
<td></td>
<td>16,980.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1851</td>
<td></td>
<td></td>
<td></td>
<td>5,100.00</td>
<td></td>
<td>2,140.00*</td>
<td></td>
</tr>
<tr>
<td>(1) TOTAL</td>
<td>(5,000.00)</td>
<td>26,880.00</td>
<td>3,320.00</td>
<td>22,130.00</td>
<td>5,100.00</td>
<td>16,980.00</td>
<td>2,140.00*</td>
</tr>
</tbody>
</table>

(1) Estimate cost of Proof House—$750.00—money, balance, may have been used at Musket Factory.

* 1851—$1,610.00 for purchase of force pump.

—$530.00 for fencing.

—$2,140.00
<table>
<thead>
<tr>
<th>Year</th>
<th>Bldg. 2</th>
<th>Bldg. 3</th>
<th>Bldg. 4</th>
<th>Bldg. 5</th>
<th>Bldg. 6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Proof House</td>
<td>Finishing &amp; Tilt Hammer &amp; Forging Shop</td>
<td>Annealing House &amp; Proof House</td>
<td>Machine Shop</td>
<td>Total for Buildings</td>
</tr>
<tr>
<td>1845</td>
<td>(750.00)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>(750.00)</td>
</tr>
<tr>
<td>1846</td>
<td>56.49</td>
<td></td>
<td></td>
<td></td>
<td>56.49</td>
</tr>
<tr>
<td>1847</td>
<td>5,434.00</td>
<td></td>
<td></td>
<td></td>
<td>5,434.00</td>
</tr>
<tr>
<td>1848</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1849</td>
<td>111.07</td>
<td>5,898.09</td>
<td></td>
<td></td>
<td>6,009.16</td>
</tr>
<tr>
<td>1850</td>
<td>34.56</td>
<td>1,379.61</td>
<td>1,611.81</td>
<td>68.50</td>
<td>3,094.48</td>
</tr>
<tr>
<td>1851</td>
<td>46.50</td>
<td>1,469.28</td>
<td>2,789.86</td>
<td>829.86</td>
<td>5,135.50</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$750.00</td>
<td>5,682.62</td>
<td>8,746.98</td>
<td>4,406.67</td>
<td>898.36</td>
</tr>
<tr>
<td>Approb. Building</td>
<td>10,800.00</td>
<td>5,100.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Machinery</td>
<td>16,080.00</td>
<td>22,130.00</td>
<td>16,980.00</td>
<td>76,090.00</td>
<td></td>
</tr>
</tbody>
</table>

(1) for board fencing, March 3, 1851.
(2) for constructing new main tail race.
1. **PROOF HOUSE, RIFLE FACTORY BLDG. NO. 2.**

Major John Symington, the new superintendent of the armory, who reported for duty in November 1844, probably erected as his first structure at Harper's Ferry, a new proof house (Bldg. No. 23 on Map No. 2(1848)) at the Rifle Factory in early 1845. Symington described this building in his annual report for the year ending June 30, 1845 as follows:

"A wooden proof house for proving barrels, 19½ by 15 feet, with back wall of stone masonry, 2½ feet thick, erected at the Rifle Factory." The cost of construction has been estimated at $750.00. No vouchers have been found that can be definitely associated with the construction of the proof house.

On April 30, 1845, however, $98.29 was paid to the stone cutter Timothy McBriety for providing $167 9/12 feet of cut stone as follows:

- $72.13 cutting and furnishing 115 5/12 ft water table.
- 26.16 " " " 52 4/12 feet of cornice.
- $98.29 total 167 9/12 lin. ft. (3)

The material was to be used in the construction of new buildings at the armory and rifle factory.

3. 3rd S., F. 2747, Vo. 13, April 40, 1845, for $98.29.
Bldg. No. 3-

2. The New Finishing and Machine Shop, Rifle Factory, 1847-48

The new Finishing and Machine Shop is Bldg. No. 1 on Map No. 2 (1848) and Bldg. No. 3 on the 1859 Historical Base Map.

In the estimates for the 1846-47 fiscal year Major John Symington requested a grand total of $17,300.00 to erect and equip with machinery a new finishing and machine shop at the rifle factory, as follows:

$10,800.00 for building "new finishing and machine shop," explaining the old shop is unsufficient for the purpose, and the walls are giving way, having been badly built on insecure foundations."

"$2,300.00 for Line of working shafts for this shop."

"$4,200.00 for Water wheels and forebays at this shop," commenting, "The forebay and wheels of the old shop are entirely rotten. Permanent stone forebays should be made for the new shop."

Congress appropriated the requested total of $17,300.00 on August 8, 1846.

Construction on the new structure got underway in late 1846.

On December 12, 1846 the carpenter Jesse Schofield was paid $56.49 for 838 square light sashs for the proposed finishing shop. On January 2, 1847, the mason Peter Litle received $959.57 for performing the following work on "a new tail race to the new finishing & Machine Shop at Rifle Factory:"

$401.40 for constructing 267 15/25 perches of dry wall for side wall of culvert.
80.28 for constructing 53 13/25 perches dry wall for projecting walls to support arch of culvert.
180.60 for constructing 120 10/25 perch dry wall on top of culvert.
55.79 for excavating 139 13/27 cubic yards of rock for wall foundations.
195.60 for excavating 652 cubic yards of earth for foundation.
45.90 for constructing 30 15/25 perch of dry wall, repair of waste gate.

$959.57 (5)

2. Ibid., Item No. 16.
3. Ibid., Item No. 17.
5. 3rd S., F. 4837, V.37, Dec.12,1846 for $56.49.
6. 3rd S., F. 4967, V.9, January 2,1847, for $959.57.
During the winter of 1846-47, material needed to erect the new buildings at both the musket and rifle factories were acquired. On March 26, 1847, 15,996 pounds of cast-iron door and window frames were purchased from T.W. and R. E Smith for $2,496.54. On June 10, 1847, Joseph Roman, Jr. & Co. also provided 14,276 pounds of sheet iron that was to be used for roofing the new structures for $892.25.

The mason Peter Litle resumed his work on the foundations of the shop in March or April 1847 and on May 8 of that year received $1,085.64 for the following construction on the foundations and tailrace:

May 8, 1847- $64.60 for excavating and removing 358 25/27 cubic yards of earth.
971.25 for constructing 555 perches of stone mortar masonry.
38.54 for puddling in rear (?) above wall 214 3/27 cubic yard.
1,074.39 (9)

July 2, 1847 11.25 For labor of driver, 3 horses, and wagon hauling material 3 3/4 days.

$1,085.64

Superintendent Symington described the progress of this construction in his annual report for the year ending June 30, 1847 as follows:

"At Rifle Factory: Foundation up to water table of new finishing shop, 130 by 35½ feet, with two wings, 24 by 24 feet completed."

He also noted that "A main tail race, to receive the waste water from the different wheels, 10 feet wide, 6 feet high, and covered over; side walls 2½ feet thick, of large stones, has been commenced, and 223 feet in length completed."

Archeological work conducted in 1959 revealed that this tail race ran parallel with and in rear of the new finishing and machine shop. Cost of the tail race and foundation, constructed by Peter Litle, was approximately $2,044.61.

7. 3rd S., F. 4967, V. 1, March 26, 1847, for $2,496.54.
8. 3rd S., F. 5623, V. 37, June 10, 1847, for $892.25.
9. 3rd Series F. 5623, V. 19, May 8, 1847, for $1,074.39.
10. 3rd S., F. 5623, V. 48, July 2, 1847, for $11.25.
12. Ibid., Item No. 1.
The Paymaster's vouchers for the 3rd and 4th quarters of 1847 and all four quarters of 1848 are missing from the National Archives Record 217 file, so that it is impossible to provide details on the construction during this period. In his annual report for the fiscal year ending June 30, 1848, however, Major Symington announced that the new structure had been completed and described the building as follows:

"The new furnishing shop, at the rifle factory, has been completed. This shop is 128 by 35½ feet, two stories, brick, with two wings, one-story each 24 by 24 feet. The door and window frames are of cast iron, the foundation stone masonry, cut stone water table, cornice, and sills, and copper gutters and spouting - all roofed with sheet iron."

Under the heading of machines and machinery constructed at the rifle factory, the superintendent further reported: "One 6-feet diameter turbine wheel, with main driving gear and drums. Stone forebay, with penstocks and gate completed, and ready to drive the machinery in one wing of the new finishing shop.

"The main line of working shafts, with counter shafts, on the two ors of both wings of this new shop, will be completed in a few more weeks. When completed, the various cutting, drilling, barrel boring, and turning machines with the stocking machines and polishing wheels, now in operation in the old, will be gradually transferred to the new finishing shop, after undergoing such modification and improvement as they require. The change of position will be so arranged that no interruption will occur in the operations."

In the estimates for the 1848-49 fiscal year Symington requested $3,320.00 "for completing the main tail-race, re-constructing the guard lock and gates, cleaning the canal and walling it in front of the shops at the rifle factory." He explained "The old works at this place have given out, the gates and

"sills being entirely decayed. This work has been commenced from the necessity of the case, and the amount estimated is necessary for its completion."

The money for this project was appropriated on August 14, 1848; however, it is possible that most of this work was already done by June 30, 1848, for in his annual report, Symington noted: "At rifle factory: "New guard gates, with feeders, with new substantial walls of Masonry, have been constructed for the armory canal which ran in front of the shops."

In his annual report for the fiscal year ending June 30, 1849, Major Symington reported with regards to the finishing shop, under the heading of "machinery": "Two 6 feet turbine water wheels, with cemented stone forebay put up in operation. 24 feet of pit gearing, 1,930 feet main line and 329 5/12 feet counter-driving machinery, with fixtures complete, put up and in operation."

These were probably put in the new finishing shop. He further commented: "...at the rifle factory all the cutting machines for components, the barrel-boring, turning and rifling machines, together with the whole of the stocking machines, have been transferred to the new finishing shop, and are, generally, in operation. The old buildings which accommodated these operations (Namely Bldgs. No. 12, 13, and 18 on Map No. 2 1848) are now taken down, preparatory to the erection on the site of a new shop (Bldg. No. 4 on 1859 Historical Base Map), for tilt hammers, and forging, and swedging."

During 1849 a total of $111.07 was expended making final touches to the finishing shop. George W. R. Seale, February 20, 1849, was paid $15.31 for painting, "2 coats, 122½ square yards, new finishing shop." Mrs. Margaret Kreps earned a total of $11.42 for making 74 cotton window curtains for the new finishing shop in 1849.

20. 3rd S., F. 9093, V. 22, February 20, 1849, for $15.31.
21. 3rd S., F. 9093, March 28, 1849, $4.32 for 13 curtain; F. 9307, V. 48, June 30, 184, $4.80 for 48 curtain; and F. 9895, V. 74, $1.30 for 13 curtains.
The brick mason William Collins, who probably erected the brick walls of the structure in 1847-48, received $84.34 in 1849 for performing the following work: $53.52 for hauling bricks, providing scaffolding, drill for cutting window in front gable, new finishing shop, Rifle Factory.

Feb. 23, 1849 84.34. in 1849 for performing the following work: $ 53.52 for hauling bricks, providing scaffolding, drill for cutting window in front gable, new finishing shop, Rifle Factory.

Aug. 31, 1849 4.87 for mason for 2 days=$ 4.00, for tender and materials finishing window= 87 cents. 23.

Nov. 29, 1849 25.95 for new driving machinery at finishing shop.

$3.90 for excavation of 13 cubic yards of earth.

20.93 for laying 3,984 bricks and laying 4 4/9 square yards of brick, latter at 55 cents.

1.12 for 3/4 days work of horse, cart and driver.

Project included cutting a hole through stone wall and building brick walls beneath the shop for a band(?) to run. 24.

$84.34

Total cost of construction of the new finishing shop, exclusive of machinery, was probably about $10,800.00, for the forebays and water wheels, $4,200.00, and of the new tail race, $3,320.00.

On December 3, 1850 the tinsmith Alexander S. Vernon was paid $34.56 for providing and installing 518 feet of cast iron stove pipe to heat the finishing shop.

In 1851 $46.50 was spent to improve the shop: On May 26, 1851 Margaret Kreps received $1.20 for making 12 window curtains of muslin for new finishing shop, Rifle Factory.

Finally, in June 1851, lightning rods - 4 points and three leads to the ground, were installed on the roof of the finishing shop at a cost of $45.30. The exterior brick walls of the new finishing shop also probably received "two coats of patent paint, in oil", as did the walls of all the shops at the musket and factory factories, "except three not yet completed."

22. 3rd S., F. 9093, V. 23, February 21, 1849, for $53.52.
23. 3rd S., F. 9895, V. 23, August 31, 1849, for $4.87.
24. 3rd S., F. 10276, V. 13, for $25.95, November 29, 1849.
25. 3rd S., F. 12169, December 3, 1850, for $34.56.
26. 3rd S., F 12680, V. 21, May 26, 1851, for $1.20.
27. 3rd S., F. 12680, V. 69, to Decker and Robinson, July 3, 1851, for $45.30.
The new finishing shop, in its architectural design, was the same as that of the new buildings that Symington was also erecting at the musket factory. First story elevations with divided into bays with recessed panels set within round arches that were supported by capped pilasters. Second-story bays were rectangular, with flat arch topped windows set in recessed bays. The parapet end walls, crenelated and topped with cut-stone coping, arose above the gable roofs at the ends. The structure was also divided into three equal sections comprised of a center building and two wings. The gable roof of the center, parapeted on the front and rear elevations, ran at right angles to the gable roofs of the two wings.

In his estimate for the 1850-51 fiscal year, Major John Symington was forced to request an additional appropriation of $9,580.00 "To complete the finishing shop at the rifle factory." He explained:

When the estimate for this building was made, it was supposed that the driving machinery, which was in use, would answer to be put up in the finishing shop. It has been found that very little of it was serviceable, and that it was necessary to provide a much greater quantity of this machinery than was supposed to be requisite. This, with the fitting up benches, forms, closets, &c., in this shop, has overrun the original estimate, and makes the amount of this item requisite for completing the shop.

Congress appropriated the requested amount on September 28, 1850, and this brought the total cost of construction to $11,880 for machinery, $15,000 for the structure, forebays and water wheels, Total-$26,880.00, plus $3,320.00 for constructing a new main tail race that was to serve all of the new shops.

29. Serial No. 568, Document No. 4, p. 156, 157, item No. 8.
30. U.S. Statutes at Large, IX, p. 507.
Construction of the Finishing and Machine Shop, Rifle Factory, 1847-48, Bldg. No. 3

Records missing for period of Project Description of Work July 1, 1847 to December 31, 1848.

<table>
<thead>
<tr>
<th>Project</th>
<th>Cost</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tail Race</td>
<td>$ 195.60</td>
<td>for excavation of 652 cubic yards of earth</td>
</tr>
<tr>
<td></td>
<td>$ 55.79</td>
<td>for excavating 139 13/27 cubic yards of rock for foundations</td>
</tr>
<tr>
<td></td>
<td>$ 661.28</td>
<td>for constructing 441 13/25 perches of dry wall, sides and top of culvert.</td>
</tr>
<tr>
<td></td>
<td>$ 45.90</td>
<td>for constructing 30 15/25 perch dry wall, repair of waste gap</td>
</tr>
<tr>
<td></td>
<td>$ 959.57</td>
<td>to mason Peter Little. 1847</td>
</tr>
<tr>
<td>Foundations of main bldg &amp; two wings</td>
<td>$ 64.60</td>
<td>for excavating 358 25/27 cubic yards of earth.</td>
</tr>
<tr>
<td></td>
<td>$ 971.25</td>
<td>for constructing 555 perches of mortar masonry foundation walls.</td>
</tr>
<tr>
<td></td>
<td>$ 38.54</td>
<td>for puddling 214 3/27 cubic yards.</td>
</tr>
<tr>
<td></td>
<td>$ 11.25</td>
<td>other</td>
</tr>
<tr>
<td></td>
<td>$ 1,085.64</td>
<td>To mason Peter Little, 1847</td>
</tr>
<tr>
<td>For two wheel pits for 6 feet turbines</td>
<td>?</td>
<td>located in rear wings, one to each wing. Probably built by Peter Little.</td>
</tr>
<tr>
<td>Cut stone</td>
<td>?</td>
<td>cut stone for water table, sills, and coping probably furnished by stone cutter Redmond Burke.</td>
</tr>
<tr>
<td>Bricks</td>
<td>?</td>
<td>bricks probably made and transported by William Collins.</td>
</tr>
<tr>
<td>Brick laying</td>
<td>?</td>
<td>brick walls in 1847-48, probably put up by William Collins</td>
</tr>
<tr>
<td></td>
<td>$ 84.35</td>
<td>in 1849 to William Collins for laying 14,688 bricks, cutting window in front gable and cutting hole through stone wall and building brick walls beneath shop.</td>
</tr>
<tr>
<td>Sheet iron Roofing</td>
<td>?</td>
<td>probably installed by William Volkmar.</td>
</tr>
<tr>
<td>Copper gutters and spouts</td>
<td>?</td>
<td>probably installed Benjamin or Dennis Snook, or Henry V. Edwards.</td>
</tr>
<tr>
<td>Heating System</td>
<td>$34.56</td>
<td>518 feet of cast iron stove pipe, Alexander S. Venmon.</td>
</tr>
<tr>
<td>Cast iron window and door frames</td>
<td>$2,496.54</td>
<td>for 15,996 lbs for use on many shops, 1847.</td>
</tr>
<tr>
<td>Sheet iron roofing</td>
<td>$892.25</td>
<td>for 14,276 lbs for roofing many shops. 1847.</td>
</tr>
<tr>
<td>Window curtains</td>
<td>$13.62</td>
<td>for 86 cotton and muslin window curtains, Margaret Kreps.</td>
</tr>
<tr>
<td>Lightning rods</td>
<td>$45.30</td>
<td>for 4 points and 3 leads to ground. 1851</td>
</tr>
<tr>
<td>Painting</td>
<td>$15.31</td>
<td>for painting, 2 coats. 122½ square yards, G.W.R. Seale.</td>
</tr>
</tbody>
</table>

1847-51:                    | $5,627.14 | Water wheels & forebays: 4,200.00; Machinery: 11,880.00.                   |
| Total:                      |          | Total cost: Bldg: 10,800.00 Grand Total: $26,880.00.                      |
| Addition in 1857:           | $2,8620.00 | new water wheels, 1856: $2,050.00.                                         |
The new tilt hammer and forging shop is Building No. 4 on the 1859 Historical Base Map.

In his estimate for the 1848-49 fiscal year Major John Symington requested $22,130.00 "for constructing new tilt-hammer and forging shops, with stone forebays, turbine wheels, tilt-hammers, working shafts and fan blast at the rifle factory." To explain the need, he wrote: "The old shops for these purposes, with their forebays and water-wheels, are in a ruinous condition, and must be renewed as soon as it can be done. They are also distant from each other, and each has its own driving wheel and gear, requiring much expense to keep them in repair."

The amount asked for was appropriated by Congress on August 14, 1848. The paymaster's vouchers for the 3rd and 4th quarters of 1848 are missing from the National Archives Record Group 217, so that it is not known what steps, if any, were taken in 1848 towards erecting the new tilt shop. Except for the possibility of purchasing building materials in 1848, the extant vouchers for 1849 suggest that actual construction of the tilt hammer and smiths shop did not get underway until the fall of 1849.

In his annual report for the fiscal year ending June 30, 1849, Superintendent Symington wrote: "The old buildings which accommodated these operations (cutting machines for components, barrel-boring, turning and rifling machines, as well as the stocking machines) are now taken down, preparatory to the erection, on the site, of a new shop for tilt hammers, and forging and swedging."

2. U.S. Statutes at Large, IX, p. 306.
In the summer of 1849 the following workshops shown on Map No. 2 (1848), were probably torn down to clear the site for the new building:

- Bldg. 9 - Rod Tilt Shop (1831).
- Bldg. 13 - Bell Shop (Stockers and Machinery) 1808-09.
- Bldg. 15 - House for Steaming Stocks.
- Bldg. 18 - Drill Shop (1836).

During 1849 359 8/12 feet of cut stone was purchased from Redmond Burke for $306.73 for use on the new rifle factory shop. This included the following items:

- $87.59 for 129 feet of cut stone window sills.
- 180.14 for 152 8/12 ft of cut stone coping.
- 39.00 for 78 feet of cut stone steps.
- $306.73 for 359 8/12 feet

On December 10, 1849, the stone mason Edward Tearney received $3,689.52 for constructing the stone foundations and forebay of the new shop. The foundations, costing $2,530.68, required the following construction:

- $252.00 for excavating and removing 840 cubic yards of earth.
- 75.00 for excavating and removing 175 cubic yards of stone.
- 1,934.80 for constructing 967 10/25 perches of stone mortar masonry for the foundation walls.
- 134.40 for constructing 1,344 feet stone wall face hammer, foundations walls.
- 40.70 for setting 407 feet of cut stone water table, window sills.
- 15.10 for making 60 18/27 cubic yards of embankment.
- 7.00 for service of stone mason, 3½ days, fitting corners of water table, sills, and steps at $2.00 per day.
- 71.68 for grouting front wall of building, 71 17/25 perches, with hydraulic cements.

$2,530.68 subtotal, cost of foundation.

The new stone forebay cost $1,198.78, and included the following work:

4. 3rd S., F. 9895, V. 8, July 24, 1849, $266.37 for 301 2/12 ft of cut stone.
5. 10276, V. 39. December 11, 1849, for $40.36 for 58½ ft of cut stone.
6. Ibid., $3,689.52.
$133.80 for removing 446 cubic yards of earth for forebay.
924.72 for constructing 348 5/15 arches heavy stone masonry laid in hydraulic cement walls of forebay.
15.16 for 189 7/12 feet of stone covering (coping)
98.60 for 986 feet of stone wall face hammered.
26.50 for puddling site of forebay.
$1,198.78-subtotal, cost of forebay.
-39.94 minus $39.94

$3,689.52 total paid to Edward Tearney in 1849 for work on tilt shop.

On November 29, 1849 the mason William Collins was paid $1,901.84 for erecting the brick walls of the shop. This included the following construction:

$1,127.59 for making and delivering 137,511 bricks.
687.55 for laying 137,511 bricks in the walls of the shop.
44.42 for setting 341 9/12 feet of cut stone (sills, etc.)
.50 for ½ days services of mason putting in and cutting for stove pipe
41.78 for other service.

$1,901.84 (7)

Total expenditures for construction of the new shop in 1849 came to $5,898.09.

On April 26, 1850, the carpenter Jesse Schofield received $510.34 for the following carpenter work on the tilt hammer shop:

$316.74 for framing roof, 4,378 feet.
36.54 for sheathing the roof, 4,875 feet.
99.60 for making 1,328 lights of square sash, fitted and hung.
57.46 for making 676 lights of circular sash, fitted and hung.

$510.42. (8)

The slate roof went on the building in February because on March 8, 1850, the slater George W. Tracey received $116.13 for performing the following work:

$105.72 for slating roof of new tilt hammer & smiths shop, 5,286 feet.
6.12 for 3½ days work putting on snow fenders.
4.29 for taking off old slate roof, 858 feet.

$116.13 (9)

Copper gutters and spouts also went up in February, for on March 1, 1950 the tinsmith Henry W. Edwards was paid $31.40 for putting 79 feet of copper.

(7) 3rd S., F. 10276, V. 33, November 29, 1849, for $1,901.84.
8. 3rd S., F. 11000, 10, April 26, 1850, for $510.34.
spouting and 172 feet of copper gutters on the new shop.

On May 15, 1850, the mason William Collins received $11.36 for labor and furnishing scaffolding, mortar, and attendent:

- $8.64 for laying 1,728 brick.
- $2.72 for laying 175 feet of brick cornice on the shop.
- $11.36 (11)

On May 16, 1850 the painter George W. R. Seale was paid $105.20 for priming and glazing 2,104 light sash for the new rifle factory shop.

The 30th of May James L. Ames of Boston, Mass., received $1,156.98 for making and delivering one four-foot turbine water-wheel, fixtures, with cast-iron forebay and penstock.

In his annual report for the fiscal year ending June 30, 1850, Major Symington described the progress of construction as follows:

"Rifle Factory:...The new tilt-hammer shop, 110 feet long by 35½ feet wide, the centre projecting in the rear 14½ feet, for office for foreman, has been put up. This building is one story, of brick, over a stone basement, with cut-stone water-table, steps, sills, and coping, cast iron door and window frames, and covered with slate. This shop will be completed in a few weeks - the laying of the floor, paving the basement, and putting in window sash, being all that is required to finish it."

Under machinery, he further commented: "1 cast-iron turbine wheel, with cast-iron flume, placed in position, ready for use, in new tilt hammer shop, rifle factory; and stone forebay of heavy faced masonry, completed."

10. 3rd S., F. 10673, V. 18, March 1, 1850, for $31.40.
11. 3rd S., F. 11000, V. 24, May 15, 1850, for $11.36.
12. 3rd S., F. 11000, V. 22, May 16, 1850, for $105.20.
13. 3rd S., F. 11000, V. 39, May 30, 1850, for $1,156.98, this included the cost of freight from Boston, which amounted to $26.68.
Work continued on the tilt hammer shop in 1850. On October 22, 1850 George W. Seale received $67.09 for furnishing and painting 536 7/9 square 2 coats, sash and frames at new tilt hammer and smiths shop at rifle factory."

On December 20, 1850 the slater William Bayley was paid $350.00 for providing the material and "for slating 53 squares of slate roofs of new buildings", which we have charged to this account. The brick mason William Collins also returned to do some minor work: he received $15.00 in November for providing the following services:

- $11.00 for 5½ days work of brick mason.
- $4.00 for 3 days work of laborer and 1 load of mortar.
- $15.00 (16)

The stone mason Edward Tearney also put in the brick floors for $178.59 in December, 1850. This involved the following construction:

- $91.09 for 364 10/27 cubic yards of earth to fill in basement.
- 55.00 for paving 275 square yards with brick pavement.
- 24.00 for constructing 12 perch masonry for piers for girders.
- 4.50 for 2 days work of mason underpining joists and girders.
- 4.00 for 2 days work of laborer and 2 cart loads of mortar.

$178.59 (19)

A total of approximately $1,379.61 was spent on the construction of the tilt hammer and smiths shop during 1850, exclusive $1,156.98 expended on the purchase of a turbine wheel.

On January 28, 1851, George W. Tracey was paid $16.28 for taking off the old slate roof of the old tilt hammer shop, 3,257 feet, at the rifle factory.

The Old Tilt Hammer Shop, Bldg. No. 7 on Map No. 2 1848(), had been erected in 1837-38 and was now being demolished to clear the ground for the construction of a new machine shop.

16. 3rd S., F 12169, V. 2, October 22, 1850, for $67.09.
17. 3rd S., F. 12169, V. 40, December 20, 1850, for $344.50.
18. 3rd S., F 12169, V. 20, November 30, 1850, for $15.00.
19. 3rd S., F. 12169, V. 43, December 20, 1850, for $178.59.
20. 3rd S., 12169, V. 6, January 28, 1851, for $16.28.
The tinsmith Dennis Snook was paid a total of $50.35 for making and installing tin blast pipe in the new shop. This included the following work:

- $10.30 for 51½ feet hammered tin blast pipe.
- $1.65 for 11 feet of tin pipe.
- $0.75 for other services.

$12.70 January 20, 1851 (21)
$37.65 May 19, 1851 for "tin blast pipe", (22) (119½ feet, put up).
$50.35 for 182 feet of tin pipe.

The carpenter Jonthan Renner was paid $70.00 for "making the frame, sash, and [3] doors, complete and fitting up of three openings in the centre and wings of the new tilt hammer shop, Rifle Factory." The largest door was apparently located in the center as this cost $30.00. Each of the doors in the wings cost only $20.00 a piece.

During the spring of 1851 the roof of the shop was apparently altered to install three ventilators and this section then had to be reslated.

On June 30, 1851 the carpenters Meen & Brewing received $145.02 for executing the following carpenter work:

- $120.00 for constructing" three lanterns or ventilators 8 feet long and 5 feet wide on roof of new tilt hammer and smiths shop.
- $25.02 for erecting and finishing a partition including sash door 8 feet high, 3,235 feet of plank.

$145.02 (24)

On August 16, the slater George W. Tracey was paid $36.51 for performing the following services: $5.40 for slating 270 feet roof of new tilt hammer shop.

$31.11 for removing slate roof of old building, 6,233 feet,

$36.51 (25)

This indicates that additional old workshops at the rifle factory were being demolished.

21. 3rd S.F. 12169, V. 77, January 20, 1851 for $12.70.
22. 3rd S., F. 12680, V. 5. May 19, 1851, for $37.65.
23. 3rd S.F. 12169, V. 11, February 11, 1851, for $70.00.
24. 3rd S., F. 12680, V. 52, June 30, 1851, for $145.02.
25. 3rd S., F12680, V. 14, August 16, 1851, for $36.51.
In June 1851 lightning rods, three points and two leads to the ground, were installed on the roof of the new tilt hammer and smiths shop at the rifle factory at a cost of $29.55.

Finally, the stone mason Edward Tearney returned in the spring of 1851 to construct the wheel pit and tail race, the foundations for the drop and tilt hammer, and install foundations for 14 anvil blocks at a cost of $1,121.57. This included the following construction:

For wheel pit and tail race:
- $23.50 for 78 9/27 cubic yard excavation of earth.
- 40.29 for excavation of 80 16/27 cubic yards in water.
- 412.80 for erecting 275 5/25 perches dry mason.
- 84.32 for 42 4/25 perches cement masonry.
- 60.00 for 60 superficial feet circular cut stone.

Total: $620.91 (31) April 21, 1851.

For Foundation drop and tilt hammer:
- 32.66 for 108 24/27 cubic yard of earth excavation.
- 432.00 for erecting 216 perches of cement masonry.

Total: $464.66 (32) April 21, 1851.

Foundation stones for anvil blocks
- $28.00 for placing in position 14 foundation stones for anvil blocks. (33)
- 8.00 for cut stone bases for 4 anvil blocks. (34)

Total: $36.00

A total of approximately $1,469.28 was expended on the construction of the new tilt hammer and smiths shop in 1851 and the total cost of construction from 1849 to 1851 was about $8,746.98.

In his annual report for the year ending June 30, 1851, Superintendent John Symington announced: "The trip-hammer and smith's shop, partially completed and described in the last report, is now completed and occupied. There are five trip hammers (belt) in operation in this shop; the forges, nine in number, are all of cast iron, and one cast-iron turbine wheel will suffice for all the machinery.

30. 3rd S., F. 12680, V. 69, to Decker and Robinson, July 3, 1851, for $29.55.
31. 3rd S., F. 12680, V. 5, April 21, 1851, for $620.91.
32. 3rd S., F. 12680, V. 5, April 21, 1851, for $464.66.
33. 3rd S., F. 12680, V. 33, June 24, 1851, for $28.00.
34. 3rd S., F. 12680, V. 54, June 30, 1851, for $8.00.
"designed for this building." Under the heading of "Machinery fabricated complete" at the rifle factory, Major Symington gave the following additional details on the new shop:

"22½ lineal feet pit-gears and shafting (made) in new tilt and forging shop. 65 lineal feet main-line " " " " " " 5 " counter-line " " " " " " 2 trip-hammers (belt) for forging barrels, rods, screws, &c.

Fabricated under appropriation for "repairs and improvements,"

9 cast-iron forges, with sheet-iron bonnets and smoke-flues, complete, in new tilt and smith's shop.
1 cast-iron furnace and flue for heating iron and steel, in new tilt and smith's shop.
102 feet of 8-inch tin blast pipe, in same shop.
80 feet of 6 inch tin blast pipe, " " "

"Remarks:

In the new tilt and smith's shop, anvil-blocks of oak timber have been placed in position at each of the forges, and the floor of the building covered with stout sheet-iron. Nine cast-iron forges and fixtures have been placed in position, complete, together with furnace for heating iron and steel for tilting. One fan-blast, and pipe conducting blast to forges, have been placed in position, complete; the whole being now in working order.

Under the heading of "Machines purchased," Symington listed "1 regular for water-wheel" and "1 factory force pump (five plungers,) and fixtures."

These were probably acquired for use in the new tilt hammer and forging shop.
<table>
<thead>
<tr>
<th>Project</th>
<th>Cost</th>
<th>Description of work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cut Stone</td>
<td>$306.73</td>
<td>129 linear feet of window sills. 158 8/12 linear feet of coping 78 linear feet of stone steps. 359 8/12 linear feet of cut stone. Redmond Burke.</td>
</tr>
<tr>
<td>For brick</td>
<td>1.136.23</td>
<td>for making and delivering 139,239 bricks. William Collins</td>
</tr>
<tr>
<td>For laying brick walls</td>
<td>791.97</td>
<td>for laying 139,239 bricks in walls. for laying 175 feet of brick cornice for setting 341 9/12 linear feet of cut stone sills, coping. Paid to William Collins</td>
</tr>
<tr>
<td>Subtotal:To William Collins:</td>
<td>$1,928.20</td>
<td>1849-50.</td>
</tr>
<tr>
<td>Stone Foundations</td>
<td>$2,530.68</td>
<td>for excavating and removing 840 cubic yards of earth. for excavating and removing 175 cubic yards of stone. for constructing 967 10/25 perches of stone mortar mason for the foundation walls. for 1,344 feet stone wall face hammerd, foundations walls. for setting 407 feet of cut stone water table, window sill for making 60 18/27 cubic yards of embankment. for service of stone mason, 34 days, fitting corners of water table, sills, and steps at $2.00 per day. for grouting front wall of building, 71 17/25 perches, with hydraulic cements.</td>
</tr>
<tr>
<td>To Edward Tearney:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For stone forebay:</td>
<td>1,198.78</td>
<td>for removing 446 cubic yards of earth for forebay. for constructing 308 6/25 perches heavy stone masonry laid in hydraulic cement. Walls of forebay. for 189 7/12 feet of stone covering (or coping?) for 986 feet of stone wall face hammerd. for puddling site of forebay.</td>
</tr>
<tr>
<td>For Wheel Pit and Tail Race-</td>
<td>620.91</td>
<td>for for 78 9/27 cubic yard excavation of earth. for excavation of 80 16/27 cubic yards in water. for erecting 275 5/25 perches dry mason. for 42 4/25 perches cement masonry. for 60 superficial feet circular cut stone.</td>
</tr>
<tr>
<td>To Edward Tearney:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For foundations of drop and</td>
<td>464.66</td>
<td>32.66 for 108 24/27 cubic yard of earth excavation. 432.00 for erecting 216 perches of cement masonry.</td>
</tr>
<tr>
<td>tilt hammer-Edward Tearney:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foundation stones for oak anvil</td>
<td>36.00</td>
<td>for placing in position 14 foundation stones for anvil blocks, (33) for cut stone bases for 4 anvil blocks, (34)</td>
</tr>
<tr>
<td>Subtotal</td>
<td>$4,949.68</td>
<td>to stone mason Edward Tearney, 1849-51.</td>
</tr>
</tbody>
</table>
### Construction of Tilt Hammer and Smiths Shop, Rifle Factory (Continued):

<table>
<thead>
<tr>
<th>Project</th>
<th>Cost</th>
<th>Description of work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carpenter Work</td>
<td>$510.42</td>
<td>framing roof, 4378 feet sheathing roof, 4,875 feet making 1,328 lights of square sash making 676 light of circular sash. By Jesse Schofield.</td>
</tr>
<tr>
<td></td>
<td>70.00</td>
<td>For making three exterior doors, one in center and one each in wings. Jonathan Renner.</td>
</tr>
<tr>
<td></td>
<td>145.02</td>
<td>For making three lantern or ventilators, 8 by 5 feet, on roof, making one partition wall, 3,225 feet of plank, with a eight foot high door. Built by Meen and Brewing.</td>
</tr>
<tr>
<td></td>
<td>$725.44</td>
<td>for carpenter work, 1849-51.</td>
</tr>
<tr>
<td>For brick pavement and support for sheet iron flooring, To Edward Tearney</td>
<td>$178.59</td>
<td>for 364 10/27 cubic yards of earth to fill in basement. for paving 275 square yards with brick pavement. for constructing 12 perch masonry for piers for girders. for 2 days work of mason underpinning joists and girders. for 2 days work of laborer and 2 cart loads of mortar.</td>
</tr>
<tr>
<td>Slating Roof:</td>
<td>$111.12</td>
<td>for slating 5,556 feet roof of shop. putting snow fender on roof.</td>
</tr>
<tr>
<td></td>
<td>6.12</td>
<td>51.68 for removing 9,480 feet + of old slate roof from at least 3 buildings.</td>
</tr>
<tr>
<td></td>
<td>$168.92</td>
<td>subtotal paid to George W. Tracey.</td>
</tr>
<tr>
<td></td>
<td>344.50</td>
<td>to William Bayley for providing and slating 53 squares on roofs of new buildings.</td>
</tr>
<tr>
<td></td>
<td>513.42</td>
<td>for slating.</td>
</tr>
<tr>
<td>Gutters and spouts, copper:</td>
<td>31.40</td>
<td>79 feet of spouts and 172 feet of gutters, copper, made and installed by Henry W. Edwards.</td>
</tr>
<tr>
<td>Tin Blast pipes</td>
<td>50.35</td>
<td>for 102 feet of 8 inch tin pipe and 80 feet of 3 inch tin blast pipe, made and installed by Dennis Snook.</td>
</tr>
<tr>
<td>Painting:</td>
<td>172.29</td>
<td>for glazing and painting 2,104 light of sash and painting 536 7/9 square yards two coats. To George W. R. Seale.</td>
</tr>
<tr>
<td>Lightning Rods</td>
<td>29.55</td>
<td>for 3 points and 2 leads to ground, installed by Decker and Robinson, at 15 cents per foot.</td>
</tr>
<tr>
<td>Sheet Metal (iron) Flooring)</td>
<td>?</td>
<td>cost of material and installation ?</td>
</tr>
<tr>
<td>Recorded Total:</td>
<td>$8,747.06</td>
<td>$22,130.00 provided for construction &amp; machinery.</td>
</tr>
<tr>
<td>Water wheel</td>
<td>1,156.98</td>
<td>for one-fourfoot cast iron turbine, with cast-iron forebay and penstock, made by James L. Ames of Boston.</td>
</tr>
</tbody>
</table>
The Annealing Furnace and Proof House is Bldg. No. 5 on the 1859 historical base map. The Old Annealing Shop, Bldg. No. 20, and Annealing Furnace Bldg. No. 21, (see Map No. 2, 1848) had both been erected by the brick mason Joseph Mullen in 1835 and by 1850 were apparently both in very poor condition. Late in 1850 Major John Symington had to spend $231.44 to construct a new annealing furnace with a chimney stack. This was erected by the masons Edward Tearney and William Collins as follows:

To Edward Tearney: $16.33 for excavating and removing 54 12/27 cubic yards of earth.

134.40 for constructing 67 5/25 perches mortar masonry

$150.73 for annealing furnace at rifle factory. (1)

To William Collins: $80.71 for labor laying 16,143 brick, furnishing scaffolding, mortar, and attendance of mason building new annealing furnace and chimney stack at Rifle factory. (2)

In the estimates for the 1851-52 fiscal year, Superintendent Symington requested an appropriation of $5,100.00 for "a new annealing furnace and proof house at the Rifle factory," explaining: "The old annealing furnaces are defective, not answering the purposes, and are put up in small buildings inconveniently located."

Congress provided the $5,100.00 for this purpose on March 3, 1851.

Prior to this, on February 11, 1850, the administrator of William Collins, deceased - William R. Collins, was paid $1,380.37 for making and delivering arbitrarily charged to the Armory 171,656 bricks. This expense has been accounted for to the annealing house account, together with the building of the new annealing furnace, thus

1. 3rd S., F. 12169, V. 43, December 20, 1850, for $150.73.
2. 3rd S., F., 12169, V. 17, November 15, 1850, for $80.71.
3. Harpers Ferry NHP Microfilm Reel 20, Vol. 7, p.694, item No. 5/.
5. 3rd S., F 12169, V.13, February 11,1850, for $1,380.37.
producing a total of $1,611.81 expended during 1850.

Actual construction on Bldg. No. 5, the new Annealing Furnace and Proof house got underway in the spring of 1851. The stone mason Edward Tearney was paid $509.46 for performing the following work on the "foundations of new annealing shop at Rifle Factory":

- $77.78 for excavation and removal of 259 8/27 cubic yards of earth.
- 407.12 for erecting 203 14/25 perches mortar masonry, foundation walls.
- 1906 for setting 198 8/12 feet of cut stone water table.
- 5.50 for 5½ days work of laborer filling in with earth.

In his annual report for the fiscal year ending June 30, 1851, Major Symington at the rifle factory described the progress of this construction as follows:

"The stone foundation for the annealing shop and proof-house is completed and ready for the brick masonry. The furnace, with its flue, is also completed and in use. This building will be 60 by 36 feet, divided by two partitions into three compartment, and in style and finish like all the other new shops."

The description of the complete annealing furnace indicates that structure erected by Tearney and Collins in late 1850 for a total of $231.44 was intended to be incorporated in the large building now being erected. It also suggests that Old Bldgs. No. 20 and 21, the Old Annealing Furnace and Old Annealing Shop, shown on Map 2, must have been demolished in 1850 in order to clear the site for the construction of Bldg. No. 5.

The brick walls of the structure were erected in August 1851 and on September 5, 1851, the mason N.T.V. Haller was paid $630.14 for the following construction:

- $593.29 for labor, furnishing mortar, attendants, scaffolding, and laying 98,883 bricks for new annealing and proof shop.
- 14.85 for laying 118 10/12 feet of cornice [brick].
- 22.00 for setting 169 3/12 feet of cut stone sills, etc.

$630.14 (8)

6. 3rd S., F. 12680, V. 33, June 24, 1851, for $509.46.
8. 3rd Series, F. 12680, V. 26, September 5, 1851, $630.14.
On September 27, 1851 the master carpenter Jeremiah Fuss received $433.51 for executing the following carpenter work on the rifle factory annealing house and proof shop, under contract:

$166.89 for framing 2,302 feet of roof.
29.00 for making, fitting, and hanging two outside doors and frames.
7.75 for making, fitting and hanging one inside door and frame.
9.00 for making, fitting, and hanging one inside door.
36.00 16 window frames "set with center".
4.00 2 window inside shutters made, hung, etc.
70.00 two ventilators made, hung, etc.
16.56 184 lights of square sash made.
13.00 130 lights of circular sash made.
11.98 389 feet of wooden ceiling put up.
40.00 for 5 sets of Venetian blinds for semi-circular windows constructed.
29.37 for 11 3/4 days work of measuring work of stone mason and bricklayers, &c.

$433.51 (9)

On October 29, 1851, John A. Steiner was paid $1,216.75 for making and delivering 157,000 building bricks to the armory. This sum has been arbitrarily charged to the Annealing House account, bringing the total recorded expenditures during 1851 to $2,789.76, and from 1850 to 1851 inclusive, to $4,406.67.

Destruction of the Armory Paymasters vouchers for the years 1852 to 1861 by the National Archives staff during the 1940's makes it impossible to trace in detail the final construction in 1852 and also any alterations or repairs that may have been made from 1853 to 1861.

In his annual report for the fiscal year ending June 30, 1852, the new superintendent, Brevet Colonel Benjamin Huger, reported: "The annealing proof-shop, described in last report as having foundation ready for the brick masonry, has been completed."

9. 3rd S., F. 12680, V. 41, September 27, 1851, for $433.51.
10. 3rd Series, F. 13017, V. 8, October 29, 1851, for $1,216.75.
As it was build like the other shops going up, the annealing house would have and proof shop, had copper gutters and downspouts. Its gable roofs, like that of its larger sister shop at the musket factory, were probably slated. and its interior also was divided into three compartments, probably a center building with flanking wing on either side. Two wooden ventilators adorned the ridge of the gable roofs, probably one on each wing, of the rifle factory shop. Lightning rods were probably installed on its roof and the exterior brick walls may have been painted with two coats of patent paint, in oil, in 1852. Total cost of the building was probably about $5,100.00.
## CONSTRUCTION OF ANNEALING FURNACE AND PROOF HOUSE, RIFLE FACTORY, 1851-52:

**Bldg. No. 5**

<table>
<thead>
<tr>
<th>Project</th>
<th>Cost</th>
<th>Description of Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundations:</td>
<td>$150.73</td>
<td>For excavating and removing 54 12/27 cubic yards of earth. For constructing 67 5/25 perches mortar masonry walls.</td>
</tr>
<tr>
<td>Annealing Furnace:</td>
<td>$150.73</td>
<td>For excavating and removing 259 8/27 cubic yards of earth. For erecting 203 14/25 perches mortar masonry wall. For setting 198 8/12 linear feet of cut stone water table. For 5½ days work of filling in with earth</td>
</tr>
<tr>
<td>Main structure</td>
<td>$509.46</td>
<td></td>
</tr>
<tr>
<td>Foundations to Main structure</td>
<td>$660.19</td>
<td>To mason Edward Tearney, 1850-51.</td>
</tr>
<tr>
<td>For brick</td>
<td>$1,380.37</td>
<td>For 171,656 made and delivered by William Collins, 1850</td>
</tr>
<tr>
<td></td>
<td>$1,216.75</td>
<td>For 157,000 made and delivered by John A. Steiner, 1851</td>
</tr>
<tr>
<td></td>
<td>$2,597.12</td>
<td>For 328,656 bricks made and delivered.</td>
</tr>
<tr>
<td>For brick walls, annealing furnace, main building:</td>
<td>$80.71</td>
<td>For laying 16,143 bricks in furnace and stack</td>
</tr>
<tr>
<td></td>
<td>$630.14</td>
<td>For laying 98,883 bricks in walls of main structure. For laying 118 10/12 feet of cornice, probably brick.</td>
</tr>
<tr>
<td></td>
<td>$710.85</td>
<td>For laying 169 3/12 feet of cut stone sills and coping.</td>
</tr>
<tr>
<td>Carpenter Work</td>
<td>$433.51</td>
<td>For making, fitting, and hanging two outside doors and frame. For making, fitting, and hanging one inside door and frame.</td>
</tr>
<tr>
<td>To Jeremiah Fuss:</td>
<td></td>
<td>16 window frames &quot;set with center&quot;. For making, fitting, and hanging 1 inside door.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Window inside shutters made, hung, etc.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Two ventilators made, hung, etc.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>184 lights of square sash made.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>130 lights of circular sash made.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>389 feet of wooden ceiling put up.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For 5 sets of venetian blinds for semi-circular windows constructed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For 11 3/4 days work of measuring work of stone mason and bricklayers, etc.</td>
</tr>
<tr>
<td>Slating Roof</td>
<td>$70-51</td>
<td>Slating done by either George W. Tracey or William Bavley.</td>
</tr>
<tr>
<td>Gutters &amp; Spouts</td>
<td>$30-51</td>
<td>Making and installing copper gutters and down spouts, probably done by Dennis Snook. (1852)</td>
</tr>
<tr>
<td>Painting:</td>
<td>$30-51</td>
<td>Painting sash and perhaps exterior brick walls two coats. Sash probably done by George W.R. Seale. (1852)</td>
</tr>
<tr>
<td>Lightning Rods</td>
<td>$30-51</td>
<td>Probably installed by Decker and Robinson. (1852)</td>
</tr>
<tr>
<td>Floors</td>
<td>$30-51</td>
<td>Probably paved with brick. (1852)</td>
</tr>
<tr>
<td>Total:</td>
<td>$4,401.67</td>
<td>Probably total cost, 1850-52: $5,100.00</td>
</tr>
</tbody>
</table>

Bldg. No. 5 at Rifle Factory, 1859 Historical Base Map.
Bldg. No. 6 - A Start on the
New Machine Shop, Rifle Factory, 1852-1853:

The new Machine Shop is Bldg. No. 6 on the 1859 historical base map.

This was the last shop at the rifle factory to be designed by Major John Symington.

In his estimate for the 1850-51 fiscal year, Superintendent Symington asked for $16,980.00 "for building a machine shop, including the requisite machinery at the rifle factory," explaining: "The present shop is old, and is only a make-shift, like all the other old buildings at this factory, and entirely too small to accommodate the machines necessary to keep up the work - some of which have now to be set up in sheds and other out-houses."

The requested sum was appropriated by Congress on September 28, 1850.

Perhaps because of the press of other construction, work on the new machine shop did not get underway until 1852.

On December 2, 1850, however, $68.50 was spent to purchase 103 3/12 lineal feet of cut-stone water table from Redmond Burke, the stone cutter, "for new machine shop at rifle factory." On April 21, 1851, mason Edward Tearney was paid $585.86 for constructing wheel pit and tail race "at new drilling and turning shop, Rifle Factory," which is probably the proposed machine shop. This involved the following construction:

$136.40 for excavating 454 18/27 cubic yards of earth.
192.32 for erecting 96 4/25 perches of cement masonry wall.
252.48 for erecting 168 8/25 perches of dry wall.
4.60 for 23 cubic yards of earth filled in.
$585.86 (4)

1. Serial No. 568, Document No. 4, p. 156,157, item No. 10.
2. U.S. Statutes at Large, IX, p.507.
3. 3rd Series, F. 12169, V. 27, December 2, 1850, for $68.50.
4. 3rd S., F. 12680, V. 5, April 21,1851, for $585.86.
On December 24, 1851, Edward Tearney was paid $244.00 for "labor taking down the machinery and building, and clearing away the rubbish from the site for the new machine shop at the rifle factory." Charges were as follows:

$206.00 for labor of 12 men, 18 days each, at $1.00 per day each.
$38.00 for Foreman supervising the work, 19 days, at $2 per day.

$244.00

In order to construct the new machine shop, the following buildings on Map No.2 (1848) had to be taken down in 1851, or earlier:

Bldg. 5-Old Filers Shop, dating from 1837.
Bldg. No. 6- Barrel Welding Shop, erected in 1831.
Bldg. No. 7- Tilt Hammer Shop, constructed in 1837-38.
Bldg. No. 9- Rod Tilting Shop, dating from 1831.

Although designed by Major Smington in 1849 or 1850, the actual construction of the new Machine Shop, Blding No. 6, was to be supervised by his replacement, the new superintendent, Brevet Colonel Benjamin Huger in 1852-53.
Repair of Old Rifle Factory Buildings, 1845-1851.

During the period 1845-1851 a record total of approximately $93.88 was spent making repairs to old Hall Rifle Factory shops. (See Following chart). Of this total, $4.87 went to the brick mason William Collins; $21.33 to the stone mason Edward Tearney; $34.69 to the slater George W. Tracey, and $9.44 to the plasterer Robert Simms.
REPAIRS AT RIFLE FACTORY, 1845-51

<table>
<thead>
<tr>
<th>YEAR</th>
<th>Old Annealing Shop</th>
<th>Old Assembly &amp; Finishing Shop</th>
<th>Old Bell Shop</th>
<th>Old Drilling &amp; Boring Shop</th>
<th>Old Turning &amp; Boring Shop</th>
<th>Old Forging &amp; Tempering Shop</th>
<th>Total for Repairs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1845</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1846</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1847</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1848</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1849</td>
<td>2.62 (1)</td>
<td></td>
<td>26.59 (4)</td>
<td>1.75 (8)</td>
<td></td>
<td></td>
<td>30.96</td>
</tr>
<tr>
<td>1850</td>
<td>.50, (2)</td>
<td>24.55 (3)</td>
<td>21.33 (5)</td>
<td>9.44, (8)</td>
<td></td>
<td></td>
<td>44.82</td>
</tr>
<tr>
<td>1851</td>
<td></td>
<td></td>
<td>7.10 (6)</td>
<td></td>
<td></td>
<td></td>
<td>7.10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>$ 3.12</td>
<td>24.55</td>
<td>26.59</td>
<td>28.43</td>
<td>9.44</td>
<td>1.75</td>
<td>$ 93.88</td>
</tr>
</tbody>
</table>

2. 3rd S., F. 11000, V. 24, to William Collins, May 15, 1850, $.50 for repairs of furnace.
3. 3rd S., F. 11542, July 13, 1850, for demolition of structure, $24.55.
4. 3rd S., F. 9307, V. 44, to George W. Tracey, June 23, 1849, for $26.59, removing slate, demolishing shop.
6. 3rd S., F. 12680, V. 14, to George W. Tracey, August 16, 1851, $7.10 for repair of slate roof, 355 fett.
8. 3rd S., F. 10276, V. 33, to William Collins, brick mason, November 29, 1849, for $1.75, repair of tempering furnace.
Demolition of Old Buildings at the Rifle Factory, 1847 - 1851:

In the period 1846 - 1851 Major John Symington designed and erected four major workshops and one minor shop that transformed the old ramshackle collection of workshops and storehouses at the rifle factory into a modern one. The following 12 old buildings were demolished to clear the sites for the new (See Map -1848):

2. Forging and Tempering Shop(1837-38)
5. Filers Shop (1837)
8. Vitriol House (1837)(sold for material, July 13,1850) (1)
9. Rod Tilting Shop(1831)
11. Assembling and Finishing Shop(1837), sold for materials, July 1850. (2)
13. Bell Shop(1808-09.) Down In June 1849 (3)
15. House for Steaming Stocks.
18. Drill Shop( 1836) in 1852?
20. Annealing Shop(1835) in 1851.

1. 3rd S., F. 11542. Sold at public sale of old materials to Dr. Nicholas Marmion for $ 3.60 on July 13,1850.
2. 3rd S. F. 11542, sold to Dr. Nicholas Marmion on July 13,1850 for $ 24.55.
3. 3rd S. F9307, V.44, George W. Tracey, June 23,1849, for removing slate from roof,
Grading at the Rifle Factory Grounds, 1845-1851

In his annual report for the fiscal year ending June 30, 1848, Major John Symington noted: "The low grounds about the buildings (at the rifle factory) have been partially filled up, 1,080 cubic yards of quarry rubble being carted upon it." The probable cost of this work was about $270.00 calculating the charge at 25 cents per cubic yard.

In the report for the year ending June 30, 1850, Symington reported:

"There has been a considerable amount of grading done on the grounds around the shops at the rifle factory, rendered necessary by the unevenness of the surface, the old race-ways having to be filled up."

On December 20, 1850 the mason Edward Tearney was paid $113.00 "for filling up ground at Rifle Factory with 452 cubic yards, filling in with earth and spalls."

In his annual report for the fiscal year ending June 30, 1851 Symington noted this work, writing: "There has been much filling and grading of grounds, both at the musket and rifle factories, to the extent of 3,000 cubic yards."

On the basis of the Tearney voucher, as given above, 452 cubic yards of grading were done at the rifle factory and 2,548 cubic yards at the musket factory.

From 1845 to June 30, 1851 more than 1,532 cubic yards of fill were placed about the new buildings at the rifle factory at a cost of approximately $382.00.

---

2. Serial No. 587, Document No. 1, p. 476, Item No. 10. Vouchers for the period July 1, 1847 to June 30, 1848 are missing.
3. 3rd S., F. 12169, V. 43, December 20, 1850, for $113.00. Tearney charged 25 cents per cubic yard of fill.
Fencing at the Rifle Factory: 1851-52.

In his estimates for the 1851-52 fiscal year Major John Symington requested the sum of $530.00 "for enclosing the Armory yard at the Rifle Factory with a board fence", explaining: "The yard at the Rifle factory is entirely open and a thoroughfare for cattle &c., at all times."

The requested amount was appropriated by Congress on March 3, 1851.

There is no mention in the annual reports for June 30, 1851 or June 30, 1852 of the board fence being erected at the Rifle Factory. If it had been put up the flood of April 1852 might well have swept it away.

Bridges to the Hall Islands:

In 1843, the wooden bridge to the Hall Islands was repaired at a cost of $111.47. William Newton received $102.90 for providing 2,286 feet 9 inches of locust timber, which was used to repair the structure, and $8.57 for his repair work.

In the estimate for the 1850-51 fiscal year Major Symington asked for $645 "for building a bridge across the armory canal, explaining it would be used "To build a wooden bridge on stone piers, in the place of the old bridge, which is out of position, abutting immediately upon the workshops, and over which all domestic supplies, for those living upon the upper part of the Hall island, have to pass. The new position for the bridge is above the workshops, so as to admit of the armory yard being properly enclosed."

The money for the new bridge was appropriated on September 28, 1850. A total of $1,746.48 was expended on construction of the Shenandoah Canal at the Rifle Factory in 1851 and of this amount $818.98 went to erect the new bridge.

Edward Tearney had the bridge abutments in place by June 30, 1851, and received $703.98 for the following construction on the "new bridge across the canal at Rifle Factory:

- $37.86 for 126 6/27 cubic yards of earth excavation @ 30c.
- 319.69 for erecting 182 17/25 perches mortar masonry @ $1.75.
- 154.98 for erecting 103 8/25 perches mortar masonry @ $1.50.
- 191.35 for 793 11/27 cubic yards of earth filled in and graded @ 25c.

Total: $703.98 (6)

5. U.S. Statutes at Large, IX, p. 507.
6. 3rd S., F. 12680, V. 54, September 30, 1851, for $703.98.
In the annual report for the fiscal year ending June 30, 1851, Superintendent Symington remarked of this work: "Two abutments of masonry, with wing walls, for a bridge over the canal (at the rifle Factory), have been erected, together with considerable filling in, rendered necessary by the improvement."  

In July 1851 master carpenter Jeremiah Fuss constructed the wooden superstructure of bridge over the Shenandoah Canal and received $115.00 for this work. Col. Benjamin Huger described the bridge in his annual report for the fiscal year ending June 30, 1852 as follows:  

"A new bridge, 32 feet span, 12 feet wide, has been constructed over the (rifle factory) canal to the workshops." In 1856, "The wooden bridge across the canal" was "weather-boarded and the frame covered to protect it from the weather."  

Accurate drawings showing the stone arched bridge and the wooden bridge to the Hall Islands are Harpers Ferry NHP Negatives Nos. HF- 794, a drawing made by Lt. James G. Benton, U.S. Army, about 1853, and HF-490, a lithograph that was published in 1857. Photograph HF-37, taken May 22, 1865, also shows the two bridges. 

Archeologist Edward McMilliam Larrabee, during his exploratory investigation of the Lower Hall Island in 1961, located the Island side abutment and wing walls of the lower bridge to the Lower Island, probably the stone arched bridge that was erected in 1820. The wooden bridge, with stone abutments, constructed in 1851 by Edward Tearney and Jeremiah Fuss, was probably the upper bridge, leading to the Armory Dwelling houses located on the Upper Hall Island. 

7. Serial No. 611, Document No.1, p. 459. Item 9;  
8. 3rd S., S. 12680, V. 10, August 6, 1851, for $115.00.  


The Shenandoah Canal, 1845 - 1851:

As has been noted, in the estimates for the 1848-49 fiscal year Major John Symington requested the sum of $3,320 "for completing the main tail race, reconstructing the guard lock and gates, cleaning the canal and walling it in front of the shops at the rifle factory," explaining: "The old works at this place have given out, the gates and sills being entirely decayed. This work has been commenced from the necessity of the case, and amount estimated is necessary for its completion."

The money for this work was appropriated on August 14, 1848.

The new main tail race mentioned above had been started in 1846-47 and ran along the rear or to the south of the new work shops being constructed at the rifle factory. In his annual report for the fiscal year ending, June 30, 1847, Symington first reported "A main tail race, to receive the waste water from the different wheels, 10 feet wide, 6 feet high, and covered over; side walls 2½ feet thick, of large stones, has been commenced, and 223 feet in length completed."

The Armory paymaster's vouchers for the period July 1, 1847 to December 31, 1848 are missing from the National Archives Record Group 217 files, so it is impossible to provide any further details on the cost of construction and amounts of materials used under the August 14, 1848 appropriation.

In his annual report for the fiscal year ending June 30, 1848, Symington noted: "New guard gates, with feeders, with new substantial walls of masonry, have been constructed for the armory canal (at the rifle factory)."

1. Serial No. 515, Document No. 2, pp.110,111.item No.8.
2. U.S. Statutes at Large, IX, p.306.
No money was appropriated or work was done on the Shenandoah Canal in 1849 and 1850. In the estimate for the 1850-51 fiscal year, as has been noted, Superintendent Symington asked for $645 to construct a new bridge across the Shenandoah Canal. Congress voted the desired amount on September 28, 1850.

During 1851 Symington spent a total of $1,746.48 for repairs and improvements on the Rifle Factory Canal as follows:

In April 1851, the mason Edward Tearney was paid $927.50 for constructing a drain culvert and a revetment wall at the rifle factory:

- $14.61 for 48 20/27 cubic yards excavation of earth @ 30¢ per yard.
- 89.90 for 179 22/27 cubic yards excavation of earth in water at 50¢ per yards.
- 33.60 for 22 10/25 perches of dry masonry wall @ $1.50.
- 789.48 for 526 8/25 perches of dry masonry @ $1.50.

The balance, $818.98, as has been noted, went to Edward Tearney and Jeremiah Fuss for constructing the new bridge across the Shenandoah Canal during the summer of 1851.

<table>
<thead>
<tr>
<th>Calendar Year</th>
<th>Recorded Expenditures</th>
<th>Appropriated for Canal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1845</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1846</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1847</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1848</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1849</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1850</td>
<td>0</td>
<td>645.00</td>
</tr>
<tr>
<td>1851</td>
<td>$1,746.48</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$1,746.48</strong></td>
<td><strong>$645.00</strong></td>
</tr>
</tbody>
</table>

Nat/Archives R.G. 217, 3rd Series, File 12680, Voucher 5, April 21, 1851, for $927.50.
On December 27, 1845, S. D. McNerthy was paid $244.21 for "furnishing material and erecting 137 perches of heavy tone wall on the dam in the Shenandoah river at the Rifle Factory." In his annual report for the fiscal year ending June 30, 1846, Superintendent John Symington reported: "Dam on the Shenandoah River repaired by 137 perches of stone to improve the head of water."

In the annual estimate for the 1846-47 fiscal year, Major Symington asked for $900.00 for "new water dam at rifle Factory," explaining: "The position of the present waste dam is altogether bad; another should be made." The requested amount was appropriated on August 8, 1846.

Money for building the new waste dam was apparently spent during the period July 1, 1847 to December 31, 1848, the period were the Armory Paymaster's vouchers are missing from the National Archives Record Group 217 files. There are thus no details available regarding cost, amount of materials, and who built the new waste dam, which was probably related also to the construction of the new main tail race at the rifle factory.

### U.S. Shenandoah Dam Expenditures, 1845-51:

<table>
<thead>
<tr>
<th>Calendar Year</th>
<th>Recorded Expenditures</th>
<th>Appropriated for dam</th>
</tr>
</thead>
<tbody>
<tr>
<td>1845</td>
<td>244.21</td>
<td>0</td>
</tr>
<tr>
<td>1846</td>
<td>900.00</td>
<td>0</td>
</tr>
<tr>
<td>1847</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1848</td>
<td>(900.00)</td>
<td>0</td>
</tr>
<tr>
<td>1849</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1850</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1851</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$1,144.21</strong></td>
<td><strong>$900.00</strong></td>
</tr>
</tbody>
</table>

1. 3rd Series, F 3122, V., 59, December 27-1845, for $244.21.
CHAPTER III

Repairs and Improvements at the Rifle Factory, 1852-54:

Brevet Colonel Benjamin Huger, appointed on July 9, 1851, to replace Major John Symington as the superintendent of the U.S. Armory at Harper's Ferry, reported for duty at the Armory in September, 1851, and served as the commanding officer of that Armory until March 1854. He was replaced in March 1854 by Major William H. Bell, who served as superintendent until about August 1854. Master Armorer Samuel Byington served as acting superintendent from August to December 1854.

During the period January 1, 1852 to June 30, 1854, Col. Huger and Major Bell were largely engaged in executing plans that had been proposed and started by Major Symington. At the Rifle Factory this included the construction of one major building, the Machine Shop, Bldg. No. 6, which had been designed by Symington. They also remodelled two of Captain John H. Hall's old workshops for use as storehouses (Bldgs. No. 8 and 10). One minor new structure, Bldg. No. 7, a Coal House, was also erected.

Congress appropriated $8,050 for repairs and improvements during the 1852-54 period, for work at the Rifle Factory. (see Chart No. 4, p. 56).

Effects of the April 1852 Flood:

In his annual report for the fiscal year ending June 30, 1852, Brevet Col. Benjamin Huger described the effects of the 1852 flood on the U.S. Rifle works as follows: "The principal workshops at the rifle works were not injured by the flood of April 20. The lower buildings and grounds were covered. These works were suspended a day only. The grounds have been cleaned up and partially graded."

CHART NO. 4

APPROPRIATIONS FOR REPAIRS AND IMPROVEMENTS AT THE U.S. RIFLE FACTORY, 1852-1854

<table>
<thead>
<tr>
<th>Year</th>
<th>New Coal Houses</th>
<th>Remodeled Store House</th>
<th>Grading, Walls removing old Buildings</th>
<th>Total Buildings</th>
<th>Shenandoah Canal</th>
<th>Shenandoah Dam</th>
<th>Total, Bldgs, Dam and Canal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1852</td>
<td>$450</td>
<td>-</td>
<td>-</td>
<td>$450</td>
<td>0</td>
<td>0</td>
<td>$450</td>
</tr>
<tr>
<td>3/31</td>
<td>$650</td>
<td>$450</td>
<td>$1,500</td>
<td>$2,600</td>
<td>$5,000</td>
<td>0</td>
<td>$7,600</td>
</tr>
<tr>
<td>8/5/1854</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>$1,100</td>
<td>$450</td>
<td>$1,500</td>
<td>$3,050</td>
<td>$5,000</td>
<td>0</td>
<td>$8,050</td>
</tr>
</tbody>
</table>
Because of the destruction of the Armory Paymaster's vouchers for the years during the 1940s, 1852 to 1861 by the staff of the National Archives, it is no longer possible to determine the details of construction in regards to cost, quantities of materials utilized, or the names of the men who did the construction. The annual reports of the armory superintendent, however, do provide the following data on the construction.

**In 1849 or 1850**

Although designed by Major Symington, the actual construction of Building No. 6, the new machine shop, was supervised by his replacement as superintendent, Brevet Colonel Benjamin Huger, in 1852-53.

In his annual report for the fiscal year ending June 30, 1852, Col. Huger reported: "A two-story machine shop has been commenced, basement of stone, 87 9/12 feet long by 35 feet wide, with a projection in the centre of it of 14 by 36 feet, for an office. The foundations are ready for the brick masonry."

In the report for the year ending June 30, 1853, Huger announced that "The new machine shop, reported last year as 'stone foundation completed, ready for the brick-work,' has been finished." Also, "One turbine wheel placed in wheel-pit, of cut stone; a new stone and cast-iron forebay put in; culvert made to conduct water from this wheel, and other culverts repaired." A large force pump, intended for use in fighting fires, was also to be attached "to the water-wheel of the machine shop."

7. Serial No. 692, Document 1, p. 278.
Machinery for the new shop was fabricated and installed in 1853-54; in the report for the year ending June 30, 1854, the superintendent Major William H. Bell noted:

"Governor to water-wheel at barrel drilling shop put up; the main line shafting in machine shop improved.

"One large force pump, for throwing water in case of fire, has been put in position, with the required gearing, connected with the water-wheel at the machine shop.

"Counter machinery fabricated and put in position in the basement of new machine shop, for lathe for first turning stocks and driving circular saw for cutting stocks to length."

Finally, in his annual report for the fiscal year ending June 30, 1856, Superintendent Henry W. Clowe commented that "Five feet of counter shafting [have been] fabricated and put in operation in machine shop [at the rifle factory], and the "fixtures for drawing head-gates in this shop have been fabricated and attached."

8. Serial No. 747, Document No. 1, p. 362
Symington's new brick and stone shops fronted to the north, on
the south bank of the Shenandoah Canal, and extended in a straight line
from east to west along that canal. Symington's new buildings,
running from east to west, were as follows:

1. Bldg. No. 5, the Annealing Furnace and Proof House, one-story,
   brick, stone foundations, 60 by 36 feet, built 1851-52, cost
   about $5,100.

2. Bldg. No. 4, The Tilt Hammer and Smiths Shop, located perhaps
   100 feet west of Bldg. 5, one story brick, stone foundation,
   110 by 35½ feet, built 1849-51, cost about $22,130.00.

3. Bldg. No. 6, New Machine Shop, located 57 feet 6 inches west of Bldg. No. 4.
   A one story brick building with stone foundations, 87 feet 9 inches
   long and 35 feet wide, built 1852-53, cost, $16,980.00.

4. Bldg. No. 3, new Finishing and Machine Shop, located 58 feet west of Bldg. No. 6,
   A two story brick building on stone foundations, 128 feet long by 36 feet wide
   with two rear one-story brick wings, each 25 feet square, built in 1847-48
   for about $26,880.00.

New Main Tail Race, 10 feet wide, 6 feet high, and covered over, built 1847-48
in the rear (south side) of the line of new shops. Cost $3,320.00

5. Bldg. No. 1(Bldg. No. 4 on Map No. 6-1848), New Filer Shop, located to southeast
   and rear of Bldg. No. 3. Erected by Major Henry K. Craig in 1843-44 at
   estimated cost of $1,000. First story of stone and second of brick.
   Building about 74 feet long and 25½ feet wide.

6. New Proof House(Bldg. No. 2)(Bldg. No. 23 on Map No. 6, 1848). Erected by
   Major John Symington in 1845 at a estimated cost of $750.00. A one story
   frame structure with a rear wall of masonry 2½ feet thick, building 19½ by
   15 feet in size. This shop was located on the north side of the W.&
   Potomac Railroad track, close to the line and adjacent to the east side of the
   Hall Island.

Old shops still standing in 1852 may have included: the following, seven:

3. Stockers Shop. (1848 map No.6)
10. Inspectors office
12. Barrel Turning and Boring Shop
17. Privy
19. Forging Shop(1827)
22. Forging Shop(1819).

Expenditures for new buildings and the new tail race at the rifle factory
by Symington, 1845-June 30, 1852, totaled about $75,160.00. With the one
new structure erected by Major Craig included, the total was about $76,160 to
$77,160, 1842 to 1851.
Sketch of the U.S. Rifle Works at Harper's Ferry, Virginia
Drawn ca. June 1853, by Lieutenant James G. Benton,
U.S. Army. From the U.S. Military Academy Library
Manuscript Collection, West Point, New York.

Harpers Ferry National Historical Park Negative No. HF-794.

View is drawn looking east along the Shenandoah Canal, looking
towards the U.S. Rifle Factory and Harper's Ferry.

Shenandoah Street runs along the north bank of the Shenandoah Canal in the center of the sketch. Note the wooden bridge on stone abutments over the canal and leading to the Upper Hall Island. This bridge was apparently constructed in 1851. Beyond the frame bridge, in the distance, can be seen a stone arched bridge which leads directly to the U.S. Rifle Factory shops on the Lower Hall Island. The stone bridge probably dates from 1820.

At the right, near the lower right hand corner, can be seen the roofs of two Armory Dwelling Houses that are situated on the Upper Hall Island. They may be House No. 158, a two-story brick dwelling valued at $900; and Houses No. 159, a two-story stone house valued at $200; and House No. 160, a one-story stone house appraised as worth $250 in 1852.

The large two-story factory, located on the south bank of the canal and standing on the Lower Hall Island, is Rifle Factory Bldg. No. 3, the Finishing and Machine Shop, which was built in 1847-48. A cast-iron turbine water wheel was located in the one-story rear wing that is visible on the right (or side south) side of the main edifice.

The next shop in line, moving to the left (or east) of Bldg. 3, is Bldg. No. 6, the one-story Machine Shop, which was erected in 1852-53. Note the wooden cupola or belfry on the center section of the Machine Shop.

Above Bldg. 6, to the left (or east), can be seen Bldg. No. 4, the Tilt Hammer and Smiths Shop, a one-story, three-part brick shop that was constructed in 1849-51.

Beyond Bldg. No. 4, Bldg. No. 5, the Annealing Furnace and Proof House, which was built in 1851-52, can be dimly seen. This was a one-story three-part-brick workshop.

The fact that Bldg. No. 6, the new Machine Shop, is clearly indicates that this sketch must have been drawn in 1853, or later, as Bldg. 6 was not completed until June 30, 1853.
Figure 19. Sketch of the U.S. Rifle Works at Harpers Ferry, ca. 1851, by Lieutenant James G. Benton. From the United States Military Academy, Library Manuscript Collection, West Point, N.Y. Photograph courtesy of the Harpers Ferry National Historical Park, No. 704.
2. Remodelled Stock House (Old Forging Shop), Rifle Factory Bldg. No. 8, 1853-54:

In the annual report for the fiscal year ending June 30, 1854, Major William H. Bell reported that at the Rifle Factory the "Old Forging shop repaired for a stock house, and laid with two new floors." Thus also indicating that the remodelled stock was a two-story structure.

What is undoubtedly the remodelled stock house, two-stories high, three bays deep, and located in the proper site at the Lower Shenandoah Canal locks, as indicated for Bldg. No. 21 on Map 1, and Bldg. No. 22 on Map 2, can be seen in the 1857 lithograph of Virginus Island, Harpers Ferry NHP Negative HF-490.

The remodelled stock house was the two-story blacksmith or forging shop that had been built for Captain John H. Hall in 1819.


The 1819 Forging Shop can be seen on Map No. 1 (1834) as Bldg. No. 21; the edifice was still listed as a "forging shop", Bldg. No. 22 on Map No. 2 (1848). As Hall's only other Forging Shop, erected in 1827, was a one-story stone structure (Bldg. No. 22 on Map No. 1 and Bldg. No. 19 on Map No. 2 (1848), there can not be any mistake in deciding which is the 1819 blacksmith shop.
3. Repair of Storehouse (Old Office), Rifle Factory Bldg. 10, 1853:

This structure, probably Captain John H. Hall's Office, was erected at some undetermined date after 1827 and prior to 1834. The Office is Bldg. No. 15 on Map No. 1(1834) and Bldg. No. 14, "Storehouse and Office", on Map No. 2(1848). Judging by Map No. 1, the edifice was approximately 30 by 35 feet in size, and like the other Hall buildings going up 1827-34, was probably constructed of stone.

In the estimates for the 1853-54, Brevet Colonel Benjamin Huger requested $450 "for repairing storehouse at rifle factory," commenting: "This is an old building, but may be made to answer the purpose of a storehouse by repairs." The Congress appropriated the desired sum on March 3, 1853.

In his annual report for the fiscal year ending June 30, 1853, Superintendent Huger noted: "storehouse repaired; outside stairs removed and new stairs put up inside."

This evidence indicates that the storehouse was a two-story structure.

The repaired storehouse, probably built of stone, will be Building No. 10 at the Rifle Factory when it is added to the 1859 historical base map.

A part of what is probably the roof of Bldg. No. 10 can be seen in the 1857 lithograph, Harpers Ferry NHP Negative HF-490.

2. U.S. Statutes at Large, X, 217.
The estimates for the 1852-53 fiscal year contained a request for $450 for "Coal houses at the Rifle factory." It was explained that this was needed to shelter the charcoal and anthracite and bituminous coal used in making arms, &c., at the Rifle factory." The desired money was appropriated by Congress on August 31, 1852.

In the estimates for the 1853-54 fiscal year Col. Benjamin Huger asked for an additional $650 "For building coal-houses and bins at the rifle factory". It was explained that "The coal-houses and bins at the rifle were only temporary structures, and were washed away by the flood of April 1852. Since then, supplies of coal have had to be carried from the musket factory, from time to time, which is troublesome and expensive." Congress voted the requested sum on March 3, 1853.

A total of $1,100 was thus provided for constructing coal houses and coal bins at the rifle factory in 1852-53.

In the annual report for the fiscal year ending June 30, 1854, Major William H. Bell reported: "New coal house, built of brick, covered with sheet-iron, 21 by 25 feet, one story of 15 feet."

For a view of the new Coal House, see the 1857 lithograph, Harpers Ferry NHP-HF-490.

5. **Grading, Street Lights, Water System for Fire Protection, 1853-1854:**

In the estimates for the 1853-54 fiscal year $1,500 was asked for removing old buildings, grading grounds, and fences, at the rifle factory; it was explained that "As the new buildings at the rifle factory are completed, the grounds should be put in order and enclosed. They are now in bad order, and the shops and property are exposed for want of proper enclosure." Congress appropriated the request amount on March 3, 1853. (2)

In the annual report for the year ending June 30, 1853, Superintendent Benjamin Huger reported the following improvements had been made to the grounds at the rifle factory:

"About 300 feet of 8-inch cast-iron pipe, with 3 hydrants attached, have been laid in front [to the north] of the shops for conveying water (in case of fire) from the large force pump designed to be attached to water-wheel of machine-shop [Bléq. No. 6, which was then under construction]. This improvement will be completed during the present [building] season."

The armory had purchased this force pump from J. T. Ames of Boston, Mass., on January 27, 1852 for $1,865.64. Included in this shipment from Ames were 62,188 lbs. of cast iron pipe, which cost $583.14.

In the annual report for the fiscal year ending June 30, 1854, Major William H. Bell reported: "One large force pump, for throwing water in case of fire, has been put in position, with the required gearing, connected with the water-wheel at the machine shop." On June 30, 1853, Col. Huger also noted" Two cast-iron lamp-posts put up, and furnished with lanterns complete."

3. Serial No. 692, Document No. 1, p. 278
4. National Archives Record Group 217, Records of 2nd Auditor, 3rd Series, File 13017, Voucher 76, dated Jan. 27, 1852, for total of $2,448.78.
5. Ibid.
7. Serial No. 692, Document No. 1, p. 278.
6. Shenandoah Canal

Revetment Walls and New Waste Way, 1852 - 1854:

In the annual estimates for the 1853-54 fiscal year, Brevet Colonel Benjamin Huger requested $5,000 "for repairs of canal at the rifle works, and constructing a revetment wall along that portion (about one-half) where there is no such wall; and for opening a new waste-way and closing the old, and repairing the canal bridge."; it was explained: "The canal requires repairs in that part without revetment wall, which the construction of such a wall will, in a great measure, prevent hereafter. The waste-way is now at the upper end of the canal, and leaves no current in the lower part. By moving the waste-way to the lower end of the canal, and building the revetment wall, the deposit will be lessened, and the necessity of stopping the works to clear out the canal will be avoided." The amount requested was appropriated by Congress on March 3, 1853.

In his report for the fiscal year ending June 30, 1853, Superintendent A. Mulger announced that at the rifle factory:

"A dry stone wall has been built all along the basin on the opposite (Fort) side of the canal, to the works, two sections on each side of the bridge to raise the edge of the canal, and so grade the road as to draw off the water from the road (Shenandoah Street) and hill-side, which has heretofore washed large deposits of earth into the basin: for this purpose 409 feet of dry wall, nearly 6 feet high by 3 wide, have been built; 700 cubic yards filling put in.

"A dry wall, 224 feet long, 6½ feet high, and 3 feet thick, has been built along the southeast (workshop) side of the canal, adjoining the finishing shop (Bldg. No. 3 [Bldg. No. 1 on 1848 map] and across the opening of old sluice-way, which has been filled up. This completes the walling-in of the whole basin. The accumulated deposits from this basin were excavated and removed, amounting to near 2,000 cubic yards."

No further further construction was reported on the Shenandoah Canal in the report for the fiscal year ending June 30, 1854.

The stone walls and improvements made to the canal at the Rifle Factory in 1853-54 can be seen in the 1857 lithograph, Harpers Ferry NHP Negative No. 490.

The U.S. Rifle Factory Dam on the Shenandoah, 1852-54.

The annual reports of operations of the superintendent for the fiscal years ending June 30, 1853 and 1854, make no mention of any repairs or construction being made to the Rifle Factory dam.

PHOTOGRAPH NO. 2

VIEW OF THE ISLAND VIRGINIUS, IN THE SHENANDOAH,
AT HARPER'S FERRY, TAKEN NEAR JEFFERSON'S ROCK.
Taken from Nature by Th, Sachs, Lithography by E.

Drawn ca. 1856 or 1857. Harpers Ferry NHP Negative No. HF - 490.

View drawn looking southwest up the Shenandoah River from Harper's Ferry.

The U.S. Rifle Factory, standing on the Lower Hall Island, is visible at
the far right and its shops front on the south bank of the Shenandoah Canal.
The locks visible at the right are the Lower Locks, the arched stone bridge
probably dates from 1820, and wooden bridge across the canal, in the far distance,
was constructed in 1851.

Beginning at the Lower Locks of the canal, the following workshops(reading
right or west) can be seen on the Lower Hall Island.

Bldg. No. 8, Remodelled Stock House, fronting on the Lower Locks. Two-story
stone building with gable roof and three bays wide on east side. This is probably
Captain John H. Hall's 1819 blacksmiths shop, remodelled in 1854.

Bldg. No. 2, Proof House, built in 1845, a one-story frame and stone shop, located
to the far left, adjacent to Winchester and Potomac railroad tracks on south side
and lower(east) end of island.

Bldg. No. 7, the new Coal House, erected in 1854- a 21 by 25 feet brick storehouse
15 feet high. This is located above(or west) of Bldg. 8, and just below Bldg. No.
4.

Bldg. No. 10, Remodelled Storehouse of 1855. Part of this structure is visible
above the roof of Bldg. No. 7. This two-story stone building, about 30 by 35
feet was built 1827-33 and may have been Captain John H. Hall's office and store-
house.

Returning to the south bank of the Shenandoah Canal above(west of) Bldg. No.8:

First-large one-story, three-part shop, with two chimneys rising above its center
section, is Bldg. No. 5, the Annealing Furnace and Proof House, which was erected
in 1851-52.

Second: Above Bldg. 5, the artist appears to have left out of the drawing
Bldg. No. 4, the Tilt Hammer and Smiths Shop, a one-story, three-part workshop
that were constructed in 1849-51.

Third, Above Bldg. No. 5 can been seen Bldg. No. 6, the new Machine Shop, which has
a cupola on the center section of this three-part, one-story edifice. Bldg. No.
6 was erected in 1852-53.

Fourth, at the far upper end of the line of large shops is Bldg. No. 3, the
large three-part, two-story Finishing and Machine Shop, which was built in
1847-48.

The factories and residences in the center and left portions of this
drawing are located on the island of Virginius and were privately owned.
CHAPTER IV

Repairs and Improvements at the Rifle Factory, 1855 - 1861:

Henry W. Clowe was appointed superintendent of the Armory on December 31, 1854 and served in that office until December 1858. He was followed by Alfred M. Barbour, who served as Armory superintendent from December 24, 1858 to April 19, 1861, when Confederate troops captured the Harpers Ferry Armory.

During the years 1855 to June 30, 1860, $ 38,408 was appropriated by Congress and probably spent to make repairs and improvements at the Rifle Factory. Of this total $ 4,910 went to repair and remodell Bldg. No. 1, the Finishing and Machine Shop, one large new workshop with a bell tower, Bldg. No. 9, the Barrel Welding and Finishing Shop, was erected at a cost of $ 15,820. About $ 12,173 was expended grading the grounds and enclosing the Rifle Factory yard with a fine stone wall and iron paling fence. Finally, about $ 5,505 was spent improving the Shenandoah Canal at the Rifle Factory.(See Chart No. 5, page 69 for details).
# Chart No. 5

**Appropriation for the Repairs and Improvements at the U.S. Rifle Factory, 1855-1861**

<table>
<thead>
<tr>
<th>Year</th>
<th>Bldg. No. 1 Finishing Shop</th>
<th>Bldg. 9 Barrel Welding Shop</th>
<th>Walls, Road, Grading</th>
<th>Proposed Shop</th>
<th>Total</th>
<th>U.S. Shenandoah Canal</th>
<th>U.S. Shenandoah Dam</th>
<th>Bldg., Dams &amp; Canals</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/1/1855</td>
<td>6/10/1856</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1856</td>
<td>2,050</td>
<td></td>
<td>8,180</td>
<td></td>
<td>$ 8,180</td>
<td>$ 3,505</td>
<td>0</td>
<td>$ 11,685</td>
</tr>
<tr>
<td>3/7/1857</td>
<td>6/17/1857</td>
<td></td>
<td>3,993</td>
<td></td>
<td>6,853</td>
<td>0</td>
<td>0</td>
<td>2,050</td>
</tr>
<tr>
<td>1859</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>2,000</td>
<td>0</td>
<td>6,853</td>
</tr>
<tr>
<td>6/31/1860</td>
<td>11/3/1860</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2,000</td>
</tr>
<tr>
<td>1861</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12,128*</td>
<td>11,129*</td>
<td>0</td>
<td>23,257*</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$ 4,910</td>
<td>$ 15,820</td>
<td>$ 12,173</td>
<td>$ 12,128*</td>
<td>$ 45,031</td>
<td>$ 16,634</td>
<td>0</td>
<td>$ 61,665</td>
</tr>
<tr>
<td><strong>Total Spent</strong></td>
<td>$ 4,910</td>
<td>$ 15,820</td>
<td>$ 12,173</td>
<td>$ 0</td>
<td>$ 32,903</td>
<td>$ 5,505</td>
<td>0</td>
<td>$ 38,408</td>
</tr>
</tbody>
</table>

* Money never spent
Due to the destruction of the Armory Paymaster's vouchers for the years 1852 to 1861 by the National Archives staff during the 1940's, it is no longer possible to trace in detail the history of the costs of construction, amounts of material used in the construction, and the names of the men who built the new Barrel Drilling and Finishing Shop at the Rifle Factory.

The estimates for the 1859-60 fiscal year requested $15,820 "for erecting new workshops for barrels, &c., at the rifle factory," it was explained: "More shop room is essentially necessary at this factory than we now have to facilitate the fabrication of the new rifle, and wherein the necessary machinery can be put in position." Congress appropriated the desired sum on March 3, 1859.

On June 7, 1859, Superintendent Alfred M. Barbour informed Col. Henry K. Craig, Chief of Ordnance, "By the mail today I transmit to yr address a Drawing exhibiting the Forging (Bldg. No. 3) and Machine (Bldg. No. 6) Shops at the Rifle Factory, with the new Barrel Drilling and Finishing shop (Bldg. No. 9), proposed to be built under the appropriations available after the 30th inst. It (Bldg. 9) occupied a central position, and connects these shops (Bldgs. No. 4 and 3), in such a manner as to enable the operations on the barrels to pass forward from stage to stage, in regular order, without crossing or clashing.

"The shop will be 57½ by 49½ feet in the clear, two stories, giving ample room for all the operations on the barrels to be performed without removal to any other shop until completed and ready for assembling.

"I am satisfied that the proposed location and plan will be highly conducive to economy in the construction of the building and to order, convenience, and symmetry; I respectively recommend the plan for your approval."

On June 8, 1859, Col. Craig presented to plan to Secretary of War Floyd and recommended its approval, writing:

"As you will perceive from the accompanying letter of the Superintendent it is designed for the operations of Rifle Barrels and will fill up the space between two other shops [Bldg. No. 4 and 6]. The arrangement is very good and when carried on to execution the three buildings will present quite a handsome appearance." Secretary Floyd approved the plan on July 12, 1859.

Construction was underway by mid-August, for on the 18th of that month, George Mauzy, a resident of Harpers Ferry, advised James H. Burton, a former master and then chief engineer of the Enfield armory in London that armory of the Harpers Ferry Armory, "The government is building another large shop between the lower forging shop [Bldg. No. 4], and the middle or machine shop [Bldg. No. 6] at the Rifle Factory." In September 1859, Mauzy was able to report that the stone mortar masonry foundations had been completed.

On April 28, 1860, Superintendent Barbour wrote to Col. Craig and requested plus four clocks, one bell in each face of the square tower of the new shop. Responding on May 1, the Chief of Ordnance announced that the procurement of the bell and clocks for the new barrel Drilling and Finishing Shop must be postponed because it was planned to include a bell and clocks in the new iron arsenal building that was proposed to be erected on Arsenal Square, Block A, Shenandoah Street.

6. Mauzy to Burton, August 18, 1859, Harpers Ferry NHP collections.
7. Mauzy to Burton, Received in London, England October 6, 1859.
On May 12, 1860, Lt. Col. James W. Ripley of the Ordnance Department submitted his inspection report of the Harper's Ferry Armory, and noted that "The addition to the Rifle Factory connecting the forging with the machine shop" was "nearly completed". He also commented: Many improvements have taken place at these works since my last inspection, and when all the designs in contemplation for its better arrangement and further improvement have been carried out it will be a creditable and more complete establishment."

In his annual report for the fiscal year ending June 30, 1859, Superintendent Alfred M. Barbour reported: "The new barrel-drilling and finishing shop... has been very nearly completed, together with a powder-house, and an annealing shop fitted up."

On July 20, 1860, George Mauzy wrote to James H. Burton and reported that new barrel grinding shop was nearly finished and when done would be one of the best shops at Harpers Ferry. The shop was probably finished by the end of the summer of 1860.

With the erection of Bldg. No. 9, connecting Bldgs. No. 4 and 6, a new giant shop 254 feet long, by actual measurement of the extant foundations, and about 35 feet deep was formed. This same evidence indicates that Bldg. No. 9 was 57½ feet wide and 49½ feet deep.

Harpers Ferry Negative No. HF-37, a photo taken May 22, 1865 reveals that Bldg. No. 9 was a two-story brick shop with a four story high clock tower. The north(front) and south(rear) gable end elevations of the shop were divided into five bays each and the center bay of the north facade was comprised of a square tower that was approximately four stories tall. The new shop was designed in the same architectural style that had been introduced to the Harpers Ferry Armory by Major John Symington in 1846 and which had been applied to adjoining Bldgs. No. 4 and 6.

From these circumstances it is highly probable that the new Barrel Drilling and Finishing Shop had stone mortar masonry foundation walls, brick upper walls that were trimmed with cut-stone water table, window sills, and coping; the door and window frames would have been cast-iron. The gable roof would have been covered with slate and the gutters and downspouts would have been of copper. HF-37 shows that the first story windows of Bldg. 9 had round arches and were recessed in panels, beneath round arched brick pilasters in the usual Symington manner, and that the second story openings, which had flat arches, were also recessed within rectangular panel, also in the Symington style. The north and south gable end walls had the usual brick parapet end walls that were topped with cut stone coping, crenelated, and rose above the ridge of the gable roof. The gable roof was also set at right angles to flanking Bldg. No. 4 and 6. The square bell tower rose about one-story above the roof ridge, was crenelated, having there a small turret at each top corner, and was a round opening set in each face apparently intended to hold a clock.
The destruction of the Armory Paymaster's vouchers for the years 1852 to 1861 by the staff of the National Archives in the 1940's makes it impossible to trace in detail the alterations and repairs that were made to the finishing shop during this final period. Estimates and the superintendents' annual reports, however, do provide the following data on this building during the years 1852 to 1861.

In his annual report for the fiscal year ending June 30, 1854, Major William H. Bell, reported that extensive repairs had been made to the water wheel and forebays at the rifle factory finishing shop.

On October 31, 1855, Superintendent Henry W. Clowe wrote to Col. Henry K. Craig, the new Chief of Ordnance, regarding the two six-feet turbine water wheels in the finishing shop as follows:

"Permit me to call your attention to the great necessity which I also explained verbally to you at yr last visit to the Armory, of substituting for the two Turbine water wheels at the Rifle Factory, a new Undershot Wheel. I am at no time certain of the availability of these wheels for efficient service, and a full description of the trouble they give us for repairs is cited in my estimates for the ensuing Fiscal year. The present is the most favorable time and season for accomplishing this purpose, if the required funds, say about $2,000 can be supplied from other sources or abstracted from our Current Appropriations for New Machinery.

You were kind enough to say, that you would investigate the probability of obtaining such funds, without trenching on our Annual Appropriation, and I trust you will be able, so to arrange it."

The estimate for the 1856-57 fiscal year according requested the appropriation of $2,050.00 for water-wheel, penstock and pit-gearings, for a new finishing shop at the rifle factory. The reason given to explain the need for changing the two new turbines with a single undershot wheel was as follows:

2. Serial No. '865, Document P. 245, item No. 12.
12. The two turbine wheels now in use in this shop are placed so low in the pit, that it is difficult to make the necessary repairs when required; at some seasons of the year they cannot be made at all. Should any accident happen during the winter, or in the sickly season during the summer, the exposure of the health of the workmen incident to the repairs, would be such as to preclude to a great extent and perhaps entirely its accomplishment with reasonable cost. All this being occasioned by back-water rising from the dam across the Shenandoah river, erected by the Harpers Ferry and Shenandoah Manufacturing Company in connection with the deep position of the turbine wheels, which back water is liable to stop the works for necessary repairs for two or three weeks at a time. It is proposed to substitute for these a new undershot wheel with cutstone head blocks, cast iron frame, fitted, framed and erected upon the most approved plan.

Congress appropriated the requested $2,050.00 on August 30, 1856.

The replacing of the water wheel was accomplished before the money was provided, for in his annual report of the year ending June 30, 1856, Superintendent Henry W. Clowe reported:

Two of the old water-wheels (at the Rifle Factory) have been removed, and their places supplied by one undershot wheel, 10 feet in diameter and 12 feet wide, designed to perform the service lately performed by the two old ones. This wheel is of wood, with cast-iron shaft, flanges "L" irons and pillow blocks, secured with wrought-iron bolts and nuts. It has two master-wheels of cast iron, 10-feet diameter and 8-inch face. The whole is supported by two cut-stone head blocks 12 feet long, 5½ feet wide, and 6 feet high, cemented. The penstock is cast-iron frame, 21 feet long, 3 feet wide, and 3 feet high, the planking being secured by bolts and nuts, with cast-iron gates, racks, pinions, &c., the whole resting on a solid stone bed or wall, grouted and cemented. This wheel drives the machinery in the new finishing shop, and very considerable improvements have been made in the main driving drums, shafts, pillow and head blocks of the same shop.

40 9/12 feet of counter-shafting and machinery in the east end of this shop have been so improved and altered as to dispense with 39 9/12 feet, with all appendages, &c., whereby great saving in oil, belting and power is effected.

In addition, on June 28, 1856, $2,860.00 was made available by the Secretary of War from another fund to make "repairs of Finishing Shop, Rifle Factory." On April 23, 1856, a joint resolution was passed by Congress

which authorized the Secretary of War to apply the proceeds from the 1852 sale of U.S. lots and houses at Harpers Ferry to the purchase of other land and to the improvement of public property and buildings at the Harper's Ferry Armory. A total of $36,606.70 had been collected from this sale from September 1852 to May 1856, and was available for use at Harpers Ferry.

On June 28, 1856, Col. Henry E. Craig was able to inform that the Secretary of War approved the expenditure of the $36,606.70 on 10 projects. Among these, Item 4, was $2,860.00 for the repair of the rifle factory finishing shop.

Superintendent Henry W. Clowe's annual report for the fiscal year ending June 30, 1857 indicates that the $2,860.00 was spent as follows:

Under machinery fabricated: "Eighty feet of main and counter shafting of the most superior quality, finished bright, with cast-iron pulleys, hangers, and Babbitt metal journal seats, have been completed and in operation on the first and second floors of finishing shop and machine shop."

Under the heading of "Building", Clowe further reported as erected:

"An addition to 'finishing shop', rifle factory 35 by 25 feet, two stories, of brick upon stone foundation, all in the same style as the main building, with cast iron window frames, cut stone sills and water tables, and roofed with sheet iron, has been completed and is now in use. The whole exterior of this building has been neatly painted." Bldg. 3A on the 1859 historical base map.

The location of this addition is not known, but it may be the "unidentified structure", located about 10 feet south of the rear one-story east wing by Archeologist Edward McMillian Larrabee during his exploratory archeological excavations on the Lower Hall Island Rifle Factory site in August 1959.

---

6. Secretary of War to Secretary of Treasury, May 7, 1856, HP NHP Reel 26, V. 5, p. 466; Secretary of Treasury to Secretary of War, May 10, 1856, Reel 26, V. 5, p. 464.
7. U.S. Statutes at Large, XI, p. 143.
Archeologist Larrabee found the corner foundations of the finishing and machine shop still in place, built according to the dimensions giving by Major John Symington in his annual report for the fiscal year ending June 30, 1848. Measuring the structure, the main building, in 1959, was found to be 128 feet 8 inches long and 36 feet one inch deep. The two backs wings, which once contained the six feet cast-iron turbine wheels, were each 25 feet square, as had been stated by Superintendent Symington.

The superintendents' reports for the years July 1, 1857 to June 30, 1860 suggest that no further major repairs or alterations were made to the finishing shop during that period.

3. Repair and Improvements to the Tilt Hammer and Smiths Shop, Bldg. No. 4, Rifle Factory, 1852–1860:

Destruction of the Armory Paymaster's vouchers for the years 1852 to 1861 by the National Archives staff during the 1940's makes it impossible to trace in detail the repairs and alterations that may have been made to the structure during period just prior to the Civil War. The annual reports of the superintendents, however, do provide the following information on work done on the shop. In his annual report for the fiscal year ending June 30, 1854, Major William H. Bell noted briefly "Anvil blocks in forging shop altered and improved." Finally, in his annual report for the fiscal year ending June 30, 1859, Superintendent Alfred M. Barbour recorded that "A watch house has been partitioned off from one end of the forging shop at the rifle factory." This room would have been used by the night watchmen.

4. Repairs and Improvements to the Annealing Furnace and Proof House, Bldg. No. 5, Rifle Factory, 1855-1860:

In the annual report for the fiscal year ending June 30, 1855, Superintendent Henry W. Clowe noted that at the Rifle Factory: "The annealing furnaces have been enlarged and extensively repaired and improved in construction." 14

Finally, in his annual report for the fiscal year ending June 30, 1860, Superintendent Alfred M. Barbour noted: "that pipe for conveying water to the annealing house" at the rifle factory had been installed and was in use.

5. Repairs and Alterations to Machine Shop, Bldg. 6, Rifle Factory, 1855-61:

In the annual report for the year ending June 30, 1856, Superintendent Henry W. Clowe reported that "Five feet of counter shafting fabricated and put in operations in machine shop and the fixtures for drawing head-gates in this shop have been fabricated and attached." 16

15. Serial No. 1079, p. 975.
In center foreground, note the lower locks of the Shenandoah Canal, moving to the right the stone-arched bridge leading to the shops located on the lower Hall Island, and (further to the right), a wooden bridge leading to the Upper Hall Island. If the date of this photograph is correct, then the small houses to be seen on the Upper Hall Island (above and to right of wooden bridge) are structures that were erected by the U.S. Military Railroad corps in 1864.

Three old Armory Dwelling Houses standing on the Upper Hall Island were demolished in 1864 by those troops.

Shenandoah Street runs along the north bank of the Shenandoah Canal at lower right-hand corner of the photo.

The main line of four large Rifle Factory shops fronting on the south bank of the Shenandoah Canal, from left to right, are as follows.

First, Bldg. No. 4, a one-story, three-part shop, the Tilt Hammer and Smiths Shop 110 feet long and 35½ feet deep, erected in 1849-51.

Second (to the right), two and one-half story plus bell tower Bldg. No. 9, Barrel Drilling and Finishing Shop, 57½ feet long and 49½ feet deep, built in 1859-60.

Third, one-story, three-part Bldg. No. 6, the Machine Shop, 87 feet 9 inches long and 35 feet deep and constructed in 1852-53.

Bldgs. No. 4, 9, and 6 formed a shop 254 feet long.

Fourth (to the right of Bldg. 6), is the two-story, three-part Finishing and Machine Shop, Bldgs. No. 3, 128 feet 8 inches long and 36 feet deep, erected in 1847-48.

To the south (left) of the rear of Bldg. No. 9 can be seen a portion of a two-story building, with a first-story of stone and the second of brick. This may be Bldg. No. 1, the Filers Shop, 74 by 25½ feet, built in 1843-44.

A 11-foot high wall, once topped with an iron paling fence, that completely enclosed the Lower Hall Island, can be seen in the photo.

At the left side an arched opening in the wall can be seen. This is probably the waste way for the new main tail race that was constructed in 1847-48 and carried the water to and from the water wheels of the new shops, along their south (rear) elevations, in an underground race.

Ruins of a gable end wall can be seen in the trees at lower center, to the left of the lower lock. This could be either the ruins of Bldg. No. 5, the Annealing Furnace and Proff House, 60 by 36 feet, 1 story, built in 1851-52, or Bldg. No. 8, remodelled Stock House, a two-story stone structure, 30 by 30 feet, erected in 1819.
The estimates for the 1861-62 fiscal year requested $12,128 for a brick building as an annealing shop, stock-house, proof house, and grinding mill, at the rifle factory; it was explained:

All the grinding of the components for the rifle has now to be done at the musket factory, and all the stocks have to be first stored in the stock-house there; much of the annealing of parts of arms has to be done in like manner; which involves an extraordinary expense in time and loss of labor in the transportation of all these things to the rifle from the musket factory, a distance of nearly a mile.

The improvements at the rifle factory, resolved on some years ago, likewise render it essential that a building, as estimated for should be erected at the earliest practicable period. The shops at this place being originally temporary structures for the fabrication of the Hall's rifle, and erected many years since, the place had either to be abandoned as a factory, or rebuilt for the manufacture of the new model rifle of 1855. This latter alternative was resolved on; in pursuance whereof, several buildings of a permanent kind have been constructed, especially looking to the necessity of filling up and grading the ground on which they stand to such a height as to secure them from inundations of the Shenandoah. By the erection of this building, all the objections to this place as a factory may be obviated, the old houses now in the way of filling up may be removed, and the cost of the manufacture of the rifle ultimately much diminished." (1)

Congress appropriated the desired $12,28 for construction proposed Shop No. 12 at the rifle works on March 2, 1861. The edifice was never built as Confederate troops seized control of the Harper's Ferry Armory on April 19, 1861.

7. Painting and Slating Roofs, Rifle Factory 1855-61:

In the annual report for the fiscal year ending June 30, 1856, Superintendent Henry W. Clowe reported: "The slate roofs of the shops at this rifle factory have all been repaired, and the iron roofs newly painted."

In his annual report for the fiscal year ending June 30, 1858, Clowe noted that: "The workshops at the rifle factory have been kept in the same state of repair as they were at the beginning of the year, requiring to do so, only slight repairs and painting."

Finally, in his annual report for the fiscal year ending June 30, 1859, Superintendent Alfred M. Barbour wrote: "All the shops at the rifle factory have been more or less improved, including the painting of all the cast-iron window frames and sash."

2. Serial No. 976, p. 1320.
The annual estimate for the 1855-56 fiscal year included a request for $8,134 for the "Protection and improvement of rifle works;" it was explained: The grounds occupied by the rifle works, about five acres, require to be enclosed to protect the public property at these works. This will require an enclosing wall of masonry with rough coping. It will also be necessary to make a road, sunk under the railroad, to communicate with the banks of the Shenandoah river, in order to obtain sand for building purposes. Congress appropriated this sum on March 3, 1855.

Major William H. Bell, who prepared this estimate, provided the following additional data on the state of the island and scope of the work intended.

He wrote: "The grounds are exceedingly irregular having wide and deep cavities to be filled in, and great irregularities of surface requiring to be graded and levelled. Without protection from enclosures or walls, whilst they are much exposed by the meeting of canal boatmen, immediately in front of the factory,

"They are exposed on four sides, two of them by the canal, Railroad, and County Road. They exceedingly need attentions to protect the Public property at the works. The sunken is...to obtain sand from the Shenandoah for building purposes, this being the only point where it can be..."  

The cost he estimated would be about as follows:

2. U.S. Statutes at Large, X, p. 637.
"1. Enclosing wall of mortar masonry 2,665 feet long, 8 feet high, 28 in. thick average.
Foundation of same, 2665 feet long, 3 feet high, 3 feet thick, equals 2,949 perches @ $2 per.............................. $ 5,898.00.

2. Rough coping of wall 2,665 feet lineal @ 50¢.......................... 1,332.50
Enclosing Wall: .......................... $ 7,230.50

3. Double Dry Wall for sunken road through Rifle work to Shenandoah River, under Railway; 160 feet long, 11 ft high & 28 in. thick average-164 perch @ 1.50, ........................................... 246.00

4. 160 ft. lineal Rough coping for same @ 50c................................. 80.00
For sunken road walls: ........................................... $ 326.00

5. Filling in about 2,500 cubic yards @ 25¢.yd................................. 625.00

Total: $ 8,141.50.(4)

Congress, as has been noted, appropriated $ 8,180 for these projects.

In the annual report for the fiscal year ending June 30, 1856, Superintendent Henry W. Clowe described the progress of construction as follows: "The stone foundation of fence, for protecting and improving the rifle factory, in length about 1,820 feet, has been completed. Nearly all the brick piers have been built, the greater portion of the iron railing and pickets put in, and about 1,100 feet of cut stone coping set on the brick walls. About 4,300 cubic yards of filling has been hauled and deposited upon the yard, to raise it to the proper level.

On June 28, 1856, the Secretary of War also approved and made available $ 3,993.00 "for completing protection & improvement of the Rifle Factory" from the proceeds of the 1852 sale of public lots and houses at Harper's Ferry.

A grand total of $ 12,173 was thus made available for these projects.

In the report for the year ending June 30, 1857, Clowe wrote:

"The stone walling, brick piers, with wrought-iron rails and pickets (the work of which was done in the smith shop(31dg. NO.3); together with cut stone coping and caps, cut stone gate piers, and wrought iron gates, for protecting and improving the rifle factory...

4. Ibid., p. 85.
"have been nearly completed, only four panels—about forty feet—remaining to be finished. The enclosure of brick and iron has been painted with three coats of lead and oil.

"A considerable amount of filling has been done in grading and levelling the yard around the workshops within the enclosure."

Superintendent Clowe, in his report for the fiscal year ending June 30, 1858, commented: "The work necessary to complete the plan of protecting and improving the grounds immediately surrounding the workshops at this factory has been completed, and the piers and gateway constructed, and a part of the wall on the canal erected....

"The enclosing wall around the factory, with iron pickets, gateways, and piers, has been thoroughly painted."

In his annual report for the fiscal year ending June 30, 1860, Superintendent Alfred M. Barbour reported: "...an iron gate at the west end of the enclosure," had been completed and was in use.

Historical prints and photographs showing the enclosing fence are as follows:

Harpers Ferry Negative No. HF-490, a lithograph published in 1857; HF-37, a photograph taken May 22, 1865.

7. Serial No. 920, p.553.
Additional street lights, hydrants, and water pipes were installed in 1859-60.

In his annual report for the fiscal year ending June 30, 1860, Superintendent Alfred M. Barbour reported, that at the rifle factory: "The tail-race for the new shops [Bldg. No. 3], hydrants for force-pumps, pipe for conveying water to the annealing house [Bldg. No. 5]; iron lamp posts for yard lamps, and an iron gate at the west [upper end] of the inclosure, have all been completed, and in use."

10. Serial No. 1079, p. 975.
10. Proposed Alterations and Improvements at the Rifle Factory, 1860-61:

Removing Old Buildings: 1860:

A February 10, 1860, Superintendent Alfred M. Barbour wrote to the Chief of Ordnance, Col. H.K. Craig, suggesting the removal of several old stone buildings from the Rifle Factory grounds on the lower end of the Hall Islands, stating:

"There are two old rough-cast buildings, possibly Bldgs. No. 8 and 10, in the lower end of that enclosure which are used only for rubbish etc. They are in an exceedingly dilapidated condition and not now needed and mar the appearance of the grounds. The material (or a portion of it) in them might be used for some other purpose. There are also a few old trees in the same enclosure, which it would be advisable to take down. I would like authority to have the old houses and trees removed."

The permission to make these changes was not granted, but the plan was studied and concurred in by Lt. Col. James W. Ripley in his inspection report of Harpers Ferry Armory of May 12, 1860. It is noted that "The addition to the Rifle Factory Bldg. No. 3 connecting the forging (Bldg. 4) with the machine shop (Bldg. No. 5), now in process of erection and nearly completed, and as soon as it is finished, the present drilling and browning shop (Old Bldg 12 A, on 1848 Map?) which is entirely out of position, may be removed and the material applied to the erection of a small stock house of sufficient capacity to accommodate about 10,000 stocks, such building being very much needed at the Rifle Works..."

No evidence has been found to indicate that these changes were made prior to 1861.

11. **U.S. Rifle Factory Canal on the Shenandoah, 1855-1861:**

The estimates for the 1855-56 fiscal year requested $3,505 "For repairs of canal embankment walls on the southwest and river sides, and of the canal and dams at the rifle factory." Major William H. Bell explained that "These walls and embankments were principally injured by the great flood of April 1852, also, in some degree, by heavy rains of the last two years; and the above amount is requisite to put them in proper repair." Congress appropriated the requested amount on March 3, 1855.²

In the annual report for the year ending June 30, 1856, Superintendent **Henry W. Clowe** reported that "5,823 feet of dry wall, varying from one to six feet in height and from two to four feet in thickness, and 4,895 feet of coping, have been built and set on the armory canal." He also noted that "3,000 feet of excavation and fillings had been made on the north and south bank[s] of the canal." He explained that "All of the foregoing, walling, fillings, and excavation was necessary to protect the banks of the canal from injury by floods, heavy rain, and other casualties."³

He further noted that "The wooden bridge across the canal has been weather-boarded and the frame covered to protect it from the weather."

In his estimates for the 1858-59 fiscal year Superintendent Clowe asked for $2,000 for a wall on the west[ or north] bank of canal, rifle factory," he explained: "The county road[Shenandoah Street], running immediately along the margin of the canal, is constantly wearing away its banks and forming a slope from the road to the canal, facilitating the washing into the immediate channel of the canal of all kinds of rubbish and filth that accumulate on the surface of the road." Congress voted the $2,000 for this project on June 12, 1858.⁴

---

2. *U.S. Statutes at Large, X*, p.637.
5. *Serial No. 941, p.193, 194, Item No. 5.*
In his annual report for the fiscal year ending June 30, 1858, Superintendent Henry W. Clowes wrote that at the rifle factory "a part of the wall on the canal had been erected," and also noted "The gravel bar, arising from the wash of the ravine in the vicinity into the canal, has been removed, and the obstruction to the flow of the water temporarily obviated."

Alfred M. Barbour, the newly appointed superintendent of the Armory, described the completion of this project in his annual report for the fiscal year ending June 30, 1859, as follows:

"One thousand four hundred and seven perches heavy stone masonry, \(1,459\) feet stone coping, 405 yards earth excavation, and 507 yards filling of earth have been made in completion of a wall on the east or west or north bank of the canal at the rifle factory, protecting it on the county road side from the wash of the hill side, and depredations and incursions from that edge of the bank."

George Mauzy, who resided in an Armory Dwelling House located on the upper end of the Upper Hall Island, informed his friend James H. Burton on June 12, 1858, that this new wall ran from opposite the Rifle factory along the roadside of the canal west or up the river to a point opposite to his residence.

In his report for the year ending June 30, 1860, Barbour briefly noted that "the canal at the rifle factory and the musket factory have been repaired to such an extent as the occasion required, so as to render them both efficient."

---

7. Serial No. 1025, p. 1115.
8. Mauzy to Burton, June 12, 1858 Collection of Letters, Harpers Ferry NHP.
<table>
<thead>
<tr>
<th>Date &amp; Year</th>
<th>Amount for Canal</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/31/52</td>
<td>$0</td>
</tr>
<tr>
<td>3/3/53</td>
<td>5,000</td>
</tr>
<tr>
<td>8/5/54</td>
<td>0</td>
</tr>
<tr>
<td>3/3/55</td>
<td>3,505</td>
</tr>
<tr>
<td>8/30/56</td>
<td>0</td>
</tr>
<tr>
<td>3/3/57</td>
<td>0</td>
</tr>
<tr>
<td>6/12/58</td>
<td>2,000</td>
</tr>
<tr>
<td>3/3/59</td>
<td>0</td>
</tr>
<tr>
<td>6/12/60</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>$10,505</strong></td>
</tr>
</tbody>
</table>

Total appropriations for the Shenandoah Canal, including bridges, from 1842 to June 30, 1860, were $11,150, and total expenditures on the canal during these same years were probably about $12,550. 39.

(1) appropriated on March 2, 1861 was $11,129 for rebuilding the Shenandoah Canal. This money, however, was never utilized.
Construction on the Shenandoah Canal Revetment Walls, 1852 to June 30, 1860

<table>
<thead>
<tr>
<th>Finished June 30</th>
<th>Length</th>
<th>Height</th>
<th>Thickness</th>
<th>Coping</th>
<th>Filling</th>
<th>Excavation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1853 North</td>
<td>409 ft (1)</td>
<td>6 ft.</td>
<td>3 ft</td>
<td></td>
<td>700 cu.yds</td>
<td>2,000 cu. yds</td>
</tr>
<tr>
<td>1853 South</td>
<td>224 ft (2)</td>
<td>6½ ft.</td>
<td>3 ft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1853 South</td>
<td>633 ft.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1856 both</td>
<td>5,823 ft (3)</td>
<td>1 to 6 ft</td>
<td>2-4 ft.</td>
<td>4,895 ft</td>
<td>3,000 cu. yds</td>
<td></td>
</tr>
<tr>
<td>1860 North</td>
<td>1,407 perch (4)</td>
<td></td>
<td>1,459 ft.</td>
<td>507 cu.yds</td>
<td>405 cu. yds</td>
<td></td>
</tr>
</tbody>
</table>

1. North bank of canal, on both sides of the Stone arch bridge.
2. South bank of canal, on shop side, by Finishing Shop, Bldg. No. 3 and across filled up opening of former sluice way.
3. On both sides of the canal.
4. Along north bank (Shenandoah Street side), from opposite Rifle Factory island, west to upper end of the Upper Hall Island.

12. U.S. Rifle Factory Dam on the Shenandoah, 1855-61:

On March 3, 1855 Congress appropriated $3,505.00 for repairs of canal embankment walls..., and of the canal and dams at the rifle factory. It was explained to Congress that "these walls and embankments were principally injured by the great flood of April 1852, also, in some degree, by heavy rains of the last two years..."

This money went chiefly to make repairs to the canal walls and canal at the rifle factory in 1855-56, and the repair made to the U.S. Rifle Factory were apparently so minor that the superintendent of the armory, Henry W. Clowe failed to describe them in his annual report for the fiscal year ending June 30, 1856, although the work on the canal is given at some length.

In like manner, the superintendents' annual reports for the period July 1, 1855 to June 30, 1860 fail to make any mention of repair or improvements being made to the Rifle Factory dam during those years. It thus appears that only minor repairs were made to the Shenandoah dam from 1855 to 1861.

| Appropriations for U.S. Rifle Factory Dam on the Shenandoah, 1852-1861: |
|---|---|
| Year | Rife Factory Dam |
| 8/31/52 | 0 |
| 3/3/53 | 0 |
| 8/5/54 | 0 |
| 3/3/55 | 0 |
| 8/30/56 | 0 |
| 3/7/57 | 0 |
| 6/17/58 | 0 |
| 3/3/59 | 0 |
| 6/21/60 | 0 |
| 3/2/61 | 0 |
| Total | 0 |

Appropriation for the U.S. Shenandoah Dam, 1842-1861 totalled $900.00 and expenditures during the same period on the dam were approximately $1,144.21.
In his estimates for the 1861-62 fiscal year Superintendent Alfred M. Barbour requested $11,129 "for enlargement and protection of rifle factory canal;" he explained: "... Originally this canal was made by a joint stock company, to facilitate the navigation from the upper country bordering on the Shenandoah river, and was not designed for the purposes to which the water power derived from it is now devoted. In effecting the improvement here proposed, a stone wall will be necessary to render the water-power of the rifle factory sufficient; and also to protect from inundation the land and tenements of the government between this canal and the Shenandoah river. These[on the Hall Islands] are occupied by operatives of the armory and are very valuable.

Congress appropriated the desired $11,129 on March 2, 1861, but the capture of the Harpers Ferry armory on April 19, 1861 ensured that none of this money was ever spent on rebuilding the Shenandoah Canal at the U.S. Rifle Factory. Of the total of $16,639 provided for canal projects from 1855 to 1861, approximately $5,505 was actually spent. (See The results of this work on the Shenandoah Canal opposite the U.S. Chart) Rifle Factories can be seen in the following views: the lithograph published in 1857-'View of the Island of Virginius, in the Shenandoah, at Harpers Ferry, Taken near Jefferson's Rock', (Harpers Ferry NHP Negative HF-490); HF-37, a photo taken during the Civil War.
CHAPTER V

The Rifle Factory During the Civil War, 1861-65:

Confederate troops arrived in Harpers Ferry about 1 a.m. on April 19, 1861 and took possession of the U.S. Musket Factory, the U.S. Rifle Factory, and the U.S. Arsenals. During the period April 19 to June 15, 1861, they removed and sent south more than 432 valuable machines for manufacturing arms and 57,000 assorted tools. The Confederate Army, after burning the Musket Factory building evacuated Harpers Ferry on June 15, 1861. On either June 20th or 28th, 1861, they returned to town briefly to set fire to and destroyed (except for the strong brick walls) the 10 buildings that made up the U.S. Rifle Factory.

In February-March 1862, the Winchester and Potomac Railroad was repaired for its entire length from Harpers Ferry to Winchester and used to carry supplies to the Union army in the Shenandoah Valley. During this period, February to September 1862, the Ordnance Department had its arsenal located in a repaired building at the U.S. Rifle Factory.

In November 1864, the U.S. Military Railroad Corps again rebuilt the Winchester and Potomac Railroad from Harpers Ferry south 28 miles to Stephenson's Depot, a point about five miles west of Winchester. Six hundred soldiers were employed to operate the 13 locomotives and 75 cars on this line. During the period December 1864 to June 1865, this railroad dispatched 2,236 trains that carried nearly 200,000 persons and thousands of tons of supplies to support Sheridan's army and also to transfer force to General Grant.
U.S. Rifle Factory Plant, Lower Hall Island, 1864-1866:

The following six frame structure had been erected by the U.S. Military Railroads on the Lower Hall Island, adjacent to the U.S. Rifle Works in 1864-65:

1. One locomotive Engine House, 164 by 26 feet.
2. One Machine and Blacksmith shop, 82 by 26 feet.
3. One railroad loading platform, 197 by 27 feet.
4. One railroad loading platform, 232 by 22 feet.
5. One railroad loading platform, 112 by 16 feet.
6. One railroad loading platform, 446 by 25 feet.

On the Upper Hall Island were located two more frame U.S. Military Railroad buildings:

7. One tool house, 37 by 22 feet.
8. One Agent's Office, 31 by 13 feet.

On March 1, 1866, the Secretary of War directed the Quartermaster General to demolish these eight structures and to sell their materials at public auction.

In his inspection report dated July 27, 1865, Brigadier General Edward D. Ramsay reported that Armory Dwelling Houses No. 6, 7, and 8, "located at Rifle Factory on Hall's Island" had been "Torn down in 1865 to make room for the Military Rail Road." He listed the three demolished houses as follows:

Dwelling House No. 6, two-story brick.
Dwelling House No. 7, one & half story, stone.
Dwelling House No. 8, two story, brick.

1. Noffsinger, pp.119,121.
II Sherwood Side (U.S. Rifle Factory):

Foundation of Rifle Factory had order of 2 or 3 buildings
200 ft. by 60 - 60 ft. by 60 ft. -
100 ft. by 60.
Lot of dressed coping.

Foundation of Stable about 50 ft. square. Dressed stone coping.

Immensely open quarries of stone face the property.

The property in machinery described & in the great quantities of dressed stone and building material laying [sic] around upon the land must be of very great value."

(Bldgs. No. 6, 9, and 4 were 254 feet long)

(Bldg. No. 1 was 128 feet 8 inches long).

(Bldg. No. 5 was 60 feet long. All these structures, except for their projecting center sections, were from 35½ to 36 feet wide).
On May 14, 1866, the Chief of Ordnance, Brevet Major General A. B. Dyer advised Secretary of War E. M. Stanton, that there were no plans to rebuild the destroyed Armory at Harper's Ferry and that the armory lands and buildings could be sold. On December 15, 1868, Congress passed an act that authorized and directed the Secretary of War to sell at public auction the U.S. lands, about 1,669½ acres, buildings, machinery, and water power privileges at Harpers Ferry. This sale was accordingly held on November 30 and December 1 and 2, 1869. The U.S. Rifle Factory, consisting of the Upper and Lower Hall Island, about 13 acres, the ruins of 10 Rifle Factory shops, and the water power rights on the Shenandoah River, were purchased by a gang of speculators headed by Captain Francis C. Adams of Washington, D.C., for $30,000. Signing bonds promising to pay for the property, Adams and his partners obtained control of the Rifle Factory property in 1869 without putting down any money and they also failed to pay off their bonds on schedule.

On July 20, 1872, Secretary of War Belknap requested the U.S. Attorney General to institute a suit against Adams and partners for the sum of $209,705 that the speculators owed on three bonds. The effort to re-establish clear U.S. title to U.S. Rifle Factory property, together with that of the U.S. Musket Factory, was waged in the U.S. Courts from 1872 to 1876. After a victory in two court battles, the Rifle and Musket Factory property were sold at public auction by the U.S. District Court of West Virginia in September 1876. The United States purchased Adams and partners' rights for $70,000.

1. U.S. Statutes at Large, XV, p.265-266.
The United States offered the water power rights on the Potomac and Shenandoah Rivers for sale on May 25, 1880, but withdrew them when a bid of only $10,000 was received for the rights on the Potomac and none for the rights on the Shenandoah. On July 4, 1884, Congress passed a law that authorized and directed the Solicitor of the U.S. Treasury to sell the U.S. Musket Factory and Rifle Factory, together with their water power rights, "Provided, that the property shall not be sold for less sum than twenty thousand dollars." At the sale of October 22, 1884, Thomas H. Savery purchased the U.S. Musket Factory property for $25,100 and also the U.S. Rifle Factory property for $810.00. The United States issued to the deed to Thomas H. Savery when he completed his payments on the Rifle Factory property, on March 2, 1885, and to the U.S. Musket Factory property on April 12, 1887.

CHAPTER VII

DESCRIPTIVE CATALOG OF RIFLE FACTORY BUILDINGS, 1842-1861

1. Rifle Factory Bldg. No. 1:
Description of the Filing Shop, 1843-44:

Because of its location to the south(or rear) of large two-story work shops that fronted on the south bank of the Shenandoah Canal, the 1844 Filing Shop cannot be seen in the known historical drawings of the U.S. Rifle Factory. This includes the 1857 lithograph, HFNHP Negative and No. HF-490; the sketch by Lieut. James G. Benton, drawn about June 1853 Negative No. 794; NHP Negative No. HF-37, which was taken May 22, 1865,

and prior to the stone and brick walls being levelled, however, provides a view of what are probably two bays of the east wall at the southeast corner of the Filing Shop. The building has one-story high stone walls topped by a brick second story. The two or three windows visible in the east wall near the southeast rear corner are topped with flat arches of cut stone. Based on this limited visual and documentary evidence the new Filing Shop may be described as follows:

The new Filing Shop was designed and erected by Major Henry K. Craig in 1843-1844 at a approximate cost of $1,000. The two-story structure was from 73 to 74 feet long and from 24 to 25½ feet wide.

The first story high foundation was of stone and the upper story of brick. The cornice, window and door sills and lintels were of cut stone, as were the exterior stone steps. The windows and doors had flat arches and the gable roof was covered with slate. The ceilings were lathed and plastered. Work benches equipped with vices for holding the arms extended general around the interior walls of the shop. The exterior architectural appearance of the new filing shop probably resembled that of the new warehouse, boring mill, and proof house that Major Craig also constructed at the Musket Factory during the years 1842 to 1844.
2. **Description of the Proof House, Bldg. No. 2, Rifle Factory, 1845**

The Proof House is Bldg. No. 2 on the 1859 historical base map of the U.S. Rifle Factory. The structure (also bldg. No. 23 on Brown's 1848 map of the Rifle Works), was located on the eastern (lower) end of the Hall Island and immediately north of the Winchester and Potomac Railroad tracks.

The Proof House, erected by Major John Symington in 1845 at an estimated cost of $750, was a one-story frame building with a back wall of stone mortar masonry that was 3½ feet thick. The structure was 19½ by 15 feet in size and probably had a slate covered roof. The edifice was used for proofing rifle barrels.

A portion of what may be Proof House, a one-story structure with a two-bay wide gable end wall that is located in the correct position, can be seen on Harpers Ferry NHP Negative HF-490, a lithograph which was published in 1857.
Description of Finishing and Machine Shop, Rifle Factory

The Finishing and Machine Shop is Bldg. No. 1 on the 1848 Map (No. 2) and Bldg. No. 3 on the 1859 Historical Base Map. The workshop can be seen in the following Harpers Ferry NHP Negatives: No. HF-490 (a lithograph that was published in 1857); HF-794, "A Sketch of the U.S. Rifle Works at Harpers Ferry" by Lieutenant James G. Benton, probably drawn about June and 1853; HF-37 a photograph taken May 22, 1865.

The Finishing and Machine Shop was designed and erected by Major John Symington in 1847-48 at a cost of approximately $26,880.00. This total included $10,800.00 for the structure, $4,200.00 for the forebays and two six feet cast-iron turbines, and $11,880.00 for the machinery. An additional $3,320.00 was spent constructing a new main tail race behind the shop. The tail race was 10 feet wide, 6 feet high, covered over, and its side walls, comprised of large stones, were 2½ feet thick.

The finishing and machine shop, was 128 feet long and 36 feet 1 inch wide (by actual measuring on the ground in 1959), two stories, brick on stone foundations. At the rear, on the east and west ends, were two brick wings on stone foundations, one-story each, 25 by 25 feet square (by actual 1959 measurement). The door and window frames were of cast-iron, the water table, cornice, coping, and sills of cut stone. The gable roofs were covered with sheet iron and the gutters and spouting were of copper. In 1848 each one-story wing contained a six foot cast-iron turbine water wheel that drove the machinery in the shop.

The construction of a dam in connection with the operations of factories located on Virginius Island caused back water that reduced the efficiency of the turbines.

In 1856, the two turbines were replaced at a cost of $2,050.00 by a new wooden undershot wheel that was 10 feet in diameter and 12 feet wide. In 1856-57 an "addition to the finishing shop" was erected at a cost of $2,860.00.
This was 35 by 25 feet, two stories, of brick on stone foundation, built in the same style as the main shop. The addition thus also had cast-iron window and door frames, copper spouting and gutters, cut stone water table, sills, and coping, and its gable roof was covered with sheet iron. No photo or sketch of the 1857 addition had been found. The building, however, may have been located about 10 feet south of the east wing of the main finishing shop.

In 1850 518 feet of cast-iron stove pipe were installed in the main workshop to heat the building.

HF NHP Negative HF-794 provides a detailed and apparently accurate view of the Finishing and Machine shop as it appeared about 1853. The main two-story building, 128 feet long, was divided into two wings and a center. Each wing was three bays deep and 4 bays long while the center section was three bays wide and appeared to project slightly. The rear one-story wings were two bay wide and two bays deep. Like the musket factory buildings designed and erected by Superintendent Symington, the rifle factory finishing and machine shop had a round arch for each first story bay with a round arched window recessed within the arch. Rectangular bays, with recessed flat arched windows, formed the second story. The gable ends of the two two-story wings and also of the two one-story rear wings were adorned with brick parapet walls that were crenelated and capped with cut stone coping. Similarly the gable ends of the front and rear elevations of center building had like parapet walls. The parapet of the north(front) parapet, however, may have contained a center window that was added in 1849.
DESCRIPTION OF TILT HAMMER AND SMITHS (OR FORGING) SHOP, RIFLE FACTORY, 1849-51

The Tilt Hammer and Smiths Shop is Bldg. No. 4 on the 1859 Historical Base Map. A view of the work shop can been seen in the following Harpers Ferry NHP Negatives, No.HF-490, a lithograph made in 1857; HF-37, a photograph that was taken on May 22, 1865; HF-490, a distant view of the island, taken ca. 1865 and prior to the great flood of October 1870 is to be found in photo HF-119.

The foundations of the Tilt Hammer and Smiths Shop, Bldg. No.4, were located by Archeologist Edward McMillan Larrabee, during the summer of 1960 in his second season of exploratory excavations at the U.S. Rifle Factory site. His finding confirm the dimensions of the workshop as given by Major John Symington in his annual report for the fiscal year ending June 30, 1850. The stone masonry walls erected by Edward Tearney's crew of masons in 1849 are four feet 4 inches wide.

The Tilt Hammer and Smiths or Forging Shop was designed and erected by Major John Symington in 1849-1851 at a cost of perhaps $9,500.00, and with the machinery included, of approximately $22,130.00. The one-story brick building had stone basement, cut-stone water table, sills, and coping. The window and door frames were of cast iron and the gable roofs were covered with slate. The gutters and downspouts were of copper. The shop was 110 feet long and 35½ feet wide and was divided into three equal sections comprised of a center building that projected 14 feet to the rear (south) contained an office for the shop foreman, and that was flanked on either side by a wing. There were three exterior wooden doors: one in the center building and

one in each wing. Judging from Photo HF-37, each wing was 3 bays wide (long) and three bay deep. The center building was three bays wide and 3 deep. As in all the other Symington designed structures, each bay was comprised of round arch that was supported by capped pilasters with round arch window being recessed within each arch. Brick parapet walls, crenelated and topped with cut-stone coping, rose above the gable roofs at the end of each wing and also of the front and rear elevations of the center building, the latter's gable roof being set at right angles to the ridge of the roof of each section was crowned by a wooden ventilator or the roofs of the flanking wings. A lantern that was 5 feet wide and 8 feet long.

The machinery in the shop was powered by four-foot cast-iron turbine water wheel that had been manufactured by James F. Ames of Boston, Mass. The floor of the building was covered with sheet iron. The shop contained nine cast-iron forges, with sheet iron bonnets and smoke flues; also one cast-iron furnace and flue for heating iron and steel. There was 102 feet of 8 inch tin blast pipe and 80 feet of 3 inch blast pipe. One fan-blast machinery was connected by means of this tin pipe to conduct a blast to each of the forges. Anvil blocks of oak timber mounted on stone foundations were located at each of the nine forges. The shop also contained five trip hammers (belt) which were driven by the turbine water wheel.

HF-794, a "Sketch of the U.S. Rifle Works at Harpers Ferry" ca. 1853, by Lieutenant James G. Benton, affords a distant and rather indistinct view of the tilt hammer and smiths shop.
The Annealing Furnace and Proof House is Bldg. No. 5 on the 1859 Historical Base Map. The structure can be seen on Harpers Ferry NHP Negatives HF-490, a lithograph published in 1857; the structure is missing (either hidden by the trees or perhaps demolished) in HF-37, a photo taken at May 22, 1865, the end of the Civil War. This suggests that the brick walls of the Annealing Furnace and Proof House may have been demolished by Union soldiers during the Civil War, either to build huts or in connection with the operations of the U.S. Military railroad on the Lower Hall Island in 1864-65.

Archeologist Edward McMillan Larrabee, during his exploration of the ruins of the U.S. Rifle Factory, 1959-61, did not find the stone foundations of the annealing furnace and proof house. This suggests several possibilities:

(1) that the northeast corner of the island where the building is believed to have stood was excavated and destroyed, together with the structure's foundations by the construction of Lake Quigley and a pulp mill in 1887. (2) that HF-37, the 1857 lithograph is in error (hence also the 1859 historical base) and the shop was actually located somewhere south of the line of main workshops which fronted on the Shenandoah Canal. If this was the case, then the foundations of the annealing furnace and proof house were located in areas that were not explored by Mr. Larrabee.

If my reading of Archeologist Larrabee's 3rd report is correct, however, it appears that about 125 feet of the northeast corner was removed in 1887 for pulp mill purposes, hence the 1851/52 stone foundations may no longer be extant.

1. Larrabee, Edward McMillan, "Report of the Third Season of Exploratory Archeological Excavations Conducted at the U.S. Rifle Works, Lower Hall Island, Harpers Ferry National Monument, Harpers Ferry, West Virginia, from 25 August through 10 November, 1961," (NPS typescript, Harpers Ferry NM, W.Va., April 20, 1962)p.58. Not located, some because they were not really searched for, were Bldgs. 1, 5, 7 and 8 on the 1859 historical base map. Bldgs. No. 7 and 8 were small structures.
2. Ibid., p.57.
The Annealing Furnace and Proof House was designed and erected by Major John Symington in 1851-52 at a cost of approximately $5,100.00. The one-story brick building had stone foundations, cut-stone water table, sills, and coping, and its gable roofs were covered with slate; the floors were probably paved with brick. The gutters and down spouts were of copper. The shop was 60 by 36 feet in size and divided by means of two brick partition walls into three compartments. The floor plan followed the unusual Symington's scheme: a center building flanked on either side by a wing. The gable roof of the center structure was set at right angles to the similar roofs of the wings.HF-490, the 1857 lithograph, indicates that two square brick chimneys, one located on each partition wall, rose above the roof. The east and west ends of the wings were divided into three bays. On the front and rear elevation each section may have been only two bay wide. Each bay was comprised of a round arch supported by brick pilasters capped with cut stone. Parapet brick walls, crenelated and topped with cut stone coping rose about the roof levels of the gable ends of the wing and also on the front and rear elevations of the center section.

The roof ridges of the west and west wings were apparently crowned with a wooden lantern or ventilator five feet wide and 8 feet long. Inside there was a wooden ceiling, two inside doors, two doors leading to the exterior. Five of the semi-circular windows had venetian blinds and two windows apparently had inside shutters; there was one and probably two annealing furnaces in the shop, one in each wing.
DESCRIPTION OF THE NEW MACHINE SHOP, RIFLE FACTORY, 1852-53:

The new Machine Shop is Bldg. No. 6 on the 1859 Historical Base Map. The workshop can be seen in the following Harpers Ferry NHP Negatives: HF-794-"Sketch of the U.S. Rifle Works at Harpers Ferry," ca. June 30, 1853, by Lieutenant James G. Benton; HF-490, a lithograph that was published in 1857; HF-37, a photo taken on May 22, 1865. These three views all indicate that the new machine shop was a one-story (not two-story) building.

The stone foundations of Bldg. No. 6 were located by Archeologist Edward McMillan Larrabee during the summer of 1960. It was determined that shop was 87 feet 9 inches long, with the center section being 36 feet wide and projecting 4 feet to the front (north) and 14 feet to the rear. It was further established that the west end of the machine shop was located 58 feet east of the east end of Bldg. No. 3, the finishing and machine shop; and (2) that the east end of the Machine Shop (Bldg. No. 6) was situated 57 feet six inches west of the west gable end of Bldg. No. 4, the Tilt-Hammer and Smiths Shop.

The description that follows is based on Col. Huger's brief remarks, the photographic and archeological evidence, and a knowledge of the type of workshops that Major Symington designed and erected, 1845-51.

Bldg. No. 6, the new Machine Shop, was designed by Major John Symington in 1850-51 and erected under the supervision of Colonel Benjamin Huger in 1852-53 at a cost, including machinery, of approximately $16,980.00. The one-story brick building had stone foundations, a basement, cut-stone water table, sills, steps, and coping; the door and windows frames were of cast-iron; and the gable roofs were probably covered with slate (or sheet iron). The gutters and down spouts were...
of copper. The building was 87 feet 9 inches long and 35 feet deep.

In accordance with Symington's favorite floor plan, the structure was subdivided into three sections: a center building and two wings. The center section was 36 feet wide on the front and rear elevations and 53 feet deep, with the front projecting four feet to the north and the rear projecting 14 feet to the south.

The rear portion contained an office for the foreman of the shop. Each wing was about 25 feet 10 inches long and 35 feet deep. The gable roof of the center was set at right angles to the gable roofs of the two wings; the gable ends of the center and the gable ends of the two wings were adorned by the usual brick parapet end walls crenelated and topped with cut-stone coping, which rose above the ridges of their roofs. The center of the center structure, in the 1853 and 1857 drawings, appears to be crowned with a wooden cupola or belfry similar in design to the one found on the Engine and Guard House, Bldg. No. 1 (the John Brown Fort), at the Musket Factory.

The machinery in this shop was powered by one cast iron turbine water wheel that was located in a wheel pit that was constructed of cut-stone; its forebay was built of stone and cast-iron. A large force pump, for throwing water in case of fire at the factory, was attached to the wheel of the machine shop in 1853.

The shop also probably had lightning rods on its roof and its exterior brick walls painted with two coats of paint, in oil, as was Symington's practice with the other new shops.
7. Description of New Coal House, Bldg. No. 7, Rifle Factory, 1854:

Designed by Brevet Col. Benjamin Huger and erected by Major William H. Bell in 1854, the coal house was a brick one-story, 15-foot-high storehouse, 21 by 25 feet in size. It roof, probably gable, was covered with sheet-iron. Cost of Construction was about $650.

8. Description of the Remodelled Stock House, Bldg. No. 8, Rifle Factory, 1854:

What is probably this storehouse can be seen in Harpers Ferry NHP Negative 490, and it is also apparently Bldg. No. 22 on Brown's 1848 Map.

This two-story stone shop with gable roof and four chimneys was erected as a smiths or forging shop for the use of Captain John H. Hall in 1819 and served as one of his first two workshops. The shop was 30 feet square and each elevation was apparently divided into three bays. The roof was slated about 1829 and the windows had flat arches. The shop originally contained four forges. In 1854 the old shop was remodelled for use as store house for rifle stocks and two new wooden floors were installed.

The Stock House was remodelled by Major William H. Bell.
The Barrel Drilling and Finishing Shop, Bldg. No. 9 on the 1859 historical base map, was centered between and adjoined Bldgs. No. 4, the Tilt Hammer and Smiths Shop, and Bldg. No. 6, the Machine Shop. Together, the three shops formed a single structure 254 feet long.

Bldg. No. 9 can been seen in Harpers Ferry NHP Negative No. HF-37, a photo that was taken on May 22, 1865.

The Barrel Drilling and Finishing Shop was designed and constructed by Superintendent Alfred M. Barbour in 1859-60 at an approximate cost, including machinery, of $15,820. The workshop was designed in the same architectural style that Major John Symington had first introduced to the armory in 1846 and which had been applied to adjoining Bldgs. No. 4 and 6.

Bldg. No. 9 was a two-story brick workshop that was adorned with a four-story tall clock tower. The edifice was 57½ feet wide and 49½ feet deep. The foundations were of mortar stone masonry, the walls of brick, trimmed with cut-stone water table, window sills, and coping. Window and door frames were of cast iron and the gable roof was probably covered with slate. The gutters and downspouts were of copper and the roof probably had lightning rods attached. Under the normal practice of that day, the exterior brick walls also probably received two coats of oil paint.

The gable roof ran at right angles to the gable roofs of adjoining buildings No. 4 and 6. The north (front) and south (rear) gable ends of Bldg. 9 had brick parapet walls that were caped with cut-stone coping and crenelated. The north and south gable ends of Bldg. 9 were divided into five bays. The center bay of the north (front) elevation was comprised of
a square clock tower that rose from the grounds to a height of about four stories (or one-story above the roof ridge). The top of the tower was crenelated, having a small turret at each corner, and each recessed solid brick panel in the upper story of the tower contained a round opening that was intended to hold a clock. It is probable that no clocks were actually installed in these four openings prior to the destruction of the shop.

The doors and windows of the first-story of the north and south elevations of the Barrel Drilling and Finishing Shop were topped by round arches and were set in recessed panels, under round arches that were supported by brick pilasters. Second floor windows on these elevations had flat arches and were set in recessed rectangular panels, all in the same identical style that Symington had applied to adjoining Bldgs. No. 4 and 6.

10. Description of Remodelled Storehouse, Bldg. No. 10, Rifle Factory, 1853:

This structure is probably Bldg. No. 14 on Brown's 1848 map. (Map -2) The building was probably erected as a storehouse and office for the use of Captain John H. Hall ca. 1827-33. The edifice was approximately 30 by 35 feet in size, two stories high, and had a gable roof that was covered with slate. The structure was probably built of stone, and had exterior stairs that led to the second floor. The old building was remodelled in 1853 at a cost of about $450.00 for use as a storehouse. In this work, the exterior stairs were removed and new stairs constructed inside.

The Store House was remodelled by Brevet Colonel Benjamin Huger.

A part of what is probably the roof of Bldg. No. 10 can be seen in the 1857 lithograph, Harpers Ferry NHP Negative No. 490.
Manuscript Material:

National Archives Records, Washington, D.C.

The Confederate Army on April 19, 1861 captured the U.S. Armory at Harper's Ferry and held the place until June 15, 1861. On their withdrawal on the latter date, they set fire to the U.S. Musket Factory buildings and thereby destroyed all of the original records at the Armory, which were on file in Musket Factory Bldg. No. 2, the Armory Offices. For this reason there is no collection of Harper's Ferry Armory records as such on file in the National Archives at Washington, D.C.

The originals of letters written by Harpers Ferry Armory Officers from 1798 to 1861 to the Secretary of War and Chief of Ordnance are still largely intact in the National Archives, but they are filed as they were received, when written, in the general filing systems of the Washington official.

In 1957, Park Historians Herbert L. Kissling and Charles W. Snell, during a six week period, searched most of the central files in the National Archives for material relating to the history of the Harper's Ferry Armory from 1794 to 1869. Collected were 14,504 pages of documents on 14 reels of microfilm and 225 pages of photostated documents. Maps, plans, prints and photographs in the National Archives collections relating to Harpers Ferry were also copied. Historians Kissling and Snell, in effect, thus recreated much the central Armory files that were destroyed in 1861.

The microfilm material was reproduced in the form of xerox pages and these were placed in loose leaf notebooks. These volumes and their pages were numbered and completely cataloged and indexed according to subject and these notes placed in a master card index system.

All persons interested in performing research on the Harpers Ferry Armory history from 1794 to 1869 would therefore do well to first examine this extensive centralized collection in Harpers Ferry National Park library to collect their data, and only then, if there are still some missing links, to attempt to locate these items in the general files of the National Archives, Washington, D.C.

The following National Archives Record Groups were searched and data relating to Harpers Ferry collected in 1957:


2. Records of the Office of the Chief of Engineers, National Archives Record Group No. 77 (Maps and reports relating to right of way for the Winchester and Potomac Railroad, 1834).

3. Records of the National Park Service, National Archives Record Group No. 79 (Maps and reports of C. & O. and Shenandoah Canal Companies for constructing canal and locks on Shenandoah in 1803-1807.)

4. Records of the Office of the Quartermaster General, National Archives Record Group No. 92 (Civil War activities, 1861-66).
5. Records of the Adjutant General's Office, National Archives Record Group No. 94. (Civil War).

6. Records of the Office of the Secretary of War, National Archives No.107 (1794-1869).

7. Records of the Public Buildings Service, National Archives Record Group No. 121(1796-1887 records of the purchase of land for U.S. Armory use, and also of the sale of U.S. lots and houses, 1852, and 1869-1887.).

8. Records of the Office of the Judge Advocate General, National Archives Record Group No. 153. (Records and copies of deeds for the purchase of Armory lands and the sale of the same, 1796 - 1887).

9. Records of the Chief of Ordnance, National Archives Record Group No. 156. This Office or Department was responsible, under the supervision of the Secretary of War, for the operations of the Harper's Ferry Armory, 1815 to 1887).

10. Records of the Office of the Inspector General, National Archives Record Group No. 159. Has many inspection reports written after inspections had been made of the Harper's Ferry Armory.

Records of the U.S. Treasury Department and the U.S. General Accounting Office, The records of the Second Auditor of the Treasury, National Archives Record Group No. 217, Series Two and Three, 1817 to 1851:

This data is comprised of thousand of pages of documents that were prepared and submitted by the Harpers Ferry Paymasters for paying wages, for purchase of materials for manufacturing arms and for construction of buildings, dams, and canals. It includes armory pay rolls and rent rolls.

This vast collection was searched by Historian Charles W. Snell for data relating to the repair and improvements of the Harper's Ferry Armory from 1817 to 1851. Records for the years 1852 to 1861 were destroyed by the National Archives staff during the 1940's in order to save space.

Historian Snell's long hand notes, taken during June 1980, have been typed up and are available for study in the Harpers Ferry National Historical Park Library in the following typescript reports:


Published U.S. Documents:

1. American State Papers - Class V, Military Affairs (7 volumes, Washington, D.C., 1832-1850) includes some correspondence of the Secretary of War, Ordnance Office, and Armory Superintendents. Many estimates and reports, for period 1793 to 1837.

   All data relating to the U.S. Armories at Harper's Ferry, Virginia, and Springfield, Massachusetts, in these seven volumes was xeroxed by Historian Charles W. Snell in January 1980 and copies of the following report provided to the libraries of both parks:


2. The Serial Number of Public Documents of the United States published by the U.S. Congress, 1817-1861:

   This series, comprised of official reports prepared by executive departments and submitted to Congress and also of reports and correspondence of Congress, was published annually for the U.S. Congress, beginning in 1817. About 1,100 volumes cover the years from 1817 to 1861.

   Most of the data relating to the U.S. Armories at Harper's Ferry and Springfield during the years 1817-1861 was xeroxed by Historian Snell in 1979 and copies of the following report provided to the libraries of both Parks:


3. Serial Number of Public Document of the United States, published by the U.S. Congress, 1866-1887:

   The Congressional Serial Number series also contains correspondence and reports, 1867-1885, relating to the sale and disposal of U.S. Armory lands at Harpers Ferry, West Virginia. This data was xeroxed by Historian Charles W. Snell and copies of the following report provided the Harpers Ferry National Historical Park Library:

4. Benet, Stephen V. ed. and compiler, A Collection of Annual Reports and Other Important Papers, Relating to the Ordnance Department, Taken from the Records of the Chief of Ordnance, from Public Documents, and from other Sources: (4 vols, Washington, D.C., 1878 - 1890).

A rare book; Historian Charles W. Snell xeroxed 79 pages from this set and proved the Harpers Ferry National Historical Park Library with copies in one volume in January 1980.


7. U.S. Statutes at Large, Volumes I to XII, contain laws, resolutions, and appropriations for the Harpers Ferry Armory, 1794 to 1861.

8. Registry of Deeds for Jefferson County, County Court House, Charles Town, West Virginia. His deeds and land records from about 1800 to date.


Has a 54 page general narrative history of Harpers Ferry, 1719-1953; pp.55-278 comprised of 36 documents transcribed from National Archives Records and copies of 12 historical maps (parts of) and and 10 19th century photographs of Harpers Ferry.

Books:


A school teacher, Barry was born and raised at Harper's Ferry; he was a boy prior to the Civil War and his history is usually accurate.


A excellent history of the development and production of small arms at the Harpers Ferry Armory, 1796 - 1861. Dr. Smith made very extensive use of the thousands of pages of documents collected in the Harpers Ferry National Historical Park Library as well as of material in the National Archives at Washington, D.C.
U.S. Rifle Factory on the Shenandoah, Upper and Lower Hall Islands:


MAP NO. 1

"A Plot Exhibiting the limits of the grounds requisite for the Passage of the Winchester & Potomac Railroad through the Islands, adjacent to Harper's Ferry. MAP C. Scale 100 feet to the inch." No date. Made October 1834.

National Archives Record Group 77, Records of the Chief of Engineers, Fortifications File, Drawer 150 Sheet 78-part 4. Cartographic Division, National Archives, Washington, D.C.

Detail from a section of this map showing the workshop of John H. Hall's Rifle Factory on the Lower Hall Island.

This map shows conditions at the Rifle Factory as of October 1834.

Numbers have been added to the map by the author. Only two of the 22 structures shown on the Lower Hall Island are positively identified on the original maps. These are No. 5—marked "Tilt Hammer" and No. 15, marked "Hall's Office".

Tentative Identification of Rifle Factory Shops

No. 1. L shaped, about 20 by 25 feet, with 15 by 20 feet wing.
No. 2. 15 by 10 feet.
No. 3. 10 by 10 feet.
No. 4. 15 by 12 feet.
No. 5. Tilt Hammer Shop, 75 by 35 feet, with 20 by 24 wing and 90 by 18 feet extension. Probably built in 1828, 45 by 45 feet when built.
No. 6. 24 by 16 feet.
No. 7. Tilt Hammer Shop, 1808-09, 45 by 45 feet, with 35 by 25 addition. Brick
No. 8. 32 by 15 feet. Perhaps the 1824 Iron House.
No. 9. 25 by 18 feet. Perhaps the 1822 Coal House.
No. 10. 25 by 20 feet, with 15 by 15 wing.
No. 11. 35 feet by 25 feet.
No. 12. 18 by 15 feet, stone dwelling?
No. 13. 15 by 12 feet, stone dwelling?
No. 14. 20 by 15 feet, stone dwelling?
No. 15. Capt. John H. Hall's Office, 35 by 30 feet.
No. 16. Grinding Mill (1808-09) - Bell Shop (1834), 80 by 45 feet with 20 by 20 wing.
No. 17. Machine Shop (1807 sawmill), 50 by 16 feet, with 32 by 16 wing. Frame.
No. 18. 20 by 25 feet. Perhaps the 1827 Coal House.
No. 19. 12 by 10, Annealing Furnace, brick, 1825.
No. 20. 12 by 10, Annealing Furnace, brick, 1825.
No. 21. 30 by 30, 1819 blacksmith shop, 2 story stone, of Hall.
No. 22. 35 by 35 feet, 1827 Smiths or Forging Shop, 1-story stone.

Unidentified structures include the following: Coal House, 1822; Filing Shop, 1831; Store House for Bar Iron, 1824; Charcoal House, 1831; Fire Engine House, 1832; and a 17 by 17 feet filing shop, 1832.
MAP OF HARPER'S FERRY, VA., prepared in compliance with Letter to Major (John) Syington, April 22, 1848, "Drawn by S. Howell Brown, Surveyor, in 1848. Scale 165 feet to the inch. Original linen map, only existing copy." 

Harpers Ferry National Historical Park Map Collection, Map No. 77.

On this map of great historical value, Brown shows and names the U.S. Armory buildings in the Musket Factory, the U.S. Rifle Factory, and the U.S. Arsenal. Location of springs, pumps, stables, woodyards, firehouses, schools, and churches are also indicated. In 1851 Major John Syington revised and updated the section of the 1848 map relating to the Island of Virginius. These revisions were made in red ink on the linen map in 1851.

The dates of construction given after the names of buildings have been added by the writer. The number and name of each structure, however, was placed on the map by Brown in 1848.

SECTION OF THE 1848 MAP SHOWING THE U.S. RIFLE FACTORY BUILDINGS ON THE LOWER HALL ISLAND:

Structures not marked "new" by Brown may appear on Maps 9 and 10, both made in 1834, and hence are useful in identifying the unmarked shops on the two earlier maps.

The Upper Hall Island was used as a residential area for Armory employees in 1848 and the numbers of the Armory Dwelling Houses have been added to their proper lots by the writer.

During the 1850's, the original ground levels of the Lower Hall Island were to be considerably altered and elevated as the result of considerable filling and grading.
2. Forging and Tempering Shop (1837-38).
3. Stockers Shop.
5. Filer Shop—Old (1837).
7. Tilt Hammer Shop (1837).
8. Vitriol House (1837).
10. Inspectors Office.
12. Barrel Turning and Bo: Shop.
13. Bell Shop, Stockers and Machinery (1808-09+).
15. House for Steaming Stoc.
17. Privy.
18. Drill Shop (1836).
22. Forging Shop (1819).
Brown's Map shows the Upper and Lower Hall Islands as they appeared 1869, without, however, indicating the location of the ruined buildings that stood on the Lower or Rifle Factory Island. The positions of the Upper and Lower Shenandoah Canal locks and of the two bridges to the Upper and Lower Island, however, are given.
MAP NO. 4

SURVEY OF THE U.S. RIFLE FACTORY GROUNDS,
(UPPER AND LOWER HALL ISLANDS), 13 ACRES

By

S. Howell Brown, February 28, 1885.

Copy provided to Thomas H. Savery, who purchased
this property for $810.00 on October 22, 1884. The U.S.
issued the deed for this land to Savery on March 2, 1885.

National Archives Record Group No. 121, Public Buildings Service,
Entry No. 58, "Warrenty Deeds to Land Conveyed by the Ordnance
Department, 1830 - 1927 (4 vols.) Vol. III, p. 615, Washington,
D.C."

Surveyed by S. Howell Brown, February 28, 1885.
MAP NO. 5

SHEMANGOAH PULP MILL
ON THE LOWER HALL ISLAND

BUILT BY THOMAS H. SAVERY.

From the Sanborn-Peris Insurance Maps of Harpers Ferry, West Virginia, November 1894

Scale: 50 feet equals one inch.
From "Warrenty Deeds to Lands Conveyed by the Ordnance Department, 1830-1927" (4 vols), Vol. III, p. 615- National Archives Record Group No. 121, Public Buildings Service, Entry No. 58, Washington, D.C.


"Survey of the Shenandoah Property at Harpers Ferry known as Hall's Rifle Factory"-

Beginning at an auger hole in the point of a rock about two poles from the Canal on the north side of Shenandoah Street - a corner to the Corporate of Harpers Ferry and Bolivar, being at the west line of Boundary Street and is the point of compromise between the United States and Major George Rowles in a suit pending in the Circuit Superior Court of Law and Chancery for Jefferson County in the year 1827 [Figure 1 on plat] running thence with a compromise line along Shenandoah Street S 48° W 23.5 poles to a stone at the edge of the Canal, four poles above the point where the north post of the old gate lock stood [figure 2 on plat] thence with another compromise line crossing the Canal and the Winchester and Potomac Railroad, S 65°45' E 17.3 poles to a stone at the margin of the Shenandoah River at the extension of the west line of Boundary Street [figure 3] thence S 74° E five poles to a stake in the water, it being the corner fixed at 28.2 poles from the sycamore tree, a corner in the 125 acre patent in a survey made for the United States in the year 1827 by William Castleman, Surveyor of Frederick County, and James M. Brown, Surveyor of Jefferson County, Va., in running out the lines of the Rutherford Grant [figure 4] thence with the lines of said Survey, south 78° E 26 poles to a stake in the water [figure 5] thence N 74° E 28 poles to a stake in the water [Figure 6] thence N 30° E 8.8 poles to the end of the stone wing wall to an abutment on the Winchester and Potomac Railroad [figure 7] thence with said wall, E 5.3 poles to the corner of the abutment [figure 8] thence with face of the same North 1.9 poles to the other corner thereof [Figure 9] thence with the guard wall at the lower or east end of the island N 1° E 8.6 poles crossing waste way
APPENDIX I:

"to an angle in the wall [Figure 10] thence N 6° 30' E 10.55 poles to another angle in said wall opposite the Locks [Figure 11] thence N 78° 30' E 7.6 poles to a forked sycamore tree standing on the lower point of the island [Figure 12] thence crossing the boat course just below the locks N 10° 15' W 4.7 poles to the north side of the stone wall at the south line of Shenandoah Street [Figure 13] thence along said street S 79° 15' W 16.6 poles to the head of the locks at the north side of the wall [Figure 14] thence along the north side of the wall S 86° 15' W 14.8 poles to the east end of a large stone on the top of the wall at an angle in the same [Figure 15] thence S 85° W 16.5 poles to a point opposite the middle of the old bridge over the Canal to "Halls Rifle Works" [Figure 16] thence S 86° W 22.15 poles opposite to and near a solid rock in the road [Figure 17] thence following the curve of the wall 10.5 poles to a stone at the west line of Boundary Street extended [Figure 18] and finally with said extension N 6° 30' E 1.8 poles to the beginning, containing 13 acres, one rood, and 10 perches."

Savery received the deed for this property, 23 acres in final survey, on March 2, 1885.
Data on the Builders who Rebuilt the U.S. Musket and Rifle Factories, 1842 - 1851:

The vouchers of the Armory Paymaster for the years 1842 to 1851 reveal the following data on the builders who reconstructed the shops at the U.S. Musket and Rifle Factories during the years 1842 to 1851, under the direction of Armory Superintendents Major Henry K. Craig, 1842-1844, and Major John Symington, 1845 - 1851.

Carpenters

1. Alfred H. Gust, active 1843-44, shingling dwellings.

2. John Hyatt, active 1843-paid $ 106.76. Dec.31, 1841 Hyatt living in Armory Dwelling No. 60, wood, 1-story, on Washington Street, paying a rent of $ 4.50 per quarter. Lived there to March 31, 1845, when he moved out owing the U.S. $ 28.95 in unpaid rent.


4. Horatio Jarboe, active 1844, shingling dwellings. He was living in Dwelling House No. 148, a stone 2-story house that was located on the bank of the Potomac above the Musket Factory, Dec. 31, 1844, paying rent of $ 8.60 per quarter.

5. John F. Price, Active 1844, shingling dwellings. He was residing in Dwelling No. 71, wood, one-story, which was located between Washington Street and the Musket Factory, Dec. 31, 1844, paying $ 8.05 per quarter. He lived in this house from at least 1841 to Dec. 31, 1846. On September 1, 1852 he purchased vacant house Lot No. 8, Block J, Camp Hill for $ 53.00 and received his deed from the U.S. on July 3, 1857.

6. Samuel Gilbert, 1845-46 active making fencing, received $ 266.94.

7. Jessie Schofield, active 1845-1851 constructing new shops, received $ 5,535.77 Schofield, July 3, 1844 for $ 8,000, acquired a 2/3rd interest in Tract No. 4, the sawmill property on the Island of Virginius, and with John Wernag, who held the remaining 1/3rd interest. They operated the saw mill. On August 24, 1847 they sold tract No. 4 for $ 37,000.

8. Patrick H. Kelly, active 1849-50, received $ 950.76 for working shops, etc. Kelly purchased the northeast(right) half of Wager Lot 50 for $ 600 on March 20, 1844. Stone mason Peter Little and Edward Tearney purchased the southwest left portion of Lot 50 for $ 600 on March 22, 1844. Jointly, the three men erected Park Bldg. No. 38, a duplex dwelling and store in 1844. Tearney acquired title to Kelly's portion on February 7, 1860.

9. Jeremiah Fuss, carpenter and master builder for Armory in 1851 - he received $ 1,498.79 from his construction work on Armory buildings. Also erected as first mayor of Harpers Ferry in 1851.

By December 31, 1844, Fuss was living in Armory Dwelling No. 140, a brick 1-story house that was located on Lot 12, Block B, Camp Hill. His rent was $ 10.35 per quarter. He was still living in the same house in 1849. Fuss purchased this house and its lot for $ 400.00 at the private sale for Armory workmen that was held on August 31, 1852. The U.S. issued the deed to this property to Fuss on October 13, 1859.
10. Philip Porter, active in 1847, received $59.81.
11. William J. Rowe, active in 1849, received $109.00.
   William T or L. Rowe purchased vacant U.S. Lot 13, Block V, Camp Hill
   on September 1, 1852 and received his deed from the U.S. on October 20, 1852.
12. Jonathan Renner, active 1851 and received $70.00.
13. Keen and Breeding, active in 1851, received $204.50.
14. Henry Read, active 1851, received $70.12.
15. Armistead Fites, active in 1851, received $52.85.

Tinsmiths (Gutters, Downspouts, Roofing)

1. Benjamin H. Snook, active 1843-47. Benjamin Snook, "Coppersmith, Tin, Plate,
   and Sheet Iron manufacturer" and maker of "Save Spouting and Roofing, repairing
   Still and their apparatus, and all kinds of Tin Ware", first opened his
   shop in Harpers Ferry in September 1836. His store was located on the
   first floor of Park Bldg. No. 45, which was then known as Armory Dwelling
   No. 7. He remained in business at this location apparently until May
   1843. Received $330.82 1843-44. On December 31, 1841, he was living in
   Armory Dwelling No. 58, a stone 2-story house on Washington Street.$12.00 per qr.
2. Dennis Snook, active 1846-1851. Received 379.82. (1)
   Dennis Snook purchased Lot No. 8, Block I, Camp Hill, a vacant house lot
   for $356.00 at the public auction held on Sept. 1-2, 1852. The U.S. issued
   his deed to Snook on October 18, 1852.
4. Alexander S. Vernon, active in 1850, received $66.42.

Painters and Glazers

1. John P. Kennedy, active 1842-43, received $332.69. A John Kennedy was
   living in Armory Dwelling House No. 163, Stone, on the Upper Hall Island
   above the U.S. Rifle Works on Dec. 31, 1841, paying $7.50 per quarter in rent.
   He was not living in an Armory house on Dec. 31, 1844.
2. George W. R. Seale, 1849-50, received $612.97.
3. Francis Trimmous, 1849, received $160.83.
4. Francis Simmons, 1850, received $160.20.
5. Robert Wilson, 1846. received $22.51.

(1) Benjamin Snook was still living in House No. 58 on Dec. 31, 1844, paying $13.80 per quarter rent. He was not living in Armory dwellings by Dec. 31, 1846.
Plasterers

1. Hiram McKenzie, active 1842-43, received $ 684.58.
2. Jerry (Jeremiah) Harris, 1842-45, received $ 400.51. On December 31, 1844, Jerry Harris was residing in Armory Dwelling No. 63, wood, 1story, located on Camp Hill near Harpers Grave yard, and paying a rent of $ 4.60 per quarter. He was not living in a government house on Dec. 31, 1846.
3. William H. Bowen, active 1846-47, received $ 222.75.
4. James Bowen, 1844, received $ 340.87.
5. John Ringer, active in 1849, received $ 231.90.
8. R. J. and W. Brenn, 1847, received $ 883.27.

Roofers, Sheet Iron


Slaters:

1. William Bayley, 1842-44, 1850, received $ 1,404.98.
2. George W. Tracey, 1842-1851, received $ 1,237.27.

Stone Cutters

<table>
<thead>
<tr>
<th>Names</th>
<th>Active</th>
<th>Paid</th>
<th>Lineal Feet of Cut Stone provided</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Redmond Burke</td>
<td>1842-51</td>
<td>$ 11,059.94</td>
<td>18,256 feet 6 inches. (1)</td>
</tr>
<tr>
<td>2. Daniel Fine</td>
<td>1842</td>
<td>130.00</td>
<td>216 feet 8 inches.</td>
</tr>
<tr>
<td>3. Timothy McBriety</td>
<td>1843-45</td>
<td>979.31</td>
<td>1,702 feet 10 inches.</td>
</tr>
<tr>
<td>4. David Maxwell</td>
<td>1846</td>
<td>65.00</td>
<td>82 feet 10½ inches.</td>
</tr>
<tr>
<td>Total, Stone cutters 1842-51</td>
<td></td>
<td>$ 12,344.25</td>
<td>20,258 feet 10½ inches +</td>
</tr>
</tbody>
</table>

(1) Redmond Burke was still active in 1860. Based upon the U.S. Census of 1860, it is probable that "Redmond Burk," stonecutter, his wife and five children, rented the two-story stone house that fronted on High Street and was located on Wager Lot No. 39. The house and lot were owned by Richard D. Doran, 1850-1863.
Brick Makers for the Armory, 1842-1851

<table>
<thead>
<tr>
<th>Brick Maker</th>
<th>Active</th>
<th>Paid</th>
<th>No. of bricks made</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. William Collins</td>
<td>1846-51, died.</td>
<td>$11,200.41</td>
<td>1,287,977</td>
</tr>
<tr>
<td>2. John Lambaugh</td>
<td>1843-45</td>
<td>3,377.50</td>
<td>377,369</td>
</tr>
<tr>
<td>3. William Lee</td>
<td>(1844-45-died)</td>
<td>2,044.00</td>
<td>307,500</td>
</tr>
<tr>
<td>4. Peter Little</td>
<td>1843</td>
<td>361.60</td>
<td>38,064</td>
</tr>
<tr>
<td>5. John A. Steiner</td>
<td>1851</td>
<td>1,216.75</td>
<td>157,000</td>
</tr>
<tr>
<td>6. Other, 8 men</td>
<td>1842-1845</td>
<td>1,204.01</td>
<td>158,200</td>
</tr>
<tr>
<td></td>
<td>1847-Dec.31,1848</td>
<td>$19,404.28</td>
<td>2,326,110</td>
</tr>
</tbody>
</table>

Brick Masons, Paid for laying bricks:

1. John Lambaugh, Active 1843, paid $2,802.97.
2. William Collins, Active 1845 to Oct. 1850, died, paid $15,272.69.
3. N. T. Haller, Active 1851, paid $1,812.46

Total: Brick Masons, 1842-1851: $19,838.12.

Notes: John Lambaugh, purchased Wager Lot No. 30, in Wager Six Acre Reservation from Gerard B. Wager on June 12, 1841, a vacant lot, for $400. Lambaugh sold Lot 30 on the same day for $400.00 to Samuel Breitenbaugh.

Stone Masons (excavation for stone foundations, walls, canals)

<table>
<thead>
<tr>
<th>Mason</th>
<th>Active</th>
<th>paid</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Peter Little</td>
<td>1842-1849, died</td>
<td>$19,658.98</td>
</tr>
<tr>
<td>2. Edward Tearney (Jr. partner of Peter Little, T842-1849)</td>
<td>active 1849-51</td>
<td>paid 28,269.48</td>
</tr>
<tr>
<td>3. George W. Lynch, 1842-49</td>
<td></td>
<td>1,396.22</td>
</tr>
<tr>
<td>4. S. D. McMurphey, 1845</td>
<td></td>
<td>1,728.23</td>
</tr>
</tbody>
</table>

Total, Stone Masons 1842-51: $51,052.91

Notes: Peter Little and his junior partner, Edward Tearney, purchased the southwest (left) half of Wager Lot No. 50 for $600.00 on March 22, 1844. With the carpenter Patrick H. Kelly, who owned the other half of Lot 50, the three men erected Park Bldg. no. 38 in 1844 as a 2½ story brick structure 41 feet 10 inches by 30 feet 2 inches. The duplex house had two store rooms on the first floor and two sets of living quarters on the upper floor. Little left title to the left half of the lot to Tearney in his will of 1849, Peter Little resided in Armory Dwelling House No. 66, wood, 1 story, from at least Dec. 31, 1841 to 1849. His rent in 1841 was $7.50 per quarter and in 1849 he was paying $10.00 per quarter. The house was located between Washington Street and the Musket Factory. Tearney apparently resided on a lot he owned in Bolivar.
Expenditures for the Services of Builders at the National Armory at Harper's Ferry, Virginia,
January 1, 1842 to December 31, 1851, (based on the vouchers issued by the Armory Paymaster in National Archives Record Group No. 217, 2nd Auditor, Series 2 and 3, U.S. Treasury Department.)

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Carpenters</th>
<th>Plasters</th>
<th>Painters &amp; Glaziers</th>
<th>Slaters</th>
<th>Tinmiths (Gutters &amp; Spouts)</th>
<th>Stone Masons</th>
<th>Bricklayers</th>
<th>Iron Workers (roofing)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1842</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1843-44</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1844-45</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1845-46</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1846-47</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1847-48</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1848-49</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1849-50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1850-51</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1851-52</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$4,156.85</td>
<td>$3,037.31</td>
<td>$1,155.47</td>
<td>$3,353.38</td>
<td>$2,556.37</td>
<td>$59,711.07</td>
<td>$16,268.55</td>
<td>$717.00</td>
<td>$96,248.71</td>
</tr>
</tbody>
</table>

(1) Vouchers for 3rd quarter of 1845 missing. (2) Vouchers for 3rd and 4th Quarters of 1847 and 1st and 2nd quarters of 1848 are missing. (3) Vouchers for the 3rd and 4th Quarters of 1848 are missing. (4) Vouchers for the 1st and 2nd Quarters of 1852 have been destroyed.
Expenditures for some buildings materials used in the Construction of Structures at the Harpers Ferry Armory, Virginia, January 1, 1842 to December 31, 1851 (based on data from the vouchers of the Armory Paymasters in the Records of the 2nd Auditor of the U.S. Treasury Department, Series 7 and 3, National Archives Record Group 217).

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>To Brick Makers</th>
<th>Number of brick purchased</th>
<th>To Stone Cutters</th>
<th>Linear feet of cut stone purchased</th>
<th>For iron, frames, roof</th>
<th>TOTAL for brick cut stone</th>
</tr>
</thead>
<tbody>
<tr>
<td>1842</td>
<td>0</td>
<td>0</td>
<td>$248.50</td>
<td>451 7/12</td>
<td>0</td>
<td>$248.50</td>
</tr>
<tr>
<td>1843-44</td>
<td>361.16</td>
<td>38,064</td>
<td>594.95</td>
<td>991</td>
<td>$254.54</td>
<td>956.50</td>
</tr>
<tr>
<td>1844-45</td>
<td>3,303.11</td>
<td>377,541</td>
<td>2,894.44</td>
<td>6,756 6/12</td>
<td></td>
<td>6,197.50</td>
</tr>
<tr>
<td>1845-46</td>
<td>1,511.00</td>
<td>231,500</td>
<td>925.59</td>
<td>1,467 5/12</td>
<td>50.40</td>
<td>2,436.50</td>
</tr>
<tr>
<td>1846-47</td>
<td>2,417.67</td>
<td>288,840</td>
<td>578.28</td>
<td>668</td>
<td>(1)</td>
<td>2,995.95</td>
</tr>
<tr>
<td>1847-48</td>
<td>3,991.24</td>
<td>427,996</td>
<td>3,101.60</td>
<td>4,998 9/12</td>
<td>1,241.38</td>
<td>7,092.34</td>
</tr>
<tr>
<td>1849-50</td>
<td>1,437.62</td>
<td>172,747</td>
<td>0</td>
<td>0</td>
<td>153.92</td>
<td>1,637.62</td>
</tr>
<tr>
<td>1850-51</td>
<td>2,913.71</td>
<td>357,838</td>
<td>1,749.71</td>
<td>1,716 4/12</td>
<td>0</td>
<td>4,663.42</td>
</tr>
<tr>
<td>1851-52</td>
<td>2,251.57</td>
<td>274,584</td>
<td>548.58</td>
<td>723 10/12</td>
<td>79/20</td>
<td>2,890.15</td>
</tr>
<tr>
<td></td>
<td>1,216.75</td>
<td>157,000</td>
<td>418.29</td>
<td>477 3/12</td>
<td>0</td>
<td>1,635.04</td>
</tr>
<tr>
<td>TOT.:</td>
<td>$19,404.23</td>
<td>$2,326,110</td>
<td>$11,050.94</td>
<td>$18,256 6/12</td>
<td>$1,779.44</td>
<td>$30,464.2</td>
</tr>
</tbody>
</table>

(1) Vouchers for the 3rd quarter of 1845 are missing. (2) Vouchers for the 3rd and 4th quarters of 1847 and the 1st and second quarters of 1848 are missing. (3) Vouchers for the 3rd and 4th quarters of 1848 are missing. (4) Vouchers for the 1st and 2nd quarters of 1852 have been destroyed.
### Expenditures For Labor and Materials in Making Repairs and Improvements at the Harper's Ferry Armory, 1845-1851

from Records of the Armory Paymaster, by Calendar Year.

<table>
<thead>
<tr>
<th>Calendar Year</th>
<th>For Labor</th>
<th>For Materials</th>
<th>Recorded Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1845 4th Quarter only</td>
<td>$5,772.63</td>
<td>$1,507.62</td>
<td>$7,280.25 (3 months only)</td>
</tr>
<tr>
<td>1846 1st-2nd qtrs</td>
<td>$21,094.92</td>
<td>$16,452.06</td>
<td>$37,546.98</td>
</tr>
<tr>
<td>1847</td>
<td>$17,223.44</td>
<td>$9,723.00</td>
<td>$26,946.44 (6 months only)</td>
</tr>
<tr>
<td>1848</td>
<td>?</td>
<td>?</td>
<td>(2)</td>
</tr>
<tr>
<td>1849</td>
<td>$23,561.66</td>
<td>$14,806.80</td>
<td>$38,368.46</td>
</tr>
<tr>
<td>1850</td>
<td>$27,019.01</td>
<td>$22,376.40</td>
<td>$49,395.41</td>
</tr>
<tr>
<td>1851</td>
<td>$39,272.09</td>
<td>$27,790.93</td>
<td>$67,063.02</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>$133,942.75</strong></td>
<td><strong>$92,656.81</strong></td>
<td><strong>$226,600.56</strong></td>
</tr>
</tbody>
</table>

(1) Paymaster's vouchers for 3rd and 4th quarters of 1847 are missing.
(2) Paymaster's records for all 4 quarters of 1848 are missing.

### Expenditures for Labor and Materials in Making Repairs and Improvements at the Harper's Ferry Armory, 1845 to 1851, By Fiscal Year.

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>For Labor</th>
<th>For Materials</th>
<th>Recorded Total</th>
<th>Total Spent</th>
<th>Recorded Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 1, 1845 - June 30, 1846</td>
<td>$11,498.69</td>
<td>$4,928.70</td>
<td>$16,427.39 (1)</td>
<td>$62,468.77</td>
<td>9 months</td>
</tr>
<tr>
<td>July 1, 1846 - June 30, 1847</td>
<td>$32,592.30</td>
<td>$22,753.98</td>
<td>$55,346.28</td>
<td>55,346.21</td>
<td></td>
</tr>
<tr>
<td>July 1, 1847 - June 30, 1848</td>
<td>?</td>
<td>?</td>
<td>? (2)</td>
<td>75,269.63</td>
<td>Recorded 6 months</td>
</tr>
<tr>
<td>July 1, 1848 - June 30, 1849</td>
<td>$10,677.33</td>
<td>$8,757.69</td>
<td>$19,435.02 (3)</td>
<td>55,674.70</td>
<td>6 months</td>
</tr>
<tr>
<td>July 1, 1849 - June 30, 1850</td>
<td>$24,790.63</td>
<td>$13,582.61</td>
<td>$38,373.24</td>
<td>38,373.24</td>
<td></td>
</tr>
<tr>
<td>July 1, 1850 - June 30, 1851</td>
<td>$34,728.12</td>
<td>$27,669.32</td>
<td>$62,397.44</td>
<td>62,397.44</td>
<td>Recorded 6 months</td>
</tr>
<tr>
<td>July 1, 1851 - Dec. 31, 1851</td>
<td>$19,656.68</td>
<td>$14,964.51</td>
<td>$34,621.19</td>
<td>34,621.19</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$133,942.75</strong></td>
<td><strong>$92,656.81</strong></td>
<td><strong>$226,600.56</strong></td>
<td><strong>$384,153.24</strong></td>
<td></td>
</tr>
</tbody>
</table>

(1) Does not include figures for the 3rd Quarter of 1845.
(2) Records of the Armory Paymaster July 1, 1847 to June 30, 1848 are missing.
(3) Records for the period July 1, 1848 to December 31, 1848 are missing.

Survey of the Hall Rifle Factory Island for the U.S. by S. Howell Brown, February 28, 1885:

"Survey of the Shenandoah Property at Harpers Ferry known as Hall's Rifle Factory":

Beginning at an auger hole in the point of a rock about two poles from the Canal on the north side of Shenandoah Street - a corner to the Corporation of Harpers Ferry and Bolivar, being at the west line of Boundary Street and is the point of compromise between the United States and Major George Rowles in a suit pending in the Circuit Superior Court of Law and Chancery for Jefferson County in the year 1827 [Figure 1 on plat] running thence with a compromise line along Shenandoah Street S 48° W 23.5 poles to a stone at the edge of the Canal, four poles above the point where the north post of the old gate lock stood [figure 2 on plat] thence with another compromise line crossing the Canal and the Winchester and Potomac Railroad, S 65° 45' E 17.3 poles to a stone at the margin of the Shenandoah River at the extension of the west line of Boundary Street [figure 3] thence S 71° E five poles to a stake in the water, it being the corner fixed at 28.2 poles from the sycamore tree, a corner in the 125 acre patent in a survey made for the United States in the year 1827 by William Castleman, Surveyor of Frederick County, and James M. Brown, Surveyor of Jefferson County, Va., in running out the lines of the Rutherford Grant [figure 4] thence with the lines of said Survey, south 78° E 26 poles to a stake in the water [figure 5] thence N 71° E 28 poles to a stake in the water [Figure 6] thence N 38° 30' E 8.8 poles to the end of the stone wing wall to an abutment on the Winchester and Potomac Railroad [figure 7] thence with said wall 5.3 poles to the corner of the abutment [figure 8] thence with face of the same N 1.9 poles to the other corner there of [Figure 9] thence with the guard wall at the lower or east end of the island N 11° E 8.6 poles crossing waste way
"to an angle in the wall [Figure 10] thence N 6° 30' E 10.55 poles
to another angle in said wall opposite the Locks [Figure 11] thence
N 78° 30' E 7.6 poles to a forked sycamore tree standing on the lower
point of the island [Figure 12] thence crossing the boat course just
below the locks N 10° 45' W 4.7 poles to the north side of the stone wall
at the south line of Shenandoah Street [Figure 13] thence along said street
S 79° 15' W 16.6 poles to the head of the locks at the north side of
the wall [Figure 14] thence along the north side of the wall S 86° 15' W
14.8 poles to the east end of a large stone on the top of the wall at an
angle in the same [Figure 15] thence S 85° W 16.5 poles to a point opposite
the middle of the old bridge over the Cana to "Halls Rifle Works"
[Figure 16] thence S 86° W 22.15 poles opposite to and near a solid rock
in the road [Figure 17] thence following the curve of the wall 10.5 poles
to a stone at the west line of Boundary Street extended [Figure 18] and
finally with said extension N 30' E 1.8 poles to the beginning, containing
13 acres, one rood, and 10 perches."

Copied by Charles W. Snell, October 1979.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter I</td>
<td>Ownership of the Land, 1782-1884</td>
<td>1</td>
</tr>
<tr>
<td>Chapter II</td>
<td>Arrival of John H. Hall</td>
<td>8</td>
</tr>
<tr>
<td>Chapter III</td>
<td>Expansion of the Hall Rifle Works, 1827-1834</td>
<td>10</td>
</tr>
<tr>
<td>Chapter IV</td>
<td>Hall Rifle Works, 1835-1845</td>
<td>21</td>
</tr>
<tr>
<td>Appendix I</td>
<td>1869 Map of Harpers Ferry by S. Howell  Brown</td>
<td>31</td>
</tr>
<tr>
<td>Appendix II</td>
<td>1807 Plat showing Shenandoah River and Island therein owned by Robert Harper</td>
<td>33</td>
</tr>
<tr>
<td>Appendix III</td>
<td>Map C, August 12, 1834</td>
<td>36</td>
</tr>
</tbody>
</table>
Survey of the Hall Rifle Factory Island for the U.S. by S. Howell Brown, February 28, 1885:

"Survey of the Shenandoah Property at Harpers Ferry known as Hall's Rifle Factory"-

Beginning at an auger hole in the point of a rock about two poles from the Canal on the north side of Shenandoah Street - a corner to the Corporation of Harpers Ferry and Bolivar, being at the west line of Boundary Street and is the point of compromise between the United States and Major George Rowles in a suit pending in the Circuit Superior Court of Law and Chancery for Jefferson County in the year 1827 [Figure 1 on plat] running thence with a compromise line along Shenandoah Street S 48 W 23.5 poles to a stone at the edge of the Canal, four poles above the point where the north post of the old gate lock stood [Figure 2 on plat] thence with another compromise line crossing the Canal and the Winchester and Potomac Railroad, S 65.45' E 17.3 poles to a stone at the margin of the Shenandoah River at the extension of the west line of Boundary Street [Figure 3] thence S 74° E five poles to a stake in the water, it being the corner fixed at 28.2 poles from the sycamore tree, a corner in the 125 acre patent in a survey made for the United States in the year 1827 by William Castlemen, Surveyor of Frederick County and James M. Brown, Surveyor of Jefferson County, Va., in running out the lines of the Rutherford Grant [Figure 4] thence with the lines of said Survey, south 78° E 26 poles to a stake in the water [Figure 5] thence N 74° E 26 poles to a stake in the water [Figure 6] thence N 38° 30' E 8.8 poles to the end of the stone wing wall to an abutment on the Winchester and Potomac Railroad [Figure 7] thence with said wall N 53° 3.3 poles to the corner of the abutment [Figure 8] thence with face of the same N 19° 1.9 poles to the other corner there of [Figure 9] thence with the guard wall at the lower or east end of the island N 11° E 8.6 poles crossing waste way
"to an angle in the wall [Figure 10] thence N 46°30' E 10.55 poles to another angle in said wall opposite the Locks [Figure 11] thence N 78°30' E 7.6 poles to a forked sycamore tree standing on the lower point of the island [figure 12] thence crossing the boat course just below the locks N 10°45' W 4.7 poles to the north side of the stone wall at the south line of Shenandoah Street [figure 13] thence along said street S 79°15' W 16.6 poles to the head of the locks at the north side of the wall [figure 14] thence along the north side of the wall S 86°15' W 14.8 poles to the east end of a large stone on the top of the wall at an angle in the same [Figure 15] thence S 85° W 16.5 poles to a point opposite the middle of the old bridge over the Canal to "Halls Rifle Works" [figure 16] thence S 86° W 22.15 poles opposite to and near a solid rock in the road [figure 17] thence following the curve of the wall 10.5 poles to a stone at the west line of Boundary Street extended [Figure 18] and finally with said extension N 4°30' E 1.8 poles to the beginning, containing 13 acres, one rood, and 10 perches."

Copied by Charles W. Snell, October 1979.

Surveyed by S. Howell Brown, February 28, 1885.
Articles of Agreement made and entered into the third day of March in the Year of our Lord One thousand Eight-Hundred and Six, Between Thomas Jefferson, President of the United States, on the one part for and in their behalf & the president and Directors of the Potomac Company on the other part.

Witnesseth that whereas the said Company are anxious to improve the Navigation of the River Shenandoah, by means of a Canal to be taken out of said River upon the Grounds belonging to the United States and Continued down to a point at or near the old Saw Mill upon the Said grounds, where it is proposed to descend by means of Locks into the bed of the River. In consideration whereof they agreed that the United States may have the full use and benefit of the Surplus Water in Said Canal - - The said Thomas Jefferson President as aforesaid Hath and Doth hereby grant to the Said Company the Right and privilege of cutting making and keeping in Repair at their own proper and exclusive expense a Canal through the Said land belonging to the United States, and in such a manner and direction as will take the water out of the Shenandoah River and Convey the Same to a point at or near the old Saw Mill where their Locks may be inserted to descend again into the bed of the River - And the Said Thomas Jefferson in his said Capacity doth hereby further grant to the Said Company for the purposes aforesaid and as necessary for their Accomplishment the Right and privilege of digging and taking Stone Locks and gravel from Such parts of the public land as Shall not be injurious to the United States; and also the Right of making keeping in Repair and using Suitable toying paths and passages on the banks of the said Canal though the whole extent aforesaid, together with the use and occupancy at all times of a sufficient Space of Ground on each side of the Locks as shall be proper for a Toll house and other necessary uses of Said Locks and the Said president and Directors in consideration of the premises do again and covenant with the United States as aforesaid that they the Said Company or their assigns will make and Keep in Repair the proposed Canal, and do hereby grant unto the United States as aforesaid forever here after the Right and privilege of drawing Water from any part or parts of Said Canal for the use of any Water Works which may hereafter be erected on any part of the public lands, So far as may consist with the free complete and uninterrupted use of the Said Canal, by the Said Company, and the Said Company doth further agree as aforesaid with the United States to cause to be made and kept in repair such Roads and bridges as may be deemed necessary and proper by the Superintendent of the
Public Works at Harpers Ferry to remedy any inconvenience which the United States may sustain in consequence of the interruption which the proposed Canal and Locks may occasion to the existing roadway.

The said president and directors of the Potomac Company having a complete knowledge of the nature and extent of the title which the United States claim to the Land through which the aforesaid Canal is intended to pass, it is hereby clearly understood and further agreed by the parties hereto, that the said Thomas Jefferson, President as aforesaid only intends to pass to the said Company such right and such only as the United States Claims as are invested with invested with, not meaning to warrant or defend the same, or to subject the United States to any damage or liability whatsoever in case their title to the Same shall hereafter prove defective.

Signed Thos Jefferson

U.S. Seal By the President

of the U. States

H. Dearborn
Sec. of War

Signed Jos. Brown
lor P. Company

True copy, 3, Nov. 1815.
In the midst of the chaos, the child's heart was filled with a sense of wonder and awe. The sun was setting, casting a warm glow across the field, and the stars were beginning to twinkle in the distance. The child felt a sense of peace wash over them, as if the world had paused for a moment to let them take it all in. They ran their hands through the soft grass, feeling the cool breeze on their skin. The wind carried the sweet scent of wildflowers, and the child inhaled deeply, feeling grateful for this moment. They sat down on the grass, closed their eyes, and let the moment wash over them.
The said President and directors of the Potomac Company having a complete knowledge of the nature and extent of the title to which the United States claim to the land through which the aforesaid Canal is intended to pass, it is hereby clearly understood and distinctly agreed by the parties herein, that the said Thomas Jefferson, President, as aforesaid only intends to pass to the said Company such right and title only as the United States claim or are invested with, but meaning to warrant or defend the same, or to subject the United States to any damage or liability what so ever in Case their title to the same shall hereafter prove defective.

Signed Thos Jefferson

By the President
of the U. States

As Dearborn
Secy. of War

Signed Jo. Brown
Ti. O. Company

31 May 1815

Copies.
PLAN and SECTION of a CANAL at the lower Falls of the SHENANDOAH RIVER; its junction with the Public Canal at HARPER'S FERRY, and the Necessary Locks. Surveyed by N. King & Leon J. Sarbaugh, Feb. 1803. Scale: 24 poles to 1 inch.

National Archives R. G. 77 Records of the Office of the Chief of Engineers. Fortifications Map File, part of map: Dr. 150, Sheet 7.
Articles of Agreement made and entered into the third day of March in the Year of our Lord One thousand Eight-Hundred and Six. Between Thomas Jefferson, President of the United States, on the one part for and in their behalf & the president and Directors of the Potomac Company on the other part. Witnesseth that whereas the said Company are anxious to improve the Navigation of the River Shenandoah, by means of a Canal to be taken out of said River upon the Grounds belonging to the U. States and Continued down to a point at or near the old Saw Mill upon the Said grounds, where it is proposed to descend by means of Locks into the bed of the River. In consideration whereof they agreed that the U. States may have the full use and benefit of the Surplus Water in Said Canal -- The said Thomas Jefferson President as aforesaid hath and doth hereby grant to the Said Company the Right and privilege of cutting making and Keeping in Repair at their own proper and exclusive expence a Canal through the Said land belonging to the United States, and in such a manner and direction as will take the water out of the Shenandoah River and Convey the Same to a point at or near the old Saw Mill where their Locks may be inserted to descend again into the bed of the River -- And the Said Thomas Jefferson in his said Capacity doth hereby further grant to the Said Company for the purposes aforesaid and as necessary for their Accomplishment the Right and privilege of digging and taking Stone Rocks and gravel from Such parts of the public land as Shall not be injurious to the United States; and also the Right of making keeping in Repair and using Suitable towing paths and passages on the banks of the said Canal though the whole extent aforesaid, together with the use and occupancy at all times of a sufficient Space of Ground on each side of the Locks as shall be proper for a Toll house and other necessary uses of Said Locks and the Said president and Directors in consideration of the premises do again and forever with the U. States as aforesaid that they the Said Company or their assigns will make and Keep in "repair the proposed Canal, and do hereby grant unto the United States as aforesaid forever hereafter the Right and privilege of taking Water from any part or parts of Said Canal for the use of any Water Works which may hereafter be erected on any part of the public lands, So far as may consist with the free complete and uninterrupted use of the Said Canal, by the Said Company, and the Said Company doth further agree as aforesaid with the United States to cause to be made and kept in repair such Roads and bridges as may be deemed necessary and proper by the Superintendant of the
Public Works at Harpers Ferry to remedy any inconvenience which the U.S. may sustain in consequence of the interruption which the proposed Canal and Locks may occasion to the existing road or way.

The said president and directors of the Potowmack Company having a complete knowledge of the nature and extent of the title which the United States claim to the Land through which the aforesaid Canal is intended to pass, it is hereby clearly understood and further agreed by the parties hereto, that the said Thomas Jefferson, President as aforesaid only intends to pass to the said Company such right and such only as the United States Claims as are invested with invested with, not meaning to warrant or defend the same, or to subject the United States to any damage or liability whatso ever in Case their title to the Same shall hereafter prove defective.

Signed Thos Jefferson

U.S. Seal By the President
of the U. States
H. Dearborn
Sec. of War

Signed Jos. Brown
for P. Company

True copy, 3, Nov. 1815.
Articles of Agreement made and entered into the third day of March

in the Year of our Lord One thousand Eight-Hundred and Six. Between Thomas Jefferson, President of the United States, on the one part for and in their behalf & the president and Directors of the Potomac Company on the other part.

Witnesseth that whereas the said Company are anxious to improve the Navigation of the River Shenandoah, by means of a Canal to be taken out of said River upon the Grounds belonging to the U. States and Continued down to a point at or near the old Saw Mill upon the Said grounds, where it is proposed to descend by means of Locks into the bed of the River. In consideration whereof they agreed that the U, States may have the full use and benefit of the Surplus Water in Said Canal -- The said Thomas Jefferson President as afore said Hath and Doth hereby grant to the Said Company the Right and privilege of cutting making and Keeping in Repair at their own proper and exclusive expense a Canal through the Said land belonging to the United States, and in such a manner and direction as will take the water out of the Shenandoah River and Convey the Same to a point at or Near the old Saw Mill where their Locks may be inserted to descend again into the bed of the River -- And the Said Thomas Jefferson in his said Capacity doth hereby further grant to the Said Company for the purposes aforesaid and as necessary for their Accomplishment the Right and privilege of digging and taking Stone Rocks and gravel from Such parts of the public land as Shall not be injurious to the United States; and also the Right of making keeping in Repair and using Suitable towing paths and passages on the banks of the said Canal though the whole extent aforesaid, together with the use and occupancy at all times of a sufficient Space of Ground on each side of the Locks as shall be proper for a Toll house and other necessary uses of Said Locks and the Said president and Directors in consideration of the premises do again and covenant with the U. States as aforesaid that they the said Company or their assigns will make and Keep in Repair the proposed Canal, and do hereby grant unto the United States as aforesaid forever hereafter the Right and privilege of drawing Water from any part or parts of Said Canal for the use of any Water Works which may hereafter be erected on any part of the public lands, So far as may consist with the free complete and uninterrupted use of the Said Canal, by the Said Company, and the Said Company doth further agree as aforesaid with the United States to cause to be made and kept in repair such Ponds and bridges as may be deemed necessary and proper by the Superintendent of the
Public Works at Harpers Ferry to remedy any inconvenience which the U.S. may sustain in consequence of the interruption which the proposed Canal and Locks may occasion to the existing roadway.

The said president and directors of the Potomac Company having a complete knowledge of the nature and extent of the title which the United States claim to the Land through which the aforesaid Canal is intended to pass, it is hereby clearly understood and further agreed by the parties hereto, that the said Thomas Jefferson, President as aforesaid only intends to pass to the said Company such right and such only as the United States Claims as are invested with invested with, not meaning to warrant or defend the same, or to subject the United States to any damage or liability whatsoever in case their title to the same shall hereafter prove defective.

Signed Thos Jefferson

U.S. Seal By the President
of the U. States

H. Dearborn
Sec. of War

Signed Jos. Brown
for P. Company

True copy, 3, Nov. 1815.
3. Stockers Shop.
5. Filer's Shop—Old (1837).
8. Vitriol House (1837).
9. Rod Tilting Shop.
10. Inspectors Office.
13. Bell Shop, Stockers and Machinery.
15. House for Steaming Stocks.
17. Privy.
18. Drill Shop (1836).
22. Forging Shop (1819).
MAP NO. 9

MAP of HARPER'S FERRY Shewing the Location of the WINCHESTER AND POTOMAC RAILROAD, NO. 2, Drawn by Lieuts. White, Allen, and R. S. Smith, U.S. Armory under the Direction of James Kearney, Lt. Col. and T.E. Scale 100 feet to one inch. Approved by President Andrew Jackson, 27th January 1835.

National Archives Record Group 77, Records of the Chief of Engineers, Fortifications Map File, Drawer 150, Sheet 82, part 2, in Cartographic Division, National Archives, Washington, D.C.

This map shows conditions at the John H. Hall Rifle Factory as of October 1834.

Numbers have been added to the map by the author. Only two of the 22 structures shown on the Lower Hall Island are positively identified on the original maps. These are No. 5-marked "Tilt Hammer" and No. 15, marked"Hall's Office".

Tentative Identification of Rifle Factory Shops

No. 1. L shaped, about 20 by 25 feet, with 15 by 20 feet wing.
No. 2. 15 by 10 feet.
No. 3. 10 by 10 feet.
No. 4. 15 by 12 feet.
No. 5. Tilt Hammer Shop, 75 by 35 feet, with 20 by 24 wing and 90 by 18 feet extension. Probably built in 1827, 45 by 45 feet when built.
No. 6. 24 by 16 feet.
No. 7. Tilt Hammer Shop, 1808-09, 45 by 45 feet, with 35 by 25 addition. Brick
No. 8. 32 by 15 feet. Furnace and Building for Hardening Rods, 1831(?)
No. 9. 25 by 18 feet.
No. 10. 25 by 20 feet, with 15 by 15 wing.
No. 11. 35 feet by 25 feet.
No. 12. 18 by 15 feet, frame dwelling?
No. 13. 15 by 12 feet, frame dwelling?
No. 14. 20 by 15 feet, frame dwelling?
No. 15. Capt. John H. Hall's Office, 35 by 30 feet.
No. 16. Grinding Mill (1808-09)-Bell Shop(1834), 80 by 45 feet with 20 by 20 wing.
No. 17. Machine Shop(1807 sawmill), 50 by 16 feet, with 32 by 16 wing. Frame.
No. 18. 20 by 25 feet.
No. 19. 12 by 10, Annealing Furnace, wooden.
No. 20. 12 by 10, Annealing Shop, wooden.
No. 21. 30 by 30, 1819 blacksmith shop, 2 story stone, of Hall.
No. 22. 35 by 35 feet, 1827 Smiths or Forging Shop, 1-story stone.

Unidentified structures include the following: Coal House, 1822; Filing Shop, 1831; Store House for Bar Iron, 1824; Charcoal House, 1831; Fire Engine House, 1832; and a 17 by 17 feet filing shop, 1832.
MAP NO. 10

"A Plot Exhibiting the limits of the grounds requisite for the Passage of the Winchester & Potomac Railroad through the Islands, adjacent to Harper's Ferry. MAP C. Scale 100 feet to the inch." No date. Make October 1834.

National Archives Record Group 77, Records of the Chief of Engineers, Fortifications File, Drawer 150 Sheet 78-part 4. Cartographic Division, National Archives, Washington, D.C.

Detail from a section of this map showing the workshop of John H. Hall's Rifle Factory on the Lower Hall Island.

This map shows conditions at the John H. Hall Rifle Factory as of October 1834.

Numbers have been added to the map by the author. Only two of the 22 structures shown on the Lower Hall Island are positively identified on the original maps. These are No. 5-marked "Tilt Hammer" and No. 15, marked "Hall's Office".

Tentative Identification of Rifle Factory Shops

No. 1. L shaped, about 20 by 25 feet, with 15 by 20 feet wing.
No. 2. 15 by 10 feet.
No. 3. 10 by 15 feet.
No. 4. 15 by 12 feet.
No. 5. Tilt Hammer Shop, 75 by 35 feet, with 20 by 24 wing and 90 by 18 feet extension. Probably built in 1827, 45 by 45 feet when built.
No. 6. 24 by 16 feet.
No. 7. Tilt Hammer Shop, 1808-09, 45 by 45 feet, with 35 by 25 addition. Brick
No. 8. 32 by 15 feet. Furnace and Building for Hardening Rods, 1831(?)
No. 9. 25 by 18 feet.
No. 10. 25 by 20 feet, with 15 by 15 wing.
No. 11. 35 feet by 25 feet.
No. 12. 18 by 15 feet, frame dwelling?
No. 13. 15 by 12 feet, frame dwelling?
No. 14. 20 by 15 feet, frame dwelling?
No. 15. Capt. John H. Hall's Office, 35 by 30 feet.
No. 16. Grinding Mill (1808-09) - Bell Shop (1834), 80 by 45 feet with 20 by 20 wing
No. 17. Machine Shop (1807 sawmill), 50 by 16 feet, with 32 by 16 wing. Frame.
No. 18. 20 by 25 feet.
No. 19. 12 by 10, Annealing Furnace, wooden.
No. 20. 12 by 10, Annealing Shop, wooden.
No. 21. 30 by 30, 1819 blacksmith shop, 2 story stone, of Hall.
No. 22. 35 by 35 feet, 1827 Smiths or Forging Shop, 1-story stone.

Unidentified structures include the following: Coal House, 1822; Filing Shop, 1831; Store House for Bar Iron, 1824; Charcoal House, 1831; Fire Engine House, 1832; and a 17 by 17 feet filing shop, 1832.
2. Forging and Tempering Shop (1837-38).
3. Stockers Shop.
5. Fillers Shop—Old (1837).
8. Vitriol House (1837).
9. Rod Tilting Shop.
10. Inspectors Office.
13. Bell Shop, Stockers and Machinery.
15. House for Steaming Stocks.
17. Privy.
18. Drill Shop (1836).
22. Forging Shop (1819).
2 Annoing

Nov. Bruch

1St of Wall foot

January 11, 1935

The sum of $19,202 is received of Edward C. B. Foundations, for the completion of the do- 

Mutual building of Hadley on the site of the original building in the said town, to be used for a hospital and such other purpose as the town may direct.

Edward C. B. Foundations,

[Signature]

1935
Articles of Agreement made and entered into the third day of March
in the Year of our Lord One thousand Eight-Hundred and Six. Between Thomas
Jefferson, President of the United States, on the one part for and in their
behalf & the president and Director© of the Potomac Company on the other part.
Witnesseth that whereas the said Company are anxious to # improve the
Navigation of the River Shenandoah, by means of a Canal to be taken out of
said River upon the Grounds belonging to the U. States and Continued down to
a point at or near the old Saw Mill upon the Said grounds, where it is proposed
to descend by means of Locks into the bed of the River. In consideration
whereof they agreed that the U. States may have the full use and benefit of the
Surplus Water in Said Canal - - The said Thomas Jefferson President as afore
said Hath and Doth he reby grant to the Said Company the Right and privilege
of cutting making and Keeping in Repair at their own proper and exclusive
expenCe a Canal through the Said land belonging to the United States, and in
such a Manner and direction as will take the water out of the Shenandoah
River and Convey the Same to a point at or Near the old Saw Mill where their
Locks may be inserted to descend again into the bed of the River - And the
Said Thomas Jefferson in his said Capacity doth hereby further grant to the
Said Company for the purposes aforesaid and as necessary for their
Accomplishment the Right and privilege of digging and taking Stone Rocks and
gravel from Such parts of the public land as Shall not be injurious to the
United States; and also the Right of making keeping in Repair and using
Suitable toving paths and passages on the banks of the said Canal though the
whole extent aforesaid, together with the use and occupancy at all times of a
sufficient Space of Ground on each side of the Locks as shall be proper for
a Toll house and other necessary uses of Said Locks and the Said president and
Directors in consideration of the premises do again and covene
States as aforesaid that they the Said Company or their assigns will make
and Keep in "repair the proposed Canal, and do hereby grant unto the United
States as aforesaid forever here after the Right and privilege of drawing Water
from any part or parts of Said Canal for the use of any Water Works which
may hereafter be erected on any part of the public lands, So far as may
consist with the free complete and uninterrupted use of the Saad Canal, by the
Said Company, and the said Company doth further agree to aforesaid with the
United States to cause to be made and kept in repair such Roads and bridges as
may be deemed necessary and proper by the Superintendant of the
Public Works at Harpers Ferry to remedy any inconvenience which the
U.S. may sustain in consequence of the interruption which the proposed
Canal and Locks may occasion to the existing roadway.

The said president and directors of the Potomac Company having a
complete knowledge of the nature and extent of the title which the
United States claim to the Land through which the aforesaid Canal is
intended to pass, it is hereby clearly understood and further agreed
by the parties hereto, that the said Thomas Jefferson, President as aforementioned,
only intends to pass to the said Company such right and such only as
the United States Claims are invested with, not meaning
to warrant or defend the same, or to subject the United States to any
damage or liability whatsoever in Case their title to the Same shall
hereafter prove defective.

Signed Thos Jefferson

U.S. Seal By the President
of the U. States

H. Dearborn
Sec. of War

Signed Jos. Brown
for P. Company

True copy, 3, Nov. 1815.
<table>
<thead>
<tr>
<th>Item</th>
<th>Years</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annapolis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Armament Department</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annapolis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total expenditure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value of new arms and materials</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

G. H. HARRIS,

Lieut. Col. or ordnance dept.

D. D. C. 1822.

[Handwritten notes and additional data added to the table.]

EXPENSES OF THE ORDNANCE DEPARTMENT

[Table showing expenditures for various items, including armaments, repairs, and miscellaneous expenses.]
# Statement of the estimated value of the United States' Armory at Harper's Ferry, Virginia, on the 31st of December, 1861.

<table>
<thead>
<tr>
<th>Building Type</th>
<th>Number of Rooms</th>
<th>Dimensions in Feet</th>
<th>Number of Stories</th>
<th>Of what built</th>
<th>Estimated Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work shop</td>
<td>1</td>
<td>131 by 45</td>
<td>2</td>
<td>Brick</td>
<td>$15,000</td>
</tr>
<tr>
<td>Work shop</td>
<td>2</td>
<td>130 by 30</td>
<td>2</td>
<td>Brick</td>
<td>15,000</td>
</tr>
<tr>
<td>Work shops</td>
<td>2</td>
<td>120 by 30</td>
<td>2</td>
<td>Brick</td>
<td>20,000</td>
</tr>
<tr>
<td>Work shop</td>
<td>3</td>
<td>111 by 30</td>
<td>2</td>
<td>Brick</td>
<td>5,000</td>
</tr>
<tr>
<td>1 work shop and 1 store-room</td>
<td>1</td>
<td>115 by 33</td>
<td>2 &amp; a cellar</td>
<td>Brick</td>
<td>12,000</td>
</tr>
<tr>
<td>Arsenal</td>
<td>1</td>
<td>115 by 33</td>
<td>2</td>
<td>Brick</td>
<td>12,000</td>
</tr>
<tr>
<td>Gun room</td>
<td>1</td>
<td>55 by 40</td>
<td>1</td>
<td>Brick</td>
<td>6,000</td>
</tr>
<tr>
<td>Furnace and forge</td>
<td>1</td>
<td>45 by 45</td>
<td>1</td>
<td>Brick</td>
<td>4,000</td>
</tr>
<tr>
<td>Work shop</td>
<td>1</td>
<td>30 by 30</td>
<td>2</td>
<td>Stone</td>
<td>1,000</td>
</tr>
<tr>
<td>Work shop</td>
<td>1</td>
<td>50 by 20</td>
<td>1</td>
<td>Wood</td>
<td>500</td>
</tr>
<tr>
<td>Dwelling houses</td>
<td>1</td>
<td>26 by 30</td>
<td>2 &amp; a cellar</td>
<td>Brick</td>
<td>2,000</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>1</td>
<td>36 by 30</td>
<td>2</td>
<td>Brick</td>
<td>2,500</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>1</td>
<td>40 by 30</td>
<td>2</td>
<td>Brick</td>
<td>2,500</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>1</td>
<td>49 by 31</td>
<td>2 &amp; a cellar</td>
<td>Brick</td>
<td>3,500</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>1</td>
<td>20 by 30</td>
<td>2</td>
<td>Brick</td>
<td>1,000</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>1</td>
<td>61 by 31</td>
<td>2</td>
<td>Brick</td>
<td>3,000</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>1</td>
<td>28 by 16</td>
<td>2</td>
<td>Brick</td>
<td>2,000</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>1</td>
<td>23 by 18</td>
<td>1</td>
<td>Brick</td>
<td>1,000</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>1</td>
<td>38 by 18</td>
<td>1</td>
<td>Brick</td>
<td>600</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>1</td>
<td>72 by 20</td>
<td>1</td>
<td>Brick</td>
<td>600</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>1</td>
<td>21 by 18</td>
<td>1</td>
<td>Brick</td>
<td>4,000</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>1</td>
<td>26 by 20</td>
<td>2</td>
<td>Stone</td>
<td>800</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>1</td>
<td>24 by 20</td>
<td>2</td>
<td>Stone</td>
<td>800</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>1</td>
<td>28 by 20</td>
<td>1</td>
<td>Stone</td>
<td>800</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>1</td>
<td>5 by 24</td>
<td>1</td>
<td>Wood</td>
<td>2,000</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>1</td>
<td>25 by 20</td>
<td>2</td>
<td>Wood</td>
<td>2,500</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>1</td>
<td>18 by 18</td>
<td>2</td>
<td>Wood</td>
<td>1,000</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>1</td>
<td>50 by 15</td>
<td>2</td>
<td>Wood</td>
<td>1,500</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>1</td>
<td>50 by 15</td>
<td>2</td>
<td>Wood</td>
<td>1,500</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>1</td>
<td>50 by 16</td>
<td>1</td>
<td>Wood</td>
<td>1,000</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>2</td>
<td>30 by 16</td>
<td>1</td>
<td>Wood</td>
<td>1,000</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>1</td>
<td>30 by 13</td>
<td>1</td>
<td>Wood</td>
<td>1,000</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>5</td>
<td>1 by 20</td>
<td>1</td>
<td>Wood</td>
<td>500</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>1</td>
<td>3 by 20</td>
<td>1</td>
<td>Wood</td>
<td>500</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>1</td>
<td>30 by 10</td>
<td>1</td>
<td>Wood</td>
<td>500</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>4</td>
<td>4 dwelling houses</td>
<td>1</td>
<td>Wood</td>
<td>1,500</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>5</td>
<td>4 dwelling houses</td>
<td>1</td>
<td>Wood</td>
<td>1,500</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>1</td>
<td>28 by 16</td>
<td>1</td>
<td>Wood</td>
<td>2,500</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>1</td>
<td>18 by 16</td>
<td>1</td>
<td>Wood</td>
<td>1,000</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>1</td>
<td>18 by 16</td>
<td>1</td>
<td>Wood</td>
<td>200</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>1</td>
<td>18 by 16</td>
<td>1</td>
<td>Wood</td>
<td>150</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>1</td>
<td>16 by 14</td>
<td>1</td>
<td>Wood</td>
<td>100</td>
</tr>
<tr>
<td>Dwelling house</td>
<td>1</td>
<td>16 by 14</td>
<td>1</td>
<td>Wood</td>
<td>100</td>
</tr>
</tbody>
</table>

Total Estimated Value: $22,915.51

Ordnance Department, November 30, 1862.

G. ROMFORD, Lieutenant Colonel on ordnance duty.
"This Indenture made this twenty seventh day of June, in the year of our Lord One Thousand Eight Hundred and thirty three between John Strider and Sarah his wife of the County of Jefferson and State of Virginia of the one part, and the United States of America by the Hon. Lewis Cass, Secretary of War of the other part, Witnesseth that the said John Strider and Sarah his wife for an in consideration of the sum of Two Thousand Six hundred Dollars, lawful money of the United States to them in hand paid by the said United States of America (through the Hon. Lewis Cass Secretary of War), at and before the enrolling and delivery hereof the receipt whereof is hereby acknowledged, have Granted, Bargained, and sold, aliened, enfeoffed, released and confirmed, and by these presents do grant, Bargain & sell alien, enfeoff, release, and confirm unto the United States of America and their assigns forever all the right, title, interest claim and demand whatsoever of the said John Stridey, and Sarah his wife, of, and to the use and priviledge /sic./ of the waters of the Shenandoah river between the mills of the said Strider called the Gulph Mills, and the public works belonging to the United States on said river below the fall in the river from the said mills to the termination of the land of said Strider being two feet Three inches, commencing two feet five inches below the top of an iron bar now inserted in a rock, situated in the tail race of the mill of said Strider; said bar being twenty three feet six inches distant from the south corner of said mill. The said John Strider and Sarah his wife for the consideration before mentioned grant, bargain, and sell unto the United States of America the priviledge /sic./ of completing and perfecting the dam now extending partly across the Shenandoah river, above and nearly opposite the said Gulph Mills, so as to increase the supply of water to any extent, passing down the canal that leads to the Rifle Factory; also the priviledge /sic./ of increasing the depth and width of the present canal, extending from the dam last mentioned past the mills of said Strider to the Rifle Factory; also the priviledge /sic./ of increasing and extending the dam or dams at the head of the canal or race which supplies the mills of said Strider with water, and of increasing the depth and width of said canal or race, and of constructing wasters /sic./ in the same, at such places as may be considered necessary by the Superintendent of the Harpers Ferry Armory, his successor, or any future agent of the United States, for obtaining water
for the public works now established, or which may hereafter be established by the United States at, or near, the Rifle Factory on the Shenandoah River; provided however that such works as aforesaid shall not be so constructed as to prevent the free passage to the mills of said Strider of whatever quantity of water he may require, without, however lessening the force or quantity of water required by the United States. And the said John Strider and Sarah his wife, for the consideration before mentioned, grant and convey to the United States of America and their assigns forever the privilege of erecting a dam or dams, partly or entirely across the Shenandoah River at any point or points below the mills of said Strider, the height of which however, shall not be more than eight inches above the top of an iron bar now inserted in a rock, situated near the upper end of the Island on which the Rifle Factory is located, being the second rock of a ledge of rocks, extending from said Island nearly across the Shenandoah River in the direction of South 3/4° West; the said iron bar is inserted in said rock so that the top thereof is even with surface of the highest point of said rock, and in order to identify it the more particularly, the following bearings and distances have been ascertained, measuring from said bar, viz.: to the inner angle of a large rock near the south margin of the Shenandoah River South 44° East; to the East chimney of the dwelling house occupied by John H. Hall on Camp Hill North 66 1/4° East; to the East corner of the new stone addition to the dwelling house of said Strider South 48 1/4° West; to the East corner of stone building No. II attached to the Rifle Factory North 45 1/4° East distant Two hundred and forty seven feet; and to the East corner of the stone building formerly belonging to Sheriff Harrington dead North 29 1/2° West Two hundred and twenty six feet. To have and to hold the said use, privilege, etc., and enjoyment of the water power before mentioned hereby granted and conveyed unto the United States of America and their assigns forever. And the said John Strider and Sarah his wife, for themselves, their heirs, Executors, and Administrators, do hereby covenant and agree to warrant and defend the whole of the water power and the right of using it as aforesaid hereby granted and conveyed unto the United States of America, and their assigns forever free from the claim or the said John Strider and Sarah his wife and from the claim or claims of every other person or persons whatsoever. And the said John Strider and Sarah his wife for the consideration before expressed, release & exonerate the United States from all claim whatever for the previous use of the water power hereby conveyed.
In Witness whereof the said John Strider and Sarah his wife have hereunto set their hands and affixed their seals the day and year first written.

John Strider
Sarah Strider

Jefferson County to wit:

We James B. Wager and Geo. B. Stephenson Justices of the peace for the County aforesaid in the State of Virginia do hereby certify that John Strider party to a certain deed bearing bearing date on the 27th day of June 1833 and hereeto annexed personally appeared before us in our County aforesaid and acknowledged the same to be his act and deed and desired us to certify the said acknowledgement to the Clerk of the County Court of Jefferson in order that the said deed may be recorded.

Given under our hands and seals this 27th day of June 1833.

James B. Wager
Geo. B. Stephenson

Jefferson County to wit:

We James B. Wager and Geo. B. Stephenson Justices of the peace for the County aforesaid in the State of Virginia do hereby certify that Sarah Strider the wife of John Strider parties to a certain deed bearing date on the 27th day of June 1833 and hereto annexed personally appeared before us in our county aforesaid and being examined by us privily and apart from her husband and having the deed aforesaid fully explained to her she the said Sarah acknowledged the same to be her act and deed and declared that she had willingly signed sealed and delivered the same and that she wished not to retract it.

Given under our hands and seals this 27th day of June 1833.

James B. Wager
Geo. B. Stephenson
APPENDIX I

1869 Map of Harpers Ferry by S. Howell Brown
Map No. 42, Drawer No. 11, Harpers Ferry Map Case
APPENDIX II

1807 Plat showing Shenandoah River and Island therein owned by Robert Harper.

May No. 44, Drawer No. 11, Harpers Ferry
Map Case

For further information on this map, see also:

1. Secretary of War to Samuel Annin, April 21, 1807, Reel 15, V.1, p.50.
2. Secretary of War to Samuel Annin, May 14, 1807, Reel 15, V.1, p.52.
L807 Plat

Explanation of the Plat

A. The beginning, at which place is three sycamores; - the leased land comes to these trees and no lower down the river.

B. Shows where the Canal takes the water out of the river.

D. The Dwelling house occupied by Leonard Harbaugh.

E. Shows the way the waste water is carried off from the canal.

F. Shows a situation where a mill may be built, to work two pair of six feet stones, and supplied with water by leading it along the old saw mill race to P and then by cutting a new race along the dotted lines to F, at which situation ten feet of fall may be had and a sufficient supply of water at all times without interfering with the supply of the Canal at B.

G. Shows the new Saw mill, supplied with water from the Canal; at which place a mill ought to be built to work two pair of Six feet stones, with ten feet head of water.

H E K. Shows a Lock Gate, and the 1st and 2nd lock.

M. Shows a situation for a Mill seat that may work two pair of Six feet stones, which may have 17 feet head and fall of water, and be supplied by taking the water from the canal at the point B, and developing it along the dotted lines to L, and there carrying it across the canal in a trunk: and if delivered on an overshot wheel the tail water cannot impede the boats passing up or down.

U. Shows where another Mill might be built to work two pair of Six feet stones, to be supplied with water in the same manner with the last, and have the same head of water.


XY The dotted line, shows where a dam might be made across that part of the river and the water in the time of a flood turned the other way; leaving an aperture in the dam to let enough through to supply the Boats passing: which would prevent the mills below the locks being stopped by back water.

The lines shaded yellow show the road to Harpers Ferry,
laid down by a scale of 8 perches to an inch.
1807 Plat Showing Shenandoah River and Island therein
owned by Robert Harper.
Map No. 11, Drawer No. 11, Harpers Ferry Map Case.
National Archives.

Subject to Inundations

Shenandoah River.
APPENDIX III

Map C-Dated August 18, 1961
MEMORANDUM

To: Superintendent Don Campbell, Harper Ferry NHP

From: Historian Charles W. Snell, National Capital Team, DSC
(Room 4314, 1100 L. Street, NW, D.C.)

Subject: Draft of History of Lower Hall Island, 1842-1885.

Enclosed is a copy of the final draft of the research report:

"History of the Lower Hall Island and the U.S. Rifle Factory, 1842

to 1885, A Physical History, Volume II, Harpers Ferry National Historical

Park, West Virginia,"(April 1981), 122 pages, 3 photographs and 7 maps.

Charles W. Snell
Historian