THE CONTINENTAL GONDOLA PHILADELPHIA

A Dissertation

by

JOHN RAYMOND BRATTEN

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

May 1997

Major Subject: Anthropology
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May 1997

Major Subject: Anthropology
ABSTRACT

The Continental Gondola *Philadelphia*. (May 1997)

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The Continental gondola *Philadelphia* is the oldest intact warship currently on display in North America. With her recovery in 1935, *Philadelphia* testified to the heroic struggle between a tiny fleet of American warships and an overwhelmingly superior British fleet on the waters of Lake Champlain in October of 1776. Although the Americans were defeated and *Philadelphia* sank, the shipbuilding race and naval contest delayed the British invasion of the rebelling colonies for one year. This delay, according to most historians, gave the American forces much needed time to muster a defense that ultimately resulted in the British defeat at Saratoga in 1777.

*Philadelphia*'s role in the naval engagement of 1776 has been the subject of several professional papers and the construction of her hull has been documented graphically. Nevertheless, in the 62 years since her recovery no comprehensive analysis of this vessel and, especially her associated artifacts has ever been produced. The primary focus of this dissertation is a study of the gunboat's history, construction, armaments, tools, utensils, personal items, and rigging elements. This will be accomplished by taking advantage of contemporary records, describing the previously undocumented collections of *Philadelphia* artifacts, and by analysis of recently-discovered photographs taken during the 1935
recovery of the vessel. An assessment will also be made of *Philadelphia II* built at the Lake Champlain Maritime Museum during 1989-1991. The replica has provided a firsthand opportunity to evaluate how a vessel of this type was built, manned, sailed, and propelled by sweeps.
DEDICATION

This dissertation is dedicated to my parents

William Lloyd and Mary Helen Bratten
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>iii</td>
</tr>
<tr>
<td>DEDICATION</td>
<td>v</td>
</tr>
<tr>
<td>TABLE OF CONTENTS</td>
<td>vi</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>ix</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>x</td>
</tr>
<tr>
<td>CHAPTER</td>
<td></td>
</tr>
<tr>
<td>I INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Historical Background</td>
<td>1</td>
</tr>
<tr>
<td>Research Procedure</td>
<td>3</td>
</tr>
<tr>
<td>II HISTORY OF MILITARY AND NAVAL EVENTS LEADING TO THE BATTLE OF VALCOUR ISLAND</td>
<td>9</td>
</tr>
<tr>
<td>III BUILDING THE AMERICAN FLEET</td>
<td>23</td>
</tr>
<tr>
<td>IV BUILDING THE BRITISH FLEET</td>
<td>55</td>
</tr>
<tr>
<td>V THE AMERICAN FLEET PREPARES FOR CONFRONTATION</td>
<td>69</td>
</tr>
<tr>
<td>VI THE BATTLE OF VALCOUR ISLAND</td>
<td>86</td>
</tr>
<tr>
<td>VII THE SALVAGE OF THE PHILADELPHIA</td>
<td>120</td>
</tr>
<tr>
<td>Salvage of the Hull</td>
<td>129</td>
</tr>
<tr>
<td>Conservation of the Philadelphia</td>
<td>139</td>
</tr>
<tr>
<td>VIII CONSTRUCTION OF THE PHILADELPHIA</td>
<td>150</td>
</tr>
<tr>
<td>Survey and Reconstruction of Philadelphia</td>
<td>151</td>
</tr>
<tr>
<td>Bottom Planking</td>
<td>152</td>
</tr>
<tr>
<td>Stem</td>
<td>152</td>
</tr>
<tr>
<td>Sternpost</td>
<td>154</td>
</tr>
<tr>
<td>CHAPTER</td>
<td>Page</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Floors</td>
<td>154</td>
</tr>
<tr>
<td>Frames</td>
<td>155</td>
</tr>
<tr>
<td>Keelson</td>
<td>156</td>
</tr>
<tr>
<td>Planking</td>
<td>158</td>
</tr>
<tr>
<td>Wales</td>
<td>158</td>
</tr>
<tr>
<td>Ceiling</td>
<td>160</td>
</tr>
<tr>
<td>Breast Hooks</td>
<td>161</td>
</tr>
<tr>
<td>The Decks</td>
<td>161</td>
</tr>
<tr>
<td>Caprail</td>
<td>164</td>
</tr>
<tr>
<td>Rudder</td>
<td>165</td>
</tr>
<tr>
<td>Awning Structure, Bow Rails, and Fascines</td>
<td>165</td>
</tr>
<tr>
<td>Other Hull Fittings</td>
<td>168</td>
</tr>
<tr>
<td>Masts, Yards, and Rigging</td>
<td>172</td>
</tr>
<tr>
<td>Paint</td>
<td>173</td>
</tr>
<tr>
<td>Tool Marks</td>
<td>173</td>
</tr>
<tr>
<td>IX THE PHILADELPHIA ARTIFACT COLLECTION</td>
<td>179</td>
</tr>
<tr>
<td>Armaments</td>
<td>180</td>
</tr>
<tr>
<td>Shot</td>
<td>188</td>
</tr>
<tr>
<td>Small Arms</td>
<td>190</td>
</tr>
<tr>
<td>Iron Fasteners</td>
<td>194</td>
</tr>
<tr>
<td>Tools</td>
<td>195</td>
</tr>
<tr>
<td>Rigging Equipment</td>
<td>197</td>
</tr>
<tr>
<td>Anchors</td>
<td>198</td>
</tr>
<tr>
<td>Sweeps</td>
<td>198</td>
</tr>
<tr>
<td>Navigation Equipment</td>
<td>199</td>
</tr>
<tr>
<td>Fireplace and Cooking Utensils</td>
<td>200</td>
</tr>
<tr>
<td>Personal Possessions</td>
<td>201</td>
</tr>
<tr>
<td>Miscellaneous Finds</td>
<td>203</td>
</tr>
<tr>
<td>X THE CREW OF THE PHILADELPHIA</td>
<td>211</td>
</tr>
<tr>
<td>XI THE PHILADELPHIA II</td>
<td>228</td>
</tr>
<tr>
<td>Evaluating the Replica</td>
<td>235</td>
</tr>
<tr>
<td>XII DISCUSSION AND CONCLUSIONS</td>
<td>250</td>
</tr>
<tr>
<td>BIBLIOGRAPHY</td>
<td>255</td>
</tr>
</tbody>
</table>
APPENDIX A: A CATALOG OF ARTIFACTS FOUND ON THE
PHILAELPHIA ............................................. 263

APPENDIX B: LETTERS OF PERMISSION .................. 329

VITA ............................................................ 332
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 3.1</td>
<td>&quot;A List of the Navy of the United States of America on Lake Cham[pl]ain, Aug. 7th 1776&quot;</td>
<td>42</td>
</tr>
<tr>
<td>Table 3.2</td>
<td>Supplies for the Galley <em>Washington</em></td>
<td>45</td>
</tr>
<tr>
<td>Table 6.1</td>
<td>The American Fleet at Valcour Island</td>
<td>91</td>
</tr>
<tr>
<td>Table 6.2</td>
<td>The British Fleet at Valcour Island</td>
<td>93</td>
</tr>
<tr>
<td>Table 10.1</td>
<td>Pay Roll of Captain Benjamin Rues Crew belonging to gondola <em>Philadelphia</em> from the time they entered sd Service to October 16, 1776 inclusive</td>
<td>214</td>
</tr>
<tr>
<td>Table 10.2</td>
<td>Crew Members of the Continental Gondola <em>Philadelphia</em></td>
<td>218</td>
</tr>
<tr>
<td>Table 10.3</td>
<td><em>Philadelphia</em> Crew Members listed as British Prisoners</td>
<td>224</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 2.1</td>
<td>The Lake Champlain-Hudson River corridor</td>
<td>10</td>
</tr>
<tr>
<td>Figure 3.1</td>
<td>Skenesborough and its environs, circa 1776</td>
<td>24</td>
</tr>
<tr>
<td>Figure 3.2</td>
<td>The Schooner <em>Royal Savage</em></td>
<td>36</td>
</tr>
<tr>
<td>Figure 3.3</td>
<td>The Cutter <em>Lee</em></td>
<td>37</td>
</tr>
<tr>
<td>Figure 3.4</td>
<td>The Galley <em>Washington</em></td>
<td>39</td>
</tr>
<tr>
<td>Figure 4.1</td>
<td>The Schooner <em>Maria</em></td>
<td>57</td>
</tr>
<tr>
<td>Figure 4.2</td>
<td>The Gondola <em>Loyal Convert</em></td>
<td>59</td>
</tr>
<tr>
<td>Figure 4.3</td>
<td>The Radeau <em>Thunderer</em></td>
<td>63</td>
</tr>
<tr>
<td>Figure 4.4</td>
<td>Admiralty draught of a boat to carry one carriage gun forward</td>
<td>64</td>
</tr>
<tr>
<td>Figure 6.1</td>
<td>Valcour Island</td>
<td>87</td>
</tr>
<tr>
<td>Figure 6.2</td>
<td>&quot;The Battle of Valcour Island 1776&quot; by Henry Gilder</td>
<td>94</td>
</tr>
<tr>
<td>Figure 7.1</td>
<td><em>Philadelphia</em>’s 1935 salvage team: from left to right, J. Ruppert Schalk, William Lilja, and Lorenzo Hagglund</td>
<td>123</td>
</tr>
<tr>
<td>Figure 7.2</td>
<td>William Lilja’s underwater sketch of <em>Philadelphia</em></td>
<td>125</td>
</tr>
<tr>
<td>Figure 7.3</td>
<td><em>Philadelphia</em>’s cannons on the deck of the Cashman lighter</td>
<td>130</td>
</tr>
<tr>
<td>Figure 7.4</td>
<td>The <em>Philadelphia</em> soon after it was raised</td>
<td>133</td>
</tr>
<tr>
<td>Figure 7.5</td>
<td>After crating, <em>Philadelphia</em> was sent to Washington, D.C. for preservation, documentation, and permanent display</td>
<td>142</td>
</tr>
<tr>
<td>Figure 7.6</td>
<td><em>Philadelphia</em> being placed into the newly constructed National Museum of History and Technology (now the National Museum of American History)</td>
<td>144</td>
</tr>
<tr>
<td>Figure 8.1</td>
<td>Bottom planking and framing structure</td>
<td>153</td>
</tr>
</tbody>
</table>
Figure 8.2  Additional structural details. ........................................... 157
Figure 8.3  Lines and planking plan ...................................................... 159
Figure 8.4  Complete structural assembly ............................................ 162
Figure 8.5  Awning structure, bow rails, and fascines .......................... 167
Figure 8.6  General arrangement, lower rigging, and ordnance ............... 170
Figure 8.7  Profile and sail plan ........................................................... 174
Figure 11.1  Philadelphia II's boatbuilders, John Gritter and Bill Swartz fabricate one of the replica's knees ........................................ 230
Figure 11.2  Steam bending exterior planking into position .................... 232
Figure 11.3  Caulking Philadelphia II's seams with oakum ..................... 234
Figure 11.4  Philadelphia II's amidship and forward decks ..................... 236
Figure 11.5  Philadelphia II's classic "barndoor" rudder ......................... 237
Figure 11.6  Arthur B. Cohn assisting in Philadelphia II's final rigging ....... 238
Figure 11.7  Launch day, 18 August 1991 ............................................. 239
Figure 11.8  Twelve-pounder replica cannon in slide carriage ................. 240
Figure 11.9  Philadelphia II's port side 9-pounder concrete replica ........... 241
Figure 11.10 Philadelphia II under sail .................................................. 243
Figure 11.11 Volunteers set Philadelphia II's topsail during "sea trials" ....... 244
Figure 11.12 Philadelphia II is extremely maneuverable under sweeps during calm conditions ......................................................... 246
Figure A.1  Twelve-pounder bow gun and slide carriage ....................... 280
Figure A.2  Weight stamp of 12-pounder bow gun ................................ 281
| Figure A.3 | Howard Hoffman and starboard 9-pounder | 282 |
| Figure A.4 | Closeup of markings and touch hole on port 9-pounder | 283 |
| Figure A.5 | Nine-pounder carriage trucks | 284 |
| Figure A.6 | Iron carriage rings | 285 |
| Figure A.7 | Iron keys for trunnion plates | 285 |
| Figure A.8 | Swivel gun, side view | 286 |
| Figure A.9 | Swivel gun, top view | 286 |
| Figure A.10 | British Broad Arrow and weight stamp on swivel gun | 287 |
| Figure A.11 | Broken swivel gun yoke. | 287 |
| Figure A.12 | Iron shot gauge | 288 |
| Figure A.13 | Wooden double shot gauge | 288 |
| Figure A.14 | Nine-pounder tompions | 289 |
| Figure A.15 | Swivel gun worm | 289 |
| Figure A.16 | Round and bar shot | 290 |
| Figure A.17 | Canister, top view | 291 |
| Figure A.18 | Canister and sabot, bottom view | 291 |
| Figure A.19 | Langrage | 292 |
| Figure A.20 | Musket or rifle stock | 292 |
| Figure A.21 | Small arm finds | 293 |
| Figure A.22 | Musket barrel fragment | 294 |
| Figure A.23 | Brass trigger guard | 294 |
Figure A.24  Wooden ramrod fragments ............................................ 295
Figure A.25  Brass ramrod pipes .................................................... 295
Figure A.26  Brass rear ramrod guide .......................................... 296
Figure A.27  Fragment of iron rear ramrod guide ......................... 296
Figure A.28  Bayonets ............................................................... 297
Figure A.29  Gunflints ............................................................... 298
Figure A.30  Wooden cartridge box ............................................. 298
Figure A.31  Buckshot and musket shot ...................................... 299
Figure A.32  Spikes and nails ..................................................... 300
Figure A.33  Eye spikes and timbering spike ................................. 301
Figure A.34  Axe heads, side view .............................................. 302
Figure A.35  Axe heads, 3/4 profile view .................................... 302
Figure A.36  Twelve-pounder and 9-pounder tompions, cleat, and serving mallet .................................................. 303
Figure A.37  Wooden plugs .......................................................... 304
Figure A.38  Pitch brush ............................................................. 305
Figure A.39  Lead pitch dish ....................................................... 305
Figure A.40  Iron spade with wooden handle recovered in 1935 .......... 306
Figure A.41  Iron spade blade, bottom view .................................. 307
Figure A.42  Iron file ................................................................. 307
Figure A.43  Fascine blades, gunner’s worm, tar brush, and iron auger ................................................................. 308
Figure A.44  Closeup of fascine blade marking ................................ 308
| Figure A.45  | 1935 artifact group, note adze blade in foreground, right | 309 |
| Figure A.46  | Original salvage photograph, note broken grindstone in foreground, center | 310 |
| Figure A.47  | Ten-inch wooden double block | 311 |
| Figure A.48  | Wooden deadeye converted from sheave | 311 |
| Figure A.49  | Iron hooks and rope thimbles | 312 |
| Figure A.50  | Hook, thimble, and rope fragment | 313 |
| Figure A.51  | Port anchor | 314 |
| Figure A.52  | Time glass | 315 |
| Figure A.53  | Iron dividers | 315 |
| Figure A.54  | Wooden chopping block and reconstructed fireplace | 316 |
| Figure A.55  | Cast iron cooking kettle, front view | 317 |
| Figure A.56  | Cast iron cooking kettle, side view | 317 |
| Figure A.57  | Long-handled iron skillet | 318 |
| Figure A.58  | Cast iron cooking pot | 319 |
| Figure A.59  | Cast iron cooking pot, side view | 319 |
| Figure A.60  | Buttons | 320 |
| Figure A.61  | Pewter spoons | 321 |
| Figure A.62  | Buckles | 322 |
| Figure A.63  | Ceramic "grog" cup | 323 |
| Figure A.64  | Ceramic fragments | 323 |
| Figure A.65  | Shoes | 324 |
| Figure A.66 | Textile fragment .................. | 324 |
| Figure A.67 | Iron half-hinges .................. | 325 |
| Figure A.68 | Brass belt holder ................. | 326 |
| Figure A.69 | Sulfur fragments .................. | 326 |
| Figure A.70 | Human teeth ....................... | 327 |
| Figure A.71 | Animal bone found in iron kettle | 327 |
| Figure A.72 | Wooden powder horn plug .......... | 328 |
CHAPTER I

INTRODUCTION

The Continental gondola *Philadelphia* is the oldest intact warship presently on display in North America. This small craft, only 54 feet in length, is the sole survivor of the flotilla which frustrated Britain's first major effort to divide and subdue her rebellious American subjects by cutting off New England from the Middle and Southern colonies. Both *Philadelphia* and her role in the Lake Champlain naval engagement of 1776 have been the subject of several professional papers and are mentioned in historical texts.\textsuperscript{1} Extensive plans of the hull have been produced at the Smithsonian Institution.\textsuperscript{2} Unfortunately, no comprehensive analysis of this vessel and, especially, her associated artifacts has ever been produced.

The primary focus of this dissertation is the study of the gunboat *Philadelphia*, her armaments, tools, personal items, and rigging elements. The study seeks to combine history and archaeology, and to make comparative analyses. Full advantage is made of contemporary written and graphic records including the journals, correspondence, and sketches of the personnel involved.

*Historical Background*

On 30 July 1776, the Continental gondola *Philadelphia* was launched from the American shipyard at Skenesborough (now Whitehall), New York, into the waters of Lake Champlain. Construction of the *Philadelphia* and her sisterships had been ordered on 17 June 1776, when the Continental Congress instructed General Philip Schuyler, commander of the American forces in New York, . . . "to build, with all expedition, as many gallies and

---

This dissertation follows *The American Neptune* style.
armed vessels as . . . shall be sufficient to make us indisputably masters of the [L]akes Champlain and George."³ Congress' order came with the realization that the American attempt to take Quebec and neutralize British Canada in the first year of the Revolutionary War had failed. Schuyler, anticipating the possible need for vessels to aid in the retreat of the army, had already begun preparations in late May for the construction of gondolas by sending carpenters from Fort George, New York, to Skenesborough.⁴

Fearing an imminent British invasion through the Lake Champlain corridor, the Marine Committee of Congress ordered additional shipwrights to Skenesborough in mid-June. At that time, Schuyler optimistically predicted that once more carpenters arrived it would be possible to build five gondolas a week.⁵ However, only two gondolas had been sent to Fort Ticonderoga by 15 July. This fact prompted General Horatio Gates, field commander of the Northern Army, to complain that the 60 carpenters at work at Skenesborough "must be very ill-attended to, or very ignorant of their business, not to do more work."⁶ Gates had already written to Benedict Arnold expressing his wish that he take charge of the building program at Skenesborough.⁷

In late July, both the shipbuilding program and command of the fleet fell to the more experienced Arnold. Arnold then instructed the nearly 200 ship and house carpenters at Skenesborough to turn their attention to the construction of larger galleys. Meanwhile, Arnold's British counterpart, Sir Guy Carleton, Governor General of Canada and Commander of the British forces, was assembling vessels at St. Jean on the Richelieu River in preparation for a thrust southward, down Lake Champlain, to cut off New England from the southern colonies.

When the British invasion of Lake Champlain began, Arnold anchored his fleet at Valcour Island near the New York shore. On 11 October 1776, the battle commenced.
The Americans fought skillfully and determinedly, but the superior firepower of the British squadron proved decisive. One hour after the battle ended the badly-damaged *Philadelphia* sank. Arnold and most of his men escaped in a daring nighttime retreat by rowing their ships between the British fleet and the New York shore. By the end of the three-day engagement only four of the original seventeen ships that formed the American fleet returned to the shelter of Fort Ticonderoga.

The British victory, however, was incomplete. Realizing it was too late in the season to lay siege to Fort Ticonderoga, Carleton chose instead to return to Canada. A second invasion in 1777 swept quickly through the Champlain Valley, but British commander John Burgoyne's campaign ended in disaster at Saratoga, where Burgoyne surrendered his entire army to Horatio Gates on 17 October 1777.

Many historians point to the naval contest for Lake Champlain in 1776 as the foundation for Burgoyne's defeat the following year. Had Arnold not forced the British to lose a campaign season by entering into a lengthy shipbuilding race, the American army would not have had time to build the strength necessary for its victory at Saratoga. The sacrifice of *Philadelphia* and other vessels in Arnold's fleet had served its purpose.

The gunboat *Philadelphia* remained at the bottom of Lake Champlain until 1935, when Colonel Lorenzo Hagglund raised her, placed the hull on a barge, and created a floating exhibit that toured the Hudson River and Lake Champlain for many years. In 1961, the *Philadelphia* went to the Smithsonian Institution, where she became a central exhibit at the National Museum of American History.

*Research Procedure*

This dissertation will place *Philadelphia* in its historical context by using contemporary documents published in the multi-volume *Naval Documents of the American*
Revolution and other primary documents. Howard P. Hoffman's "A Graphic Presentation of the Continental Gondola Philadelphia, American Gunboat of 1776," comprises a detailed record of Philadelphia's design. The use of these plans, along with a visual inspection of the hull, will provide the necessary information needed to write a complete description of the gondola.

Documentation will attempt to include the entire collection of artifacts recovered with the Philadelphia in 1935. A total of 719 objects (including the hull) were accessioned into the United States National Museum (now the National Museum of American History) following the Hagglund bequest.11 Several more objects were found with Philadelphia, however. The final number will be determined by comparing the number of artifacts described in Lorenzo Hagglund's report of the salvage project, and an accession list and Polaroid photographs kept at the National Museum of American History (NMAH) of the Smithsonian Institution.

With the fortuitous discovery of Philadelphia's original payroll in 1973, the names of the 44-man crew became known.12 With the exception of a few brief paragraphs concerning Philadelphia's officers, surprisingly little use has been made of this invaluable document in published works. Philip Lundeberg has noted that approximately two-thirds of Philadelphia's crew originated from New Hampshire.13 Virtually every member, however, can be traced in the historical record to his original militia or Continental regiment. Examination of this data provides insights into the difficulties that Arnold encountered and the types of seamen he was forced to rely on during the naval action at Valcour Island.

According to Richard Steffy, "the ultimate research vehicle [for nautical archaeology] is a full-size, faithfully duplicated copy of [an] original ship . . . since they
have no parallel for studying construction techniques and ship handling.”14 With this idea in mind, and the desire to “demonstrate a cost-effective and historically sound alternative to raising fragile, historic shipwrecks,” the Lake Champlain Maritime Museum began the construction of a full-size Philadelphia replica in 1989.15 This vessel was assembled from details contained in Hoffman’s plans of the original hull, and provides an opportunity to evaluate how Philadelphia was built, manned, sailed, and propelled by sweeps.

While many of the ships of Arnold’s fleet have been located, and many salvaged, only Philadelphia remains intact and on public display. This vessel is an exceptional resource for students of the Revolutionary War and 18th-century maritime studies, well deserving of complete documentation and analysis. Unfortunately, conservation treatments were not attempted on Philadelphia immediately following her recovery in 1935. Although the hull timbers of Philadelphia were treated with two spray coats of polyethylene glycol (PEG) in 1961, the wood bulking treatment proved to be too minimal to be effective. Consequently, many of the gondola’s timbers have split and cupped, indicating that the wood has failed on a cellular level. Philadelphia’s conservation problems are further complicated by the fact that Gentol 101 (liquid nylon) was also applied to the wood in an attempt to seal in the PEG. The liquid nylon has probably become insoluble and may hamper further efforts to introduce other preservative materials into the wood. A discussion of the Philadelphia’s conservation history and current status will be included in the research presentation.

In summary, the dissertation will record and catalogue all of the artifacts recovered from the Philadelphia now in the possession of the Smithsonian Institution, as well as those documented only by photograph. A complete written description of Philadelphia’s hull, based upon visual inspection of the hull and the plans drawn by Howard Hoffman,
will be included. In addition to documenting the gondola's crew, comparisons will be made with similar vessels and equipment. The Lake Champlain Maritime Museum's full-sized replica has provided an excellent opportunity to apply the principles of experimental archaeology in order to gain insights into 18th-century ship construction and naval warfare.

As the earliest American naval vessel on display in the country, *Philadelphia* is a unique and important artifact. This significance is also reflected in the vessel's history, architecture, and artifact collection. Although *Philadelphia* has received some study (mostly historical and architectural recording) the vessel and her artifact collection have never undergone comprehensive archaeological study, recording and analysis. For the first time the many separate elements of the *Philadelphia* story have been combined into one report.
Notes: Chapter I


CHAPTER II

HISTORY OF THE MILITARY AND NAVAL EVENTS LEADING TO THE BATTLE OF VALCOUR ISLAND

During the first two centuries of European colonization of North America, Lake Champlain was the key to transportation across the wilderness area between Canada and the Continent's eastern seaboard. The valley between the Adirondacks and the Green Mountains was a waterway between the colonies of Britain and France. Connected to the St. Lawrence via the Richelieu River, Lake Champlain provided an easily navigable route to New England and New York via the Hudson River (figure 2.1).

Long before European explorers came, the Hudson valley was inhabited by the Iroquois, the St. Lawrence River valley by the Algonquins. From north and south, the two tribes traveled along the lake in search of furs or food with the Iroquois claiming the western shore and the Algonquins the eastern shore.¹

In September of 1609, Henry Hudson, an English explorer in the employ of the Dutch, sailed to the uppermost limit of navigation on the river that now bears his name. Hudson may have been aware of the lakes that lay but a few miles to the north of where he ended his exploration. As a result of this expedition, the Dutch concluded a treaty with the Iroquois and established a trading post called Fort Nassau, on Castle Island, in the Hudson River, south of present day Albany, New York. In 1624 several Walloon families began permanent settlement at the Dutch post of Fort Orange (later, Albany, New York).

Just a few months before Hudson made his historic voyage into the interior with the ship Half Moon, a French explorer entered the Champlain Valley from the north. Samuel de Champlain, with two French companions and some sixty Algonquins, had paddled south from Quebec, the first permanent colony in New France, to raid the Iroquois. Near the
southern end of the lake named after the explorer, the party met a large force of Iroquois. Loading his arquebus with four balls, Champlain, at the head of the Algonquins, marched to within thirty paces of the defenders. With a single shot he killed two of the opposing chiefs and wounded a third. Amazed at the power of these unbelievable French weapons, the Iroquois fled. Years later, according to most historians, this encounter would set the stage for an alliance of the Iroquois with the British against the French. One historian writes that “It was inevitable, however, that the French should ally themselves with the people among whom they had to live, and, in the end, defend them against the raids of their enemy.”

For the next 100 years, the French settled the St. Lawrence Valley and engaged in the fur trade with the Native Americans. Eventually, their trading interests led them further south into the Champlain Valley. To protect their new markets, the French began construction of a stockade in 1730, which, with later additions, became Fort St. Frédéric. In 1755 the French began construction of a second fort at the southern end of Lake Champlain. Immensely strong, Fort Carillon was built in the star-shaped pattern of construction perfected by French engineers in the 17th century.

In 1664, at the beginning of the second Anglo-Dutch War, the English took control of the Dutch colony established on the Hudson River. Almost immediately they began to move north toward the Champlain Valley. Across these few miles were later fought the bitter battles of a century of conflict between French power from the north and English settlements pressing up from the south.

In 1758, Fort Carillon became the center of French resistance against a mixed force of nearly fifteen thousand British and provincial troops invading from the Hudson Valley in 900 bateau and 100 whale boats. In early July, the British army lost two thousand men,
including George Viscount Howe, their most gallant general, attempting to take the stronghold. To further strengthen their hold on the lake, the French built a small naval squadron consisting of four 65-ton sloops (Musquelony, Esturgeon, Brochette, and Waggon), and a 70-ton schooner (Vigilante).\textsuperscript{5}

In July of 1759, General Jeffrey Amherst finally took Fort Carillon. The British immediately occupied the fort and renamed it Fort Ticonderoga. Fort St. Frédéric was similarly captured and renamed Crown Point.\textsuperscript{6} Before the British could continue their advance north into Canada, it was be necessary to take control of the lake. Amherst therefore ordered the construction of a 155-ton brig, Duke of Cumberland, and a 115-ton sloop, Boscawen, at the King's Shipyard at Ticonderoga.\textsuperscript{7}

Once the two vessels were launched, the British sailed in search of the French fleet. In what has been called a “questionable maneuver,” the French intentionally scuttled three of their sloops without a fight when the British vessels were spotted.\textsuperscript{8} The sloops were immediately raised and pressed into British service.

The capture of the greater portion of the French fleet signaled the end of the French occupation of the Champlain Valley. In 1760, three British armies, one of them Colonel William Haviland's from Ticonderoga, moved against Montreal.\textsuperscript{9} By 1763, with the Treaty of Paris, all of Canada became British. For a short time peace returned to the Champlain Valley.

The use of Lake Champlain as an invasion route was not soon forgotten. In 1767 Guy Carleton, Governor General of Canada, wrote to General Thomas Gage, Commander in Chief of the British forces in America recommending that he:

\textit{... strengthen the vital posts at Crown Point, Ticonderoga and Fort George, as well as the terminal citadels at Quebec and New York City, and to provide for recruiting troops either from the people under his jurisdiction or from...}
Great Britain... old forts must be repaired and new ones constructed at the
terminal points in order to secure communications with Great Britain.10

Carleton realized that control of the two port cites was absolutely necessary to
provide for a quick reinforcement of troops in case of attack. His plan also foresaw the
political influence that the establishment of a strong military presence would have on the
colonists. Thus, the second purpose of his plan was to:

... establish Tranquility, and a firm Attachment to His Majesty's
Government, at the same time it is equally essential to establish that security
and Strength as can properly curb and overawe, should such ever arise, who
by the Ties of loyal Subjects and honest Men, are not thoroughly bound to
their duty.11

Considering the future events in the Champlain Valley, Carleton's letter to Gage has
been seen as something of a prophesy. Had this strategy been adopted, it does not
necessarily mean that there would not have been a revolution, but the success of the
American cause would have been made exceedingly difficult.12

As tensions began to mount between the colonists and Great Britain during the
Spring of 1774, General Frederick Haldimand (acting commander in chief during Thomas
Gage's absence) suggested that two regiments be ordered from Quebec to Crown Point
with the idea of rebuilding that fort.13 Like Carleton, Haldimand realized that a British
garrison on Lake Champlain would ensure an open line of communications with Canada
and provide access to the more remote settlements of the northern colonies should they
decide to stage any violence against the British from these outposts.”14 Shortly afterwards,
Lord Dartmouth, Secretary of State for the colonies, advised Gage that proposals for the
repair of both Crown Point and Ticonderoga would be considered.15

By fall of 1774, increasing unrest among the colonists prompted Dartmouth’s
orders to Gage to restore both Ticonderoga and Crown Point to their original state of
military readiness. These orders were not received by Gage until winter had moved into the valley, restricting troop movements until after the spring thaw. Gage took a rather leisurely approach to the reconstruction, perhaps because of the general inactivity of the winter season. His only orders to Captain William Delaplace at Ticonderoga were to be alert in the event of trouble, but no other action was taken.

The British decided by mid-April of 1775 to occupy any forts and defensive locations that might benefit the rebels. The four regiments of foot that were intended to reinforce Gage’s troops in Boston were instead directed to New York to take control of the Lake Champlain-Hudson River corridor and to prevent any military movement to New England from the middle colonies. On April 19, Gage ordered Carleton to send the Tenth Regiment to Ticonderoga or Crown Point as soon as possible. Gage was confident that his troops would be able to hold the Champlain Valley, or at the least “make a diversion on the frontiers as the service shall require.” These orders were received by Carleton a month later, and on the next day he discovered that they were no longer appropriate since Arnold and his men were already camped along the lakeshore. The colonial leaders had also seen the importance of the Lake Champlain installations and had taken the first action.

In 1775, the garrison at Fort Ticonderoga had less than fifty British troops under an elderly officer, Captain William Delaplace. On 10 May, scarcely three weeks since the outbreak of fighting at Lexington and Concord, Massachusetts, the captain and his men earned their place in history by being the first British troops to surrender to the American rebels. Ethan Allen, a land speculator from Vermont and leader of the famed Green Mountain Boys formed a joint, if strained, leadership with Benedict Arnold, who was commissioned by the Massachusetts Committee of Safety. The two men led an American force of eighty-three men across the lake by night. At three o’clock in the morning the
Americans dashed into the sleeping fortress. Legend holds that in response to the baffled Captain Delaplace’s demand of “In whose name do you come?” Allen answered, “In the name of the Great Jehovah and the Continental Congress.”23 The War of Independence had begun on Lake Champlain.

With the capture of Ticonderoga, American insurgents had seized the gateway to British Canada for their embryo republic. At the same time they had gained a valuable store of military supplies. The guns of Ticonderoga, rusty from disuse but still serviceable, were later dragged away to form the main artillery strength of General Washington’s army outside Boston.24

Thirty men under Captain Samuel Herrick were sent to Skenessborough where they captured the village without any exchange of gunfire.25 A more valuable prize collected by Herrick, however, was Skene’s small schooner.26 Renamed Liberty, the schooner was taken by the captain and his men to Ticonderoga.

Liberty arrived at Ticonderoga on the 13 May, 1775. She provided Arnold with a haven of his own from which to command without the interference of Allen. The two men had had a tense relationship since Arnold felt he was cheated out of command, and Arnold further did not approve of the drunken behavior of Allen’s Green Mountain Boys. Arnold’s experience at sea allowed him to claim the vessel and use it to expand the reach of the Americans onto other parts of the lake, especially down the Richelieu to the northern terminus of navigation at St. Jean. With the fall of the undermanned garrison at Crown Point on the twelfth, St. Jean was the only significant post on the lake still under British control.27

On the morning of 18 May, the British at St. Jean were caught completely off guard. In an official report to Gage, Carleton told his superior that:
one Dominick Arnold, said to be a Native of Connecticut, and Known Horse Jockey, who has been several times in this Province, and is well acquainted with every Avenue to it landed at St. Johns, captured one sergeant and ten men, plus the sloop.  

The sloop which Carleton refers to was about seventy tons and mounted two six-pounders. It was renamed Enterprise. In addition, Arnold and his thirty-five man force captured two brass field pieces and nine small boats, five of which they burned.

The British quickly regrouped and within a few days four hundred regulars moved up the Richelieu and secured St. Jean. Rumors of a British counter-attack from Canada prompted the Continental Congress to order the evacuation of the Champlain forts and the withdrawal of American forces to an east-west line at the southern end of Lake George. In the haste of the Congress to make a decision, its members had examined only the most recent evidence, and did not carefully devise their strategy. The legislatures of New York and the New England states, along with Arnold and Allen, loudly protested the withdrawal believing that it would leave the northern states vulnerable to British invasion. The voices of the states and officers were heard, and on 27 June, Congress ordered that St. Jean should be retaken, as well as Montreal and any other strategic positions that would help to secure the colonies.

Colonel Benjamin Hinman arrived at Ticonderoga in late May with one thousand Connecticut troops and asked Arnold to turn over command of American forces on the lake. When Arnold flatly refused, he was summarily dismissed. After which he left the lake and returned to his Connecticut home.

Following the Battle of Bunker Hill in June 1775, the Second Continental Congress appointed George Washington as commander-in-chief of the American forces. Washington hastened to Boston where he commanded the troops until the British siege of
the city was broken the following year with the help from the cannon captured at Fort Ticonderoga. With the congressional organization of the American Army, Philip Schuyler found himself a major general and commander of the American forces in New York responsible for leading an invasion of Canada.35

By 17 July, Schuyler had visited Fort George, New York, and had left instructions for its further preparedness. After a similar inspection at the garrisons on Lake Champlain, Schuyler requested that additional supplies and equipment be sent north to prepare for the Canadian expedition. In anticipation of transporting troops down Lake Champlain and into Canada, Schuyler ordered the construction of bateaux at Lake George. By mid-August the American naval force on the lake consisted of enough bateaux to carry 1,300 troops, the schooner Liberty, sloop Enterprise, two newly constructed flat-bottomed gunboats (gondolas Hancock and Schuyler), and an assortment of smaller vessels including two armed bateaux.36

Schuyler’s second in command, Brigadier General Richard Montgomery, arrived in August. By this time, the British were making their own efforts toward a lake invasion by beginning the construction of two lake vessels at St. Jean. On 28 August, Montgomery left Ticonderoga with 1,200 men to attack St. Jean. The task would be far more difficult now that the British had reinforced the garrison with cannon and troops. After spending seven weeks in an unsuccessful attempt to capture the outpost, Montgomery finally managed to cut the fort off from its Chambly and Montreal supply lines, forcing the St. Jean commanders to capitulate on 2 November. It was the greatest American victory yet in the Revolution. Included among the captured military and naval equipment was the recently finished schooner Royal Savage (which the Americans had sunk with a 13-inch mortar on 14 October) and a row galley still on the stocks but ready for launching. The schooner was
raised and renamed Yankee, but soon reverted to its original British sobriquet: Royal Savage. The row galley was designated as Douglas in honor of Major William Douglas, the "Commodore" of the small American fleet. Later at Ticonderoga it would be rigged as a schooner and renamed Revenge. 

A second plan to push north and attack Canada was formulated when Colonel Arnold met with George Washington at his Cambridge, Massachusetts, headquarters in early September. At his own request, Arnold was given his first independent command and placed in charge of a plan to attack Quebec. In mid-September Arnold led 1,100 men through the wilderness of Maine. After an extremely arduous trip Arnold arrived at Quebec on 9 November with slightly more than 600 effective troops. Montgomery's troops were pushing toward Quebec after taking the undefended city of Montreal on 13 November. Together the combined forces attacked Carleton's stronghold in the heavily-fortified city of Quebec on New Year's Eve in a blinding snow storm. The attack was a disaster. Montgomery was killed along with several of his officers, Arnold was seriously wounded in the leg, and Carleton captured more than 400 American prisoners.

The American army pulled back and retired three miles up the river to establish a land blockade of Quebec. With Quebec cut off from the sea by ice, the Continental troops camped near the Plains of Abraham and continued to surround the city until May of 1776. Schuyler continued to send what supplies and reinforcements he could to the north.

For his role in the campaign, Benedict Arnold was promoted to brigadier general. After the death of Montgomery, the command of the American forces succeeded in turn to David Wooster, John Thomas, and finally to John Sullivan.

On 6 May 1776 the British reinforcement fleet arrived at Quebec after carefully negotiating its way through the late spring ice of the St. Lawrence River. The transport
ships landed 1,800 fresh troops forcing the Americans to retreat to Sorel, about 100 miles southwest of Quebec on the St. Lawrence River. After spending the winter in the field, the American army was sick, starving, unclothed, and suffering greatly from small pox. By 17 June, the remains of the American army had retreated to St. Jean, burning the fort and barracks before moving on to Isle-aux-Noix and finally retreating up the lake to Crown Point.

The British rapidly pursued the retreating Americans to the northern end of the lake, nearly capturing the whole rebel army at St. Jean. With no vessels available for the transport of troops, artillery, and supplies up the lake, the British were unable to follow the Americans onto Lake Champlain.

The invasion cost five thousand Americans lives, some to British guns, some to disease, while still others were taken prisoner. At least three thousand of the retreating soldiers were plagued with wounds and sickness, while the remaining five thousand were exhausted and demoralized. In the words of the noted naval historian Alfred Thayer Mahan, the Royal Navy's relief of Quebec had "decided the fate of Canada." For the time being the Americans held Lake Champlain. All that stood between the British army and the rebelling northern colonies were four small vessels: Liberty, Enterprise, Royal Savage, and Revenge. These vessels held control on the lake, but the British would soon begin to regroup their forces and the American response to this would determine how long the schooners would maintain their supremacy.
Notes: Chapter II


6. The site of Fort St. Frédéric was on a low headland, approximately 70 miles south of Lake Champlain's outlet, thrust out toward a bluff on the west shore. According to Frederic Van de Water, the French has named the site “Pointe à la Chevelure”—literally “Hair of the Head Point” but by Canadian connotation “Scalp Point.” The English by mistranslation, called it “Crown Point,” see Van de Water, *Lake Champlain and Lake George*, 75.


8. Ibid.


11. Ibid.

12. Ibid.


31. Fowler, Rebels Under Sail, 322n.

32. Ibid., 322-323; Ethan Allen to the Continental Congress, 29 May 1775 in Clark and Morgan Naval Documents 1: 563-64; Colonel Benedict Arnold to the Committee of Safety of Massachusetts, 29 May 1775, in Ibid., 1: 562; Walter Spooner to Governor Jonathan Trumbull, 3 July 1775, in Ibid., 1: 807-808.

33. Fowler, Rebels Under Sail, 323n.

34. Bellico, Sails and Steam in the Mountains, 120.

35. Ibid.

36. Schuyler to Franklin, 23 August 1775, in Clark and Morgan, Naval Documents 1: 1217; Bellico, Sails and Steam in the Mountains, 121.

37. Bellico, Sails and Steam in the Mountains, 123, 125-126.

38. The origin of the Revenge has been open to some speculation by earlier authors. Several authors indicate (without reference) that it may have been built at Ticonderoga by an unknown contractor in 1775, see Myron J. Smith, Jr., Navies in the American Revolution: A Bibliography, vol. I, (Metuchen, NJ: The Scarecrow Press, 1973), 195-197; Van de Water, Lake Champlain and Lake George, 191 and 192. Russell Bellico presents a substantiated argument that the row galley captured at St. Jean was taken to Ticonderoga and rigged as a schooner, see Sails and Steam, 132.


CHAPTER III

BUILDING THE AMERICAN FLEET

On 17 June 1776, General Philip Schuyler began formally carrying out the order of the Continental Congress to build a fleet of vessels for Lake Champlain. He had already ordered preparations as early as May of that year by sending thirty carpenters from Fort George, New York, to Skenesborough. He wrote General George Washington, commander-in-chief of the American forces, that "altho' Nothing is prepared for building them - I hope nevertheless to finish one in a short Time." Schuyler admitted that he knew next to nothing about constructing vessels and requested that an experienced shipwright be sent to oversee the construction.

As far as resources were concerned, Schuyler's choice of Skenesborough for the site of the American shipyard was excellent. Located at the head of Lake Champlain where Wood Creek empties into South Bay, the area abounded in large tracts of timber (figure 3.1). The small community had been established in 1765 through a British land warrant rewarding Major Philip Skene for his field service in the French wars. The initial tract grew to 25,000 acres and, as a result of Skene's mercantile ambitions, became the largest pre-Revolutionary lake settlement. The grounds housed Skene's mansion house, barns for the storage of crops and the housing of cattle and horses, and cleared meadows. But, of greater significance for the construction of naval vessels, was the presence of two sawmills and an iron forge. In Skene's own words, the furnace and bloomery were capable "of turning out the best iron bar in the colonies." Iron ore for the forge was mined from a nearby 600 acre section of land that Skene had purchased close to modern day Port Henry, New York.
Figure 3.1. Skenesborough and its environs, circa 1776. Courtesy of the Smithsonian Institution, NMAH/AFH, Howard P. Hoffman, A Graphic Presentation of the Continental Gondola Philadelphia: American Gunboat of 1776, Sheet 1.
To augment the construction force at Skanesborough, Schuyler wrote to Colonel Cornelius D. Wynkoop (then commander at Fort Ticonderoga) for additional carpenters, a blacksmith, and tools. Unable to oversee construction of the gondolas himself, Schuyler ordered Hermanus Schuyler (apparently no relation to Philip Schuyler), the assistant deputy commissary general of the Northern Department to Skanesborough on 7 June. Hermanus Schuyler's orders were explicit. Upon his arrival at Skanesborough he was to:

... take Charge of the Carpenters, Ax-men, Teamsters & Blacksmiths at that place and do every Thing in your power to forward the Building of the Gundaloes and to procure plank and whatever may be necessary - the Saw Mill must be immediately repaired. - a Mr Granger who resides in that Neighbourhood understands the work well; him you must procure and add as many of the other Carpenters now there, as can work at it, that it may be finished the soonest possible.

You will employ the Oxen in drawing the Timber necessary to construct the Vessel with and try to procure as many Oak Logs before the Mill is finished as you possibly can; the larger and longer they are the better.

Take a List of all the people employed under your Direction, distinguishing the Carpenters from the Ax-men, and those from the Teamsters, and discharge such as may be unfit for Service either by Disease Drunkenness or Laziness, and keep an exact Cheque Book, and call over the Names of every person at Sunrise before they go to Work.

You must provide a Master Sawyer for the Mill & the sawing must go on by Night as well as by Day and that the Sawers may not play Tricks count the Logs on the Log-Way at Sunset, and again at Sunrise in the Morning and then you will be able to know if the Sawers have done their Duty.

You should now and then visit them in the Night. Let the greatest Care be taken to guard against accidents by Fire, and charge the Sawers that if any Thing gives Way in the Night not to go to Bed or lay down to sleep, as many Mills have been burnt for Want of this precaution - Keep always two Barrels full of Water in the Mill with a Bucket in each.

Frequently examine the Stores, and see what you are likely to want and write for it in Time. I expect to be frequently informed how the Work goes on: how many Logs you have their Dimensions and when you expect the Mill will begin to saw.

You can write either by the Way of Ticonderoga or Wood Creek, as you will have frequent opportunities both ways.
On 12 June, Schuyler wrote Washington to express his fears of the imminent evacuation of Canada by the American troops. The major general also reemphasized the necessity of the work at Skanesborough by stating that "I am however humbly of Opinion That we still ought to Build the Gundaloes, and Make every preparation to prevent the Enemys Crossing the Lake and penetrating into the Colonies Which I think will Certainly be our own Fault if they do." To add to the urgency of the situation, he informed Washington that Brigadier General Benedict Arnold had written from Canada with the news that the British were already preparing to assemble gunboats for a lake invasion. The British task would be made much easier since the vessels were to be constructed from prefabricated parts that had already been shipped from England.

By 13 June, the first American gondola (later to be called New Haven) had its flat bottom finished. The stem and stern post were ready to be set in place and the knees installed the following day. Construction of the second gondola (Providence) was proceeding at the same time. Although the woodcutters had cut and dragged enough timber for both of them, Hermanus Schuyler wrote that without "a Dozen of Whip Saws & Files sent up with all possible Dispatch" the saw mills would be unable to keep up with the carpenters demands.

General Schuyler's foresight, and the subsequent letters of Generals Benedict Arnold and John Sullivan to George Washington, prompted Congress' Marine Committee to order additional shipwrights and "a master carpenter acquainted with the construction of the gallies used on the Delaware, who shall take with him other carpenters, and models if requisite." to Skanesborough in mid-June. Congress was referring to the eleven "galleys" that had been built in 1775 by John Wharton, Emanuel Eyre, and other Philadelphia shipbuilders for the defense of the Delaware River.
In spite of Schuyler's concern for the situation along the lake he continued to remain at Fort George directing the work at Skenesborough by dispatch. Hermanus Schuyler, however, was never fully informed as to how many vessels would be needed and appeared fearful that he might cut too much wood. He wrote Schuyler on 20 June that:

... tomorrow the corkers will begin to cork one of the gundelows, the other gundelow they began yesterday to plank. I have got 36 Loggs at the mill, I have got 40 Logs in the Creek in Rafts, I have 50 men out in the woods ready to draw out General, I should be glad to know if I must continue the wood cutters at Cutting Loggs, the mill is sawing boards and plank or what I must do. Mr. Bratt [Capt. Henry Bratt, New York Militia] tells me he will not want above 20 of these Loggs to complete the other gundolow, the carpenters would be very glad to have a Barrel of [illegible, probably beer] and a Barrel of Rum if it is to be had.17

Schuyler instructed the former quartermaster to continue cutting oak logs until enough had been stock piled to complete five more gondolas.18 As before, his orders emphasized the importance of the work to Hermanus Schuyler:

... the Mill must Constantly be kept going & If You have not strength to Team enough, Employ more,—Remember that Altho Every thing is to be done with the Greatest Oeconomy.—Yet the Work must be done.19

As soon as the first gondola was finished, Hermanus Schuyler was to send it to Fort Ticonderoga for masting and rigging. A contemporary map suggests that this was accomplished across from Fort Ticonderoga on the Vermont side of the lake at the area later to be fortified and called Mount Independence. Philip Schuyler indicated that the gondolas must be “fixed to receive the Guns in the Manner those of last Year were.”20 Apparently he was referring to the Schuyler and Hancock which had been built in 1775 at Lake George just before the Canadian invasion. The two gondolas were approximately 60 feet long and of a size which Schuyler considered capable of supporting five twelve-pounders each.21 Due to a shortage of cannon the two vessels were later outfitted with
only one 12-pounder in the bow and twelve swivels on the sides. Ultimately, the Skenesborough gondolas were armed with three cannons: a 12-pounder in the bow and two 9-pounders on the midship deck. This arrangement of three heavy guns per gondola was identical to Arnold’s plan for the gondolas whose construction he supervised at Chambly in May.23

Schuyler responded to the Skenesborough carpenters’ request for spirits by sending two barrels of rum and beer. However, he also indicated that he was informed that:

... a Certain Colo: Williams from White Creek, has Given an Order that no Person should work on Sunday, this ought not to Effect any Person so indispensably necessarily employed as those in the Public Service. You are therefore to keep the People at Work.24

While the work now continued at Skenesborough seven days a week, the American retreat from Canada was well underway. Arnold fled Montreal on 15 June with 300 men, “Sick & allmost the whole, destitute of Cloathing & every necessary of Life except Salt Pork & Flour.”25 By 24 June, Brigadier General John Sullivan’s troops had fallen back to Isle aux Noix. He wrote Washington that:

... I think it would be by far, the Best to remove to Crown Point, Fortify that, Build Row-gallies to Command the Lakes, & by Scouting parties to defend our Frontiers, as the Savages have already begun upon us. They have made two Attacks upon our men, Kill’d & taken near Twenty, Among which are seven officer. ... I hear from all Quarters that the Enemy are very Numerous in Canada. Their Shipping is also Numerous, & it cant be Doubted that all the Canadians, & all the Indians in this Quarter, Will be Compell’d to bear Arms against us. This I know they would gladly have avoided, But finding that we are not able to Afford them that Protection we promised, They are Obliged to make their peace in the best manner they can - I think it is now past a Doubt that the Neglect & Inattention to this Departmt has not only lost us Canada, But Involv’d us in a war with all the Blacks & whites in this Quarter, & to Check their progress, I know of no better Method than to Secure the Important posts of Ticondaroga & Crown point, & by building a Number of Arm’d Vessels, Command the Lakes, Otherwise the forces now in Canada, Will be brought down upon us, As quick as Possible, having nothing
now to Oppose them in that Colony - They have a Number of Batteaus fram'd Which they brought from three Rivers, They will Doubtless Construct Some Arm'd Vessels, & then Endeavour to penetrate the Country Toward New York, This I am persuaded They will Attempt, But am Sure they can never Effect, Unless we Neglect to Secure the important posts now in our power . . . .

Sullivan's advice did not go unheeded. But he would soon be dismayed to learn that he had been replaced by Major General Horatio Gates as the Commander of the American Army in the field following his retreat.

On 26 June, the first gondola was launched at Skenesborough. The second was being planked and enough logs had been to cut to see to the start of several others. It had taken a little over three weeks to begin the necessary processes of harvesting, cutting, and shaping the green wood into two of the simply designed gondolas. Philip Schuyler was optimistic enough to write Washington that he would “build one every six Days.” Schuyler's optimism was due to the fact that he had written to Connecticut Governor Jonathan Trumbull for fifty more ship carpenters and a similar number from Massachusetts Bay. The new carpenters were to be organized into gangs of twenty-five each and paid at the rate of those already engaged in the service, one-third of a dollar per day, commencing from the time the companies left home, allowing the rate of one day for twenty miles.

The proffered salary was not high enough, however. In order to entice the shipwrights away from their lucrative (and potentially healthier) positions in the privateer trade, the Marine Committee of the Congress was forced to offer thirty-four and two-thirds dollars per month. The wage was incredibly high. According to one researcher, the shipwrights working at Lake Champlain were the most highly paid in America. In fact, aside from Commodore Esek Hopkins, they would earn “more than any enlisted man or officer in the entire Continental navy,” and five times that of the common Massachusetts
soldier stationed at Ticonderoga. Beyond the high salary, the carpenters negotiated to receive one month's pay in advance and one and one-half rations per day. Before the carpenters even began their march to Skanesborough formal contracts had to be signed. The shipwrights agreed to “begin work at sunrise and to continue until sunset, with the exception of an hour break for breakfast and an hour and a half break for dinner. Rations were to include a pound and a quarter of beef or pork, a pound and a half of flour, and a half pint of rum. In addition, four pints of peas and a pint of molasses were to be distributed to each carpenter on a weekly basis.”

Beyond the rushed work of building the gondolas, the Americans were faced the task of finding the equipment needed to rig and arm the small fleet of larger vessels that were already in their possession. To this difficult task, Philip Schuyler assigned his personal aide, Captain Richard Varick. Varick began the process in early May by writing to John McKesson, secretary to the New York Provincial Congress for:

*a suit of sails, of certain dimensions, for a pettiauger, and as much rope as will rig two Albany sloops, (cables, shrouds and hawsers excepted) and also enough for two large pettiaugers; blocks for all.*

The requisition was probably for additional rigging needed for *Royal Savage;* the row galley captured at St. Jean, later to be called *Revenge;* and the two gondolas that Arnold was building at Chambly. It is apparent that the latter two vessels were burned by General Sullivan just before he retreated to St. Jean. When this rigging arrived it was probably used for the first two gondolas built at Skanesborough.

The second gondola was sent to Ticonderoga on 30 June and the third was launched the same day. Hermanus Schuyler's reported dimensions for the first two gondolas were 50 feet long, 15 feet in beam, and 4 1/2 feet deep, essentially equal to those known for the *Philadelphia.* Based on the supply of wood already cut, Henry Bradt
(head carpenter at Skenesborough) predicted that a gondola could be launched every week with weather permitting.\textsuperscript{37}

On the day that the Americans declared their independence from Great Britain, Schuyler was writing the orders for the new carpenters coming from Massachusetts and Connecticut. Each company of twenty-five men was to put itself under the command of Hermanus Schuyler and take charge of constructing a gondola.\textsuperscript{38} In response to an unspecified difficulty in satisfying all the carpenter's demands for food or tools, Schuyler wrote:

\textit{As in the present State of Affairs Every Article of Provisions allowed You by Your Contract, cannot be procured. I hope, Nay I have tho the fullest Confidence that You will be Contented with such as can; Especially as I do hereby Engage that Every Deficiency will be made up in Money. At this Critical Hour, It is the Duty of Every Well Wisher to his Country, to exert himself to the Utmost & I hope Gentlemen That You will be Early & late at a Work so Necessary as the Constructing Vessels to maintain our Superiority on the Lake. Little Jealousies, which are the Bane of Every Service, I dare say, will not take Place in Your Minds; But that You will harmonize with every Person Employed in the public Service.}\textsuperscript{39}

At the end of June, the American army completed its retreat from Canada. Over a period of several days, seven to eight thousand men were transported from Isle-aux-Noix to Crown Point by bateaux. On 7 July, Major General Philip Schuyler, Major General Horatio Gates, Brigadier General Benedict Arnold, Brigadier General John Sullivan, and Baron Frederick Wilhelm de Woedtke met at Crown Point in a 'Council of War' to discuss the present state of affairs on the lake. It was decided that Crown Point was untenable and could not be made so that summer.\textsuperscript{40} The colonial troops would move to Ticonderoga and the "Strong Ground" (Mount Independence) on the east side of the lake.\textsuperscript{41} In order to reduce the chance of small pox running rampant through the camps again, it was resolved to send all the sick to Fort George. The threat of small pox was by far the strongest
objection that militia troops voiced to avoid being sent to Ticonderoga. To insure that the Americans could retain control of the lake, and by that, prevent the British from penetrating into the New England colonies, the construction of more formidable row galleys should begin immediately to augment the smaller gondolas.

By 9 June Arnold was working closely with Gates to improve the efficiency of the American shipbuilding effort. Arnold detailed oar makers to the woods near Crown Point to find suitable material for making the oars and sweeps that would be needed for the gondolas. He gave orders that Captain Edward Williams and his gang of blacksmiths were to be sent from Crown Point to Skanesborough. The armorers, under the charge of Lieutenant Solomon Bowman were to remain at Fort Ticonderoga where the new vessels were being fitted with cannon. Lieutenant Benjamin Beal’s thirty-four house carpenters and Mr. Noah Nichols’ eight wheelwrights were to remain under the orders of Colonel Jeduthan Baldwin, Chief Engineer at Ticonderoga to see to the production of gun carriages for the fleet. Thirty four other house carpenters were sent under Thayer (probably Captain Simeon Thayer from Providence, Rhode Island) to Skanesborough, along with Richard Fittock’s gang of thirteen ship carpenters. Lieutenant Curtis and thirteen additional ship carpenters were to remain at Ticonderoga under the direction of Captain Jacobus Wynkoop.

In order to determine the state of readiness of the British forces, General Sullivan sent Colonel Thomas Hartley from Crown Point to scout out the northern end of the lake. At Cumberland Head, Hartley’s party destroyed a small quantity of ship timber to keep it from falling into the hands of the British. At William Hay’s clearing, opposite Valcour Island, his troops seized a quantity of “good Plank and crooked Timber” which was carried to Crown Point in bateaux. An additional 1000 board foot of timber was left in the swamps
so that it could be retrieved over the next winter. Hartley reported to Arnold that General Guy Carleton and Brigadier General Simon Fraser were repairing the works at St. Jean and a number of Hanoverian and British regulars were employed in cutting wood between St. Jean and Isle aux Noix for the British shipbuilding effort.45

Just after the Council of War, the Americans began to construct an enormous earthwork on the east side of the lake across from Fort Ticonderoga. Colonel John Trumbull described the new fortification to his father Jonathan Trumbull, Governor of Connecticut:

_This wretched situation of our Troops, induc'd the Genl Officers in a Council of War, to determine on a Retreat to this place; - The post we are to occupy here, is very advantageous. - it is a height Opposite to the Old-Works [Fort Ticonderoga] which commands the Entrance of Lakes Champlain & George - tis almost inaccessible except in two places where we propose Roads, the rest is surrounded by Rocks & Precipices - We shall easily be supply'd with Provisions from Skenensborough, at the head of Lake Champlain & can easily retire that way into the Country - This, without a Naval superiority on the Lakes, I fear we shall be oblig'd to do notwithstanding the strength of our Camp, unless we are very soon join'd by Six or Eight Thousand Men . . . _46

Trumbull also expressed his concerns about the American shipbuilding effort on the lake:

_How we shall maintain our Naval superiority I must confess myself much at a Loss. - 'Tis true we build a thing call'd a Gondola, perhaps as much as one in a Week - but where is our Rigging for them, where our Guns, we have to be sure, a great Train of Artillery, but they are very few of them mounted on Carriages, & our Materials & Conveniences for making them are very slender. We have Carpenters, shipbuilders, & Blacksmiths in plenty, but neither places for them to work in nor Materials in that plenty we ought to have . . .

To oppose the Enemy on the Lake, - we have a schooner of twelve Carriage Guns - a sloop of Eight; two small Schooners to Carry four or six each & three Gondolas - The large Schooner will be in good sailing order in two or three Days - the sloop is a most unmanageable thing, 'tis not possible to beat up against a head wind, in her - the two small schooners are Arm'd,
Gondolas are Arm'd, - & even the Carriages] of their Guns are yet to be made -

The Enemy we find are at St. Johns repairing the works at the place, & building three schooners & two sloops, they have, no doubt every thing ready to their hands, the Rigging made, the Guns mounted, & only the wooden work to perform, - in which I fear they will have the advantage of us.47

Not withstanding the lack of equipment and rigging, Schuyler over-optimistically predicted in mid June that once the additional carpenters arrived it would be possible to build five gondolas a week.48 Even though three gondolas had been completed, only two had been sent forward to Fort Ticonderoga by 15 July. This fact prompted General Horatio Gates, commander of the Northern Army, to complain that the 60 carpenters at work at Skenesborough “must be very ill-attended to, or very ignorant of their business, not to do more work.”49 Gates wrote to Arnold from Ticonderoga to express his anxiety for his early return from Crown Point because he felt that “maintaining our naval Superiority is of the last Importance.”50 By this, Gates meant that it was of the utmost importance and desired Arnold to personally oversee the construction.

By 16 July, Governor Nicholas Cooke of Rhode Island had responded to Congress' request for carpenters. Captain Barnard Eddy had enlisted twenty men at a rate of pay equal to that which the Marine Committee had given to the Philadelphia shipwrights.51 By the time that Eddy's men began their march to Skenesborough, the number of Rhode Island carpenters had grown to fifty, all supplied with tools and arms.

At the end of June, The Royal Savage, Enterprise, Revenge, and Liberty were used to aid in the evacuation of the troops from Canada. Gates wrote that what had “hitherto been solely employ'd as Floating Waggons” must be brought from Crown Point and armed. New carriages for the cannon were made at Ticonderoga “out of Wood taken from the Swamp.”52 The Royal Savage was armed with four 6-pounders and eight 4-pounders and
was ready to sail by 15 July (figure 3.2). The smaller Revenge was armed with four 4-pounders and four 2-pounders. Although it would later be designated as the hospital sloop, the Enterprise was armed twelve 4-pounders. Liberty was provided with the smallest broadside weight of all: two 4-pounders and six 2-pounders.

Gates was singularly unimpressed with the two gondolas that Schuyler had sent forward to Ticonderoga. He wrote Hancock that:

_The Gondolas General Schuyler has Order'd to be built, as he had no Model to direct him, are in nothing but in name like those at Philadelphia, the Rigging and Artillery are all to be Fix'd here, and when done, they seem to be Vessels very unwieldy to move, & very indifferent for the purpose intended. Two are Finished, & Two more will be Finish'd this Week; if the Enemy gives us time to do all this, it will be well, if not, This wretched Army will probably be yet more unfortunate._

The responsibility for seeing that the American fleet was properly rigged and armed fell to Colonel Jeduthan Baldwin, Chief Engineer at Ticonderoga. His journal entry for 28 July states:

_... I paid Esqr. Gilliland 212 Dollars for Carpenters tools as there is no Quartermaster Genl. at present with this army, I have that duty to do in part, & I have the intire direction of all the House & Ship Carpenters, the Smiths, Armourers, Roap makers, the Wheel & Carriage makers, Miners Turners, Coalyers, Sawyer & Shingle makers, which are togeather 286, besides the direction of all the fateagueing parties, so that I have my hands & mind constantly employed night & Day except when I am a Sleep & then sometimes I dream._

Baldwin may also have been responsible for seeing that the cutter Lee was assembled and rigged at Ticonderoga (figure 3.3). The frames for the vessel had been taken from another craft that the Americans had been building at St. Jean. During the American retreat, Arnold had wisely numbered the frames and carried them back to the south.
Figure 3.3. The Cutter Lee. Courtesy of the Smithsonian Institution, NMAH/AFH.
Per Gates request, Benedict Arnold arrived at Skanesborough on 23 July to oversee and evaluate the fleet construction progress. By this date, four gondolas had been launched. Two others, including Philadelphia, were nearly finished. Thirty fresh carpenters had just arrived from Connecticut. Arnold ordered their leader, Captain Winslow, to begin the construction of the first “Spanish Galley.” According to Hermanus Schuyler, the galley was “to be 63 feet long 18 feet beam holl [sic] 74 inch waist.” To honor the Connecticut shipwrights' governor it would later be named Trumbull. On the next night, fifty-two additional carpenters arrived from Philadelphia. Their captain was Thomas Casdrop (or Casdorp) of Casdrop & Fullerton who had built the Chatham and Effingham (variously called row-galleys, armed-boats, or gondolas) for the Pennsylvania state navy. Casdrop's crew would start work the next morning on the second galley (Congress). At the same time, a Captain Titcomb brought another fifty carpenters from Massachusetts Bay who would see to the construction of the third galley (Washington, figure 3.4). To satisfy their most immediate needs, Hermanus Schuyler wrote to Schuyler for iron, steel, and “about a tun of Rum.”

Arnold also sent Schuyler a list of the articles that would be needed to complete the vessels. Relying on his former business connections, Arnold suggested that sail cloth could be obtained from Thomas Mumford of New London, Connecticut, and cordage from Mr. Mortimer of Middletown, Connecticut. Arnold emphasized to Schuyler that while many of the articles on his list might be seen as “trifles,” they were absolutely necessary and could not procured near the lake.

To obtain desperately-needed rigging for the vessels, Schuyler ordered Richard Varick to attempt to procure it from the owners of the sloops at Albany, New York. Schuyler reasoned that since their navigation had been stopped following the British
occupation of New York city every owner would aid the effort. He told Varick "this is a Matter of so Much Moment, as to Claim Your first Attention." If it proved impossible to purchase used blocks, Varick was to have blockmakers at Albany fabricate new blocks. In the event that the cordage and sail cloth could not be obtained in Albany, Varick was to approach the ship carpenters at Poughkeepsie, New York.

It was a difficult shopping list to fill. Besides the sail cloth and the cordage Varick was also searching all of New York state and Connecticut for the wide variety of other materials that would be needed to supply Arnold's fleet, the troops at Ticonderoga, Mount Independence, and the small garrison that remained at Crown Point. Eventually gunpowder and buckshot were obtained at Albany. Junk (pieces of old cable or cordage used to make gaskets, swabs, and oakum), oakum, pitch, iron, and steel were sent from Fort George. The yard at Poughkeepsie furnished six coils of slow match; six dozen large sails, bolt rope, and marline needles; one hundred weight (112 pounds) of twine; some blocks; and a quantity of oakum and other articles. A portion of the many anchors and cables needed were obtained from Captain Peter Post of Esopus, New York, a small community about sixty miles south of Albany on the Hudson River.

Jacobus Van Zandt, manager of the Poughkeepsie yard, regretfully informed Varick that he would be able unable to supply the pistols, cutlasses, sheet lead, quick match, port fires, cod lines, sheet copper and swivel guns that Varick had requested since "the Fire Craft & other Vessels we have been fixing here has Consumed largely of our Stores." Van Zandt suggested that General Schuyler write to Judge Porter, manager of the Salisbury Iron works for the swivels since he had been assured that a large number of them had been cast for government use. Varick immediately sent an express message to both the Salisbury Iron Works and the "Forges & Furnaces at Livingstons Manor" for swivel guns, grapeshot,
bar shot, and chain shot. Varick was also successful in obtaining additional anchors, cables, and cordage from the sloop owners and merchants at Albany and Schenectady. All of these items, including a set of bellows, blacksmith tools, grindstones, spades, and axes were transported on the Hudson river by bateau and then carried overland on the last leg to Skenesborough by wagon.

The Philadelphia was the fifth of eight gunboats that would form part of Arnold's command. Like the other four before it, Philadelphia was constructed in approximately three weeks, a remarkable feat considering the host of problems that Schuyler's shipwrights faced. Philadelphia's builders complained of the necessity of having to stand in line each morning waiting to sharpen their axes on the few grindstones available to them. Woodcutters protested that the soldiers who "went into the woods to help them . . . would sit down by the trees instead of working." By the time of Philadelphia's construction, it was necessary for axe-men to travel up to 12 miles to secure the oak crooks needed for the 78 knees of each gunboat.

Although Benedict Arnold is usually given the credit for overseeing the construction of Philadelphia, his first contact with the vessel came only three days short of its planned launching. After inspecting Schuyler's latest gondola, he delayed its launch and ordered that a gun platform should be installed in the stern for the installation of a mortar to complement the three cannons that would be added at Ticonderoga.

After the extra work on the mortar platform was completed, Philadelphia was launched on 30 July. Captain Cornelius Wynkoop wrote to Gates, "I have sent you one gondola more down, which the carpenters have named after me." Obviously, the name didn't stick, for the first list of vessels built on Lake Champlain in 1776 lists all of the gondolas with the names of states or cities (Table 3.1). Presumably, the names were
Table 3.1

"A List of the Navy of the United States of America on Lake Champlain"

Aug. 7th 1776

<table>
<thead>
<tr>
<th></th>
<th>C. Guns</th>
<th>Swivels</th>
<th>and Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Row Gally, Congress</td>
<td>6.</td>
<td>16</td>
<td>80</td>
</tr>
<tr>
<td>2. do Washington</td>
<td>6.</td>
<td>16</td>
<td>80</td>
</tr>
<tr>
<td>3. do Schuyler</td>
<td>6.</td>
<td>16</td>
<td>80</td>
</tr>
<tr>
<td>4. do Lee</td>
<td>6.</td>
<td>10</td>
<td>65</td>
</tr>
<tr>
<td>Schooner Royal Savage</td>
<td>12.</td>
<td>10</td>
<td>60</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>G. Guns</th>
<th>Swivels</th>
<th>and Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sloop Enterprize</td>
<td>10</td>
<td>10</td>
<td>60</td>
</tr>
<tr>
<td>Schooner Revenge</td>
<td>8</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>Schr Liberty</td>
<td>8</td>
<td>8</td>
<td>35</td>
</tr>
<tr>
<td>Gondola Newhaven</td>
<td>3</td>
<td>8</td>
<td>45</td>
</tr>
<tr>
<td>do Providence</td>
<td>3</td>
<td>8</td>
<td>45</td>
</tr>
<tr>
<td>do Boston</td>
<td>3</td>
<td>8</td>
<td>45</td>
</tr>
<tr>
<td>do Spitfire</td>
<td>3</td>
<td>8</td>
<td>45</td>
</tr>
<tr>
<td>do Philada</td>
<td>3</td>
<td>8</td>
<td>45</td>
</tr>
<tr>
<td>do Connecticut</td>
<td>3</td>
<td>8</td>
<td>45</td>
</tr>
<tr>
<td>do New Jersey</td>
<td>3</td>
<td>8</td>
<td>45</td>
</tr>
<tr>
<td>do New York</td>
<td>3</td>
<td>8</td>
<td>45</td>
</tr>
</tbody>
</table>

NB. each Gally Mounts 2. 24 pounders, 2. 12 pounders & 2 - 6 pounders, each Gondola 1. 12 & 2. 9 pounders

The Sloop & Schooner carry 3 - 4 & 6 pounders
6 Gondola's end compleat - one Gally Launched
The Sloop & Schooners compleated - the whole will be ready compleated in the course of this month & four other Gally's will be compleated by the middle of September.

chosen to honor the colonial troops who were serving from those states, or, more likely, the homes of the carpenters who had built them. *Spitfire* was the lone exception. At least one other vessel had its named changed. The list compiled on 7 August designates a galley *Schuyler*. This is the only reference to a galley of that name, all future lists designate the galleys as the *Trumbull, Congress, Washington*, or *Gates*. Perhaps General Schuyler suggested the name change himself since one of the gondolas built at Lake George in 1775 had been named *Schuyler*.

The *Philadelphia* was likely the gondola that military engineer Jeduthan Baldwin, described on 1 August:

... at Sunset one howet [howitzer] was fired on board a large Gundalow by way of experiment, the Shell brok in the air, one 13 inch Bomb was also thrown from the same Gundelow on bord of which were about 20 men, when the Bomb went off[f] the Morter Split & the upper part went above 20 feet high in the Air over the mens heads into the water & hurt no man. the piece that blowd off[f] weighed near a ton, I was nigh & saw the men fall when the morter burst, & it was a great wonder no man was kild.\(^{71}\)

*Philadelphia* has several square openings cut into its inner planking in the aft end of the vessel suggesting that Arnold's mortar platform was removed following the mishap. To trim the vessel, a number of stones were then placed under the quarterdeck to counteract the weight of the 12-pounder bow gun. The idea of arming the gondolas with mortars was given up when the only other large mortar available to the Americans also blew apart during a test firing on Mount Independence the next morning.\(^{72}\) Jeduthan Baldwin lamented the fact that:

*these 2 morters were carried from this place to Cambridge & brought back & went Down to Canada & then back to this place, at an immense cost, altho they were worth nothing.*\(^{73}\)
Arnold wrote to Schuyler at the end of July with the news that there were now two hundred carpenters working at Skenesborough. Construction of the four galleys was well underway. Arnold described them as nearly of the construction of those built in Philadelphia and hoped to arm each with two 24-pounders, two 18-pounders and two other lighter cannon. In addition, he planned to build four more galleys which would require a similar complement of cannon. In regard to the present ordnance supply, Arnold indicated that:

_We have only Eleven pieces & 10 twelve Pounders, which May Answer tho Not so well as heavier Guns - If they are substituted, Eleven Pieces will still be wanting with shot &ca - which I wish May be sent up if they Can possibly be procured._

Evidently, Schuyler and Varick were unsuccessful in obtaining the heavy cannon that Arnold desired. By the time the vessels were armed, not a single 24-pounder was included in the fleet’s arsenal. The armament needs for the galley Gates alone indicate the vast expense and effort that was required to build the defensive force which the Americans hoped would be enough to stop the British invasion through the Champlain Valley (Table 3.2).

With the steady increase of vessels on the lake, there was some room for optimism about the Americans remaining ‘Masters of the Lakes.’ Colonel Anthony Wayne wrote Benjamin Franklin from Ticonderoga that:

_We are indefatigable in preparing to meet the Enemy by Water - the Superiority in a Naval force on this Lake is an object of the first moment - it has been hitherto shamefully neglected, but now in a fair way of becoming formidable as we have at present three Schooners & one Sloop well appointed & mann’d with people drafted from the several Regiments; they carry from 8 to 16 Guns, each which together with four Gondolas already built will be no contemptible fleet in the Sea..._
Table 3.2

Supplies for the Galley *Washington*

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 18 pound Iron Cannon</td>
<td></td>
</tr>
<tr>
<td>2 12 ditto do do</td>
<td></td>
</tr>
<tr>
<td>2 9 ditto do do</td>
<td></td>
</tr>
<tr>
<td>4 4 ditto do do</td>
<td></td>
</tr>
<tr>
<td>20 round Shott for 18 pounder</td>
<td></td>
</tr>
<tr>
<td>20 ditto do for 12 ditto</td>
<td></td>
</tr>
<tr>
<td>20 ditto do for 9 ditto</td>
<td></td>
</tr>
<tr>
<td>20 ditto do for 4 do</td>
<td></td>
</tr>
<tr>
<td>10 Doublehead Shott for 18</td>
<td></td>
</tr>
<tr>
<td>10 Ditto ditto for 12</td>
<td></td>
</tr>
<tr>
<td>1-2 pound cannon</td>
<td></td>
</tr>
<tr>
<td>8 swivels</td>
<td></td>
</tr>
<tr>
<td>40 Swivels Shott Round</td>
<td></td>
</tr>
<tr>
<td>10 2 pound do do</td>
<td></td>
</tr>
<tr>
<td>10 Cannister Shott for 18</td>
<td></td>
</tr>
<tr>
<td>10 ditto do for 12</td>
<td></td>
</tr>
<tr>
<td>20 ditto do for 9</td>
<td></td>
</tr>
<tr>
<td>40 ditto do for 4</td>
<td></td>
</tr>
<tr>
<td>40 Paper cartridges fill'd for .....18 lb.</td>
<td></td>
</tr>
<tr>
<td>40 ditto do for 12</td>
<td></td>
</tr>
<tr>
<td>50 ditto do for 9</td>
<td></td>
</tr>
<tr>
<td>60 ditto do for 4</td>
<td></td>
</tr>
<tr>
<td>80 ditto do for 2</td>
<td></td>
</tr>
<tr>
<td>300 ditto do for swivels</td>
<td></td>
</tr>
<tr>
<td>12 Tubes</td>
<td></td>
</tr>
<tr>
<td>3200 Musquet Cartridges</td>
<td></td>
</tr>
<tr>
<td>200 Flints</td>
<td></td>
</tr>
<tr>
<td>1 Musquet &amp; Bayonet</td>
<td></td>
</tr>
<tr>
<td>1 Rifle Gun</td>
<td></td>
</tr>
<tr>
<td>Rammers &amp; Sponges</td>
<td></td>
</tr>
<tr>
<td>2 for 18 pounders</td>
<td></td>
</tr>
<tr>
<td>2 for 12 pounders</td>
<td></td>
</tr>
<tr>
<td>2 for 9 pounders</td>
<td></td>
</tr>
<tr>
<td>4 for 4 pounders</td>
<td></td>
</tr>
<tr>
<td>1 for 2 pounders</td>
<td></td>
</tr>
<tr>
<td>8 for Swivels</td>
<td></td>
</tr>
<tr>
<td>8 Lead Aprons for Cannons</td>
<td></td>
</tr>
<tr>
<td>2 Priming Wires &amp; Brushes</td>
<td></td>
</tr>
<tr>
<td>20 Unfilled Flannel Cartridges for 12 poundr.</td>
<td></td>
</tr>
<tr>
<td>10 Doubleheaded Shott for 9 pdr omitted</td>
<td></td>
</tr>
<tr>
<td>1 Cartridge to Each Cannon Fill'd with Damaged powder</td>
<td></td>
</tr>
<tr>
<td>1 Barrel Contg 1 hundred Wt. 4 Quire Cannon powder</td>
<td></td>
</tr>
</tbody>
</table>

John Thacher Capt.

Arnold wrote to Gates on 7 August that he was very pleased with the progress made toward completing the galleys. The *Trumbull* had already been launched and he expected that three more would be put in the water in two weeks or less.\textsuperscript{77} He predicted that a shortage of iron and planking would be the only thing that would retard the work.\textsuperscript{78} In actuality, the procurement of enough rigging materials would be the most difficult part and would not be completely accomplished until 11 October.\textsuperscript{79} At the time of *Philadelphia*'s construction, Arnold was still optimistic about the gondolas. He planned to build a total of ten, each to be armed with three or four heavy cannons and fourteen swivels.\textsuperscript{80} Once the carpenters began working on the galleys, however, he changed his mind and ordered that no more gondolas should be put on the stocks, since "they take a large quantity of Plank, & retard the Building of the Gallies, which are of more Consequence."\textsuperscript{81} Gondola construction ended with a total of eight vessels. Arnold was still planning, however, to build a total of eight galleys. He wrote to Schuyler to praise Captain Varick's efforts to supply the shipwrights and blacksmiths to that date, but in his estimate another 12 to 15 tons of iron would still be needed to see the galleys through to completion. He suggested to Schuyler that time could be saved if about six to eight tons of the iron could be sent up in ready-made spikes from 5 to 7 inches long, mainly 6 inches.\textsuperscript{82}

In total, 159 carpenters had arrived from Philadelphia and Connecticut. Out of the fifty that had traveled from Providence, Rhode Island, with Captain Barnard Eddy, only eleven were fit enough to work. The other thirty-nine were at "Williams Town" (Williamstown, Massachusetts) suffering from small pox. Hermanus Schuyler requested that Philip Schuyler prevent their coming to Skeneesborough as he feared their arrival would result in bad consequences.\textsuperscript{83} When Gates learned of this news from General David Waterbury, he responded at once by asking Governor Trumbull to write to Governor
Cooke to dismiss them immediately. "Pay," he said, "they do not deserve a penny, [and] should on no Account be permitted to come to Skenesborough, I am confidently assured we can do without them." At this period there was much self inoculation by soldiers, which consisted of infecting one's self with matter from a mild case of smallpox. The patient then usually underwent a mild attack of the disease and secured future immunity. Stringent orders were issued against the practice, but it could not be stopped.

In the latter part of August the shipbuilding effort at Skenesborough began to slow down and with it Arnold's plan for four more galleys. Hermanus Schuyler wrote on 25 August that fifty-five of the blacksmiths had taken sick and were unable to make the iron work as fast as the carpenters required it. He also admitted with "great reluctance" that Captain Titcomb's crew was down from fifty to twenty able men. Both Winslow's and Casdorp's crews were also suffering a great deal from the "ague." Upon being informed of the illness (probably malaria), Schuyler ordered a physician to Skenesborough to examine the sick carpenters. His orders were to discharge those that were "not likely to be of future Service -- the Expense being very high."

Later in the month one of Captain Casdorp's ensigns was involved in an unspecified dispute with a colonel from the regular troops. Evidently, the disagreement was serious; the ensign was placed under guard and taken to Ticonderoga to be tried. Prior to this incident, the highly paid carpenters apparently felt that they were not subject to regular military discipline. As a result of the affair and the continuing sickness the carpenters became very uneasy and anxious to go home. Despite the problems, Casdorp's crew launched the Congress on the first of September.

The third galley followed just before the end of the month. In order to see the fourth galley completed more quickly the entire carpenter force was ordered to jointly finish
the vessel.\textsuperscript{91} Essentially, all the ship building activities at Skenesborough ended on 2 October when the \textit{Gates} was sent to Ticonderoga for rigging and arming. As Horatio Gates expressed it, the Americans had done all they really could that season to meet the British invasion by water. There was discussion, however, of continuing the shipbuilding effort over the winter.\textsuperscript{92} Arnold wrote Gates from Valcour Island on 10 October that:

\begin{quote}
I am extremely glad you have represented to Congress and General Schuyler the absolute necessity of augmenting our navy on the Lake. It appears to me to be an object of the utmost importance. I hope measures will be immediately taken for that purpose. There is water between Crown Point and Point-aux-Fer for vessels of the largest size. I am of the opinion that row galleys are of the best construction and cheapest for this Lake. Perhaps it may be well to have one frigate of thirty-six guns; she may carry eighteen pounders on the lake, and will be superior to any vessel that can be built at and floated from St. John's. Carpenters ought to be immediately employed to cut timber and plank, and three hundred set at work at Skeensborough, the 1st of Feb. Of these matters I hope we shall have time to confer hereafter.\textsuperscript{93}
\end{quote}

As time would tell, however, the American defensive strategy would change with the Battle of Valcour Island (see Chapter VI). After 13 October, the Americans would concentrate all their attention to increasing the defensive strengths of Fort Ticonderoga and Mount Independence.

The shipbuilding effort had taken almost exactly four months. In that short time, the Americans had managed to build eight gondolas, four galleys, and finish the construction of the cutter \textit{Lee}. Although Arnold would still be writing for additional supplies and ordnance as late as 10 October, the entire American fleet of seventeen vessels had for the most part been rigged and armed. That this was possible, was mainly due to the efforts of Captain Richard Varick, but General Schuyler had certainly had aided that work, especially through his close contact with Governor Jonathan Trumbull.
Notes: Chapter III


3. Ibid.


7. Schuyler to Wynkoop, 31 May 1776, in Clark and Morgan, Naval Documents 5: 317.


9. Ibid.


11. Ibid., 495.

12. Ibid., 494.


14. Ibid.


34. Varick to McKesson, 1 May 1776, in Clark and Morgan, Naval Documents 4: 1362; Minutes of the New York Committee of Safety, 8 May 1776, Ibid., 4: 1460.


36. Hermanus Schuyler to Philip Schuyler, 30 June 1776, Adirondack Museum.

37. Ibid.

38. Schuyler to Officer Bringing Carpenters from Massachusetts and Connecticut to Skanesborough, 4 July 1776, in Clark and Morgan, Naval Documents 5: 915.

39. Ibid.


41. Colonel John Trumbull to Governor Jonathan Trumbull, 12 July 1776, Ibid., 5: 1035-1036; Gates to Hancock, 16 July 1776, Ibid., 5: 1099.

42. Arnold to Gates, 10 July 1776, Ibid., 5: 1008-1009.


44. Ibid.

45. Hartley to Arnold, 10 July 1776, in Clark and Morgan, Naval Documents 5: 1009.

46. Colonel John Trumbull to Governor Jonathan Trumbull, 12 July 1776, Ibid., 5: 1035-1037.

47. Ibid.


50. Gates to Arnold, 13 July 1776, in Clark and Morgan, Naval Documents 5: 1057.

51. Cooke to Hancock, 15 July 1776, Ibid., 5: 1097.

52. Gates to Hancock, 16 July 1776, Ibid., 5: 1099-1101.
53. Ibid.


55. Hermanus Schuyler to Schuyler, 24 July 1776, Adirondack Museum; Arnold to Schuyler, 24 July 1776, in Clark and Morgan, Naval Documents 5: 1197.

56. Schuyler to Schuyler, Ibid.


59. Arnold to Schuyler, 24 July 1776, in Clark and Morgan, Naval Documents 5: 1198.

60. Schuyler to Varick, 25 July 1776, in Clark and Morgan, Naval Documents 5: 1211.

61. Varick to Hughes, 3 August 1776, Ibid., 6: 35.


64. Varick to Washington, 3 August 1776, Ibid., 6: 33.

65. Ibid., 33-34.

66. Varick to Schuyler, 3 August 1776, Ibid., 6: 34.

67. Force, American Archives, 1: 582.

68. Schuyler to Schuyler, 30 June 1776, Adirondack Museum.


70. Cornelius Wynkoop to Gates, 30 July 1776, in Clark and Morgan, Naval Documents 5: 1284.


72. Ibid.


83. Hermanus Schuyler to Philip Schuyler, 10 August 1776, Adirondack Museum.


88. Schuyler to Hancock, 29 August 1776, in Clark and Morgan, *Naval Documents* 6: 348.

89. Hermanus Schuyler to Philip Schuyler, 2 September 1776, Adirondack Museum.


CHAPTER IV

BUILDING THE BRITISH FLEET

The British shipbuilding effort began at almost the same time that the Americans started building gondolas at Skanesborough. In fact, the British should have been ahead of the Americans, since Governor Guy Carleton had written to Vice Admiral Graves in Boston as early as July of 1775 for two “Sloops of War, and an additional number of Shipwrights and Seamen, in order to build Vessels and regain the Navigation of the Lakes and drive out the Rebels.”1 Graves was unable to fill Carleton's request and it was apparently forwarded to the British Admiralty Office.2 Besides the sloops, Carleton's requisition specified that enough materials should be sent to Quebec to build: “at least four hundred Batteaux from 36 to 40 feet in length, and 6 or 7 feet in Breadth on the Beam.”3 It was not necessary to send planking and timber for the vessels since the Admiralty knew that it could be easily obtained in Canada.

Carleton received at least some building materials in early May of 1776 when Charles Douglas' transport fleet arrived to relieve the then-besieged city of Quebec. Additional materials arrived in late May and early June.

Following the American retreat from Canada, the British army quickly made camp on the banks of the Richelieu River at Isle aux Noix, Chambly, and St. Jean.4 No time was wasted in repairing the facilities. Two hundred men were immediately assigned to reconstruct the two old redoubts and ship stages at St. Jean since the Americans had destroyed the docks, yards, boats, and construction materials before abandoning the post.5

The biggest obstacle facing the British in their preparations to place a fleet on Lake Champlain was the fact that their existing fleet could only sail up the Richelieu River as far as Chambly. Beyond that point, a twelve-mile stretch of rapids and shallow water on the
river prevented any further progress to St. Jean and Lake Champlain by water. The British were faced with two choices: they could start from scratch and build a new fleet of ships at St. Jean, much as the Americans were doing at Skenesborough, or they could attempt to carry part of their existing force either through or around the St. Thérèse rapids between Chambly and St. Jean.

Captain Charles Douglas, commander of the St. Lawrence fleet, has been given credit for believing the first choice was really a mistake. With the short time available to them that summer, the best the British could hope to build would be several small vessels. What Douglas believed the British really needed were a few large vessels, but powerful enough to confront and overwhelm the weaker fleet the Americans were putting together.

In the end the British decided to do both. Carleton was astute enough to realize that:

*A victory upon Lake Champlain . . . was dependent upon many factors, including geography, the status of ship building, the activities of the enemy and the successful maneuvers of the advancing combined army, militia, Indian and naval forces. Instead of moving with reckless speed, [he] insisted on the construction of all possible flat boats and larger vessels.*

While new vessels would be built at the St. Jean shipyard, Douglas was determined to transport warships around the portage. After a quick survey of the Richelieu River, it was deemed necessary to build a road so that the vessels could be carried overland. “By all these means,” wrote Douglas, the British would acquire “an absolute dominion over Lake Champlain.”

The first vessel to be carried across the portage was the 14-gun schooner *Lady Maria* (figure 4.1). Named for General Guy Carleton's wife, the schooner had been captured by the Americans in November 1775 on the St. Lawrence and retaken by the British following the American retreat. *Maria* had a length on deck of 66 feet; a 52 feet,
Figure 4.1. The Schooner Maria. Courtesy of the Smithsonian Institution, NMAH/AFH.
2 1/4 inch length of keel; a beam of 21 feet, 6 inches; and a depth of hold of 8 to 8 1/2 feet. When originally built, the vessel was fitted out with eight gun-ports on a side, five sweep-ports, a cutwater, and a figurehead. Douglas ordered its present captain, Lieutenant John Starke, to bring the vessel to St. Jean. If necessary, Starke, working under the direction of Captain Thomas Pringle, was to take down the schooner to within “two streaks of her present line of floatation” to insure that it would be light enough to be rolled along the portage on logs. When the road proved too soft to support even that weight, the partially dismantled vessel was further stripped down to its floor heads.

In a similar manner the schooner Carleton and gondola Loyal Convert (figure 4.2) were also transported to St. Jean and reassembled. Carleton was a topsail schooner, 59 feet, 2 inches on deck; 46 feet, 10 inches on the keel; 20 feet in breadth; and 6 to 6 1/2 feet deep in the hold. The vessel had seven gun-ports on a side and was eventually armed with twelve 6-pounders. The British plan of the vessel suggests that it was very similar to the Maria, but lacked the sweep-ports, cutwater, and figurehead of the former. Both vessels had a short quarterdeck. Like Maria, the Carleton had been captured by the Americans in November of 1775 and was retaken by the British in June of 1776.

The Loyal Convert (or Royal Convert) was a captured American vessel. It has been suggested that this gondola may have been either the Hancock or Schuyler, the two armed gondolas that Philip Schuyler had built at Lake George in 1775. Both vessels had been dragged northward over the rapids by the Americans in November of 1775. According to Chapelle, the Loyal Convert measured 62 feet, 10 inches on the deck; 50 feet, 8 inches on the keel; 20 feet, 3 inches in beam, and had a depth of hold of 3 feet, 7 1/2 inches. This overall length matches very closely with the corresponding dimension that
Figure 4.2. The Gondola *Loyal Convert*. Courtesy of the Smithsonian Institution, NMAH/AFH.
Schuyler reported for the *Hancock* and *Schuyler*.\(^\text{18}\) The gondola was armed at St. Jean with six broadside 9-pounders and one 24-pounder bow gun taken from the army.\(^\text{19}\)

In a remarkable feat of engineering, the 180-ton *Inflexible* was also carried up to the lake. After receiving intelligence reports of the progress that the Americans were making toward their own fleet, Carleton insisted on its transport to St. Jean.\(^\text{20}\) The vessel had already been under construction at Quebec “where her floors were all laid, and some of her timbers put in.”\(^\text{21}\) Lieutenant John Schank, captain of the armed ship *Canceaux*, ordered his carpenters to dismantle the partially built ship so that *Inflexible*’s timbers could be shipped to St. Jean in thirty longboats.\(^\text{22}\) According to Lieutenant James Hadden:

\[
\text{[Inflexible's] keel was laid the second time on the morning of Sept. 2d, 1776, and by sunset on that day, not only was she as far advanced in her new location as she had been at Quebec, but a considerable quantity of fresh timber was also got out and formed into futtocks, top timbers, beams, planks, &c.; as it was no uncommon thing for trees, growing at dawn of day, to form parts of the ship before night.}^{23}
\]

Douglas ordered Schank to take *Canceaux* to Chambly, where all her stores, sails, anchors, and crew were transferred to St. Jean for duty with *Inflexible*.\(^\text{24}\) Until the *Inflexible* was ready to sail, Schank was to serve as the superintendent of the shipyard.\(^\text{25}\) Schank's work force was drawn from the St. Lawrence River fleet. Hundreds of carpenters, riggers, sail makers, and caulkers were sent down to assemble the vessels. Over 600 experienced sailors waited to man them.

Lieutenant William Twiss of the Engineer’s Corps was also ordered to the St. Jean's shipyard. Upon his arrival he was give directions for building the army's transport boats:

\[
a \text{common flat bottom called a King's Boat or Royal Boat, calculated to carry from 30 to 40 men with stores and provisions, with this only difference, that the Bow of each Boat is to be made square resembling an English Punt, for the convenience of disembarking the Troops, by the means of a kind of broad gang board, with Loopholes made in it for Musquetry, and which may}
\]
serve as a Mantelet when advancing towards an Enemy, and must be made strong accordingly.26

It is unknown how many flat-bottomed boats were built at St. Jean to these specifications. A British document entitled “Force on the Lake [Champlain] Tolerably Exact, on Septr 18th. 1776” specifies that “450 Batoes” were to be used for the “conveyance of the Troops.”27

By the middle of August, the Maria had been reassembled and slid into Lake Champlain. Two weeks later, the Carleton, Loyal Convert and most of the gunboats followed. According to one researcher the Inflexible took longer. After the keel had been relaid at St. Jean, Schank ordered it extended eight or nine feet so that vessel would draw less water than had been originally planned.28

German Company Surgeon, J. F. Wasmus watched the launching of the Inflexible on 29 September. He wrote:

At 10 o'clock this morning, the frigate Inflexible was launched. It was beautiful to see how she had been set on a sled-like machine, which had been rendered slippery with tallow and soap. With much effort, the ship got into motion but went into the water with great speed and cast anchor in the Rivière Richelieu. And now there sounded a cry of hurrah, done 3 times by the sailors and workmen.29

Douglas was extremely impressed with both Schank and the Inflexible. He wrote to Philemon Pownoll, captain of the frigate Blonde (anchored in the St. Lawrence River), about the imminent departure of the British fleet:

As the Inflexible is of the party, I am not uneasy about the event . . . All the Carpenters work bestowed upon her; until launching; did not exceed 12 men’s labor for 16 days—By Lieutenant Schank’s contrivance and close unremitting diligence . . .30

One large vessel was built entirely at St. Jean. The radeau Thunderer was a large, scow-like vessel designed to carry the heaviest armament of the fleet: six 24-pounders, six
12-pounders, and two howitzers (4.3). Thunderer had an overall length on deck of 91 feet, 9 inches; 72 feet on the keel; 33 feet, 4 inches in breadth, and 6 feet, 8 inches deep in the hold. The nearly flat-bottomed vessel (Chapelle calculated approximately 6 inches deadrise) had raking ends comparable to more modern scows.

To round out the fleet, twenty to twenty-eight gunboats, each armed with a brass field piece (twenty-fours to nine-pounders) and some with howitzers were assembled at St. Jean (figure 4.4). Ten of these gunboats (complete, but disassembled) had arrived from England on the frigate Tartar on 7 July. Four longboats taken from the transport fleet on the St. Lawrence River had also been brought and fitted with carriage guns to serve as armed tenders. Another twenty-four unarmed longboats were added to the growing flotilla to carry provisions for the fleet.

It had been a remarkable feat of engineering. In less than ninety days, the British had built and armed an invasion fleet. Command of the new fleet was given to Lieutenant Thomas Pringle, formerly captain of the armed ship Lord Howe.

Although the large British vessels would be manned by seasoned sailors, the bateaux and gunboats would be manned by soldiers. Carleton’s troops, the Hesse-Hanau artillerymen in particular, practiced their rowing skills on the St. Lawrence so that they could propel themselves up Lake Champlain.

Carleton continued to receive updates on the position of the American fleet. By 3 October it was known that the enemy had departed from Point au Fer and Isle la Motte. Suspecting that their fleet might be behind Grand Island, Carleton directed a reconnoiter, consisting of the Lady Maria and the Carleton while minor troop maneuvers continued the advance. On 5 October, the British fleet “sailed for Isle aux Noix, thus linking forces with the advanced units. The smaller vessels, the gondolas and the 20 gunboats also appeared
Figure 4.3. The Radeau *Thunderer*. Courtesy of the Smithsonian Institution, NMAH/AFH.
Figure 4.4. Admiralty draught of a boat to carry one carriage gun forward. Courtesy of the Smithsonian Institution, NMAH/AFH.
though the Germans had some difficulties in loading their bateaux and had to be transferred to the *Thunderer.* In six days time the two newly constructed fleets would meet at Valcour Island.
Notes: Chapter IV


2. George Jackson to John Pownall, 9 January 1776, in Clark and Morgan, Naval Documents 3: 490.

3. Ibid.; Fowler, Rebels Under Sail, 325n; Lords Commissioners, Admiralty, to Lord George Germain, 6 February 1776, in Clark and Morgan, Naval Documents 4: 890-91.


6. Fowler, Rebels Under Sail, 199.


10. Douglas to Starke, 7 July 1776, in Clark and Morgan, Naval Documents 5: 957.


12. “A Draught of the Carleton rebuilt at St. Johns on Lake Champlain 1776,” in Clark and Morgan, Naval Documents 5: 1256; Chapelle, American Sailing Ships, 76.


CHAPTER V

THE AMERICAN FLEET PREPARES FOR CONFRONTATION

On 7 August 1776, Major General Horatio Gates wrote Benedict Arnold’s sailing orders. Significant to the fact that the Americans had just declared their independence from Great Britain, Gates wrote “Upon your Arrival at Crown-Point you will proceed with the Fleet [of] the United States under your Command, down Lake Champlain.”\(^1\) Gates made it emphatically clear to Arnold, that “It is a defensive War we are carrying on; therefore, no wanton risque, or unnecessary Display of the Power of the Fleet, is at any Time, to influence your Conduct.”\(^2\) The fleet was not to be stationed any further north than Isle aux Têtes, and kept far enough from shore that it could not be damaged from land-based artillery. Arnold's ultimate goal was to prevent the enemy’s invasion, and if attacked by the British he was to “act with such cool determined Valour, as will give them Reason to repent their Temerity.”\(^3\)

Acting on Gate's orders, Arnold arrived at Crown Point on 16 August to take command of the fleet, unaware that Schuyler had already assigned the responsibility to Jacobus Wynkoop, captain of the *Royal Savage*.\(^4\) The next afternoon, Arnold received a message from Lieutenant Colonel Thomas Hartley indicating that the British were approaching. A group of Hartley’s men acting as a covering guard for a gang of oar makers had spotted a British scouting party seven miles further down the lake and had lit a signal fire to alert Crown Point to the possibility of an invasion.\(^5\) Arnold immediately ordered Hartley to take one hundred men and secure the retreat of the oar makers. Captains Seamon and Premier were instructed to take *Revenge* and *Liberty* down the lake for 7 or 8 miles to find out if the enemy were in view.\(^6\) After seeing the two schooners
weigh anchor, Wynkoop immediately fired a shot from _Royal Savage_ bringing the vessels
to.

Upon questioning the two captains, Wynkoop sent a hastily written note to Arnold:

_I find an Order you have given out that the Schooners are to go down the
lakes. I know no Orders but what shall be given out by me except sailing
Orders from the Commander in chief if an Enemy is Approaching I am to
be acquainted with it and know how to Act in my station._

Arnold immediately responded to Wynkoop with a note of his own:

_I am surpris'd you should pretend to Contradict my Orders to the Captains
of the Schooners at this time when we are alarm'd by a Signal of the
Approach of the Enemy, and much more so, as I acquainted you some time
since that the Commander in chief had Appointed me to take command of the
Navy on the Lakes, had I not receiv'd this Appointment from my rank in the
Army and as commander in chief of this Post, it is your duty to obey my
Orders, which you have receiv'd and executed for some time past, you surely
must be out of your senses to say no Orders shall be obey'd but yours, do you
Imagine that Congress have given you a Superior Command over the
Commander in chief; or that you are not to be under his direction, if you do,
give me leave to say you are much mistaken and if you do not suffer my
Orders to be Immediately complied with by sending to the Captains of the
Schooners to obey them I shall be under the disagreeable necessity, of
Convincing you of your Error by Immediately Arresting you._

Arnold’s note brought no immediate reaction from Wynkoop, either in reply or in orders
to the two schooners. Arnold therefore boarded _Royal Savage_ to confront Wynkoop in
person. After reading Gates’ instructions to Arnold, Wynkoop finally relented and ordered
the two schooners underway.

Wynkoop, still believing that he was in the right, wrote to Gates that night:

_I have understood that General Arnold is to have Command of the Navey and
if that Be So he ought to have Shown me his Power to It, but instead of that
he sent an Order for two of the Schooners to get under way and go Down the
Lake upon Some Information he Says he had of the Aprouch of the Enemy
was It not his Duty to have Communicated It to me and my Orders to have bin
Given to the Vessels. I have Contradi[c]ted them till he Acquainted me of
with Some Accounts of the Enemy And then I Emediately Issued out my Orders
for them to go Down Sr If that be the Case I would be Glad of my Dismission_
from the Service for I Excepted of this Command upon these Conditions Major General Schuyler has a Letter which I Brought up to him from Congress that no man was to take the Command from me and when he had Read Letter he told me that I need not to fear that no one Should have It but me and the Congress of New York Promissed me that If any one Should arrive here Authorised to take the Command by the Honourable Contenental Congress I was to be Dismissed the Service and have the Command of one of the Frigates Building up the North River for I am Resolved to go under Comand of no man I will Receive General Orders to Sail and how far And will Obey the Comander In Chiefs Orders but If I have the Comand I Expect to Give Orders to the Capin of the Fleet when I Receive them from the Comander In Chief. I Refer your Honour to a Copy of my Warrant a Copy of Major Generals Schuylers Letter and his Orders here Inclosed. Sr If you find my Grievance well founded I hope your Honour will be pleased to Redress It I am Sr with all Due Respect Your Honours.¹⁰

Arnold had also written to Gates that same night. After reading both officers’ account of the incident, Gates became furious and ordered Arnold to arrest Wynkoop and send him prisoner to Ticonderoga.¹¹

Wynkoop’s reputation as a commander was already tarnished. Earlier that month he had spotted the sails of the approaching British fleet while scanning the lake with his telescope. With the use of a speaking trumpet he had shouted out an alarm to all the vessels at Crown Point. When Captain Seamon climbed to the top mast of Revenge with a telescope it was determined that what Wynkoop had taken to be sails was only a large flock of white seagulls.¹²

Gates wrote to Schuyler indicating that he was going to send Wynkoop to Albany, where:

_I dare say you will without Scruple, forthwith dismiss him the Service—He ought, upon no account, to be employed again._¹³

Gates added that many officers at Ticonderoga considered Wynkoop totally unfit to command a single vessel.¹⁴
Arnold dutifully sent Wynkoop to Ticonderoga but admitted to Gates that the captain was really of the opinion that neither he nor Gates had the authority to command him. Wynkoop appeared "convinced to the Contrary, & sorry for his disobedience of orders." It was Arnold's wish that Wynkoop return home without being cashiered. Wynkoop eventually arrived at Albany with an appeal to submit to Congress. His lengthy "Memorial" was referred to Continental Congress to its Marine Committee for consideration, but appears to have been largely ignored. Wynkoop left the lake service, but not with the embarrassment of being cashiered as Gates had suggested.

In response to the misunderstanding, Philip Schuyler wrote:

_Altho' I believed Wynkoop to be brave and industrious and equal to the Command of what Vessels we had when I recommended him, yet I was so far from being sufficiently acquainted whether he was equal to the Command of such a Number of Vessels as we have now there, that I learnt General Arnold's Appointment with great Satisfaction and very much approved of it_ 16

On 18 August, Gates assigned to Brigadier General David Waterbury, Jr. as second in command of the fleet. Gates had confidence that there would be no dispute between the two since Arnold and Waterbury were already upon the best terms. As a replacement for Wynkoop, Gates recommended that the command of the Royal Savage be given to Colonel Edward Wigglesworth along with the responsibility of acting as third officer in overall command. Wigglesworth was known to be a good seaman and, according to Gates, "much of a Gentleman [of] unimpeached good Character." Arnold had already taken Royal Savage as his flagship and appointed David Hawley as captain. Hawley had brought along the majority of his crew with him from Connecticut. Wigglesworth would arrive later and perform his duties on the Trumbull.
Arnold’s first task as fleet commander was to find a pilot and a surgeon. He wrote to Dr. Thomas Potts at Fort George for a surgeon and one “Robert Aitkinson,” a patient at the hospital, who was known to be an exceedingly good pilot. Dr. Stephen McCrea was appointed as First Surgeon to the Fleet with Mr. Francis Hagen to accompany as assistant. McCrea was able to bring his own medical instruments and medicines, but Arnold was forced to rent instruments for the assistant.

The *Washington* had just been finished at Skanesborough and its builder, Captain Titcomb requested to captain the galley. Arnold denied the request since he thought it best that Titcomb remain with his gang to finish the fourth galley. Command of the *Washington* would instead be given to Captain John Thatcher of Colonel Heman Swift’s Connecticut regiment. It would not be until 6 October that Thatcher and Waterbury joined Arnold with the *Washington* due to delays in rigging the galley.

Before the gondolas were sent to Crown Point, at least one of the green crews had an opportunity for training. On the morning of 5 August, while off the east redoubt of Mount Independence, Captain Simonds ordered his crew to fire the cannons onboard the gondola *Providence*. The bow and port gun were fired without mishap, but when it came time to reload, Gunner’s mate Solomon Dyer, who was serving the sponge for the 12-pounder bow gun suffered a deadly accident. While in the act of ramming a new gunpowder cartridge home, the improperly cleaned gun fired prematurely. According to the gondola’s ensign, Dyer was standing in front of the gun when it went off, blowing “Boath his hands & one nee almost of[f].” Although a search was made for the gunner’s body, it was two days before the remains floated up and Dyer could be given a proper burial.

Additional activities of the American fleet from the time of their outfitting until the Battle of Valcour Island were recorded in a journal made by a Connecticut officer. The
Journal of Ensign Bayze Wells of the gondola Providence provides a daily record of the fleet’s preparation and movement down the lake.

Wells notes that early on the morning of 24 August, with the fleet now mostly assembled at Crown Point, Arnold issued orders for every vessel to prepare for getting underway.\textsuperscript{26} The gondola Philadelphia under the command of Captain Benjamin Rue had joined the fleet four days earlier. Connecticut (Captain Joshua Grant), the sixth gondola built at Skenesborough, had just arrived, making a total of ten vessels ready for service.\textsuperscript{27}

Arnold was still short of his desired complement of seamen and marines. To make up the deficiency he temporarily drafted a detachment of troops from Colonel Thomas Hartley’s force at Crown Point. Preparations for sailing took almost the entire day, so it was not until sunset that evening that the fleet finally got underway. Arnold led the way in the Royal Savage, followed by Enterprise and the gondolas New Haven, Boston, Providence, Spitfire, Philadelphia, and Connecticut. The schooners Revenge and Liberty brought up the rear. The fleet fell down the lake for four miles and anchored for the night in four fathoms of water.\textsuperscript{28}

By the night of the 25 August, Arnold had taken the fleet to Willsborough (now Willsboro), New York.\textsuperscript{29} That same night a violent storm came out of the northeast. By 2:00 p.m. the next day, the fleet was forced to weigh anchor and return to “Buttonmould Bay” (now Button Bay), Vermont, for a safer anchorage. The storm proved to be a real test for the smaller gondolas. Connecticut lost its mast and had to be taken in tow by the Revenge.\textsuperscript{30} Spitfire was unable to clear the shore and was forced to ride out the storm alone. Arnold was amazed to see Spitfire the next day when Captain Ulmer brought the vessel in with only the loss its trailing bateau.\textsuperscript{31}
The storm continued unabated over the next two days keeping the fleet wind bound. On the afternoon of 29 August, Arnold invited all of the captains and lieutenants to dine with him on shore. According to Wells, it was a "most Genteel feast" of roast pig, wine, punch, and cider. After drinking to the health of Congress and Bendict Arnold, the officers named the small point of land and bay to their south after Arnold.

By 31 August, the wind switched directions enabling the fleet to resume its northerly course. Arnold hoisted a white pendant on Royal Savage ordering all captains to come aboard. Apparently, during the wind delay some troops had gone ashore and raided the area residents of household furniture and garden produce. Captains Seamon and Sumner were ordered ashore to ascertain the damage so that the locals could be reimbursed for damages sustained. Forthwith, no boats were allowed to the shore unless accompanied by an officer.

Arnold reported to Gates on 2 September:

_I hope soon to have it in my power to send you a very full Account of the Strength of the Enemy by Sea & land. I hope no time will be lost in forwarding, the three Gallies, when they have Joined us, I am very Confident, the Enemy will not Dare attempt Crossing the Lake... when the Enemy drive us back, to Tyonderoga, I have some thoughts of going to Congress, & beging leave to resign, - do you think they will make me a Major General—(Entre Nous)..._ 

At the time, Arnold had only scant intelligence of the British strength by water. It was the general opinion of most Americans that they were far ahead of the British in the shipbuilding race. That fact, coupled with the lateness of the season, led everyone to believe that British would not mount an attack that year. It was predicted that the British would strengthen their positions to the north and force the Americans to winter at Ticonderoga.
Gates sent further instructions to Arnold, ordering him to dispose his fleet in three divisions: Arnold in the center, Waterbury on the right, and Wigglesworth on the left. From this disposition, Gates believed that the captains of the vessels would get "to know their Commanding Officers, and prevent any Confusion or dispute, about Command, in Case of an unlucky Shot, or other Accident should take care of the General." The choice of the fleet's final defensive position was left entirely to Arnold's experience.

On Monday, 2 September, the fleet acted on a false alarm that the British were just four miles further down the lake. Unmolested, the Americans continued to the lower end of Schuyler's Island. Acting cautiously, Arnold continued to send one or several scout boats ahead of the fleet each day to determine if the British were in the area. By 3 September, the fleet had made its way to Cumberland Head. During the day the scout boats had encountered a party of twenty British soldiers and fired on them with three swivels. Several riflemen from the fleet landed and searched the New York shore but apparently met with no resistance. By four o'clock, the fleet was anchored off Isle la Mott.

The next day, six of American scout boats discovered that the British were placing cannon on an island to the north. Arnold ordered the Liberty and Revenge to get underway and determine the British strength. The two vessels soon returned with the news that several hundred British troops were on Isle aux Têtes about four miles to the north. When Arnold brought his vessels up in a line of battle, the enemy made a hasty retreat.

Arnold continued to post scout boats at his front. The British were also sending out boats but with a "View of decoying" the American guard boats. Presumably, the British were hoping to make an easy capture and gather intelligence about Arnold's real strength. Planning to rely on his own intelligence sources, Arnold resisted pursuing the British vessels. Instead he sent Lieutenant Benjamin Whitcomb and three others to spy on
St. Jean. While Whitcomb traveled by water on the western side of Isle la Mott, Ensign Thomas McCoy and his party of three scouted out the eastern approach to St. Jean.

On 5 and 6 September, the crews of the gondolas were sent on shore to gather fascines that Bayze Wells stated were to be placed “Round the fore Castle.”42 Arnold elaborated on their further use: they were to be fixed on the “Bows and Sides of the Gondolas to prevent the Enemies boarding and to keep off small shot.”43 The British had used the same tactic during the French and Indian War on Lake Champlain.44

Contrary to orders, Captain Sumner of the gondola Boston sent his boat ashore with eighteen men to gather fascines, but neglected to wait until the other boats were ready. When Sumner’s men landed they were attacked by a “Party of Savages.”45 The British officer in charge offered quarter, but the Americans refused and were subsequently fired upon in their boat. Two Americans were killed and five more were wounded, one of whom died soon after he was placed on the hospital sloop.46 The rest of the fleet immediately sent a heavy fire into the woods where the British had laid in waiting.47 Afterwards, Arnold sent a party on shore but found only a laced beaver hat and a button of the British 47th regiment.

Later that afternoon the cutter Lee and gondola New Jersey joined the fleet. Lee’s arrival prompted a salute from every vessel in the fleet. The courtesy was returned by Lee, “all Done in order and Good Dissepline.”48 The two dead sailors from the Boston were buried on shore soon after. During the earlier skirmish, the gunner of the Royal Savage accidently loaded one of his cannons with the wrong size of shot causing it to lodge halfway down the barrel. The cannon had to be placed on a boat and rowed to shore where it was successfully discharged without mishap.49

Now that Arnold had had an opportunity to observe the abilities of his men and fleet, he advised Gates of his present concerns and strategy:
we are moor'd in a Line a Cross the Lake, in such a manner, it will be impossible for a Batteau to pass us. — I hope the Gallies are nearly completed, the Force of the Enemy is uncertain, however they have this advantage that they can Man all their Batteaux with Soldiers whenever they think proper to attack us, and our Vessels are so low that numbers may carry them by boarding, this must be attended with great Loss on their side, as I am Positive they will not be able to surprize us. If I find the Enemy have a considerable Naval Force I design to retire, to Cumberland Head or Schuyler's Island until joined by the three Row Gallies, which will be Superior to all our present Force, when the whole are joined, I believe the Isle a Mott will be the best Stand as the Enemy can bring nothing against us by Land nor will they dare to Come on the Island, as by our Guard boats we can prevent, any Boats going from Missique Bay, as you have more Troops at Tyconderoga than you want, will it not be prudent to send up one thousand or fifteen hundred Men, who might encamp on the Isle aux Mott, and be ready at all times to assist us if attacked twenty Men to a Batteau will be sufficient, they might Load under Cover of the Vessels, push out and Fire, & retire under cover again, & If the Enemies Boats should make their principal Attack on any particular Vessel these Batteaux might Assist her; each should be fixed for a Swivel in each end, and if they are armed one should be fixed in them, if you should think it necessary to send a Detachment, it will be necessary to bring intrenching Tools, that they may cover themselves from Small Arms.50

Oddly, Gates never responded to Arnold's suggestion of placing troops on Isle la Mott. Instead he cautioned Arnold to continue watching his flanks and to provide for the protection of resupply vessels.51 Along with the promise that the galleys would soon be manned and dispatched north, Gates sent Arnold a copy of the Declaration of Independence. The document was to be given to the British if Arnold received an "Order to send a Flag to the Enemy; or have an Opportunity by the return of one of theirs."52

On 8 September, the American fleet was stationed at Isle la Mott.53 Wigglesworth arrived by bateau the next day to begin his duties as third officer to the fleet.54 Two days later, the eighth and last gondola joined the fleet. Curiously, Wells referred to New York as the "Success," suggesting that several vessels may have had their names changed after completion.55
By now the British had a very good idea of the number of American vessels and
t heir general whereabouts. The Americans also knew that the British were making further
preparations to the north. On 12 September the reports of about sixty cannons were heard
from the vicinity of St. Jean or Isle aux Noix.56 Five days later, Arnold received his first
real intelligence of the British strength by water, "about Seven Sail allmost Compleat and
A Large number of Large Battoes."57 More specifically, "a Ship on the Stocks at St.
John's, designed to mount Twenty Guns, Nine, and Twelve Pounders, several Schooners,
and small Craft.58 Arnold's informants were ignorant of the sizes of the vessels and the
number of guns and crew, however. In an attempt to gather further information Arnold
befriended a "Frenchman" whom he had found in Mississquoi Bay and sent him to St. Jean
for information. Until Arnold received new intelligence he planned to go to Valcour Island
and wait for the three new galleys. Arnold had already scouted out the position and knew
that it would leave him the option of a retreat if necessary. Gates approved openly of
Arnold's plan, but had earlier warned him that:

_The Enemy are Subtile, and quick at Expedients; they may endeavour to
Impose False Friends upon you; your watch word, should never be given
until Sun Sett, and all boats, at Day light, kept at a proper Distance, until
their Crews are examined._59

Although bateaux occasionally arrived from Crown Point with fresh provisions,
Arnold's men were still running short of food. At one point, he wrote Gates that the only
fresh provisions they had lately received were four "Beves."50 The crews still foraged
ashore if given the chance. At an abandoned "french mans" farm, crewmen from five
bateaux found some "Pertatoes" and corn.61 Beyond the lack of provisions and tobacco,
many of the crewmen were becoming ill due to their exposure on the open lake. Arnold
was forced to send twenty-three of the more serious cases back to Ticonderoga.62
On 19 September, while the fleet lay off Bay St. Armand (north of Cumberland Head), the schooner Liberty was ordered to patrol off Isle la Mott and join up with the fleet later that day. On its return, the vessel was hailed by a "man in French Dress" on the New York shoreline, opposite the southern end of Isle la Mott. The unknown individual indicated that he was a British deserter and wished to board the vessel. Suspicious of a trap, Captain Premier ordered his boat to approach stern first, with "Swivels pointed & match lit." Premier directed the stranger to swim out, but the man waded out only to his chest and indicated that he did not know how to swim. Unable to lure the boat in, he waded back to shore, gave "three Ca hoops," to bring forth three to four hundred of the enemy dressed mostly as Native Americans. Their surprise fire on the boat and schooner wounded five of the Americans. In retaliation, Premier fired upon the shore with grapeshot for nearly an hour.

A little later and a little further down the lake, Liberty came across two or three hundred Native Americans equipped with many birch bark canoes. Arnold feared the canoes since they could easily slip past him in the night and hide along the shore in the daytime. Consequently, no guard boat was to act alone.

Following these last encounters with the British, Arnold told Gates:

_I must renew my request For more Seamen & Gunners, there is a plenty of the former in the Army, provided they have liberty of Enlisting, tho it is a bad prescident, this emergency will Justify the measure._

Of the men already under his command, Arnold wrote: "We have but very indifferent Men, in general, great part of those who shipped for Seamen know very little of the Matter." His opinion did not improve until after the Battle of Valcour Island. It certainly did not change on 20 September when the nervous lieutenant of the New York mistakenly fired a swivel gun into the gondola Providence, the vessel he was supposed to be relieving.
Fortunately, neither vessel suffered any damage or injury. On the same day, seaman Ansel Fox was “Cabb’d twelve Strokes on his Naked Buttucks” for sleeping on watch. Later, as tensions began to grow among Arnold's crews that a battle was ever more likely to occur, four seamen announced that they would refuse to fight the British. Comparable to the strict and harsh punishment the British navy inflicted upon their sailors, the four mutinous seamen were whipped from vessel to vessel, receiving in total seventy-eight lashes.

On 24 September, with the wind from the northwest, the fleet sailed for Valcour Island where it made a good anchorage in six fathoms of water. The next day, Arnold, secure in his new position, invited all the officers to dine with him on the island. While enjoying “a most agreeable Entertainment,” the Americans listened to sounds of the British cannon fire to the north. Fearing more from his gunners’ inexperience and inaccuracy, than of giving away his position, Arnold employed the men in firing cannons at empty casks.
Notes: Chapter V

1. Gate’s Orders to Brigadier General Benedict Arnold, 7 August 1776, in Clark and Morgan, Naval Documents 6: 95.

2. Ibid.

3. Ibid.

4. Wynkoop had been recommended by Schuyler and the New York Committee of Safety for the command in March. Minutes of the New York Committee of Safety, 23 March 1776, Ibid., 4: 476; Schuyler to Wynkoop, 7 May 1776, Ibid., 4: 1440.

5. Arnold to Gates, 17 August 1776, Ibid., 6: 216.


14. Ibid.


16. Schuyler to Hancock, 29 August 1776, Ibid., 6: 348.


41. Ibid.


44. “Last night we had no molestation from the enemy. Our batterys are almost compleat, & the brig has sent on shore to git fasshines to hang over her sides, so as to atteck the fort at the time the batterys are opened.” See: Samuel Jenks, “Samuel Jenks, his Journal of the Campaign in 1760,” *Proceedings of the Massachusetts Historical Society* 5, Second Series (1889-1890).


49. Ibid.


52. Ibid.


54. Ibid.

55. Ibid.

56. Ibid., 277.

57. Ibid., 278.


CHAPTER VI

THE BATTLE OF VALCOUR ISLAND

Benedict Arnold had brought his small fleet to anchor in the half mile wide channel between Valcour Island and the New York shore (figure 6.1). The geography of the position reflected Arnold's strategy for meeting the British ships. Valcour is approximately two miles long and a mile wide. The steep sides of the rocky island rise to nearly 180 feet above the lake's surface.¹ Considering that the island was then heavily wooded, the anchorage provided an excellent screen from a southbound fleet in the main channel. A small promontory on the northwest side of the island aided in the fleet's concealment from the north. Arnold justified the defensive position to Major General Horatio Gates by emphasizing "that few vessels can attack us at the same time, and those will be exposed to the fire of the whole fleet."²

The galley Trumbull joined the fleet on 30 September. After sailing down from Fort Ticonderoga, Captain Seth Warner informed Arnold that he was not carrying the expected reinforcement of 100 additional sailors. An exasperated Arnold wrote a cynical letter to Gates and stated: "I hope to be excused (after the requisitions so often made) if with five hundred men, half naked, I should not be able to beat the enemy with seven thousand men, well clothed, and a naval force, by the best accounts, near equal to ours."³

After inspecting the new galley, Arnold wrote that although "the Trumbull is a considerable addition to our fleet," it is "not half finished or rigged; her cannon are much too small."⁴ He reminded Gates that in July the original building plan called for eight galleys. Consequently, requisitions for cordage had been written sufficiently for all eight. Since only four galleys were actually constructed Arnold stated: "I am surprised at their strange economy or infatuation below. Saving and negligence, I am afraid, will ruin us at
last." Arnold ended the letter by explaining that the weather had turned windy and cold. Snow had already fallen on the fleet in late September. Without an immediate resupply of adequate clothing and provisions he felt that his "almost naked" seaman and marines could not remain on station for more than two weeks. Arnold requested Gates send the supplies down with Liberty, a badly leaking schooner that had been captured over a year before and had already been sent to Ticonderoga for recaulking.

Brigadier General David Waterbury, Jr., joined the fleet on 6 October with the galleys Washington and Congress captured by John Thatcher and James Arnold respectively. Waterbury, an experienced mariner from Stamford, Connecticut, was able to assume his role as the fleet's overall second-in-command now that his duties at the Skenesborough shipyard had ended. Waterbury brought a letter from Fort Ticonderoga responding to the shortage of sailors, rigging, and provisions. In this letter, Gates admitted to Arnold that although two hundred seamen were promised from New York none had been sent to Ticonderoga or were expected to arrive. Gates also explained that only half of the requested cordage had been obtained. Consequently, the fourth and final galley Gates was still incomplete. It was expected, however, that the final rigging could be completed at Fort Ticonderoga and the galley sent ahead in a week. As to the supplies and clothing, Arnold was told:

> every article that you demanded in your last letter [is] on board the Liberty schooner except what is not be had here; where it is not to be had, you and the princes of the earth must go unfinished.

It was Gates' opinion that the British were not going to make an attack that season. He based this observation on the latest intelligence report received from Canada. In late September, a Sergeant Stiles had been sent north to spy upon the British encampments. Stiles had just returned from Isle Aux Noix where, on 30 September, he observed "upwards
of Two Thousand Men on the Island." He also reported a number of men erecting a battery of heavy cannon on River LaCole. Gates took the erection of the battery as a sign that the British were acting upon the defensive. Arnold answered in agreement, indicating that the probability of a British attack that year would be dictated by the quickly approaching winter. He wrote Gates that "If the enemy do not make their appearance by the middle of this month [October], I have thought of returning to Button-Mould Bay, as I think they will not pretend to cross the Lake after that time." Arnold ended the letter, however, by adding: "We are prepared for them at all times, and if they attempt crossing the Lake, I make no doubt of giving a good account of them."

Up to this point, the American estimates of the British naval and land forces had not been very reliable. After hearing the observations of Sergeant Stiles an updated "Intelligence Report on the British Forces in Canada and on Lake Champlain," was written at Valcour Island on approximately 1 October. The report correctly notes that 10,000 men were known to have landed in Canada from Europe. Of these, 8,000 were to join up with loyal Canadians for the invasion of the lakes. The detailed report also lists an accurate account of the British naval force in Canada, but does not include the newly-built radeau Thunderer. All of the other large vessels in the British fleet are listed, as are the smaller gunboats. It seems likely, however, that Arnold knew of the large raft-like vessel's existence. As early as 21 September, rumor of its construction had reached Fort Ticonderoga.

Although the inclement weather persisted, Arnold's mood and opinion improved with the arrival of General Waterbury and the two new galleys. Especially welcome to the fleet were fourteen barrels of rum and what Gates reputed to be the finest beef the region had to offer.
Despite the lateness of the season and the erection of a defensive battery, the British force sailed from Canada on 4 October. The British were fully aware that the American fleet was on the lake. Lieutenant William Digby's journal entry for 6 October notes that "the enemies were cruising off Cumberland Bay, about 20 miles above ours."\textsuperscript{16} Cumberland Bay was, in reality, approximately ten miles north of Arnold's true position at Valcour Island. Three days later, Digby indicated that "About 12 o'clock we heard the enemy very distinctly scaleing the guns on board their fleet, and soon hoped to make [them] exercise them in a different manner."\textsuperscript{17} The reported position was again incorrect, placing the American fleet nearer to Grand Isle than Valcour Island.

With the arrival of the galleys, Arnold's fleet consisted of fifteen vessels: two schooners, three galleys, a sloop, a cutter, and eight gondolas (Table 6.1). The Enterprise was designated as the fleet's hospital ship with Doctor Stephen McCrea serving as fleet surgeon. The Gates was still at Fort Ticonderoga, as yet unfinished and unavailable. Liberty had not yet sailed from Ticonderoga with the additional supplies of clothing and equipment.

Arnold's letter to Gates on 10 October reported that he had not heard any recent intelligence of the British motions since the two canoes available to the fleet for small scouting parties had been lost.\textsuperscript{18} Even though Arnold was unaware that the British had in fact sailed, he had wisely sent the schooner Revenge down the lake to act as scout vessel.

On Friday morning 11 October, Arnold transferred his flag from the Royal Savage to the newly-built Congress. Sometime between seven and eight o'clock, the Revenge returned from her scouting mission signaling the approach of the British fleet.\textsuperscript{19} After receiving the report, Waterbury immediately rowed over to the Congress urging Arnold "to come to sail and fight them on a retreat in [the] main lake."\textsuperscript{20} Waterbury believed the
Table 6.1

The American Fleet at Valcour Island

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Commander</th>
<th>Armament</th>
<th>Crew*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Royal Savage</td>
<td>schooner</td>
<td>Hawley</td>
<td>4 6s; 8 4s</td>
<td>50</td>
</tr>
<tr>
<td>Revenge</td>
<td>schooner</td>
<td>Seaman</td>
<td>4 4s; 4 2s</td>
<td>35</td>
</tr>
<tr>
<td>Enterprise</td>
<td>sloop</td>
<td>Dickenson</td>
<td>12 4s</td>
<td>50</td>
</tr>
<tr>
<td>Lee</td>
<td>cutter</td>
<td>Davis</td>
<td>1 12; 1 9; 4 4s</td>
<td>65</td>
</tr>
<tr>
<td>Trumbull</td>
<td>galley</td>
<td>Warner</td>
<td>1 18; 1 12; 2 9s; 4 6s</td>
<td>80</td>
</tr>
<tr>
<td>Congress</td>
<td>galley</td>
<td>Arnold</td>
<td>2 18s; 2 12s; 4 6s</td>
<td>80</td>
</tr>
<tr>
<td>Washington</td>
<td>galley</td>
<td>Thatcher</td>
<td>1 18; 1 12; 2 9s; 6 6s</td>
<td>80</td>
</tr>
<tr>
<td>New Haven</td>
<td>gondola</td>
<td>Mansfield</td>
<td>1 12; 2 9s</td>
<td>45</td>
</tr>
<tr>
<td>Providence</td>
<td>gondola</td>
<td>Simonds</td>
<td>1 12; 2 9s</td>
<td>45</td>
</tr>
<tr>
<td>Boston</td>
<td>gondola</td>
<td>Sumner</td>
<td>1 12; 2 9s</td>
<td>45</td>
</tr>
<tr>
<td>Spitfire</td>
<td>gondola</td>
<td>Ulmer</td>
<td>1 12; 2 9s</td>
<td>45</td>
</tr>
<tr>
<td>Philadelphia</td>
<td>gondola</td>
<td>Rue</td>
<td>1 12; 2 9s</td>
<td>44'</td>
</tr>
<tr>
<td>Connecticut</td>
<td>gondola</td>
<td>Grant</td>
<td>1 12; 2 9s</td>
<td>45</td>
</tr>
<tr>
<td>New Jersey</td>
<td>gondola</td>
<td>Grimes</td>
<td>1 12; 2 9s</td>
<td>45</td>
</tr>
<tr>
<td>New York</td>
<td>gondola</td>
<td>Reed</td>
<td>1 12; 2 9s</td>
<td>45</td>
</tr>
</tbody>
</table>

Totals: 15 vessels  88 guns; 645 lbs.  800 men

*Arnold’s desired complement of crewmen; it is doubtful that Arnold’s total force of seamen and marines was anywhere near the 800 required.

'Although, Philadelphia was supposed to muster a total crew of 45, its final payroll indicates that only 44 men actually served.

superior number and strength of the British fleet would prove overwhelming since the
Americans lay in "such a disadvantageous harbour." He reasoned that "The enemy would
be able to surround them on every side since they lay between the island and the New York
shore." Arnold was determined to fight the British from his preselected position even
though the scouting report indicated that they were greatly outnumbered.

At nine-thirty, Arnold ordered Colonel Edward Wigglesworth, third in overall
command, into the "yawl to go to windward and observe their motions." When
Wigglesworth returned at ten with the news that the British had rounded the island, Arnold
ordered Royal Savage and the three galleys under way. His immediate plan was to send
the larger vessels to windward to draw the attention of the British and, if possible, gain a
raking position on the enemy fleet. The eight gondolas, Lee, and Enterprise remained at
anchor in a tight defensive arc in the middle of the channel. Aided by a strong northerly
wind, the British ships were already in midchannel two miles beyond the southern end of
Valcour Island before they detected the concealed American fleet.

The British naval force was sailing under the command of Captain Thomas Pringle
(Table 6.2). Governor General Guy Carleton, in overall charge of the invasion, rode in
company on Pringle's flagship, the Maria, named in honor of Carleton's wife. In addition
to the schooner, the vanguard of the British invasion force consisted of four other large
vessels: the schooner Carleton, Inflexible, a three-masted, ship-rigged man-of-war; the
radeau Thunderer; and Loyal Convert, the aptly named gondola captured from the
Americans the year before. The British also possessed a second gondola which apparently
played no part in the forthcoming battle. The presence of this unnamed vessel is noted in
both Arnold and Arthur St. Clair's reports and is shown in a contemporary painting
depicting the battle (figure 6.2). It was also counted among the vessels reported to the
Table 6.2

The British Fleet at Valcour Island

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Commander</th>
<th>Armament</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inflexible</td>
<td>ship</td>
<td>Schank</td>
<td>18 12s</td>
</tr>
<tr>
<td>Maria</td>
<td>schooner</td>
<td>Starke</td>
<td>14 6s</td>
</tr>
<tr>
<td>Carleton</td>
<td>schooner</td>
<td>Dacres</td>
<td>12 6s</td>
</tr>
<tr>
<td>Thunderer</td>
<td>radeau</td>
<td>Scott</td>
<td>6 24s; 6 12s; 2 howitzers</td>
</tr>
<tr>
<td>Loyal Convert</td>
<td>gondola</td>
<td>Longcroft</td>
<td>7 9s</td>
</tr>
<tr>
<td>unnamed</td>
<td>gondola</td>
<td>unknown</td>
<td>unknown</td>
</tr>
<tr>
<td>20-24 unnamed</td>
<td>gunboats</td>
<td>various</td>
<td>20-24 various, from 24s to 9s</td>
</tr>
<tr>
<td>4 unnamed</td>
<td>longboats</td>
<td>various</td>
<td>4 various</td>
</tr>
</tbody>
</table>

Totals: 30-34 vessels* 81-85 guns; approx. 1,023 lbs.

*The flotilla was manned by a contingent of seamen from the British ships and transports at Quebec. Their numbers amounted to eight officers, nineteen petty officers and six hundred and seventy picked seamen, making in all six hundred and ninety-seven men from the regular navy. One hundred of these men were taken from the Isis, seventy from the Blood, sixty from the Triton, thirty from the Garland, forty from the Canceaux, eighteen from the Magdalen, Brunswick and Gaspee, ninety from the Treasury and several armed brigs, thirty from the Fell, nine from the Charlotte, two hundred and fourteen from transports, while nine were volunteers.

Figure 6.2. "The Battle of Valcour Island" by Henry Gilder. Original painting in Windsor Castle, Royal Library.
crew of the *Trumbull* when the British invasion force was first spotted. Following closely behind the larger vessels were 20-24 gunboats, four longboats, and several smaller supply vessels. Nearly 1,000 British soldiers came after the main group in 40 or more bateaux to act as boarding parties should the need arise. In addition, some 650 Native Americans led by British officers were regularly ranged behind in a contingent of canoes. The British main army—7,000 men preparing some 300-400 bateaux—had been left behind at Point au Fer.

Lieutenant Digby stated that Pringle's order for proceeding up the Lake was to be as follows:

*Three small boats in front of all as a party of observation, our schooners and armed vessel in line of battle following: Gun boats . . . The battalion of Grenadiers in flat bottomed boats, and in their rear, the remainder of the army in battows. One gun fired from a gun boat, was a signal to form 8 boats a breast; and two guns, a signal to form a line of boats.*

Frequent practice had made the otherwise land based soldiers expert rowers and capable of performing either maneuver with a "pretty effect." The plan, however, was later "found not to answer so well," once the true position of American fleet became known.

Doctor Robert Knox, Physician to the British fleet, laid claim to be the first to sight the American fleet. In a letter written a few days after the battle, Knox recounted that:

. . . about ten o clock, as I was walking the Quarter deck with the Genl, I descried a vessel close in shore, which suddenly disappeared, and almost made me think I was deceived, but my glasses being good, I persisted in it, and induced the Commodore [Pringle] to send a Tender down, with orders, to fire a gun and heist a signal if he saw any ships; he no sooner arrived at ye mouth of ye river Valcour, than he fired . . .

Pringle signaled the fleet to execute a turn to windward, then being NNW, in an attempt to weather the point of Valcour Island and engage the American ships. In performing this maneuver the *Maria*, although described as "the best sailer" in the fleet,
was among the least successful. She was brought to anchor at a prudent distance from the action, by Pringle himself. The ship's captain, Lieutenant John Starke, having refused to do so “as an act truly unbecoming on such an occasion.”

The British error in not sending out scout boats became readily apparent. As Arnold had predicted, Pringle had to sail his vessels into the wind to make an attack, a difficult maneuver if it was to be conducted with any sort of unison between the vessels in the confined channel.

According to Pascal De Angelis, a thirteen-year-old Connecticut seaman serving on the *Trumbull*, Arnold gave the order for all of the ships, which had been “standing off and on . . . to come to anchor in a line of battle.” Shortly after, the *Royal Savage*, due to mishandling, missed stays several times and could not get up into the line. Seizing the advantage, several British vessels immediately attacked the lone schooner. After the *Inflexible* “fired several broadsides with much effect” the *Royal Savage*'s foremast was shot through and most of its rigging cut. Captain David Hawley was forced to run the *Royal Savage* aground on the southern end the island. Under the direct fire of *Inflexible* and several British gunboats, the crew attempted to abandon the *Royal Savage* and seek out protective cover on Valcour Island. Simultaneously, Lieutenant Edward Longcroft, commander of the *Loyal Convert*, led a boarding party onto the stranded vessel and captured about 20 Americans who had not yet managed to escaped. Longcroft then turned the *Royal Savage*’s guns back upon the American fleet. When the British gunboats began firing on the escaping crew, four of the American vessels moved up in an attempt to protect the grounded schooner. As British Lieutenant James Hadden described it, the British gunboats were at that point “in a cluster” and in danger from the larger American vessels. Pringle immediately signaled an order for the gunboats to drop back and form across the
bay. Longcroft, however, continued to fight the captured schooner “till half of the men who boarded with him were kill’d.” 32 Once the _Loyal Convert_ fell to leeward, he was forced to abandon the schooner. According to a later report by the British ship captains the _Royal Savage_ “was most shamefully lost,” because Pringle did not send assistance to get her offshore as Longcroft needed. 33

Pringle’s order to the gunboats was executed under heavy American fire. Beyond the fire from the larger vessels, the eight American gondolas were involved in this action from the very beginning. Captain George Pausch of the Hesse-Hanau artillery wrote that “several armed gondolas, which, one after another, emerged from a small bay of the island firing rapidly and effectively. Every once in a while they would vanish in order to get breath, and again suddenly reappear.” 34 Although successful, the withdraw of the gunboats was completely unsupported as all of the other British vessels had “dropped too far to Leeward.” 35

Sometime between twelve and one o’clock, the _Carleton_ came up into the anchorage by catching a fluke wind veering off Valcour Island. The schooner, well in front of the gunboats, “attacked at once, without waiting for the rest of the squadron, though her force was only twelve six-pounders.” 36 The captain, Lieutenant James Dacres, 37 anchored the vessel broadside to the American defensive crescent with a spring on its cable. Seventeen of the British gunboats followed the schooner up. Accounts from both sides indicate that it was at this point that the real battle began. Jahiel Stewart viewing the battle from the deck of the American hospital sloop wrote that when “…one of the Regular Skooners Came up … the battel was verryey hot [and] the Cannon balls & grape Shot flew verryey thick.” 38 With one large target at very close range, the Americans were able to concentrate their fire. According to Hadden, the _Carleton_ received “the Enemies whole
fire which continued without intermission for about an hour.”

Very early in the action, Robert Brown, the Carleton's second-in-command, lost an arm; soon after, Lieutenant Dacres fell, severely wounded and senseless. Just as Dacres was about to be thrown overboard for dead, a nineteen-year-old midshipman named Edward Pellew, intervened and saved his captain's life. Following Dacres' and Brown's injuries, Pellew succeeded to command.

According to a biographer, Pellew, later the Admiral Viscount Exmouth:

maintained the unequal contest until Captain Pringle, baffled in all his efforts to bring up the squadron, made the signal of recall. The Carleton, with two feet of water in its hold, and half the crew killed or wounded, was not in a condition to obey, being at the time near the shore, which was covered with enemy's marksmen, she hung in stays, and Mr. Pellew, not regarding the danger of making himself so conspicuous; sprang out on the bowsprit to push the jib over. The artillery-boats now took her in tow, while the enemy maintained a very heavy fire, being enabled to bear their guns upon her with more effect, as she increased her distance. A shot cut the tow-rope, and Mr. Pellew ordered some one to go and secure it; but seeing all hesitate, for indeed it appeared a death-service, he ran forward and did it himself.

Eventually, the badly-damaged Carleton was towed out of range by two of Inflexible's boats.

According to Knox, General Carleton became dissatisfied with the distant situation of the Maria: “about one o'clock he thought the Maria was not close enough in.”

This was the moment as well, according to Knox, in which both he and Carleton suffered a close call from an enemy shot. Knox was leaning on a boom alongside Carleton at the moment an 18-pounder from the Congress passed menacingly overhead. The shot slammed into the quarterdeck of Maria, seriously wounding Thomas Carleton, the General's younger brother. Knox recorded Carleton's nonchalant reaction: “well Doctor, says he, how do you like a sea fight.” Following the incident, Maria kept to her anchorage by Pringle's order.
As Starke and the other dissident captains later charged, she "lay too with the top sails, and
[Pringle] was the only person in the fleet who showed no inclination to fight."44

While it was assumed that the heavy armament of the radeau Thunderer would
command respect from the Americans, such was not the case. Lieutenant John Enys noted
that the Thunderer was:

totally useless she being flat bottomed and consequently could not work to
Windward. We fired some few Shot at the time we first Saw their fleet but
believe it might have been just well lett alone.45

Similarly, the Inflexible and Maria also fired a number of shot during the battle but
with little effect since both were too far off. The real work of the battle had fallen to the
British gunboats once the Carleton was towed out of the action. According to Hadden,
"It was found that the Boat's advantage was not to come nearer than about 700 yards, as
whenever they approached nearer, they were greatly annoyed by Grape Shot, tho' their
Case could do little mischief." Captain George Pausch of the Hanau Artillery was in charge
of one British gunboat. He provides a vivid account of the gunboat action:

... Our attack with about 27 batteaux armed with 24, 12 and 6 pound
cannon and a few howitzers became very fierce; and, after getting to close
quarters, very animated ... Close to one o'clock in the afternoon, this naval
battle began to get very serious. Lieut Dufais came very near perishing with
all his men; for a cannon ball from the enemy's guns going through his
powder magazine, it blew up. He kept at a long distance to the right. The
sergeant, who served the cannon, on my bateau, was the first one who saw
the explosion, and called my attention to it as I was taking aim with my
cannon. At first, I could not tell what men were on board; but directly, a
chest went up into the air, and after the smoke had cleared away, I
recognized the men by the cords around their hats. Dufais's bateau came
back burning; and I hurried toward it to save, if possible, the Lieutenant and
his men, for as additional misfortune, the bateau was full of water. All who
could, jumped on board my bateau, which was being thus overloaded, came
near sinking. At this moment, a Lieutenant of artillery by the name of Smith,
came with his bateau to the rescue, and took on board the Lieutenant,
Bombadier, Engell, and one cannonier and nine sailors remained with me;
and these, added to my own force of 10 cannoniers, 1 drummer, 1 Sergeant,
1 boy and 10 sailors—in all 48 persons, came near upsetting my little boat,
which was so overloaded that it could hardly move. In what a predicament
was I? Every moment I was in danger of drowning with all on board, and in
the company, too, of those I had just rescued and who had been already half
lost.\textsuperscript{46}

During that same incident one well-aimed shot from an American vessel killed
outright one of the men serving the single cannon on Dufais' vessel. Once the shot passed
through the cannoneer it tore off the leg of another seaman before driving through the
bulwark of the vessel.

To the storm of shot that fell upon the American fleet from the British gunboats was
added musketry from two detachments of Indians and 100 Canadians under the commands
of Captain Christopher Carleton (nephew of General Carleton) and Colonel Simon Fraser.
Both groups landed their canoes on Valcour Island and the New York shoreline to the west
of the Americans. Although they continued to fire upon the Americans throughout the day,
their fire proved more annoying than effective.\textsuperscript{47}

Very late in the afternoon, Lieutenant John Schank finally managed to bring the
\textit{Inflexible} up before the American line. The ship-rigged vessel fired broadside after
broadside into the American fleet. According to one historian, the sheer power of
\textit{Inflexible}'s eighteen 12-pounders all but silenced the American cannons.\textsuperscript{48}

The British gunboats maintained their fire until dusk, or just about five o'clock when
Pringle made the signal for recall. The vessels pulled back out of range and anchored in a
confining semicircle to the south of the Americans. About one hour later the gondola
\textit{Philadelphia}, "hulled in so many Places” sank to the bottom.\textsuperscript{49}

At the end of the battle the \textit{Congress} had been hulled twelve times, with seven of
these shot hitting below the waterline. The mainmast was damaged in two places and the
yard in one.30 The situation was more serious on the Washington. Waterbury reported that the galley’s first Lieutenant was dead and Captain Thatcher and his master were wounded. The newly-built galley had been hulled at least as many times as the Congress, the mainmast was “Shot thro,” and the vessel was taking on water. In the New York, all of the officers had been killed except for Captain Lee. Arnold later estimated that 60 Americans had been killed or wounded during the day. Without doubt, Dr. McCrea had had his hands full on the Enterprise. Jahiel Stewart wrote:

I believe we had a great many killed and I was aboard of the hospitable sloop and they brought the wounded aboard of us the Doctors Cut of great many legs and arm and See Seven men threw overboard that died with their wounds while I was aboard.31

The British also suffered a number of casualties during the day. Specifically, Lieutenant Enys mentions that one midshipman (presumably on the Thunderer) was wounded, and that “5 or 6 Men and a Drummer Killed and one wounded on board a Gun Boat.”32 Several British soldiers were also lost to drowning as an indirect result of the American fire directed at the gunboats. Digby noted in his journal that the British loss was very close to that of the Americans: “about 60 men killed and wounded.”33 Rather than relying on a hospital vessel, the British transported the wounded back to their northern lines where they had established a field hospital. J. F. Wasmus, a German company surgeon stationed at Point au Fer related that on 12 October “A batteau arrived on which there were an Engl. officer, 8 Engl. soldiers and one Hesse-Hanau Artilleryman . . . one arm and 2 legs were amputated.”34

The American casualty rate of approximately ten percent was probably due almost entirely to fire from the British gunboats. Hadden noted that at the beginning of the battle the gunboats were supplied with “80 Rounds of Ammunition, 30 of which were Case Shot,
& could not be used with effect."55 Just before their recall late that afternoon, each vessel needed to be resupplied with ammunition.56 It seems probable, therefore, that the British gunboats alone may have fired well over 1,000 rounds of solid shot.

The Americans for their part had also fired a large number of shot during the day. Arnold wrote that nearly three-fourths of the ammunition had been expended when the firing ceased that evening.57 He admitted to Gates that the battle "suffered much for want of Seamen & Gunners." Evidently, he felt that the cannons could have been more accurately served since Arnold was "obliged . . . to Point Most of the Guns on board the Congress," which he felt he did with "good execution." Hadden argued that the American fire was skillfully aimed since most of the British vessels had to be "well mended and patched up with boards and stoppers."58

At dusk, just after Pringle ordered his fleet to form in a semicircle south of the channel between Valcour Island and the mainland, Carleton ordered the Royal Savage to be set on fire. The task was soon carried out by the Native Americans stationed on the island. Shortly afterwards, the powder supply on board the schooner blew up and carried away the upper part of the vessel. The fire continued to burn all night before the lower hull finally settled into the water off the island. Hadden considered "this [act] an unnecessary measure as she might at a more leisure moment have been got off, or at all events her stores saved, and in her present position no use cou'd be made of her by the Enemy."59

At seven o'clock, Arnold summoned all his officers onboard the Congress for a Council of War: there would be no surrender; they would make their escape during the night. Remarkably, the Americans did just that. There has been much speculation as to whether the American retreat was to the north or to the south, it is apparent that the American vessels slipped south, between the British fleet and the New York shoreline.60
With Trumbull in the lead, and a hooded lantern in the stern of each vessel showing to the next behind, the fleet carefully passed single file "with so much secrecy that we went through them entirely undiscovered." As one researcher has noted, the burning of the Royal Savage provided the perfect distraction.

When later asked to explain how the Americans were allowed to escape, Pringle merely said that his attempt to cut off their retreat was "frustrated by the extreme obscurity of the night." A year later he was charged with negligence by three of the other ship captains: John Schank, John Starke, and Edward Longcroft. In an "Open Letter to Captain Pringle" they charged that:

...the fleet was not brought to anchor as near as possible to the rebels, for the MARIA weighed and run out above half a mile from the place where you had anchored her before as did the Carleton still farther, and the inflexible was ordered by you to anchor near the Maria not to make the line too extensive. By which means the rear of the British line was at least one mile from the western shore, and the van beyond the small island at the southern end of Valcour. From this disposition, Sir, and not from the extreme obscurity of the night as you are pleased to say, the rebels escaped.

Hadden placed the blame for the American escape on Pringle's positioning of the gunboats. In support of his own detachment, and in praise of Benedict Arnold, he wrote that:

*The Enemy finding their force diminish'd and the rest so severely handled by little more than 1/3 the British Fleet determin'd to withdraw towards Crown Point, and passing thro. our Fleet about 10 o'clock at Night effected it undiscover'd; this, the former position of the Gun Boats wou'd probably have prevented. All the Enemies Vessels used Oars & on this occasion were muffled. This retreat did great honor to Gen'l Arnold who acted as Admiral to the Rebel Fleet on this occasion...*

Jahiel Stewart described his escape on the Enterprise that night:

we histed Sails & put our oars & maid all the Speed we Could and they did not give us one gun nor we Did not tier one at them... Did not Recive any
Damage to our Sloop nor men so we got threw the fleet verrey Safe but we Run a ground but got of without much Difficulte and we Sailed all Night and Roade so we thought we was Safe.66

According to the British reports, some part of the American fleet was still visible at daylight. The British attempted to pursue them but, as the wind “was hard against them,” they were forced back.67 Apparently, the Thunderer was in danger of sinking because “her lee boards [were] giving way which made heel so much as to let some water into her lower part.”68 The Inflexible was also having some unspecified difficulty with the weather and reported to be in danger as well. Later that evening, a British tender acting as a scout vessel spotted the fleet for the second time that day.69

Off Schuyler’s Island, about eight miles to the south of Valcour, some of the American fleet anchored to effect repairs. Arnold wrote to Gates that:

Most of the fleet is underway to Leeward and beating up. As soon as our leaks are stopp’d the whole fleet will make the utmost dispatch to Crown Point, where I beg you will send ammunition & your further orders for us. On the whole, I think we have had a fortunate escape.70

During the stop, the gondola Providence was found to be so badly damaged that a decision was made to remove the equipment and scuttle the vessel. The Trumbull, being in the lead, had sailed past Schuyler Island and on to Ligonier Point before anchoring to wait for the fleet, stop their own leaks, and secure the mainmast that had been split in two.71 The New Jersey “was taking water”72 and apparently ran aground. With the weight of the water in the vessel it could not be moved.73 According to Enys, a party of Canadians following the British found and took the vessel on the 13th.73 For an unspecified reason, the crew of the cutter Lee also abandoned their vessel on the New York shoreline allowing the British another easy capture.74
Unfortunately for the Americans, the wind changed directions on the afternoon of 12 October and blew directly from the south. With the wind now in their teeth, the ten remaining vessels, suffering from varying degrees of damage, became widely separated during the next twenty-four period. The *Trumbull, Revenge, Enterprise,* and *New York* were well ahead of the *Washington, Congress,* and the four remaining gondolas when the British ships were spotted to the north.

On the morning of 13 October, Henry Sewall, thirty miles away at Fort Ticonderoga, noted in his diary that he "Heard a cannonading down the lake." Most likely, these were the three guns fired twice in succession at Crown Point to signal the enemy's advance. About that same time, Pringle later wrote: "I again saw 11 sail of their fleet making off to Crown Point, who, after a cahce of seven hours, I came up with in the *Maria,* having the *Carleton* and *Inflexible* a small distance astern; the rest of the fleet almost out of sight." When it became clear that the British were gaining on the Americans, Arnold sent an order to *Enterprise* endeavoring the hospital sloop to make all speed to Ticonderoga. This was accomplished by ordering three men to each oar so that headway could be made against the wind.

At nine o'clock, Arnold instructed Wigglesworth "to lie by for the fleet," which the *Trumbull* did by "stretching across the lake." Apparently, the two other vessels with Wigglesworth were too far away from Arnold to regroup. At this point, Wigglesworth "thought it [his] duty to make sail and endeavor to save the Trumbull galley if possible" by double-manning the oars, and throwing the ballast overboard to escape the British fleet.

When the British closed within range they began to fire on the *Washington and Congress.* "My vessel was so torn to pieces that it was almost impossible to keep her above water," Waterbury later explained to Gates. "It began to grow calm and I knew
the next wind would be north and the enemy could spread so much sail and our vessel was so much torn and dull I thought best to put my wounded men into the boats and send them to Ticonderoga and row my galley ashore and blow her up."\textsuperscript{83} As Inflexible gained on him, Waterbury sent an officer to Arnold's flagship for permission to destroy Washington. Arnold refused and ordered Waterbury "to push forward to Split Rock, where he would draw the fleet in a line, and engage them again."\textsuperscript{84} When Waterbury reached Split Rock, he found the other vessels still fleeing "and [Washington] left . . . in the rear to fall into the enemy's hands."\textsuperscript{85}

Wigglesworth recorded that the first shots of the second engagement occurred at ten o'clock.\textsuperscript{86} Pringle noted that real battle, however, "began at twelve o'clock, and lasted two hours."\textsuperscript{87} The three British vessels surrounded the Washington about five miles below Split Rock. According to Waterbury, the Washington "was so Shatored She Was Not able to Bare fiering," he was forced to surrender without firing one gun.\textsuperscript{88}

It is evident from a British prisoner list that most of Philadelphia's crew transferred to the Washington after the loss their vessel at Valcour Island.\textsuperscript{89} The journal of Jeduthan Baldwin records that just prior to Waterbury's surrender, Captain Rue (of the gondola Philadelphia) and sixteen men of his men escaped and came in through the woods to Fort Ticonderoga.\textsuperscript{90} Rue and his followers were able to leave the galley in a bateau and flee to shore unmolested by the British.

Congress, following the eastern shore, now faced the full brunt of the large enemy warships. The vessel's rigging and sails were soon torn to pieces; the first lieutenant and three others killed by grapeshot. The battle settled into a running engagement during which the vessels sailed approximately nine miles from Split Rock to present-day Panton, Vermont.
To keep his ships from falling into British hands, Arnold steered for tiny Ferris Bay, just ten miles north of Crown Point on the eastern shore of the lake, and ran his flagship and the four remaining gondolas into the bay until they were aground. With flags still flying in defiance of his British pursuers, he ordered the cannon dumped overboard and his vessels destroyed.\(^9\) It is believed that Arnold intentionally choose Ferris Bay because of his familiarity with the anchorage. Arnold had stopped there on 31 August and knew both the area and the landowner, Squire Ferris.\(^9\)

The *Congress*’ sergeant of the marines [Cushing] later told General James Wilkinson that:

[Arnold] set [the ships] on fire, but ordered the colours not be struck, and as they grounded, the marines were directed to jump overboard, with their arms and accoutrements, to ascend a bank about twenty-five feet elevation, and form a line for the defense of their vessels and flags against the enemy, Arnold being the last man who debarked. The enemy did not venture into the cove, but kept up a distant cannonade until our vessels were burnt to the water's edge... \(^9\)

Dr. Knox's letter indicated that “Mr. Arnold run five ships ashore, and remained on the beach till he set fire to them, burning the wounded and sick in them.”\(^9\) Cohn provides a well-defended argument that contends that Arnold feared spending the time to remove the dead from the vessels and that it was these that Knox saw and believed to have been wounded rather than already killed. Arnold had just left a battle and had little time or reason to drop the bodies overboard as Jahiel Stewart earlier observed on the hospital sloop. Three weeks later, when the British soldiers returned to Canada, Lieutenant Digby visited the scene of the second battle. The soldiers with him referred to the area as “Destruction Bay” in reference to the American defeat and the burned vessels.\(^9\) Several American dead were still floating on the water and promptly buried by the British soldiers.
The remaining sailors of Arnold's flotilla, 200 in number—only 46 of the Congress out of a crew of 73—started on a bridle path for Crown Point, ten miles away. They escaped an Indian ambush and reached the undermanned fort, finding what was left of their fleet, Trumbull, Enterprise, Revenge, New York, and the Liberty, which had just recently sailed down from Ticonderoga with supplies.96

Once the Americans reached Crown Point, Arnold quickly convinced Colonel Thomas Hartley that it would be impossible to hold the fort against the advancing British. Hartley and his garrison of the 6th Pennsylvania Regiment, together with Arnold's survivors, burned all the buildings and retreated to Ticonderoga.

Jeduthan Baldwin, the engineer at Ticonderoga, described the hasty retreat from Crown Point on 13 October:

About 3 0'clock our Schooner came in Sight, Soon after a sloop & then a nother Schooner, & then the Row Galley & after a gundalow, & they were followed by the Inhabitants from Crown Point & from Panton, they were followed by Col. Hartly's Regt., part by water & part by land, bringing all the Horses, Cattle & So forth. . . . all the buildings at & about Crown point were burnt by our people. Some of the Inhabitants ran Some 5, Some 7 or 8 Miles in the woods with women & Children in the greatest distress, leaving all there Housel stough [household stuff], Cloathing &c to the enemy, or to flames. a Mellancholly Sigt that was Seen at Ticonderoga, but we may Expect a more Mellancholly Seen to morrow or Soon. God prepair us for it & grant us a Compleat Victory over our Enemy.97

The next morning Carleton's soldiers took possession of Crown Point and Windmill Point (modern day Chimney Point) on the opposite side of the lake. Pringle sailed the fleet to the southern end of Lake Champlain and anchored within three miles of Fort Ticonderoga, where to the surprise of the Americans, several British rowboats came up under a flag of truce and delivered up General Waterbury and the entire crew of the Washington and the remaining eighteen of Philadelphia's.
Colonel Trumbull, one of Arnold's senior officers, described the British treatment of the captured Americans:

_When the action was over, Carleton gave orders to the surgeons of his own troops to treat the wounded prisoners with the same care as they did his own men. He then ordered that all the prisoners should be immediately brought aboard his ship, where he first treated them to a drink of grog, and then spoke kindly to them, praised the bravery of their conduct, regretted that it had not been displayed in the service of their lawful Sovereign, and offered to send them home._

Carleton was true to his word. According to William Briggs, one of Washington's captured crewmen, "the wounded [were] taken great care of, all discharged upon their parole, and guarded thro' the woods by some soldiers, lest they shall fall in with the Indians, who were there in great numbers..." Apparently, the generous treatment on the part of Carleton "made such an impression on the captives, and they were so loud in their praise of him, that it was thought dangerous to allow them to mingle with the others." Horatio Gates immediately ordered them sent home.

On 14 October, Carleton wrote the British secretary of state for the American colonies, Lord George Germain, that "the season is so far advanced that I cannot yet pretend to inform your Lordship whether any thing further can be done this year." Lieutenant Digby's Journal entry for the same day explains that Carleton had to contend with other logistical problems beyond that of the lateness of the season:

_Their force then at Ticonderoga, about 14 miles, was said to be 20,000, and it was thought from the lateness of the season and many other reasons, but this, the one most material, that it would be but a vain attempt to besiege it that year, we having but a small part of the army on that side of the lake; viz, the first Brigade and our Advanced corps. The remainder of the army not having battows ready to remove from St Johns, and Isle-aux-Noix, from whence it was thought by the advice of the engineers who were consulted respecting works, &c., that the enemy must return to winter in Canada, they not being then able to throw up lines for above 1300 men, and even then, we_
should have no place to cover our troops from the very severe cold shortly expected to set in.\textsuperscript{102}

The Americans at Fort Ticonderoga and Mount Independence were fully expecting a British attack, however, and had begun to increase fortifications in anticipation. General Philip Schuyler called up more militia to strengthen the 9,000-10,000 man force already at Ticonderoga. Redoubts or gun batteries were built on both sides of the lake with a 20-gun battery on Mount Independence and another four-gun battery higher on the hill. A log boom was placed across the lake to prevent the advance of the British warships past the Jersey Redoubt.\textsuperscript{103} Construction was also begun on a floating foot bridge which would connect Fort Ticonderoga to Mount Independence.

By 20 October Carleton had made the decision to return to Canada. Within two days, he proposed building another ship the size of \textit{Inflexible} for a renewed naval campaign in 1777. On 24 October, General Burgoyne returned to Canada aboard the captured galley \textit{Washington}. His advance troops who had been ordered down from Point au Fer on 14 October remained at Crown Point and made one probe toward Ticonderoga. Three to five of the British gunboats followed by thirteen to fifteen other vessels appeared at Three Mile Point where a landing was made by the British troops. When one gunboat appeared within range, the galley \textit{Trumbull} anchored safely behind the log boom opened fire. One shot hit the gunboat, killing one man and wounding another. At sunset the British retreated to Crown Point. Colonel Trumbull correctly surmised that the "appearance [at Fort Ticonderoga and Mount Independence] was indeed formidable, and the season so far advanced . . . that the enemy withdrew without making any attack."\textsuperscript{104}

By 3 November, the first scouting reports reached Ticonderoga that the British had departed from Crown Point. The militia at Ticonderoga was soon dismissed and most of
the regular troops later sailed south on Lake George and the Hudson River with General Gates to join Washington's army that had retreated to New Jersey in the face of General Howe. Colonel Anthony Wayne became commandant of Fort Ticonderoga and Mount Independence for the winter. Wayne also supervised the remnants of Arnold's fleet which now included the galley Gates which was completed after the battle.

In early November, Maria Carleton joined her husband in Montreal. She carried with her a new honor for the Governor General of Canada, Carleton was now Sir Guy Carleton. In June, the British cabinet had recommended to George III that, for his successful defense of Quebec, Carleton be made a Knight of the Bath.\textsuperscript{105}

The praise for Arnold's courage and dedication during the Valcour engagement came from many quarters, including the British for his skill and boldness under fire. Gates noted the "gallant behavior and steady good conduct of that excellent officer" in a letter to Governor Trumbull of Connecticut, ten days after the battle.\textsuperscript{106} The praise was not universal, however, for Arnold was also blamed for losing the fleet: Richard Henry Lee of the Continental Congress, wrote Thomas Jefferson criticizing Arnold as a man "fiery, hot, and impetuous, but without discretion," who failed to obtain proper intelligence and retire when faced with a superior force.\textsuperscript{107}

The noted naval historian Alfred Thayer Mahan agreed with Arnold's decision to remain in the channel believing that "A retreat before square-rigged sailing vessels having a fair wind, by a heterogeneous force like [the Americans], of unequal speeds and batteries, could only result in disaster." Mahan thought it better to fight from a "steady, well-ordered position, developing the utmost fire." He further stated that "the correctness of Arnold's decision not to chance a retreat was shown in the [results of his] retreat of two days later," whereby the fleet was essentially separated and lost.\textsuperscript{108} Other naval historians have
expressed the same opinion believing "that a retreat would have been demoralizing and disastrous."\textsuperscript{109}

Benedict Arnold, though rash and reckless, had bought valuable time—time for raising the regiments that in 1777 would meet and overwhelm General John Burgoyne's invading armies at Saratoga. The naval success had been enough to allow Carleton to call off his invasion in 1776. The real value of the small American navy on Lake Champlain lay in its mere existence, which delayed the British advance until it was too late.

Arthur St. Clair eloquently summed up the events on Lake Champlain in 1776 when he wrote:

*We have this satisfaction that our People tho' unsuccessful behaved with the greatest Intrepidity in general and he that looks for uninterrupted Good Fortune will certainly reckon without his Host. . . . We shall yet see an End of these troublesome Scenes, and tell our Stories over to our Children With the Pleasure that old Men have in reflecting upon the Scenes of their more vigorous life.*\textsuperscript{110}
Notes: Chapter VI


4. Ibid.


7. James Arnold, captain of the Congress, has sometimes been confused with Benedict Arnold. Previously, James Arnold served as a company commander in Colonel Joshua Wingate's New Hampshire regiment. At least 13 men from Arnold's company were drafted to man the Philadelphia. The Company's 1st Lieutenant, Joshua Grant, was given command of Connecticut.


9. Ibid.


13. Ibid.


27. Ibid., 148.


29. Snyder, "With Benedict Arnold at Valcour Island.” 198.


33. Ibid.


35. Rogers, Hadden’s Journal, 23.


37. According to E.S. Maclay, Lieutenant Dacres of the Carleton was the father of James R. Dacres, the commander of the Guerrière when captured by the Constitution in 1812. See A History of the United States Navy from 1775 to 1894, 2 vols. (New York: D. Appleton and Company, 1895), 1:53.


41. Ibid., 165-166.

42. Maguire, “Dr. Robert Knox's Account,” 144.
43. Ibid., 142-143.


47. Arnold to Gates, 12 October 1776, in Clark and Morgan, Naval Documents 6: 1235; Bellico, Sails and Steam, 153.


49. Arnold to Gates, 12 October 1776, in Clark and Morgan, Naval Documents, 6: 1235; Jeduthan Baldwin notes in his journal that "a Gundalow Stript & Sunk by our men in the Bay of Bellcour," see Baldwin Journal, 80-81; "[W]e lost 3 vessels, one we sank after taking out all on board, a schooner run aground & was burnt, another went off to the Eastward & has not been seen since . . ." see Jeduthan Baldwin, "The Baldwin Letters," American Monthly Magazine, 6 (1895): 193.

50. Arnold to Gates, 12 October 1776, in Clark and Morgan, Naval Documents, 6: 1235.


55. Rogers, Hadden's Journal, 23.

56. Ibid., 24.

57. Arnold to Gates, 12 October 1776, in Clark and Morgan, Naval Documents 6: 1235.

58. Stone, Pausch's Journal, 82-85.


72. “Att light we clos't to the Four Brothers and the schooner, sloop and 2 gallies in sight, the wind southerly; and we beat up and came to, and anchor[ed] under the western shore and stoped our leaks and refreshed ourselves, and lay there till half after one at night, when 2 of the gundeloes came along and we hailed them; and they told us that one of our gundeloes was taking water [New Jersey] and the other sunk [Providence]. Whereupon we gott underway, and beat down the rest of the night,” see Snyder, “With Benedict Arnold at Valcour Island,” 198.


74. “The first [11 October 1776] we lost 3 vessels, one we sank after taking out all on board, a schooner run aground & was burnt, another went off to the Eastward & has not been seen since ...” see Baldwin, “The Baldwin Letters,” 193; Persifer Frazer notes correctly that the British took two vessels (New Jersey and Lee), see “Letters from Ticonderoga, 1776,” Bulletin of the Fort Ticonderoga Museum 10 (1962) 6: 453.


80. Ibid.


82. Waterbury to Gates, 26 February 1777, in Clark and Morgan, Naval Documents 2: 1224-1295.

83. Ibid.

84. Waterbury to Gates, 24 October 1776, in Force, American Archives, 2: 1224.

85. Ibid.

86. Force, American Archives, 2: 1069.


88. Waterbury to Gates, 26 February 1776, in Clark and Morgan, Naval Documents, 7: 1295.

89. Haldimand Papers, Special Collections, John C. Pace Library, University of West Florida, Pensacola, Florida.

90. Baldwin, Baldwin’s Journal, 81.


92. “Dear General I intended sending the foregoing from Button Mould Bay, but waited for a Boat that I had Sent to this place... yesterday at Noon we left Button Mould Bay, & arived here last night (Button Mould Bay was the name formerly applied to Ferris Bay.)” see Arnold to Gates, 2 September 1776, in Clark and Morgan, Naval Documents 6: 654.

94. Knox's report of this incidence is found in a fragment of a letter presumed to be an English correspondent of Knox's. The letter was written on 29 October 1776 from Crown Point, New York. Personal possession of J. Robert Maguire.


CHAPTER VII

THE SALVAGE OF THE PHILADELPHIA

The Philadelphia was raised from the bottom of Lake Champlain on 9 August 1935. The recovery of this historic vessel by Lorenzo F. Hagglund was considered a remarkable feat for the time and both Hagglund and his partner, J. Ruppert Schalk, received high praise from the local community. The festive atmosphere that surrounded the project led the Burlington Daily News to print a special historical tabloid to satisfy the eager public's curiosity about the vessel and its salvors.1 A descendent of Benedict Arnold was even enlisted to provide a solemn commentary on the exploits of his tarnished ancestor in the Champlain Valley. For a brief time, the project received national attention with the release of newsreel footage.

The recovery of the Philadelphia was, however, purely a salvage operation; the science of nautical archaeology had not yet developed. Although the experienced salvagers carefully raised the vessel without apparent damage, no accurate site plan was made. The hull was meticulously searched for artifacts, but only a very limited effort was made to search the area surrounding the wreck for artifacts that may have scattered when the vessel sank. The ultimate fate of Philadelphia and its associated artifacts, however, has been far better than many other historic wrecks raised from Lake Champlain in later years.

The idea of raising Philadelphia began in 1917 when Lorenzo Hagglund was sent to Plattsburg, New York, for overseas military training. Only three months short of graduation from Lehigh University, the 23-year-old New York state native had immediately enlisted in military service when America entered World War I in 1917.2 An avid history buff, Hagglund became intrigued with the local accounts of sunken Revolutionary War vessels at nearby Valcour Island. Undoubtedly, he heard stories from the local residents
who could still remember seeing the charred hull of the *Royal Savage* during periods of low water.\(^3\) When Hagglund's officers-training course ended, he left the Champlain Valley for service in Europe, but with the hope that he would someday return and search for the wrecks.\(^4\)

After the war ended, Hagglund was employed by Merritt, Chapman, and Scott, a New York marine salvage corporation.\(^5\) While in their employ, he learned how to dive and train other divers. Later, he became the operations manager for the company's subsidiary, the Underwater Cutting Company, for which he perfected an underwater cutting torch.

In 1932, the experienced marine engineer returned to Plattsburg for a short family vacation. Hagglund spent most of that vacation trying to find the wreck of the *Royal Savage*. At first, he tried to learn the position from local residents, but when that failed he relied on the more traditional divers' method of using circle searches.\(^6\) Using this technique, he found cannon balls, bar shot, and grapeshot: a small portion of the hundreds that had been fired on 11 October 1776 at the Battle of Valcour Island. On the final day of his vacation, Hagglund discovered the wreck approximately 150 feet offshore from the southwestern tip of Valcour Island in 20 feet of water.

Prior to his search, Hagglund attempted to interest governmental agencies in the salvage of Arnold's fleet in Lake Champlain or the British vessels scuttled at Yorktown in 1781.\(^7\) With the discovery of the *Royal Savage*, he made one more attempt but met with no success. Undeterred, Hagglund returned to Valcour Island in 1934 to raise the remains of the vessel with his own resources.

Before lifting the hull, Hagglund removed by hand all of the mud that had accumulated in the vessel. Each bucketful was washed, including the mud that lay to some distance on each side of the wreck, for associated artifacts. With this method, he found
several pewter spoons (one marked "1776"), grapeshot, cannon balls, and the fragmented remains of an iron pot that he attributed to the explosion of the vessel's powder stores shortly after British General Guy Carleton ordered the vessel burned.

With the aid of 22 empty tar drums, Hagglund raised the surviving lower portion of the hull to surface. The hull remains were disassembled and tagged in anticipation that they could later be reassembled and appropriately displayed. Unfortunately, the timbers remained virtually untouched and untreated for the next fifty years while lying in storage in various garages in New York state. Recently, Lorenzo Hagglund’s son, Hudson, sold the remaining pieces of Royal Savage to a small, private Pennsylvania museum.

After this first success at Valcour Island, Hagglund decided to search for the Philadelphia. During the fall of 1934 he began exploring the historical record for clues to the position of the gondola. A few months later, Hagglund began to collaborate with J. Ruppert Schalk of Rhinebeck, New York, a nephew and heir to Colonel Jacob Ruppert, New York brewery magnate and owner of the New York Yankees. After Hagglund raised the Royal Savage, Schalk, a Lake Champlain enthusiast, became interested in the salvage operation and offered to aid the project. Throughout the winter the two men studied the written histories of the battle and the later events of 1776 and 1777 in an attempt to disprove local rumor that the British had raised the gondola after the battle. Encouraged by their research, Schalk agreed to provide the funding and the use of his yacht Linwood for the project. The pair assembled a salvage team and went to Valcour Island in July of 1935 to search for the Philadelphia.

In company with Swedish-born William Lilja, a veteran diver of 23 years experience, the crew began searching the channel between Valcour Island and the New York shore with grapnel irons\(^1\) (figure 7.1) In much the same manner as modern nautical
Figure 7.1. *Philadelphia*'s 1935 salvage team: from left to right, J. Ruppert Schalk, William Lilja, and Lorenzo Hagglund. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
archaeologists conduct underwater surveys, Hagglund relied on triangulation to mark the various underwater sites. By placing a series of stakes along the New York shoreline and Valcour Island he insured that all areas of the channel could be systematically searched in an efficient manner. Once an object was detected by the grapnel hook, Hagglund marked the site with a buoy and triangulated its position from the stakes with a range finder. Over the next two weeks the salvage team located a variety of objects including: stumps, a discarded metal rowboat, anchors, and trees. On 1 August, after a series of these disappointing finds, Hagglund replaced the grapnel hooks with a chain sweep. Late that afternoon, the sweep hung up on an object in midchannel bringing the slowly moving Linwood to a dead stop. The next morning Lilja descended in his hard-hat to find the obstruction. When Lilja returned to the surface he informed the crew of the project’s diving scow Old Eli that he had found a “fish house with a stove,” Hagglund’s predetermined code for a gunboat. When it was later reported that the vessel mounted three guns and had a single mast still standing, Hagglund was positive they had found Philadelphia. Lilja made a quick sketch of the wreck showing the general shape of the vessel and the position of the three guns (figure 7.2). After discussing the wreck and the labor that would be involved in raising it, Hagglund estimated that it would take “three day’s hard work to get the guns and a week to secure the hull.”

Philadelphia was found sitting upright on the bottom, fifty-seven feet below the lake’s surface approximately 300 yards south of Valcour Island. Hagglund described the appearance of the sunken vessel in A Page From the Past: The Story of the Continental Gondola “Philadelphia.” Based on a series of dives, Hagglund provides a tour of the sunken vessel beginning at the stern:

*Here there is a brown shadow in front of us. We advance toward it and it takes shape. It is the hull of a vessel. Before us on the bottom, partly buried*
in the mud, lies the rudder. The tiller is gone, probably drifted away when she sank. Her stern is sharp and as we walk along her side, her gunwale is under our armpits . . . 17

In testimony to the excellent preservation that the cold, dark water of Lake Champlain imparts to its shipwrecks, the Philadelphia was found in a remarkable state of completeness. Thole pins for use with the vessel's long ash sweeps were still socketed in place in the port and starboard caprails along with several three-foot high stanchions that had been used to support the gondola's awning. In the mud alongside the hull lay the remains of the fascines that the Americans had cut near Windmill Point in September 1776 where two men had been killed and seven wounded during a British ambush.18 Originally, the bundles of saplings had been secured to the gondola's bulwarks in an attempt to protect the 44-man crew from sniper fire.

Surprisingly, Philadelphia's lower mast was still standing upright, reaching up to within ten feet of the surface. Two spars, the 27-foot-long main yard and the 20-foot-long top sail yard, lay athwartship over the vessel's rails. They most likely had dropped straight down on the hull when their securing halyards and lines eventually deteriorated.

On the starboard side of the vessel, near the bow and “just above the mud line there [was] a hole in her side through the outer planking, a shattered rib and the inner planking.”19 This was the first of the three areas on the hull damaged by British cannon fire during the seven-hour battle on 11 October 1776. On the port side, a few feet aft of the stem, was evidence that a second British shot had bored through both the outer and inner 3-inch, white oak planking. Another four feet further down was the third damaged area. The cause of the damage was unmistakable, for a 24-pound cannon ball was still lodged in the planking.
The *Philadelphia*'s starboard bower anchor was resting upright in the mud just under its cathead. Although water-worn, the two-piece oak stock was still pinned together at the upper portion of the shank. Just forward of the cathead was a lead-lined hawsehole with the wear of the anchor rope clearly visible. On the port side, the vessel's second bower anchor rested just under the second cathead.

At the center of the bow, the muzzle of the 12-pounder bow gun projected over the stem. Much to the divers' surprise, one end of a double-headed bar shot was found protruding from the end of the barrel. Hagglund correctly surmised that when the *Philadelphia* sank bow first, "the bar shot slid forward and half out of the muzzle, where, as one end dropped, its own leverage clamped it in position."

After inspecting the outside of the hull, the divers boarded the vessel over the stern. On both the port and starboard sides of the stern deck were wooden lockers that had served as both benches and storage compartments aboard the cramped vessel. Through time, the sides had broken and fallen inward and were covered with an inch of mud. Among the few visible remains were an unbroken china cup and what Hagglund identified as a medicine bottle with its contents intact. Seemingly out of place on this hurriedly-built lake vessel, but true to naval tradition, were the remains of a broken sand glass. Other long-lost artifacts scattered about in the stern included leather shoes, shoe buckles, and a wooden gauge calibrated for both nine and twelve-pound shot.

In the aft cockpit, thirteen feet forward of the stern knee, an iron swivel gun and its broken yoke were found resting on the ceiling. Later examination showed that this swivel gun, shaped like a small cannon, fired a 3/4-pound ball. The barrel was marked with the British broad arrow suggesting that it was a captured piece, or one taken out of stores at Fort Ticonderoga. In total, places for eight swivel guns had been fixed for use in the
caprail. The other swivel guns were probably removed by the crew just before the vessel sank.  

On the midship deck, an area measuring approximately 12 feet by 14 feet, two 9-pounder cannons complete with their wooden carriages lay overturned. The starboard gun was out of position and jammed against the carriage of the port 9-pounder. Hagglund speculated that the position of the guns was not attributable to the sinking, but evidence that Philadelphia's crew had attempted to off-load the cannons prior to the vessels sinking. Alternately, he suggested that their placement may have resulted from an unsuccessful attempt by the British to salvage the guns after the battle. Typical of guns cast nearly a century before the start of the Revolution, “these guns [were] of cast iron with trunnions low and cast of a piece with the gun.” Just forward of the touch hole, Hagglund stated that the letters “HP” were clearly visible on the barrels. The wooden gun carriages were fashioned from oak and ran on four solid wooden wheels or trucks. The four trucks of one gun were still held in place by the linch pins on the wooden axles, but two wheels from the other gun had been broken off and were lost. Although the breech ropes were missing, the tackle blocks necessary for firing and reloading operations remained in place.

Just aft of the port waist gun, a pile of fifty-five 9-pound iron round shot was stacked between two of the gunboat's knees. In the same area, the divers located an iron shot gauge and a crumpled lead sheet that probably served as an apron for one of the guns. Between the two knees just forward of the port gun was a brick hearth. Still in place, a long-handled iron frying pan “half eaten” away by corrosion rested on the iron grating of the fireplace. Nearby, a cast iron cooking kettle was found in which Hagglund recovered a single bone.
In the forward cockpit a variety of artifacts were found including a pot containing pitch and a horse hair brush, a musket stock, single and double blocks with sheaves and pins, axes, spades, an adze, a wooden canteen, a leather bullet pouch, bayonets, musket balls, and small tools. Underneath the foredeck was the cook's supply of wood for the fireplace and one of the craft's twelve ash sweeps. Later, when the silt was removed from the boat, the salvagers found one of the fatal projectiles: a 24-pound shot marked with the British broad arrow.

Fastened along each side of the bow was a curved wooden shot garland for holding round shot in convenient position to the 12-pounder bow gun. Both garlands were empty except for a single 12-pound shot resting in the starboard rack. Scattered on the deck were what Hagglund identified as pieces of a human arm bone, several teeth, and part of a skull. Lying with the bones were several uniform buttons, each bearing the number of the 26th British regiment.

*Salvage of the Hull*

Salvage of the vessel began with the retrieval of the visible artifacts and the three cannons (figure 7.3). Supplied with air by a crew of eager boy scouts drafted for pumping duty from nearby Camp Penn on Valcour Island, Lilja set about recovering the guns. Hagglund's empty tar drums, which had been used the year before to raise the timbers of the *Royal Savage*, were similarly employed to remove the cannons from the vessel. By rigging a boom onto the stern of the *Linwood*, the guns were lifted off the hull and eventually moved into shallower water near Seton's Wharf on Valcour Island.

At 9:30 on the morning of 9 August, Hagglund took final bearings on *Philadelphia*'s location from the lighthouse on Valcour Island; the road bridge over Salmon River; and Day's Point. At 12:30 p.m., the Cashman derrick-lighter No. 3, the tallest
floating derrick on the lake, arrived at the site in tow of the tug Osceola to lift the vessel to the surface. To raise Philadelphia, Lilja cut three holes through the mud underneath the hull with a high-pressure water jet. Next, three rope slings were placed under the hull, one at midships and the others at bow and stern. The free ends of the slings were brought to the surface and attached to a hook suspended from the derrick's steel cables. To prevent the boat from being crushed during the lift, Lilja placed three logs across the gunwales to act as spreaders between the rope slings. When tension was applied to the cables, and the Philadelphia began to take on a slight list, Lilja removed the mud from the bottom of the hull with the water jet and lessened the suction of the lake's bottom on the fragile hull. The hull pulled free of the sediments in which it had rested for 159 years, and the derrick crew continued to lift the vessel. To insure that the gondola would be raised parallel to the lighter, Lilja attached an additional line on the bow to prevent twisting. The derrick slowly raised the hull to the surface and at 2:30 that afternoon the tip of the mast broke the surface of the water to the cheers of the many onlookers.

When about six feet of the mast was exposed, Schalk halted the operation so that Frederick Greco, the youngest member of the salvage crew, could attach a replica Colonial flag to its tip. The mast proved so slippery that Greco was unable to climb it necessitating the extension of a long plank from the Linwood so that the 13-striped flag could be nailed to the mast.

Once the hull broke the surface, Stephen M. Driscoll, collector of Customs at St. Albans, Vermont, asked the crowd to join in a minute of silent prayer. The solemn ceremony was followed by three volleys to honor the fallen Revolutionary War heroes. Once the fanfare ended, and the salvagers were properly introduced to the crowd, the Philadelphia was towed to shallower water near Valcour Island.
The raising of the *Philadelphia* was performed in what was very like a holiday atmosphere, with a large crowd of onlookers in "36 craft ranging from rowboats to palatial cabin cruisers and yachts." So enthusiastic was the crowd, that a considerable traffic problem was created. One over-anxious visitor seeking a close up view even threw a sharp boathook into the starboard bulwark of the *Philadelphia*. Hagglund solved the problem created by enthusiastic spectators by towing the vessel into shallower water. The day's events were captured on both still and movie cameras. A short film made by Horace Eldred of the University of Vermont's Fleming Museum has been preserved and is regularly shown at the *Philadelphia* exhibit in National Museum of American History.

With the vessel safely raised and secured, a large piece of canvas was used to wrap the hull so that the water could be pumped out and the interior searched (figure 7.4). All of the mud from the vessel was sifted through screens. It was by this process, as well as by groping in the mud with their hands, that the salvagers recovered most of the artifacts. According to records kept at the Smithsonian Institution over 700 objects were found on the gondola.27

A local Vermont legend records that the salvagers also recovered several bottles of rum from the deck of the *Philadelphia*.28 The liquor was not, however, part of the original ration provided to the crew of the gondola, but the remains of a jettison of illegal cargo smuggled over from Canada during the American prohibition.

Once the gondola was raised the question of what to do with it arose. Schalk and Hagglund reportedly assembled the crew the night before the recovery to take a vote on the ultimate disposition of the gondola. According to J. W. Staley, the first man to go on board the sunken gondola in Valcour Bay following her discovery in 1935, it was unanimously decided that the vessel should go the Smithsonian Institution.29 For an
unspecifed reason, the *Philadelpho* did not make the trip to Washington, D.C. for another twenty-five years. Shortly after its recovery, Hagglund and Schalk offered the gondola to the state of Vermont provided that a suitable museum building could be found to contain it. Initially it was suggested that a stone building be built on the campus of the University of Vermont for the vessel's permanent housing. In anticipation of this possibility *Philadelpho* was placed in storage for the winter at Shelburne Harbor, Vermont.

In the spring of 1936, Hagglund received a letter from the University of Vermont stating that the necessary funds for the building could not be raised. In response, Hagglund declared that "The *Philadelpho* is part of American History. As such, it belongs to all the American people. Why not show it to them and let it tell its story." Therefore, on 3 July 1936, the *Philadelpho* became a floating tourist attraction. Hagglund placed the gondola on a barge and towed the temporary historical museum to Burlington, Vermont.

Between 1936 and 1941, the barge and its historic cargo toured Lake Champlain and the Hudson River Valley. Lengthy stopovers were made at several historic places that the *Philadelpho* had originally called including: Whitehall (modern day Skenesborough), Fort Ticonderoga, and Crown Point, New York. Hagglund also sent the *Philadelpho* through the Hudson River Valley, making stops as far south as Albany and Long Island, New York. In his words, the gondola was "sometimes towed by tug boats, sometimes by launches; and sometimes, when the wind blew adversely, towing the towboat; arriving at her ports of call when wind and weather permitted and sometimes arriving at unscheduled ports, and glad to make them." For the price of a fifty-cent admission ticket visitors were allowed to board the gunboat and examine Hagglund's collection of Revolutionary War artifacts including those raised from the *Royal Savage*. Hagglund's
commercial enterprise also included the sale of a historical pamphlet, souvenir postcards, and miniature, lead cast replica cannons.

Maritime historian and naval architect Howard Chapelle examined *Philadelphia* in 1939 and recommended that it be brought to the Smithsonian Institution for treatment and preservation. This plan was rejected in a memorandum from Frank Taylor, Curator, Division of Engineering, which stated that "War vessels are outside the scope of the [Smithsonian's] watercraft collection. It appears to be a relic for some public agency to acquire and preserve, but I understand that it would take about $40,000 to buy it and erect a suitable building for it at the site."³³

During World War II, Hagglund returned to military service, attaining the rank of Lieutenant Colonel, and he later served with the Red Cross office in Germany.³⁴ When Hagglund returned to the Champlain Valley in 1948, he offered the gondola to the U.S. Navy but was told that they were not interested in an "Army boat."³⁵

After the war Hagglund also attempted to locate other vessels from Arnold's fleet. Between 1951 and 1953 he made exploratory dives at Schuyler Island and Ligonier Point in search of the other lost gondolas.³⁶ Unsuccessful in finding *Providence*, Hagglund took his search to Arnold's Bay where four other gondolas were known to have been burned on 13 October 1776. These wrecks had been visible during periods of low water since at least 1849.³⁷ All four gondolas and the *Congress* had been visited numerous times by souvenir hunters in the intervening hundred years. According to local tradition "three of the gondolas were dragged out of the water with teams of horses during the nineteenth century and cut up for souvenirs."³⁸ Pieces left by the scavengers eventually rotted away, and one hull was reported to have burned on the shore of Arnold's Bay.
In 1952 Hagglund raised the last gondola from the bay. Reported to be nearly identical in construction to the Philadelphia, the remarkably well preserved vessel was towed to the New York shore. Two years later, the flat-bottomed hull was set alongside the remains of the early nineteenth-century steamer Vermont near Ausable Chasm, New York.\textsuperscript{39} Hagglund had used his empty oil drums to assist the Lake Champlain Associates, Inc. (LCA) in raising the 1809 steamer in 1953. The LCA laid plans to build an exhibition hall to display the new gondola, Royal Savage, Vermont, and Philadelphia, but efforts to secure the building funds through the sale of common stock were unsuccessful. The gondola was eventually abandoned in the woods and after years of neglect and vandalism by souvenir hunters the last remaining pieces were removed to make way for a new campground.\textsuperscript{40}

Concerned for the future of Philadelphia and its long term care, Hagglund again contacted the Smithsonian Institution in 1959.\textsuperscript{41} According to Hagglund, “local public agencies [had] shown no interest in it, although private entities, such as Shelburne Village, Shelburne, Vermont, and the Fort Ticonderoga Museum at Fort Ticonderoga, New York, had expressed interest in the gondola.” Hagglund added, that although, he had substantial offers to purchase the vessel, he preferred “to see it preserved under public auspices.”\textsuperscript{42}

Hagglund wrote a letter to Mr. Frank Taylor, Director of the Museum of History and Technology (MHT), offering to donate the vessel to the Smithsonian Institution. His only stipulation was that he be reimbursed for his expenses in recovering and preserving the boat. He believed that a figure of “30 to 50 thousand dollars would be fair,” but would leave it up to the United States National Museum to suggest the actual figure.\textsuperscript{43}

In response to Hagglund's letter, Taylor wrote a memo recommending that the MHT purchase the boat and exhibit the vessel in the Museum of History and Technology.\textsuperscript{44}
Fourteen years earlier, Howard Chapelle, the Institution's naval architecture expert, appraised the gondola and placed a value of $25,000 to $30,000 on the vessel and its associated artifacts. Taylor believed that the museum “would be justified in paying up to $40,000.” Accordingly, Hagglund was informed that the museum considered his figure a reasonable range for discussion.

The MHT's first step in acquiring the Philadelphia was to authenticate the vessel and its equipment. In addition to a thorough inventory of the objects, the museum wanted to make a careful investigation into the ownership of the boat.\textsuperscript{45} Hagglund assured the Smithsonian that none of the volunteers who assisted in raising the gunboat had a claim or was making a claim.\textsuperscript{46} And while the State of New York had once sent a truck to take the gunboat away, nothing came of the event. Around 1945, the New York State Attorney General's office investigated the State's claim to Philadelphia, but found that it had no apparent rights to the vessel.\textsuperscript{47}

Since neither Hagglund nor the MHT wanted the transaction to appear as an outright sale, an attorney representing the Smithsonian Institution thought it best to obtain a deed of gift. Simultaneously, the museum would offer to reimburse Hagglund for his expenses.\textsuperscript{48} In 1960, the MHT wrote a formal agreement of transfer between the two parties. Before the document could be signed and a final inventory of the objects made, Colonel Hagglund died.

A short time later, the MHT received a letter from Hagglund's attorney indicating that the city of Philadelphia was trying to raise money to purchase the gunboat from the Hagglund estate.\textsuperscript{49} According to Peter Schaufler, Philadelphia city planner, Hagglund had begun negotiations with the Philadelphia Museum some years before. The city was planning to feature the gunboat in a comprehensive exhibit of historic vessels in its newly renovated
downtown waterfront. The Philadelphia with its "unique significance and associated name would be directly affiliated with Independence Hall from which the philosophy of freedom underlying the Revolution was first declared." To this end, the City was offering $60,000 in municipal bonds for the Philadelphia.

Colonel Hagglund's will stipulated, however, that the Philadelphia would be given to the Smithsonian Institution provided his surviving heirs agreed. Ultimately, Gladys Hagglund contacted the MHT and indicated that she felt it was her husband's wish for Philadelphia to go to the Smithsonian. She deeded the vessel to the museum under the original terms her husband had negotiated, namely, $40,000 to be paid over a period of four years.

Once the Smithsonian's acquisition of the Philadelphia became public, a number of newspaper editorials and letters were written concerning its movement from New York to Washington, D.C. The village of Whitehall, New York (formerly Skenesborough), had attempted to purchase the vessel from Hagglund several years earlier. At the time of Whitehall's Bicentennial celebration in 1959, lengthy negotiations were conducted with Mr. Hagglund in an effort to have the gunboat returned to Whitehall as a permanent exhibit. Local representatives hoped to make the vessel "the keystone of a permanent display" stressing Whitehall's claim as the "Birthplace of the U.S. Navy." As it turned out, "what the Bicentennial committee desired and what Colonel Hagglund wanted were poles apart; the committee felt that it was an impossibility to meet the terms offered by the Colonel, and he in turn felt that he had an attraction which deserved better treatment that could be accorded him here."

After the transfer, residents of Whitehall unsuccessfully attempted to persuade the Smithsonian to leave the gondola in New York. The owner of the Fort Ticonderoga
Museum, John H. G. Pell, was equally unsuccessful in his request that the vessel be left in his museum's care.55

When it became evident that the Philadelphia would be taken from New York, Sen. Kenneth B. Keating and Rep. Carleton J. King wrote the Smithsonian and asked that the Philadelphia exhibit include “mention of the local interest in the Lake Champlain area in the restoration and display of important relics of the Revolution.” The MHT assured the two legislators the exhibit would not only do that, but would “emphasize to visitors from all sections of the country the importance of New York State in winning the Revolutionary War.”56

Whitehall's only consolation was that if it “couldn't have the boat, the Smithsonian was the next best place for it.”57 A local newspaper conceded that “In the long run, probably more people will learn through the Smithsonian exhibit that the first U.S. Fleet was built at Skeensborough, than would have had the Philadelphia been returned to Whitehall.”58 In a move to replace the then-unobtainable Philadelphia, Whitehallers recovered the Ticonderoga, one of U.S. Navy Captain Thomas Macdonough's warships at the Battle of Plattsburgh, War of 1812, from East Bay and moved it to the area south of Skanesborough Museum in 1958.59

Conservation of the Philadelphia

As reported in a local newspaper, Hagglund made little attempt towards preserving or restoring the vessel. It is was likely that “the 25 years above water took a far heavier toll than the 159 years on the bottom of the lake.”60 Treatment techniques for waterlogged wood were barely known in 1935 and still relatively new in 1960. The first attempts to preserve archaeological waterlogged wood began in Denmark in the middle of the 19th century.61 Wooden objects were boiled in a supersaturated solution of alum (potassium
aluminum sulphate, \( \text{K}_2\text{SO}_4 \)) for two hours. While not an ideal method, the technique was fairly successful if the treated wood was allowed to absorb as much linseed oil as possible following the treatment. Drawbacks to the treatments involved penetration problems and tendency for the interiors of wooden objects to collapse. Between 1900 and 1950 there were few technical improvements in the treatment of waterlogged wood.\(^{62}\) Later methods included impregnation with glycerol, embedment in paraffin wax, and treatment creosote and linseed oil. The creosote/linseed oil treatment was a very simple approach and only proved effective for ship timbers that were very sound to begin with. The Viking ship burial (AD 800) at Oseberg, Norway was successfully treated by this method following its recovery in 1904.\(^{63}\)

The development of polyethylene glycol (PEG) as a conservation process was the first reliable method for treating waterlogged wood that was simple to carry out.\(^{64}\) In practice, the excess water in wood is removed and the wood cells are “bulked” in one operation. Typically, the treatment involves cleaning to remove all dirt on the surface of the object and placing it in a ventilated vat where the temperature is gradually increased until, after a period of days to weeks, it has reached 60 degrees C (140 F). During this time the PEG percentage of the solution increases as the solvent (water or alcohol) evaporates or by adding increments of PEG. In the process, the wax slowly diffuses into the wood, displacing the water.

Although, first synthesized in 1859, PEG was not commercially produced until Union Carbide began doing so in 1939. In 1956 the first suggestion of using PEG for archaeological wood was published. One scientist noted that the success of PEG as a treatment was due to the fact that it is completely soluble in water in all proportions, and, therefore, can totally replace water in the cell wall of wood.\(^{65}\) In specific applications to
archaeological wood it was found that optimum results were achieved by raising the
temperature and concentration slowly by gradual evaporation of water until the wood
specimens were immersed in pure molten PEG at 70 degrees C.

Before the MHT moved *Philadelphia* from New York, Smithsonian researcher
Mendel Peterson contacted the National Park Service Preservation Laboratories for
recommendations on treating the desiccated wood. The National Park Service
recommended the application of carbowax (polyethylene glycol) to make the vessel more
limber and relieve the vessel's somewhat dried-out appearance.66

Further research by the Smithsonian indicated that the Forest Products Laboratories
at Madison, Wisconsin, was using a 50% solution of Carbowax 1000 and water.67 Because
the Smithsonian was using a heavier molecular weight, *i.e.*, Carbowax "1500," it was
thought best to use a 30% solution (based on weight) to insure adequate penetration.

Since the gondola had completely dried out many years earlier, the MHT decided
to apply the PEG by gently brushing it onto the moistened wood rather than using the more
costly and time consuming immersion approach. Due to the poor ventilation available in
Hagglund's shed, the PEG was applied with a spray rig, rather than by brush as had been
originally planned. By doing so, the surface of the wood was not disturbed and it was
possible to spray many interior areas not accessible with a brush. According to Peterson,
the vessel was definitely more limber following two applications of PEG, "relieving the
ship's somewhat dried-out appearance."68 At the time, the treatment appeared to have been
successful.

The MHT prepared the *Philadelphia* for shipping in June of 1961. After skidding
the gondola nearly one-half mile overland to the edge of Lake Champlain at Essex, New
York, workmen constructed a wooden crate around the vessel69 (figure 7.5) The vessel
Figure 7.5. After crating, *Philadelphia* was sent to Washington, D.C. for preservation, documentation, and permanent display. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
was then slowly moved to water's edge and over a specially built ramp to a barge. The Smithsonian paid Lake Industries, Inc. $8100 to transfer the *Philadelphia* to Albany via the Lake Champlain-Hudson River Canal. At Albany, the gondola was swung on board the United States Coast Guard buoy tender *Firebush* for transport to Washington, D.C., where through the generous assistance of United States Navy she found temporary berth at the Naval Weapons Plant. Four years later, the *Philadelphia*, still encased in its wooden crate, was raised by derricks and slid along a track into its third floor berth in the new National Museum of American History (figure 7.6). With the opening of the Halls of the Armed Forces in the new museum, the *Philadelphia* entered upon yet another chapter in her long and inspiring career, surrounded by several hundred artifacts recovered from her resting place in Valcour Bay.

*Philadelphia* has now been on exhibit at the Smithsonian Institution for thirty-three years. Although the hull timbers were treated with polyethylene glycol (PEG) in 1961, the wood bulking treatment proved to be too minimal to be effective. Consequently, many of her timbers have split and cupped, indicating that the wood has failed on a cellular level. It is also feared that corrosion of the vessel's iron fittings have further fragmented the wood from within. Access to the interior of the vessel for cleaning purposes is now prohibited. *Philadelphia*’s conservation problems are further complicated by the fact that the Smithsonian Institution applied Gentol 101 (liquid nylon) to the wood in an attempt to seal in the PEG in the 1960s. The liquid nylon has probably become insoluble and may hamper further efforts to introduce other preservative materials into the wood. Unfortunately, the Smithsonian Institution does not have the specialized conservation staff needed to assess and address the problem. The museum’s conservators are seeking funding to determine:
1. the degree to which PEG and soluble nylon penetrated.
2. the extent to which soluble nylon has become insoluble.
3. the phases of metal and corrosion products present in the iron fasteners.\textsuperscript{74}

A recent Navy Legacy grant proposal designed to bring in a team of conservation consultants to the NMAH was unsupported. Because \textit{Philadelphia} is considered a "top drawer" attraction for the museum, the conservation staff plans to resubmit their proposal to other agencies in the near future.
Notes: Chapter VII


7. Ibid., 1651.

8. Ibid., 1652.

9. Art Cohn, personal communication.


12. NMAH, Record No. 229338.237.


17. Ibid., 19.


20. Ibid., 20.

21. Baldwin, "Journal," 13 October 1776, "this morning a Messinger came from the fleet about ten o'clock with a letter from Genl. Arnold informing that he had with his fleet been ingaged with the Enemies fleet 2 Day that we have lost a large schooner [Royal Savage] run aground & burnt by the enemy a Gundalow stript & sunk by our men in the Bay of Bellcour."


24. According to Dr. Harold Langley, Curator of Armed Forces History at the Smithsonian Institution, all of the faunal material recovered from Philadelphia was later identified as animal.


27. NMAH, Record No. 229338.237.


29. NMAH, Record No. 229338.237.


32. Hagglund, A Page from the Past, 23.

33. Frank Taylor to Mr. Graf, 16 October 1939, Memorandum on file at the National Museum of American History, Smithsonian Institution.


39. Ibid.

40. Ibid., 201.

41. NMAH, Record Nos. 229338.026 and 229338.007.

42. NMAH, Record No. 229338.019.

43. Ibid.

44. Ibid.

45. NMAH, Record No. 229338.018.

46. NMAH, Record No. 229338.031.

47. Ibid.

48. NMAH, Record Nos. 229338.030 and 229338.026.

49. NMAH, Record No. 229338.091.

50. Peter Schaufler to Frank Kiendl, NMAH, Record No. 229338.103.

51. Ibid.


53. Ibid.

54. NMAH, Record Nos. 229338.184 and 229338.194.

55. NMAH, Record No. 229338.194.


58. Ibid.


62. Ibid.


66. NMAH, Record No. 229338.174.


68. NMAH, Record No. 229338.186.

69. NMAH, Record No. 229338.189.

70. NMAH, Record No. 229338.323.


73. Charles H. Olin to Philip Lundeberg, 26 September 1963, U.S. Government Memorandum, NMAH.

74. Beth Richwine, personal communication.
CHAPTER VIII

CONSTRUCTION OF THE PHILADELPHIA

Following the Smithsonian Institution's acquisition of the gondola Philadelphia in 1961, Howard P. Hoffman (Museum Specialist, Division of Naval History, National Museum of History and Technology) undertook the responsibility of researching and surveying the hull. The results of his work, "A Graphic Presentation of the Continental Gondola Philadelphia: American Gunboat of 1776" (1982), are presented in a set of plans consisting of sixteen sheets.

Rather than producing a graphic record of the hull in its present state, Hoffman's objective was to develop a set of detailed plans which represented Philadelphia as fitted out in 1776. In addition to providing a brief history of the Northern Campaign on Lake Champlain in 1776, the comprehensive plans detail almost every aspect concerning Philadelphia's construction and outfitting including a well-researched reconstruction of the vessel's rigging and sail plan. Similarly, other sheets provide reconstructed elements for missing, but necessary equipment relating to vessel's armament, cooking facilities, and awning. Information pertaining to the contemporary fabrication of sails, fittings, and ammunition was also researched and illustrated.

To record Philadelphia's lines and structure, Hoffman and museum specialist Harold Ellis laid out predetermined station lines on the floor beneath the gondola and set up a transit to act as a horizontal datum plane from which vertical measurements to the hull could be taken. Two scribed vertical supports positioned on either side of the vessel and a sliding arm between enabled Hoffman to lift the water lines. Measurements and data derived from this method were used to develop the lines drawings and locations of
structural members. Existing hull fittings in the form of spars, blocks, and deadeyes provided additional information about Philadelphia's rig.

To test the development of the preliminary plans, Hoffman built a model of the fully outfitted gondola at a scale of 1 inch to the foot. The model was subsequently placed on display next to the original hull so that visitors to the museum could see Philadelphia as she would have looked prior to The Battle of Valcour Island.

Survey and Reconstruction of Philadelphia

When initially surveyed at the Smithsonian, Philadelphia's overall length was 53 feet, 2 inches. Extreme breadth from outside planking to outside planking measured 15 feet, 2 inches. Depth at midships, from bottom to rail, was 4 feet. Philadelphia's armament consisted of one 12-pounder mounted on a slide carriage in the bow and two broadside 9-pounders; the rail was fitted for eight swivel guns of which one 3/4-pounder was recovered. At the end of the survey, Hoffman calculated a full-load displacement of 29 tons, a figure that accounts for the weight of the arms, crew, and stores. In a fresh water body such as Lake Champlain, Philadelphia would have had a full-load draft of 1 foot, 11½ inches.

The carpenters at Skenesborough built Philadelphia and the other seven gondolas on fixed timber platforms called stocks. Hoffman suggests that to aid in their construction and launching of the gondolas these stocks were approximately the same size and width of the hull's flat bottoms, raised to a convenient working height, and probably sloped toward the water. The first step in the construction sequence was to lay the gondola's bottom planking on the platform and saw it to the proper double-ended contour. The planking then served as a foundation to which floors, frames, stem and stern post could be attached. Throughout this construction progress Philadelphia remained in an upright position.
**Bottom Planking**

*Philadelphia* is completely flat-bottomed with no keel or keel plank present. Eleven strakes of 2-inch-thick white oak laid side by side comprise the gondola's bottom⁹ (figure 8.1). Individual strakes vary in width between 10 and 17 inches and, with the exception of the central strake, are composed of two to four planks. The center strake consists of a single plank 48 feet, 10 1/2 inches in length. Where necessary, planks in the other runs are connected with simple butt joints. To secure the joints, butt blocks made of 1-1/2-inch-thick white oak were fastened over exposed plank butts after the framing was installed.

Once the planks were positioned and temporarily fastened, Hoffman proposed that the basic outline of the hull's bottom, with a maximum breadth of roughly 12 feet, 1-1/2 inches, was scribed onto the surface and cut out. At the same time, the position of posts, floor timbers and frames could have been marked.¹⁰

To facilitate draining the vessel of water during construction, a 2-3/4-inch-diameter hole was drilled through one of the bottom planks about 4 feet forward of the stern post.¹¹ Since the hole became inaccessible once the aft deck was added, Hoffman suggests that the shipwrights inserted a wooden stopper from underneath before launching.

**Stem**

The heel of *Philadelphia*'s one-piece curved stem is flat-scarfed to the center bottom plank with four 1-inch-diameter treenails. The outboard portion of the white oak stem is set flush with the lower face of the bottom planking. Sided dimension remains a constant 10 inches on the post's after face. On its forward face, the stem decreases from a sided dimension of 6-1/2 inches at the base to 2-1/2 inches at the top. Moulded dimension at the top is 11-3/4 inches and at the bottom 2 feet, 2 inches.
To allow the muzzle of the 12-pound bow chaser to clear the stem, it later became necessary to trim the stem and a portion of the uppermost strakes a few inches below the existing sheer. After modification, the post's maximum height is approximately 4 feet, 9-1/2 inches. In addition to securing the plank ends, the post was also used to anchor the mainstay eyebolt and the bow breast hook.

**Sternpost**

*Philadelphia's* straight sternpost is also of white oak. Like the stem, it is fastened to the center bottom plank with four 1-inch-diameter treenails. Sided dimension is constant at 9 1/2 inches inboard of the rabbet and 7 inches outboard, decreasing to 3 inches on the post's after face. Width in the rabbet is approximately 5 inches. The top of the sternpost is moulded approximately 10-3/4 inches. Maximum fore and aft dimension, 2 feet, 1 inch, occurs at heel. The post's maximum height is 4 feet, 11-1/2 inches. To support the gondola's rudder, two holes were drilled through the post for the placement of eyebolt type gudgeons that were secured with both rings and forelocks. A third forelock bolt positioned about halfway up the post was used to fasten the stern breast hook.

When it came time to place the fore- and aftermost cant frames it was necessary to trim the inboard heels of both the stem and stern post so that the frames could occupy their proper positions. Similarly, the top of the sternpost was also trimmed to allow proper clearance for the vessel's tiller.

**Floors**

Thirty-four white oak floors are positioned across the bottom planking of *Philadelphia*. Each member is straight, 4 inches moulded, and 4 to 5 inches sided. Spacing is approximately 15 inches between centers. Two rectangular limber holes, approximately 1 inch by 2 inches, are present in each timber, one on each side of the vessel's centerline.
Floors are attached to the bottom planking with 1-inch-diameter white oak treenails. All treenails are octagonal and are not wedged. Two treenails are placed at every floor/bottom plank interface. To reduce the possibility of splitting the timbers, treenail locations are staggered along the length of the floor. After installation, the ends of each timber were beveled to match the outer contour dictated by the frames and chine. The presence of nails and nail holes indicate that prior to drilling the holes for the treenails, the \textit{Philadelphia} shipwrights temporary secured the floors in place by toenailing.

\textbf{Frames}

The frames of \textit{Philadelphia} would most properly be called “standing knees,” since they are not attached to floor timbers. These 39 frame knees are set perpendicular to the outer hull contour (90 degrees off the chine) instead of being fastened to the floor timbers. This method of ship construction necessarily saved a tremendous amount of time that otherwise would have been spent in beveling the frames to match the hull contour.\textsuperscript{13}

This type of construction: a flat bottomed, double ended hull with standing knees instead of attached frame timbers, is extremely similar in form to a scaled-up bateau. The simple design of the bateau had been in use in North America for more than a century before \textit{Philadelphia}’s construction. Bateau continued to be employed by both the American colonists and the British and were much like the larger gondolas.

\textbf{All of Philadelphia’s frames appear to have been hewn from natural growth timbers of white oak (in other words, the cut of the knee matches the grain of the wood) and have the same moulded dimension of 3-1/4 inches at the top, increasing to 4-1/4 inches directly above the chine, and decreasing back to 3-1/2 inches along their horizontal bottom sections. Sided dimensions vary from 2-1/2 inches to 4-1/2 inches. Frame knee spacing is the same as for the floors, approximately 15 inches between centers.}\textsuperscript{14} The Smithsonian survey
determined that the side contours of the frames were developed from a series of radii. It is apparent that on both sides of the vessel, frames 13 to 30 have identical contours indicating that they were mass produced from an existing template. Hoffman calculated that if the other seven gondolas were similarly constructed, a tremendous amount of manpower would have been saved in not beveling the 624 frames needed for all the vessels.\(^{15}\)

The upper arm of every *Philadelphia* frame was probably cut slightly longer than necessary. After the planking and ceiling were added, the tops of the frames were simply trimmed off to match the sheer defined by the planking. Nails and nail holes also indicate that the floors were temporarily secured in position by toenailing and then, like the floor timbers, frames were tightly secured to bottom planking with unwedged treenails driven into 1-inch-diameter holes. Staggering of treenail fasteners was impractical due to the small sided dimension of the frames.

One pair of frames was erected between every two floors with the exception of three pairs that were placed at either end of the hull beyond the last floors. In many cases, it was necessary to saw the lower arms of frames to the proper angle to butt against the floors.

*Keelson*

The full length of the keelson was not accessible for examination, but Hoffman suggests that this internal reinforcing timber was made of two pieces scarfed together amidships. The white oak keelson has a moulded height of 5-7/8 inches and a sided dimension of 8-1/4 inches.\(^{16}\) The 48 foot, 11 inch long timber rested on the upper surface of each floor and was toenailed to the stem and stern posts (figure 8.2). To further secure the timber, ten iron bolts were driven through drilled holes into the floors and central
Figure 8.2. Additional structural details. Courtesy of the Smithsonian Institution, NMAH/AFH, Hoffman, A Graphic Presentation of the Continental Gondola Philadelphia, 1982, Sheet 5.
bottom plank at approximately five foot intervals. The ends of the bolts are flush with the upper face of the keelson and the lower face of the central bottom plank.

A mast step is located approximately one-third of the vessel’s length 18 feet, 8-1/4 inches aft of the stem. It consists of a 12 by 3-1/2 inch mortise cut 4 inches deep into the keelson's upper surface. A 1/2-inch-square iron rod formed into the shape of a staple was found driven into the upper surface of keelson a few inches aft of the mast step. Hoffman determined that its most likely function was to secure the mainyard tie tackle.

**Planking**

*Philadelphia* is planked with five 1-1/2-inch-thick white oak strakes (figure 8.3). The lowermost strake is spiked directly to the outside edges of the bottom planking the latter had already been beveled flush with the outer face of the frames. Individual strakes are composed of three to four planks that butt each other on the center of a frame. The planks are fastened to every frame with a minimum of four iron nails. Strake ends were secured in their rabbets with seven or eight nails driven into the stem or stern posts. The edges of the planks were probably beveled to receive caulking material.\(^\text{17}\)

**Wales**

*Philadelphia* has one rectangular wale 3 inches thick and 4-1/2 inches wide, running directly below the sheer strake. On each side of the vessel, the reinforcing member is made from two pieces of white oak fastened by a simple flat scarf over a span of four frames.\(^\text{18}\) The wale is attached to the vessel with one spike at every frame position. Three iron nails and one spike were used to secure the timber to the stem and sternposts. Hoffman notes that the 1-inch-diameter bolts for the midship deck knees also pass through the wales.\(^\text{19}\)
Ceiling

*Philadelphia* has two types of internal planking or ceiling, side ceiling and what Hoffman refers to as flooring (figure 8.2). After the keelson was installed, 1-1/2 inch thick ceiling was installed over the rectangular floor timbers in a fore- and aft-direction.²⁰ Floor ceiling is white oak of varying width (10 to 18 inches). The planks closest to the centerline of the vessel butt against the keelson while the outboard planks are beveled to fit around the frames. The ceiling is attached to each floor timber with two or three iron nails. A well area, approximately 2 feet, 5-1/2 by 1 foot, 9-1/2 inches was created in the stern by cutting out a rectangular portion of the flooring on each side of floor timber twenty-five. Hoffman suggests that a bailing cover may have been present but was not recovered, presumably floating away when the vessel sank.

Side ceiling was also fashioned from white oak, but 1/4 inch thinner than the flooring. Four ceiling strakes of varying width (10 to 12 inches) are present on both sides of the vessel. The uppermost ceiling plank is placed at the same height as the corresponding external plank, effectively covering the frames up to their tops. The lowermost ceiling plank sits directly on the flooring. Side ceiling was secured with three nails at every frame position. The ends of every strake were beveled to butt against the stem and stern posts and are fastened to each post with seven or eight nails in staggered pattern.²¹

A series of rectangular cutouts (five on each side) in the side ceiling indicates that the after deck may have been located in a more elevated position. Hoffman suggests that a higher deck may have been installed with the idea of placing an additional cannon in the stern of the vessel.²² In fact, we know that Benedict Arnold ordered a mortar platform installed in the stern of *Philadelphia* just before the vessel was launched.²³
Skenesborough builders would have been faced with two choices: raising the existing after
deck or installing a new platform above it. After the mortar blew apart during its first test
firing at Ticonderoga, the platform was either removed or lowered to its original position.
Stone ballast weighing 3,375 pounds was then placed underneath the after deck to
counteract the weight of the bow gun.

Once the ceiling and planking were nailed, the carpenters strengthened the hull by
driving twenty-nine through bolts of 5/8-inch-diameter into the hull through the sides of the
hull. The bolts were then passed through the ceiling, frames, and exterior planking. To
secure the bolts, washers were placed underneath the heads and the outboard ends were
hammered flat to fit flush with the face of the exterior hull planking.

Breast Hooks

One breast hook of naturally-curved white oak was placed at each end of the vessel.
Both are approximately 5-1/2 inches thick and positioned about half-way up the stem and
sternpost. The bow breast hook has an arm length of approximately 3 feet, while the
opposite member spans a distance of 2 feet. Forelock bolts were used to secure these
timbers to the stem and sternpost and nails were used to fasten them to the ceiling.

The Decks

Philadelphia possesses three decks: the after deck, amidship deck, and forward
deck (figure 8.4). As mentioned above, the after deck may have been lowered after the
gondola was sent to Fort Ticonderoga. The amidship decks sits at approximately the same
level as the lowered after deck, but the forward deck was placed at a higher level to permit
the 12-pounder bow gun to fire over the stem of the vessel. Five white oak deck beams of
varying sided dimension (3 to 5 inches) and 5-1/4 inches in moulded dimension rested on
the keelson to support the after deck planking. The straight beams were secured in position
by having been toenailed to the keelson and ceiling. The ends of the beams were trimmed to fit the contour of the ceiling. Additional support was provided by placing two 4-1/4 inch thick blocks or pillars between the lower surface of each beam and the flooring.

The midship deck is supported by seven beams, 11 inches moulded and between 6-3/4 inches to 18 inches in sided dimension. Unlike the other deck beams, these were fashioned from straight lengths of white pine. The beams rest on top of the floor timbers and were notched on their undersides to fit around the keelson. The outboard ends were trimmed to fit the contour of the ceiling. Like the other beams, they were secured in place by toenailing to the floor and ceiling.

Five straight white oak timbers support the forward deck. The timbers were sided 3 to 5-1/2 inches and moulded 5-1/4 inches. Partial support was provided by placing the ends of the beams through cutouts in the ceiling. Additional support was provided by toenailing 4 by 5 inch pillars to the keelson and lower surface of each beam.

Eight lodging knees (four to a side), cut from natural growth timbers, provide additional support for the forward deck. One 4-inch thick knee was attached to the aft face of each forward deck beam, except the beam furthest forward. The lodging knees were attached to both the beams and ceiling with wrought iron nails.

Deck planking was milled from white oak. On both the fore and after decks, the planking is 1-1/4 inches thick, while the midship deck planking is made from 2 inch thick planking. The increase in thickness was justified by the extra weight that would be imposed by the two 9-pounder cannon that were to be situated in that position. Since the planking of the fore deck was not used to support the weight of the 12-pounder bow gun the thinner planking was also acceptable in that position. In all three cases deck planking was fitted to the ceiling and secured to the deck beams with iron nails. On the forward deck the
planking butts up against the slide carriage tracks of the 12-pounder. Coaming is present only on the amidship deck and consists of two pieces that scarf into two deck knees. The white oak coaming is bolted through the deck and into the beams.

Originally six white oak standing knees were placed on each side of the amidship deck. It is apparent that these timbers were intended to reinforce the sides of the hull against the force of breeching when each 9-pounder recoiled. Cut from natural growth wood, the supporting timbers were bolted through the hull and wale. Nails were used to fasten the timbers to the deck and ceiling. The presence of bent bolts and empty bolt holes in the deck planking indicate that two of these knees had to be removed for the correct placement and efficient operation of the two 9-pounder guns that were later installed at Fort Ticonderoga. The guns were not mounted directly opposite one another to ensure sufficient space for each to recoil and for the gun crews to load and aim each weapon.

Upon completion, the aft deck ran forward of the sternpost for 13 feet, 6 inches. Both the amidship and forward deck are 14 feet, 9 inches long. The two outermost planks of the forward deck were situated so that they extended to cover lodging knees placed at the intersection of its aftermost beam and the ceiling planking. By this design, two cockpit areas were created between the three separate deck areas. The aft cockpit provided access to the bailing well in the bilges and the forward cockpit allowed access to the storage area created under the forward deck.

Caprail

Once the planking and ceiling had been installed and the upper frame arms cut off even with the sheer, the white oak caprail was added. The 1-1/2 inch moulded by 8 inch sided covering plank was fastened to the top edges of the upper strake and ceiling with iron nails, spaced approximately every one foot. To fit the contour of the vessel, the rail cap
was fashioned from five individual pieces on the port side of the vessel and six pieces on
the starboard side that butt together in \( v \)-shaped joints.

Beginning at the bow, the rail cap is pierced along its length for the installation of
catheads, swivel gun mounting brackets, awning and bow rail stanchions, thole pins, bitts
(timber heads), and eyebolts through which running rigging was passed. The cap also
served as a nailing surface for cleats.

Rudder

_Philadelphia's_ "barndoor" rudder is made from three pieces of white oak fastened
with both wood battens and iron bolts.\(^{25}\) The three rudder planks were edge-fastened by
two 1/2-inch-diameter iron bolts across each of the two plank seams. Two 1-inch-thick
battens were fit in mortises cut into the starboard sides of the rudder planks so that they
could further support the structure and yet sit flush with the rudder's surface. These
battens were secured with a series of clenched iron nails. Two pintles are strapped to the
rudder and held in place by nails. A 1-inch-diameter pin was welded to the front of each
strap for placement in the eyebolt gudgeons bolted through the stern post.

The forwardmost rudder timber extends approximately 6 inches above the stern
post and terminates in a tenon for the tiller. _Philadelphia's_ original tiller was not recovered
in 1935. Hoffman suggests that the original tiller would have projected approximately six
feet forward after terminating in a rounded handle. Just above the upper pintle, a 5/8 inch
diameter hole in the rudder indicates that a rudder pendant may have been attached to
prevent the rudder from lifting up and off of the gudgeons.

Awning Structure, Bow Rails, and Fascines

_Philadelphia_ was fitted with a canvas awning for the protection of the crew. Very
few pieces of the awning's beams and stanchions were recovered in 1935. As evidenced
by rectangular openings in the caprail, a total of fourteen stanchions supported the gondola’s awning (figure 8.5). Awning stanchions were approximately 4 feet in length and probably cut from 3-inch-square white pine stock. Surviving pieces show that the lowermost 10 inch section of the stanchion was inserted into a rectangular cutout in the caprail between the inner and outer planking and secured by three iron nails driven through the ceiling. The tops of the stanchions were shaped into a tenon to fit rectangular mortises (1-1/4 inches square and 3 inches deep) in the ends of the awning beams. Stanchions were spaced between 4 and 5 feet and provide support for an awning that would have covered the entire midship deck and most of the aft deck. Hoffman suggests that the two end awning stanchions on each side of the hull would have been fitted with a small cleat for securing awning pendants and lashings.

Three awning beams were recovered in 1935. Fabricated from 3 inch white oak stock, the end of each member was fitted with a mortise to receive an awning beam. To insure that water would drain off the awning, the beams were curved so that their centers were positioned approximately 10 inches higher than their outboard ends. Length of the seven awning beams was made to suit the breadth of the hull at the corresponding stanchion positions. No awning battens were recovered. Nail holes in the awning beams allowed Hoffman to reconstruct the position of awning battens that would further support the canvas cover. Hoffman suggests that the battens would be made from 1 inch by 2 inch stock. Battens were attached to the upper surface of the awning beams or to the outer face of the stanchions with one iron nail at each position.

Hoffman proposes that the builders of Philadelphia could have placed a set of racks on the port side of the vessel underneath the third and fourth awning beams to store rammers, sponges, ladles, and worms for the 9- and 12-pounder cannons to alleviate
Figure 8.5. Awning structure, bow rails, and fascines. Courtesy of the Smithsonian Institution, NMAH/APH, Hoffman, A Graphic Presentation of the Continental Gondola Philadelphia, 1982, Sheet 7.
overcrowding on the vessel's decks. Similarly, an additional storage rack may have been attached to the starboard side of the vessel between the first two awning beams to store rammers, sponges, ladles, and worms for the swivel guns. This position would also serve to hold the handspikes for the 9-pounders.

Six additional stanchions were placed into rectangular cutouts in the bow caprail to support the bow railing. Like the awning stanchions, these members were placed between the inner and outer planking and secured with three nails driven in from the outer planking. The upper ends of the stanchions project up from the caprail for a height of approximately 2 feet, 4 inches, and terminate in a tenon designed to fit a mortise in the white oak rails. Bow rails were cut from 2-1/2 by 3-1/2 inch white oak stock. A notch on the aft end of each rail suggests that an additional section of railing may have extended across the bow deck. The section was either lost or never installed. Its use would appear impractical aboard such a cramped vessel.

Historic documents indicate that the gondolas were fitted with fascines (bundles of saplings) to protect the crew from sniper fire.26 Hoffman proposes a practical arrangement of 9-inch-diameter bundles of various lengths that would have provided some protection to the crew, but would not interfere with the rigging, operation of the sweeps, swivels, or broadside cannon. Presumably, the fascine bundles were secured to the rail and awning stanchions with rope lashings.

Other Hull Fittings

Two lockers which could also serve as seats were placed on the aft deck. Hagglund recovered the two wooden top pieces (2-1/2 inches thick) and other fragments that appeared to be ends and fronts of the lockers. Hoffman’s reconstruction indicates that the lockers were toenailed to the deck and ceiling.
The carriage for *Philadelphia*’s 12-pounder was designed without trucks or axletrees. Instead, the gun was designed to recoil on wooden tracks (figure 8.6). These tracks, 5-7/8 inches thick, extend the full length of the deck and are bolted to the deck beams. A T-shaped timber is situated at the end of the tracks and is braced against the mainmast with a 3-inch-square timber. The backstop of the track was also used to secure the eyebolt for the 12-pounder intackle.

One curved shot garland was nailed to the topmost ceiling plank in the bow on each side of the 12-pounder. Fashioned from white oak, the 2-5/8 by 4-1/2 inch timbers have a number of semi-globular cavities gouged out to a depth of 1-1/2 inches to hold the 4.4 inch diameter round shot for the 12-pounder. The port rack was designed to hold fourteen shot and the starboard rack thirteen.

A white oak cathead is located on each side of the bow. Before placement, the rail was notched flush with the ceiling and the timber placed parallel with a frame. Each cathead was secured in place with nails driven through the timber and ceiling. The upper arms of the catheads angle out and possesses a 1-inch-diameter hole to secure the anchor stopper rope. Just forward of the catheads is a pair of mooring bitts positioned much as the rail and awning stanchions were by inserting through the caprail and next to a frame.

*Philadelphia*’s uppermost strakes of exterior planking and ceiling are pierced in a number of places for other hull fittings. On each side of the stem, just forward of the catheads, is a lead-lined hawse pipe 3-1/2 inches in diameter. The pipe is made from 1/8 inch sheet lead that had been rolled into a tubular shape and then hammered outward into a 1-1/4 inch flange on both inboard and outboard sides of the hull and secured with nails.

Places for four eyebolts were found on each side of the midship deck. The eyebolts were obviously used with rings to secure the side tackles and breeching ropes for the 9-
pounder cannons. Additional eyebolts and rings in the same area served to anchor the main backstays. One other pair of eyebolts are located just forward of the hawse pipes and were similarly used for the 12-pounder breeching ropes. Four pairs of holes are also present in the upper strake and ceiling just aft of the main mast and most likely served to secure deadeye straps which in turn secured the lanyards and main shrouds.

Places for eight swivel gun brackets were found on the caprail. Before the wrought iron straps of the brackets were attached to the hull it was necessary to notch the caprail flush with the planking and ceiling. The brackets rest directly on the caprail and are fastened to the interior and exterior planking with three iron nails per side. A 1-5/8-inch-diameter hole was chiseled or drilled through the caprail for the insertion of the swivel gun yokes.

Additional square openings in the caprail mark the position of thole pins. Both the port and starboard side of the vessel are fitted for seven positions. Considering the positions of the 9-pounders and the close-quarters in the stern, however, Hoffman proposed that four of these locations would have proved impractical for manipulating the long sweeps. He suggested that ten sweeps and two spares would be sufficient and practical for propelling the vessel, and depicted a reconstructed sweep storage rack nailed over the canvas and the two center awning battens.

The caprail also served to anchor eyebolts for the vessel's braces and sheets. Two eyebolts on each side of the stern were driven through the caprail and into the top of frames. Forward, a pair of elliptical holes in the caprail on each side of the vessel led Hoffman to believe that bitts were originally located in this position and served to belay the tacks. Similar openings in the rail near the aft cockpit may have contained other bitts to belay the mainsheets. Although few cleats were recovered with the vessel, nail holes and
markings on the rail indicated that four were present on the starboard side and three on the port side. The cleats likely served to belay the main and topsail braces and topsail halyard.

*Masts, Yards, and Rigging*

Remnants of *Philadelphia*’s rig recovered in 1935 include the white pine main mast, square sail boom, and topsail yard. Hagglund also located the white oak crosstrees, pin rack and pins. Four blocks of different sizes were also recovered, but it is unclear if these were designed for rigging or for cannon breeching. One wooden sheave and three wooden deadeyes were also found but their locations were not recorded.

*Philadelphia*’s 35 foot, 11 inch long mainmast was found sitting upright in the vessel.\(^{27}\) Maximum diameter of the mast is 10-1/2 inches just above the heel tenon. The heel of the mast is cut into rectangular tenon 3-1/2 inches wide and 10-1/2 inches long. As positioned in the mast step, *Philadelphia*’s mast rakes aft 1 inch for every three feet of its height.\(^{28}\) A wood shim was placed on the aft side of the mast heel to insure correct alignment. To support the mast, a 10-inch-wide mast partner was placed athwartships on the forward face of the mast. The timber protrudes through the ceiling on the starboard side of the vessel, but only butts up against the ceiling on the port side.\(^{29}\) Two lodging knees, 4-1/2 inches moulded, are attached to the forward face of the mast partner and ceiling with iron nails. The mast was secured to the partner by an iron mast ring that was fastened to the partner with four 7/8-inch-diameter bolts.

Near its top, *Philadelphia*’s mast becomes octagonal in shape and possesses an 8-3/8-inch-diameter sheave in the center of the hounds for the tye of the main yard. Above the hounds, the mast again becomes circular in cross-section and tapers to 5 inches in diameter.
Philadelphia's square sail boom is 5 inches in diameter at its center and decreases over its 27 foot, 6 inch length to 2 inches. The topsail yard is shorter at 20 feet, 2 inches and possesses a maximum diameter of 4-5/16 inches which tapers to 1-3/4 inches at the outboard ends. Hoffman reconstructs a cleat position for each of the three spars for use in tying off the topsail sheet pendant, clew pendant, and clew line respectively.

The final plan of Philadelphia's reconstructed spars, sails, and rigging is mainly based on these surviving rigging elements recorded with the hull. As mentioned above, existing deadeye strap holes, cleats, and eyebolts allowed further inferences to the overall rig. To complete the rig and sail plan, Hoffman consulted contemporary records and sketches. In the end, he details "a practical rig suitable for service on Lake Champlain."30 Philadelphia's sail plan is also shown in figure 8.7. The Smithsonian Institution's plans also provide tables detailing the size of cordage and blocks needed for the restoration of Philadelphia's standing, running rigging, sails, ordnance, anchors, and other miscellaneous lines.

Paint

Aside from some traces of red paint on one of Philadelphia's tompions, the gondola appears to have been left unpainted. During the Smithsonian survey it was determined that the hull retained some traces of linseed oil. It is likely, however, that the linseed oil was applied by Hagglund as a preservative when the gondola was under his care.

Tool Marks

In the 1980s, William A. Bayreuther, a graduate student from Texas A&M University's Nautical Archaeology Program, surveyed Philadelphia's hull for the presence of tool marks that could provide other clues to the gondola's construction. His survey concluded that a variety of cutting implements were employed throughout the three week
construction process. These included the adze, broadaxe, drill, crosscut saw, and chisel. Markings on the less eroded planks indicated that they had been cut with a water-powered up-and-down sash saw with regularly-patterned teeth. Significantly, Bayreuther found no evidence for the less regular angled tooth marks indicative of a pit saw. He concluded that Philip Skene’s mills were up to the job of supplying the carpenters with oak planking.
Notes: Chapter VIII


CHAPTER IX

THE PHILADELPHIA ARTIFACT COLLECTION

A minimum of 767 individual objects were found with Philadelphia. This number was determined by comparing the number of artifacts described in Lorenzo Hagglund's report of the salvage project, and an accession list and Polaroid photographs kept at the Smithsonian Institution's National Museum of American History (see Appendix A). Many of these artifacts, including the cannon and shot, were removed from the hull prior to its raising. The remainder were recovered by washing and screening the mud that had accumulated in the hull during its 159-year immersion.

Undoubtedly, a number of artifacts, particularly those associated with the vessel's rigging and awning were lost, either by floating away or by dropping outside the hull after the gondola sank. Due to poor visibility and a muddy bottom, the salvagers avoided searching this area to any extent. Hagglund's salvage team was unable to take advantage of the tools that underwater archaeologists rely on today such as scuba, metal detectors, magnetometers, or side-scan sonar. Much to their credit, however, Hagglund's salvage team diligently searched and apparently kept everything found on board the vessel. The recovery of coal cinders dropped in the hull by passing steamboats was even recorded.

Because the project was a salvage operation and not conducted using modern archaeological practices, no accurate map of the artifacts' exact locations within the hull exists. Fortunately, Hagglund's reports provide a general location for many artifact positions.

Except for a few missing items and several objects that may have been given away at the time of the salvage, the remainder of the artifacts are now with the Smithsonian Institution. The majority of these are displayed either next to, or onboard Philadelphia.
Visitors entering the Armed Forces History wing on the third floor of the NMAH encounter the hull of the vessel resting on the floor, its mainmast alongside. A much shortened replica mast has been installed to fit underneath the museum's ceiling. *Philadelphia's* cannons are on board in their original locations, but rest upon unobtrusive iron supports instead of the fragile hull. The brick fireplace has been reassembled and is displayed in the position in which Hagglund reported finding it. Much of *Philadelphia's* original equipment is also exhibited on the vessel including the iron kettles and shot.

While Hoffman's *A Graphic Presentation of the Continental Gondola Philadelphia, American Gunboat of 1776*, provides illustrations and dimensions for several of *Philadelphia's* artifacts, the otherwise comprehensive plans fail to mention or describe many of the items recovered in 1935.

The *Philadelphia* artifact collection comprises a wide variety of materials and provides us with an idea of the equipment and supplies carried on a naval craft of this size and period. This chapter describes some of the more significant finds and, where possible, provides information on distribution and quantity. Unfortunately, some items were either unavailable for examination or lost. Therefore, information provided for these items is based solely on written or photographic evidence.

**Armaments**

The largest category of artifacts recovered from the hull was armaments, the foremost being the three cannons and their wooden carriages. *Philadelphia's* main battery consisted of one 12-pounder on a slide in the bow and two 9-pounders mounted amidships.

The tube of *Philadelphia's* cast iron 12-pounder has an overall length of 8 feet, 6 1/2 inches, measured from the base ring to the end of the muzzle. A knob-like cascabel projects 10 inches from the rear of the base ring (figure A.1). Forward of the base ring is
the 1/2-inch-diameter touch hole, first reinforce astragal, paired first and second reinforce rings, and the muzzle astragal. Caliber or bore is 5 inches. Trunnions are set approximately one-half caliber below the centerline axis at a distance of 3 feet, 7 1/2 inches forward of the base ring. Distance between the trunnions is 2 feet, 1 inch. A raised “F” is present on the end of each trunnion. The only other marking on the cannon is a crudely chiseled weight stamp on the top surface forward of the touch hole (figure A.2). There are four numbers: the first three digits are “334” and the last appears to be a “3.” This figure of 3,343 pounds compares well with the present weight of the cast iron tube at 3,490 pounds.

In length and weight, this cannon tube matches the standards established by the English Board of Ordnance of 1764.² The fact that the bore is slightly oversized at 5 inches suggests an earlier casting date, however. According to Hoffman, the standard bore for 12-pounders of the period was 4.7 inches.³ Criterion established by the Board of Ordnance maintained that a bore of 4.63 inches diameter should be used. Considering that Philadelphia's round shot for the 12-pounder were 4.4 inches in diameter, the cannon may have been rather inaccurate at anything other than short ranges due to excessive windage.

Another clue to an early casting date is the fact that the trunnions are not set on the centerline of the piece but are located approximately one-half caliber below. Although this position improved vision to the side and reduced recoil by producing downward pressure on the breech, it placed greater stresses on the carriage.⁴ By 1750, English artillerists were maintaining that trunnions should be located on the axis of the bore.⁵

Research at the Smithsonian Institution concluded that this gun is a “finbanker,” cast at Finspong, Sweden, as much as a full century earlier.⁶ A similar cannon mounted on a conventional naval carriage is depicted in the Guide to the Royal Danish Arsenal
Museum. This cannon was recovered in 1909 from the wreck of the *Enigheden*, a Danish 66-gun, line-of-battle ship that sank in the southern channel at Kalmar, Sweden in 1679. Like *Philadelphias* 12-pounder, this cannon possesses the letter “F” on the end of each trunnion. *Finsbankere* were Dutch and Swedish export articles and were sold in large quantities to the Danish navy.

The tube of the 12-pounder was mounted in the bow of *Philadelphias* on a slide carriage. The unusual carriage has no trucks or axletrees, but was simply designed with notches or cutouts in the outboard bottom section of the carriage's cheeks (side pieces) so that it could be positioned on two wooden tracks bolted to the forward deck beams. Through careful placement of the tracks, or by allowing clearance in the design of the carriage, the 12-pounder could move without restriction along the tracks. The design is simple and saved time that otherwise would have been spent manufacturing the carriage's axletrees and trucks. However, to use the cannon, the entire gondola had to be turned in order to train the weapon.

Hagglund noted that the recoil from the 12-pounder must have carried it well inboard since the back stop of the carriage tracks was reinforced with a brace set against the mast. In later periods, slide carriages sat upon inclined skids. The incline reduced the recoil and allowed the gun to be more easily heaved back into position.

*Philadelphias* two cast iron 9-pounders are nearly identical (figure A.3). The starboard gun weighs 2,195 pound and the port gun weighs just five pounds less. Each gun is 7 feet, 9 inches long from the base ring to the muzzle. Forward of the base ring is a 1/2-inch-diameter touch hole, first reinforce astragal, first and second reinforce rings, and muzzle astragal. Like the 12-pounder, these guns have an oversized bore of 4-1/2 inches for the placement of the 4-inch diameter balls they were designed to fire. Distance between
the 4-1/2 inch diameter trunnions is 1 foot, 10 inches. The letters "HP" are scribed on the top surface of each cannon just forward of the touch hole (figure A.4). The Roman numeral "VII" is also scribed on the port gun just to the right of the touch hole. The design of these guns indicates that they are also of Swedish origin and were probably cast during the late seventeenth century.¹¹

The carriages for the 9-pounder tubes are virtually identical to the ordinary British design of the period. The standard published work of the period for gun carriage design was the English artillerist John Muller's *A Treatise of Artillery* published in 1757. According to one researcher, "Muller was a professor of fortification and artillery at Woolwich, known for his advocacy of lighter guns and the use of cast iron rather than bronze in their fabrication. While the so-called Muller system was never officially adopted in the Royal Navy, his book with its illustrations and calculations for determining the dimensions of carriages was certainly known in the American colonies at the time of the Revolutionary War."¹²

The chief difference between *Philadelphia*’s carriages and Muller’s carriage is in the size of the trucks and a variation in placing the iron work.¹³ Muller proposed a dimension of 4 bore-diameters for the size of the fore trucks and 3.5 for the hind.¹⁴ The five surviving trucks on *Philadelphia*’s 9-pounder carriages are approximately 13 inches in diameter (2.88 bore diameters) for the both the fore and the hind (figure A.5).

Three corroded carriage rings, one with an attached eyebolt, are exhibited next to *Philadelphia* (figure A.6). Seven keys for the carriage trunnion plates were also recovered in various shapes and degrees of preservation (figure A.7). Only six were actually needed, however. The iron keys are roughly L-shaped and possess a hole in the wider end for the attachment of a lanyard.
To date no historic document has been found that specifically states where these three cannons or the other cannons on Arnold’s fleet were obtained. It is generally assumed that they were taken from stores at Fort Ticonderoga. When the Americans captured the British fort in May of 1775, fifty-eight guns (forty-two cannon and sixteen mortars and howitzers) were inventoried.\(^{15}\) Approximately half of these were sent to the Continental army outside Boston. Some of the latter were apparently returned to the lakes, carried with the army to Canada in early 1776, and eventually transported back to Fort Ticonderoga following the American retreat.\(^{16}\)

Alternately, some of *Philadelphia’s* cannon could have been taken from Crown Point. Colonel Thomas Hartley wrote to General Horatio Gates to express his fears of losing more cannons to the fleet:

*I understood General Arnold has wrote to you for the guns I have here. It is well known to your Honour that we had the greatest search after them. We spent much time and labour in digging them from under the ruins of wood earth, where they lay long, and might have remained there had it not been for us.*\(^{17}\)

It is evident that these were older cannon, probably left over from the French and Indian War. Following the Battle of Valcour Island, British troops occupied the deserted American outpost at Crown Point. German Company surgeon J. F. Wasmus wrote that:

*Among the enemy cannon found at Crown Point, one came upon several cannon quite carefully inscribed AUGUST WILHELM H.Z.B.U.L. and the rest. How did those ever get here?*\(^{18}\)

Braunschweig troops had fought against the French in Europe during the Seven Years War as allies of the British. It is possible that these cannon had been captured by the French and later installed at Fort St. Frédéric. The inscription refers to August Wilhelm (1715-1781), the Duke of Braunschweig-Bevern, one of the outstanding soldiers in the army of Frederick the Great (Herzog zu Braunschweig und Lüneburg).\(^{19}\)
Certainly, the supply of cannon at these two forts was not plentiful enough to adequately supply both the posts and the fleet. Arnold informed Schuyler of this situation in July and suggested that an attempt be made to find cannon in other colonies.\textsuperscript{20}

One of the reasons for the shortage of cannons in the American colonies was that British policy did not allow for their manufacture.\textsuperscript{21} The few cannon available to the Americans at the outbreak of the revolution consisted of "a motley collection of every sort and caliber."\textsuperscript{22} According to Spencer C. Tucker, the Americans had three choices: (1) cast the cannon themselves; (2) capture guns from the British; or (3) secure cannon from other foreign sources, chiefly France.\textsuperscript{23} His research suggests that all three eventually proved to be viable solutions. For the Philadelphia and the rest of Arnold's fleet, however, the chief source of cannon seems to have been the stores at Fort Ticonderoga.

Although Philadelphia's rail cap was pierced in eight places for swivel gun brackets, only one swivel gun was recovered. Hagglund reported finding the cast iron gun and its broken yoke in the bottom of the aft cockpit. In form, the swivel is a small-bore cannon, 2 feet, 11-1/4 inches in length as measured from the base ring (figures A.8 and A.9).\textsuperscript{24} A flat ended cascabel projects back 3 3/8 inches from the base ring. No monkey tail or other handle is present. Forward of the touch hole, the swivel tube is marked with a weight stamp of "1-1-23" indicating one British hundredweight (or long hundredweight) of 112 pounds, one quarter-hundredweight of 28 pounds, and 23 additional pounds for an original casting weight of 163 pounds (figure A.10). An additional mark in the form of a Broad Arrow denotes that the weapon was originally British Crown property. The size of the bore (1-7/8 inches) indicates that the gun would have fired a 3/4-pound iron ball, 1-3/4 inches in diameter.
A broken iron yoke was found resting beside the swivel (figure A.11). The Y-shaped pivot was designed to retain the swivel's trunnions in iron rings. The lower end of the yoke terminated in a cylindrical pivot that would have rested in one of the eight sockets placed in Philadelphia's rail. Clearly, the yoke broke at the junction of the two arms and the swivel either fell or was deposited into the aft cockpit along with its broken yoke. The missing arm was not recovered. The fact that no other swivels were found suggests that they were either not present or offloaded prior to the vessel's sinking.

During the Revolutionary War period swivels came in even less standardized form than cannon. They ranged in size from a heavy musket to a small cannon. In their fixed mounts swivels could not sustain great recoil and so had to be limited in size. They were usually of the heavier, cannon-type, and the loose shot they fired were effective against personnel at close range. In general, they varied from 34 to 36 inches in length, from 1-1/2 to 1-3/4 inches in bore, and threw shot weighing 1/2 to 3/4 pound. Swivels were particularly favored for early colonial merchant vessels and were also popular on board vessels patrolling the Great Lakes.

Although Philadelphia and the other gondolas were supposed to have been armed with eight swivel guns, it is not known how many were actually placed on the vessels. Richard Varick attempted to procure swivel guns from the Iron Works at Salisbury, Connecticut, and the "Furnaces and Bloomerys at Livingston Manor." Apparently Varick was successful to some degree since Gates wrote Arnold on 12 September to inform him that swivels were being sent forward. Considering the presence of the Broad Arrow on the one surviving swivel, it seems probable that this gun was taken from naval supplies captured at St. Jean or from one of the British vessels taken by the Americans on the St. Lawrence River. Alternately, swivels might have been taken from stocks at Ticonderoga.
British ships from the French and Indian War were heavily armed with swivels. The investigation of one of these, the sloop *Boscawen*, produced a total of 22 swivel guns.  

One wrought iron ring gauge was recovered from the gondola (figure A.12). Although Hagglund reported finding the gauge on the midship deck next to port 9-pounder, its dimensions suggest that it would have been more suitable to the 12-pounder. The inner dimension of the ring is 4-7/16 inches which would have just allowed a 12-pound round shot (4-13/32 diameter) to pass through. More unusual was Hagglund's find of a wooden double shot gauge, for both 12- and 9-pounder shot resting on the aft deck (figure A.13). Fashioned from white ash, the wooden board has an overall length of 2 feet, 1/4 inch and a width of 6-7/8 inches that tapers down to 6-3/8 inches. Two holes are present: a 4-1/8 inch diameter hole and a 4-15/16 inch hole. Although simply made, the wooden gauge could effectively separate the main battery shot. In order to protect the gauge from splitting, three battens made from 5/16 inch thick white ash were nailed to one surface. The center batten was missing when recovered, but like the two that remain, it was nailed to the gauge with four small nails.

The NMAH accession list does not include an apron among its inventory of *Philadelphia* artifacts, although Hagglund reporting finding a crumpled lead apron next to the port 9-pounder. Amazingly, considering their tendency to float when not in use, wooden tompions were found for all three cannons. Two smaller tompions, nearly identical in size, are appropriate for the 9-pounders; they included a drilled center hole, which was once presumably threaded with a knotted cord to aid in removal from the muzzles (figure A.14). Each example retains traces of red paint on their outward faces. The larger tompion for the 12-pounder is approximately twice as long and lacks a center rope hole.
Very few gunners' tools were recovered with *Philadelphia*. One rammer head fabricated from white ash was found and is appropriate for the 12-pounder.\textsuperscript{31} The surviving head is tapered, 4-3/8 inches in diameter and length. According to Tucker, the suggested length of the head should have been 1.5 times the diameter of the cannon's bore, in this case, 7-1/2 inches.\textsuperscript{32} Fragments of wood inside the hole indicate that a wooden handle was originally attached. Hoffman's reconstructed rammer positions the head at one end of an ash handle and a sponge at the other. Contemporary literature suggests that the turned wooden sponge would have been covered with a sheep skin, wool side out.

A wrought iron worm for the 3/4 pound swivel was found in an unspecified location (figure A.15). Like the rammer head, the wooden handle is missing, but presumably was made of ash and attached to the worm with a single nail through the sleeve of the worm. Overall length is 6 inches with a diameter of 1-3/8 inches.\textsuperscript{33} Hoffman suggests that a copper ladle may have been positioned at the other end of the tool.

**Shot**

Two bar shot were recovered with the gondola (figure A.16). One bar shot suitable in size for use with the 9-pounders has a present weight of 7 pounds, 2 ounces.\textsuperscript{34} Hoffman calculated an original weight of exactly 8 pounds. The two shot hemispheres have a diameter of 3.85 inches and were connected with a 3/4 inch square, wrought iron bar. The 10-7/8-inch-long connecting bar was inset into the two hemispheres to a depth of 3/4 inches. The single 12-pounder sized bar shot was found protruding from the muzzle of the bow gun, having slid forward and wedged itself in the tube following *Philadelphia*’s sinking. Identical to the 9-pounder bar shot, but manufactured on a larger scale, the 12-pounder sized bar shot had cast iron hemispheres of 4.85 inch diameter connected with an
11/16 inch square wrought iron bar set in to a depth of 1 inch. The present weight of the shot is 16 pounds with a calculated original weight of 16 pounds, 7 ounces.

According to Hagglund's 1949 report, fifty-five 9-pound round shot were recovered.\(^{35}\) Eleven of them may have been lost or given away as souvenirs since the NMAH accession papers only list forty-four.\(^{36}\) The shot pile was found between the two knees just forward of the port 9-pounder. Other than some casting marks and sprue traces, the round shot are unmarked. Average diameter is 4 inches.

Only two 12-pound round shot were found indicating that this cannon may have seen more service during the battle at Valcour Island. One 12-pound shot was found still resting in the shot garland in the bow and the other under the forward deck. Average diameter of the 12-pound round shot is 4-13/32 inches.\(^{37}\) Neither is marked.

Three other round shot were found aboard the vessel: a 24-pounder, 6-pounder, and 4-pounder. The 24-pounder sized shot is credited with sinking the *Philadelphia*. The shot is marked with the British broad arrow and was found lodged in the hull planking on the port side of the vessel.\(^{38}\) Because *Philadelphia* did not mount any 4- or 6-pounder guns, it is interesting to speculate whether these shot were fired into *Philadelphia* since the vessel exhibits evidence of having been hulled in two other places. Both *Maria* and *Carleton* had batteries consisting of 6-pounders. Alternately, the two shot could have been carried aboard in error.

One grapeshot canister and its white oak sabot is included in the *Philadelphia* collection and both are remarkably well-preserved (figures A.17 and A.18). Although not originally accessioned with the rest of the collection, the tin plated cylinder was later donated by Lorenzo Hagglund's son. This artifact was recovered from one of the 9-pounder cannons in 1935. Upon recovery, the cannon was found to have been loaded with the
canister of shot, a 9-pound ball, and three thick wads and powder.\textsuperscript{39} The canister as originally assembled contained eighty-four 7/8-inch-diameter shot arranged in six layers, fourteen 1.5 ounce shot per layer, giving a total weight of shot of 7 pounds, 12 ounces. Although no canisters or wooden sabots suitable in size for the 12-pounder were found, a cluster of ten 1-inch-diameter iron shot recovered suggests that canister may have been used by this cannon.

The Smithsonian collection also includes 108 grapeshot of two other sizes. A handwritten note by Hagglund indicates that a total of 116 grapeshot were recovered in 1935.\textsuperscript{40} The majority of these are 1-3/4 inches in diameter and served as shot for the swivel guns. Alternately, Hoffman suggests that this sized shot could have been used in the fabrication of canvas covered grapeshot clusters for the 9-pounders. No wooden spindles or bottoms were recovered from the wreck that would indicate that complete stands of grapeshot were actually in use, however. Other grapeshot in this group are 1-15/16 inches diameter, suggesting that the 12-pounder bow gun may have fired grapeshot as well.

Four pieces of iron langrage were also recovered with Philadelphia. Each appears to have been cut from crudely formed iron rod or bar stock (figure A.19). Like grapeshot, langrage could have been fired in pre-loaded canisters or simply packed into the cannons. Langrage was effective only at short ranges, not exceeding 300 to 500 yards, due to the rapid dispersion and lightness of the cylinder's contents. At short range, canister shot was more effective than any other projectile, including grape.\textsuperscript{41}

\textit{Small Arms}

A badly-eroded wooden musket stock lacking any of its original hardware was found on the bottom of the forward cockpit (figure A.20). Due to its incomplete preservation it is difficult to identify the type, but the weapon appears similar to
contemporary Brown Bess or French Charleville muskets. Although no mention is made in Hagglund’s salvage reports or in the NMAH accession list, a Polaroid photograph on file at the Smithsonian Institution indicate that fragments of this same gun and several others were also recovered (see figure A.21 and A.22). Four trigger guards (presumably, brass) are depicted in the photograph along with some other concreted gun fragments. This photograph and one other brass trigger guard fragment included in the collection suggests that at least five muskets or similar weapons may have been left behind by Philadelphia’s crew.

Trigger guards on regulation British muskets were consistently of brass after 1720, and up to about 1775 possessed a terminal nipple at both ends and had one screw hole just behind the loop of the guard.\textsuperscript{42} Around 1775, the guard was shortened, the nipples removed, and a second screw hole was added close to the end of the tail. Both styles of guard were drilled through the fore edge of the loop to receive a sling swivel.

Two of Philadelphia’s trigger guards are complete and, although they are shown only from the side in photographs, do not appear have nipples on either end. Only one has been drilled through the fore edge of the loop to receive a sling. Two other trigger guards are depicted in the photograph but are still concreted to musket firing assemblies. One is obviously broken at the beginning of the tail. The second possesses a screw opening in the end of the tail similar to that of the later style of the Brown Bess musket. The fifth trigger guard is also fragmented, having broken across screw openings at either end (figure A.23). Its overall shape does not resemble either model of the Brown Bess.

Other gun fragments in the Polaroid photograph appear to be a very simple key plate (probably brass), a wooden ramrod fragment, and two gun barrel fragments. Five wooden ramrod fragments are displayed at the NMAH (figure A.24). Each fragment has
undergone considerable shrinkage and distortion due to a lack of conservation following their recovery in 1935. These same fragments were found in association with several ramrod thimbles (figure A.25 and A.26). Two brass thimbles (or pipes) fashioned from sheet brass with the ends drawn up into a pierced strip for attachment to the stock are included in the collection. In style, these appear similar to ones found on either the Brown Bess model 1 (long land musket, introduced about 1727), or the Brown Bess model 2 (short land musket, introduced about 1740). Both weapons were used by both the British and the Americans during the Revolution. Two brass rear ramrod thimbles were also found. The first example has two fastening holes, approximately 1/8 inch in diameter. The second is similar, but only possesses one fastening hole. More unusual was Hagglund’s find of one fragmented rear ramrod thimble fashioned from iron (figure A.27). The length of the surviving tail is 4-3/4 inches.

The remains of nine bayonets are included in the Philadelphia artifact collection (figure A.28). Each is badly corroded making exact identification difficult. The bayonets were found in the forward cockpit and appear to represent several different types. Surviving blade lengths vary from 4 inches to 16-3/4 inches. In most cases, the blades appear to be triangular in cross-section, fulleried on two sides. Only two fragments retain portions of their sockets.

Bayonets are usually identified on the basis of the length and shape of the blades, shanks, and sockets. Three bayonets in the Philadelphia collection have blade lengths that are nearly 16-3/4 in length, the standard for the British Brown Bess musket. Only one retains a portion of the socket, however. This bayonet has suffered some additional damage since 1935, but appears to have had a 4-inch-socket with a rear reinforcing collar. In all respects, this bayonet is identical to the British standard type. One other bayonet has
a 3-inch socket. Because the mounting slot in the thin-walled socket is fragmented it is difficult to identify precisely, but is similar to the French 1763 model in design.\textsuperscript{45} Alternately, the bayonet may be an American copy of the French model. Most of the other bayonets include portions of the shanks, but these appear to have many variants in both feature and design. Any or all them could be American copies of either British or French styles. None however, appear to have the flat, swordlike blades associated with German bayonets or pre-1750 British models.\textsuperscript{46}

Included in the same cluster as the other gun parts were eight gun flints (figure A.29). All are honey-colored and possess rounded ends suggesting that they are of the common French type. One other interesting find associated with the small arms is a wooden cartridge box (figure A.30). Although the box is heavily eroded, it appears to have been designed to hold seventeen or eighteen paper tubes of powder and shot (cartouches). The leather pouch in which it would have been carried was recovered, but its location has not been determined.\textsuperscript{47}

One iron musket ball (1/2-inch-diameter), four lead musket balls (11/16-inch-diameter), two lead musket balls (5/8-inch-diameter), and 349 lead buckshot (3/8-inch-diameter) were recovered from the forward cockpit (figure A.31) Conceivably, buckshot could have been fired from any of the weapons aboard the vessel including the cannons, swivels, or small arms. Small arms charged with the combination of “ball and buck” were particularly lethal weapons when fired at short ranges.

The varied types of firearm furniture and bayonets, as well as the sizes of small arms shot together suggest that a mixed collection of weapons was aboard the vessel. Presumably, these were the personal arms of the soldiers who were drafted to serve in \textit{Philadelphia}. According to one small arms expert, “variety was the word for the firearms
of the Continental soldier.48 Even though America possessed a large number of British small arms at the outbreak of the Revolution, there were not nearly enough to supply the entire army. Both the individual colonies and Congress were forced to turn to American gunsmiths to make up for the shortage. The majority of Philadelpbia’s crew was drafted from the New Hampshire militia stationed at Fort Ticonderoga. New Hampshire did not let a specific contract for arms, but periodically collected money and sent out agents to procure firearms from wherever they were available.49 Just how serviceable these weapons were is open to debate. George Washington wrote to the colony in 1777 to inquire about purchasing muskets for the Continental troops. By way of reply, the Committee of Safety wrote: “fire arms cannot be procured from us that can be depended upon.”50 The Committee also added that they had practically run out of unreliable firearms.

Iron Fasteners

The majority of Philadelpbia’s wrought-iron nails, spikes, and bolts remain in the hull in their original positions and only eighteen loose nails and spikes are included in the collection (figure A.32). Preserved lengths range from 7-13/16 inches to 2-1/16 inches. The heads and shanks are corroded, but all have square shanks which taper down to a flat or chiseled point. On most, the four corners of the head angle downward into a characteristic rose head shape. During the survey of the vessel, Hoffman determined that the majority of these fasteners fell into four categories of original length: 3-1/2, 4-1/4, 5-1/2, and 9-3/4 inches.51

One other very large fastener (13-3/4 inches long) is also displayed at the NMAH and is labeled as a timbering spike (figure A.33). The shank is round in cross-section (1-3/4 inches diameter), but tapers down to a corroded point. The original position of the round headed fastener was not determined. Three iron eye spikes, between 9-1/4 inches and 7-1/4
inches in overall length were recovered from an unspecified location. It is assumed that these were used to secure tarpaulins and light lines.

**Tools**

Four axes were recovered from the forward cockpit of *Philadelphia* (figures A.34 and A.35). Two of these retain a portion of their wooden handles. Each axe blade is of a different type. Carl P. Russell writes that:

> For nearly a century after the American ax was perfected, older ax types lacking niceties of balance continued to be manufactured in America as well as in Europe. These various forms, intermediate between the typical European ax and the distinctive American product, found use along with the better tool to which they had given origin, and it is not unusual for the archeologist and historian to uncover specimens in one site that are representative of all stages in the development of the American ax. A good example of this overlapping is seen in the axes from the recovered hull of the Continental gondola Philadelphia, which was sunk in 1776.\(^{52}\)

One of *Philadelphia*’s axes is of the “French” axe type (figure A.34a) and does not possess any poll. Two others have been described as an “intermediate” ax type and show some development of a counterbalancing poll (figures A.34b and A.34c). The last example can be called “a full-fledged American ax” (figure A.34d). All of these types found use by the Continental fighters who manned the *Philadelphia*.\(^{53}\)

A large wooden mallet was also found in the forward cockpit (figure A.36). It has been presumed that this mallet was used for serving (or wrapping) the vessel’s rigging with spun yarn as protection against chafing although it does not exhibit the distinctive groove down the center of the mallet head. The mallet may also have been used to assemble and disassemble staved containers or to hammer in wooden plugs that would stop leaks made by enemy round shot. Two (or possibly three) wooden plugs of a size appropriate to fill a hole from a 9- or 12-pounder sized shot were also recovered in 1935 (figure A.37).
A round brush with horsehair bristles, approximately 10 inches in overall length, was found in association with a dish shaped from sheet lead (figures A.38 and A.39). Both the dish and the brush retained traces of pitch. Pitch may have been used along with caulking on Philadelphia's seams. Another possible use of pitch aboard Arnold’s vessels may have been in the manufacture of a medicine used to treat impetigo (see sulfur below).

Based on Hagglund’s report, it appears that at least two spades may have been recovered. In a 1935 photograph, one of the salvagers is seen holding a spade complete with wooden handle (figure A.40). The blade of this spade appears to have been either much shorter, broken, or extremely corroded when compared to a second spade exhibited at the NMAH. The second spade is 15 inches long (including the 3-1/2 inch handle socket), the blade is 11-1/2 inches long, 7-3/4 wide at the forward end, and 8-1/2 inches wide near the handle (figure A.41). As originally manufactured, the spade was probably made by hammering a flat sheet of iron over a form. The end result strengthened the blade by producing a supporting arch down the center and a socket in which a 1-3/4 inch diameter wooden handle could be inserted.

Other tools, most of which were probably recovered from the forward cockpit, include an iron file (figure A.42), approximately 12 inches long, and two iron fascine knives (figure A.43). These two knives, essentially a type of billhook, were probably used to cut the saplings which were bundled and secured to the bulwarks of the gondola as fascines. One fascine blade is stamped with the letter “H” (figure A.44). At least one auger and one chisel were also recovered from the forward cockpit. One other tool mentioned in Hagglund’s account, but not included in the NMAH accession list, is an iron adze head. The artifact is clearly depicted in a 1935 photograph and is approximately 12 inches long with a blade width of about 4 inches (figure A.45). One broken grindstone was also
recovered. As pictured in a 1935 photograph, this object appears to have been approximately 12 inches in diameter and 4 inches thick (figure A.46). A hole is present in the center and a wedge-like section is missing from the circumference.

**Rigging Equipment**

Four wood rigging blocks were included in the *Philadelphia* collection when accessioned by the Smithsonian Institution. These included one 12 inch double block, one 10 inch single block, one 10 inch double block (figure A.47), and one 8-1/2 inch long single block. In each case, the shells are made of white ash (*Fraxinus* sp.) and all sheaves, except for the 8-1/2-inch single block, are fashioned from lignum vitae (*lignum vitae*). The smaller block's sheave is made of hop-hornbeam. Pins for the three larger blocks are made of lignum vitae, while the smaller block has a white ash pin. Unfortunately, Hagglund did not indicate where the blocks were found. Other than the 8-1/2 single block, Hoffman makes no use of these blocks in *Philadelphia*’s reconstruction.

Three wooden deadeyes of several sizes were also found in 1935. One of these was obviously converted from a sheave (figure A.48). One 7 inch deadeye made of white ash was chosen as the model for reconstruction. In total, eight such deadeyes were needed to secure *Philadelphia*’s lanyards and shrouds.

Hooks served a variety of purposes on board the *Philadelphia*. Hoffman noted that a total of 16 would be needed for gun tackles, main backstay, forestay, and anchor fish pendant. The NMAH collection includes nine iron hooks, one of which includes both a rope thimble and a clevis (figures A.49 and A.50). One hook was found with a fragment of parcelled rope wrapped around a thimble. Thimbles were used in conjunction with many of the hooks and appeared to have been hand-forged for four sizes of rope diameters: 5/8, 13/16, 1-1/8, and 1-3/4 inches.
Anchors

Two anchors were recovered with Philadelphia. Both were in their original stowed positions before the vessel sank. Eventually, their securing lines deteriorated and the anchors fell into the mud alongside the hull. Just below the starboard cathead was an anchor marked “320.” Apparently, this number bears no relation to the anchor’s original weight since its present weight, including the stock is only 112 pounds.58 The anchor’s two-piece, white oak stock also survived in remarkably good condition. Sixteen white oak treenails are placed in 3/4-inch-diameter holes that were staggered along the length of the stock. An 8-inch-diameter ring made from 3/4 inch wrought iron looped through the eye at the top of the shank. This anchor has a unique removable locking pin in the stock. Once the pin is disengaged from a nut on the shank, the stock can be rotated in the same plane as the arms, a feature that would simplify stowage when placed on board the vessel. Cutouts in the stock allow for a smooth rotation around the nut. Two white oak wedges driven from underneath the stock and alongside the shank prevent any further movement once the stock is locked into position.

The port anchor was also found underneath its corresponding cathead. It is slightly larger in both weight and length than its starboard companion and lacks the rotating feature of the starboard anchor stock (figure A.51). The stamped number “129” on the anchors crown closely matches its present weight of 134 pounds.59 This stock was also made from two pieces of white oak. Eight 1-inch-diameter white oak treenails secure the two timbers. An 8-inch-diameter ring, identical to the other anchor, is found at the anchor’s eye.

Sweeps

Hagglund found the remains of two sweeps underneath the forward deck. Both sweeps are made of white ash and together, provided enough details for Hoffman to
reconstruct their original dimensions. Overall length was approximately 20 feet, 6 inches. Handles were approximately 11 inches long and 1-1/2 inches in diameter. Forward, the sweep becomes 3-inches-square in cross-section in the area of the loom and transitions to a 3-inch-diameter round cross-section at the body. The last six feet of the sweep is occupied by a blade, 4 inches wide and 5/8 inches thick. Hoffman notes that this width is approximately two inches narrower than what was normally used during the period.60

Navigational Equipment

During the examination of the stern lockers, Hagglund found the remains of a broken time glass (figure A.52). As originally assembled, the time glass was mounted between two wooden disks with five dowels being used to separate the two.61 The deteriorated remains of the wooden frame are not included in the NMAH collection, but are depicted in Hagglund’s account of the salvage. Testing at the Smithsonian Institution on the “log glass” as reassembled by Hagglund revealed that it was designed to measure 28 second time intervals and could possibly have been used with a log reel.62 Considering the short duration of measurement, the only useful function of the glass would have been in determining the vessel’s speed.

One pair of iron navigational dividers was also found onboard the vessel (figure A.53). Since the parent material is iron the tool is in a badly corroded condition, and one arm has a surviving length of half the other arm. Overall length was approximately 6-1/8 inches. Like the log glass, the usefulness of this tool aboard the gondola is unclear. It is evident that the vessels were not provided with charts of Lake Champlain. Arnold had difficulties in obtaining even one chart and sailed without one. Gates eventually sent one to the fleet at a later date.63 It seems reasonable to speculate that the two items belonged
to Captain Rue and may have been retained from navigational equipment belonging to the schooner he captained on the St. Lawrence River in April or May of 1775.

**Fireplace and Cooking Utensils**

According to Hagglund, the fireplace was located on the port side of the hull between the two knees just aft of the forward cockpit (figure A.54). Char marks found on the underside of the mast partner suggest, however, that the true position may have been in the well. When examined at the Smithsonian Institution, the red clay bricks still retained traces of the original mortar which cemented the fireplace together.

An iron cooking kettle was found still sitting in the vessel's fireplace. The outer flared rim is broken along most of the circumference except in the two areas where the triangular-shaped lugged handles attach to the rim and body (figures A.55 and A.56). Three legs support the bottom of the kettle. Approximately one-half of the kettle's bail survived the long immersion in the lake. Sitting next to the kettle was a long-handled iron skillet (figure A.57). Although half of the pan's outer rim has corroded away, it can be determined that its outer diameter originally measured 13 inches. A hole in the socket end of the handle indicates that this pan could have been used with a wooden extension. Undoubtedly, these two vessels were used in food preparation. In close association with these two objects was a heavy wooden chopping block (see figure A.54).

A smaller iron kettle or pot was recovered from the forward cockpit (figures A.58 and A.59). Although this container could have served in food preparation, it was found to contain traces of ochre that may attest to the use of paint on the vessel. The only traces of paint found on the vessel, however, was a red coating on the end of the 9-pounder tompions. It is possible that these utensils were obtained from the Salisbury Iron Works, as were some of the fleet's swivel guns.
Personal Possessions

Eight pewter buttons, two brass buttons, and one wooden button back were recovered from the *Philadelphia* (figure A.60). Two pewter buttons, found on the foredeck, bear the number "26." Hagglund correctly determined that these were British buttons of the 26th regiment. Although seemingly out of place aboard an American vessel, their presence is easily explained by the fact that in December of 1775, General Montgomery captured Montreal and with it, a quantity of uniforms belonging to the 7th and 26th British regiments. Afterwards, Montgomery distributed the main part of the badly needed clothing to Arnold's corps who had just arrived in Quebec after an extremely difficult trek across Maine.

Plain-faced buttons, like *Philadelphia*'s brass buttons and several of the pewter buttons, were worn by all nations, military and civilians alike. Other buttons from *Philadelphia* with star and script motifs are also common finds from Revolutionary War land sites.

Five complete spoons, one spoon bowl, and one spoon handle were found in various places in *Philadelphia*'s hull (figure A.61). All were made of pewter. Incredibly, one spoon was found resting on the caprail of the vessel after it was brought to the surface. Three spoon bowls were scratched with their owner's initials. The letters "P.H.S.,” “I.M.,” and “L.P.” are present. Two sets of initials may match with several of *Philadelphia*'s crewmen. "P.H.S." may correspond to Peter Stephens. Considering that I's sometimes represent J's, "I.M." may represent James Mars, one of the two crewmen named James McIntire, John Mills, or Jacob Murrel. There were no crewmembers with the initials "L.P.”
Eight shoe and knee buckles were found scattered on the aft deck among some leather shoe remains (figure A.62). One example is a brass shoe buckle complete with chape and tongue. Buckles of this type were used with shoes possessing two straps. The shoe's lower strap would be secured by the chape, and the upper strap fastened over the lower by the tongue. The *Philadelphia* artifact collection also includes three silver shoe or knee buckle frames, all rectangular in shape, but with rounded corners. Two have some decoration in the form of ridges or raised circles. One other example is a highly decorated silver shoe buckle. The frame is oval in shape and approximately two-thirds complete. The high quality and fine decoration on most of these buckles suggests that were lost by the gondola's officers. The one brass example recovered may typify the quality and shoe style worn by the sailors and marines.

A white ceramic cup was found in one of the stern lockers and it has been suggested that this was the crew's grog cup (figure A.63). The glazed surface has crazed and discolored in a fine network of cracks due to its long immersion in Lake Champlain. The vessel appears to be creamware. The surface is undecorated except for a fine scallop pattern underneath the rim.

Two other ceramic fragments were also recovered. One of them is a base sherd from what was probably another cup and the other is a body sherd, likely from the same vessel (figure A.64). Like the intact cup, the surfaces of the fragments are similar in fabric and are also discolored and crazed.

Twenty-five leather shoe fragments, representing several pairs of shoes, were found in the stern of the vessel in the lockers or on the deck. One pair of men's shoes with wooden pegged heels has been reconstructed and is on display at the NMAH (see figure A.65). No textiles were reported to have been found with *Philadelphia*, nor are any listed
on the Smithsonian accession list. One textile fragment, however, was documented at the
Smithsonian Institution by a Polaroid photograph (figure A.66). The coarse fabric appears
to be canvas and is shaped like a sash or the remnant of a man’s jerkin.

Hagglund mentions finding a wooden canteen in the forward cockpit in his 1949
report.\textsuperscript{73} The item is also included in a list of artifacts which he provided to the
Smithsonian Institution shortly before his death. The canteen is not displayed, and the
accession list is notated with a question mark beside it. Similarly, a pair of officer’s cuff
links were also reported to have been found in 1935, but are no longer included in the
collection.

\textit{Miscellaneous Finds}

Two wrought-iron strap hinges believed to have come from the gunner’s chest are
included in the \textit{Philadelphia} collection (figure A.67). The first example has three fastener
holes present and the partial remains of a fourth at the broken loop on the end. The second
example is smaller in length and has openings for two fasteners. One other metallic object
probably belonged to a member of the crew. A small brass rod, approximately 2 inches
long, bent into a U-shape may have served as a sailor’s belt hook (figure A.68).

Intermixed with the other bilge debris, Hagglund’s salvage crew recovered seven
pieces of sulfur (figure A.69). The cylindrical shape of the sulfur fragments suggests that
they may have been carried aboard in paper tubes, a common practice in the 18th-century.\textsuperscript{74}
Although it has been suggested that the sulfur was used on board the vessel as a fumigant,
its most likely use may have been medicinal.\textsuperscript{75} During the Revolutionary War an ailment
known as impetigo, and referred to by the soldiers as “the itch,” was often described in
contemporary journals.\textsuperscript{76} This bacterial infection was a common and troublesome disorder,
very contagious and easily spread by contact. Affected areas included the hands, especially
between the fingers, and the infection caused the person to break out in itchy vesicles which were easily ruptured by scratching. Continued scratching produced a “disgusting crust” which further developed into pustules and ulcers.77

Two methods could be employed to stop the spread between the soldiers: frequent washing of the body and frequent changes of linen. Alternately, the clothing could be scented with brimstone (burned sulfur) before being worn. Those stricken with the ailment could be bathed in water impregnated with sulfur and a lard based ointment.

That the crew members of *Philadelphia* may have been suffering from impetigo infection is borne out in the *Journal of Bayze Wells*, who wrote:

*Monday 16th Sept... about Six P. M. Mr Tiffany and I Bathd for the Itch with Brimstone tallow and tar mix together and Lay in our Cloaths.*78

Wells makes two other references to the ailment and was forced to continue his “baths” for the next two nights.

In amongst the other items in the stern lockers was a small, filled medicine bottle. Like several other objects, this artifact is not included in the Smithsonian collection. According to Hagglund’s 1949 report, an analysis of the original substance revealed an oleoresin of copaiba (derived from the leaves of a South American tree of the genus *Copaifera*) flavored with several essential oils—oil of thyme being the most characteristic of the flavors.79 References to copaiba from the 1800s indicate that it was regarded as a panacea with varied medicinal uses.80

Three human teeth were found lying loose on the forward deck. The roots have been stained black following their long immersion and several caries are visible on each (figure A.70). All appear to be molars.81 According to Hagglund’s original report and newspaper accounts, there were also “several pieces of the bones of an arm... and a part
of a skull” next to the teeth.82 Only one bone is included in the Smithsonian collection, however. It is a animal bone that was found inside the iron kettle (figure A.71). The three teeth are the only human remains included in the Smithsonian collection.

One wooden cleat is included NMAH accession sheet (see figure A.36). Although badly eroded, the original dimensions were reconstructed by Leon Hope, one of the original salvors of Philadelphia. Distance between the arms is 13-1/2 inches. Width at the base is 4-3/4 inches and the thickness is 1-1/2 inches. This specimen is larger than any cleat reconstructed by Hoffman for use on Philadelphia’s caprail. Therefore, this particular cleat may have served to secure the main yard lift.

Among the other wood fragments found on Philadelphia were pieces of Northern white cedar which were obviously the remains of half and quarter barrels.83 One small wooden artifact which has been previously unidentified may be a plug for a powder horn (figure A.72). A similar item was recovered from the Boscawen.84 The only other wooden fragments mentioned by Hagglund were pieces of firewood for the cook’s stove discovered under the forward deck.

The last artifact to be discovered on Philadelphia occurred during the cleaning and recording operations at the Smithsonian in the late 1960s. Fragments of chalk were discovered underneath the decks and ceiling.85 Undoubtedly, these had probably been left by Philadelphia’s carpenters and were used to mark the locations of floors, deck beams, or other timbers.
Notes: Chapter IX


5. Ibid.


8. Ibid.


29. Kevin J. Crisman, personal communication.


45. *Ibid.*, see Figure 2, No. 2, 59.

46. *Ibid.*, 56-57, and Figure 4, No. 6, 63.


50. Ibid.


53. Ibid.


59. Ibid.


67. Philip K. Lundeberg, personal communication.


75. Philip K. Lundeberg, personal communication.


82. Mark Hartmann, personal communication.


84. Kevin Crisman, personal communication.

85. Philip K. Lundeberg, personal communication.
CHAPTER X

THE CREW OF THE PHILADELPHIA

When it came time to man the Philadelphia and the rest of the hurriedly built fleet, Benedict Arnold looked to the ranks of the northern army for experienced sailors. Out of the thousands of soldiers assembled at Fort Ticonderoga, only seventy volunteered for the duty.¹ Undoubtedly, there were many more men at Ticonderoga with maritime skills, but none volunteered. Arnold understood the reason for the soldiers’ caution. He reported to Schuyler that “there is no prospect of [their] making reprisals on the Lake, but rather Fatigue & Danger.”² It was reasonable for the soldiers to assume that service on the lake would be dangerous and no matter how uncomfortable they were at the fort they were a lot better off behind stone walls than sailing on the open lake.³ Since there was not even the temptation of prize money, the only reward for those who signed up was the usual monthly pay.⁴

Arnold wanted to send to Connecticut for seamen but feared that the sailors would turn down Congress’ established rate of forty-eight shillings for Continental Navy sailors and would accept nothing less than the “Common Premium” and ten dollars per month.⁵ He suggested to Schuyler that sailors might be found in the army at New York but insisted that “by no means” would soldiers or landsmen answer the call.

Later that July, the call for seamen and marines to man the fleet was sent out to the maritime seaports. It soon became apparent that luring experienced seamen and marines from the healthier and potentially more profitable privateering fleets would be difficult, if not impossible. Consequently, Congress was forced to order drafts from the Northern army stationed at Fort Ticonderoga.⁶ Three hundred officers and soldiers were drafted out of the various regiments on 7 August.⁷ One-half of the draftees were to serve as seamen
and the other half as marines. The soldiers would receive an additional $1.00 a month above their regular pay.\textsuperscript{8}

At Arnold's request, Schuyler wrote Connecticut Governor Trumbull on 31 July requesting an additional 300 men to augment the numbers already drafted.\textsuperscript{9} Captains Seth Warner, David Hawley, and Frederick Chapel each raised a company of seamen, but only after they had been assured of higher wages than those paid to the sailors already in service. Bounties were increased from $7.50 to $15.00, and an additional premium of $2.50 was paid to every man who provided his own musket, cartridge box, blanket, and knapsack. Wages were increased to $6.00 a month for seamen, $15.00 a month for lieutenants, and $24.00 a month for captains. The premium and the first month's wages were payable before the sailors began their march.\textsuperscript{10}

In fear that the British invasion could come at any time, Arnold ordered his small flotilla (which then consisted of only ten vessels) to sail from Crown Point on 24 August.\textsuperscript{11} Still short of his complement of seamen and marines, Arnold made up the deficiency by temporarily drafting a detachment of troops from Colonel Thomas Hartley's force at Crown Point. As a replacement, and to appease an irate Hartley, Gates sent seventy men from Ticonderoga as a replacement. Several days later, Arnold wrote Gates from Buttonmold Bay that an additional seventy-four men were needed to man the vessels.\textsuperscript{12} Gates ordered thirty-three soldiers drafted from Colonel Asa Whitcomb's Sixth Massachusetts Regiment to serve as marines, and the same number of soldiers were drafted from Colonel Samuel Brewer's Massachusetts Militia Regiment to serve as seamen.\textsuperscript{13}

In total, the fifteen American vessels that eventually assembled and fought at Valcour Island were designed to be manned by 800 sailors and marines. Arnold specified that eighty crewmen would man each galley, forty-five men would serve on each of the
eight gondolas, fifty sailors and marines were to be stationed on both the schooner *Royal Savage* and the hospital sloop *Enterprise*, sixty-five crewmen were designated for the cutter *Lee*, and thirty-five men were to be placed on board the smaller schooner *Revenge*. It is doubtful that Arnold ever reached the desired complement of seamen. As late as 1 October he was still requesting one hundred sailors and marines ("no land lubbers") to fill his quota.14 Only one day before the Battle of Valcour Island Arnold wrote to Gates:

> I am much surprised so little attention is paid to us by the good people below. I should have imagined two hundred seamen could have been sent us in three or four months, after they were so pressingly wrote for.15

The promise of bonuses and high wages were not enough to attract experienced sailors and gunners to serve with Arnold on Lake Champlain. This disadvantage was not shared by the British fleet that was adequately staffed by veterans and officers of the Royal Navy, as well as a large number of other British and German troops.16

With the fortuitous discovery of *Philadelphia's* original payroll in 1973, the names of the fifth gondola's crew became known.17 Although, the gondola was designed to be manned with a crew of 45, it is now known that only 44 men actually served on board the *Philadelphia* (Table 10.1).

*Philadelphia's* Captain, Benjamin Rue, was lost in the historical record for many years when pioneering archivist Peter Force mistakenly spelled his name as "Benjamin Rice" in the *American Archives* (1848-53).18 Once the spelling of his name was corrected, it was determined that Rue began his military career in Bucks County, Pennsylvania.19 Private Benjamin Rue is listed as a member of Bristol Company, one of eight companies organized into the First Battalion of the Pennsylvania Line on 12 October 1775.20 Almost immediately, Rue's name appears in the records as orderly sergeant of the company. Promotion followed quickly and Rue was made ensign in Captain Willet's company in
Table 10.1

Pay Roll of Captain Benjamin Rues Crew belonging to the gondola Philadelphia
from the time they entered sd Service to October 16, 1776 inclusive

<table>
<thead>
<tr>
<th>Officers &amp; Privates</th>
<th>When Entered the Service</th>
<th>Time in the Service</th>
<th>Wages per Month [mos./days]</th>
<th>Total Amount of Wages</th>
<th>What amount each pr. after [deductions] remains to receive</th>
<th>Money Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benjamin Rue, Captain</td>
<td>August 1</td>
<td>2 16</td>
<td>£9 - 12 - 0</td>
<td>£24 - 6 - 5</td>
<td>---</td>
<td>£24 - 6 - 5</td>
</tr>
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<td>6 --------------</td>
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<td>5 - 1 - 4</td>
<td>6 - 6 - 8  x</td>
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<td>4 ---</td>
<td>--- 16 --- x</td>
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<td>Officers &amp; Privates Names</td>
<td>When Entered the Service</td>
<td>Time in the Service</td>
<td>Wages per Month [mos./days]</td>
<td>Total Amount of Wages</td>
<td>What amount each pr. after [deductions] remains to receive</td>
<td>Money Due</td>
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<td>---------------------</td>
<td>-----------------------------</td>
<td>-----------------------</td>
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<td>4 ---</td>
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<td>4 ---</td>
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<td>x</td>
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<td>Benjamin Walker, Dto</td>
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<td>4 ---</td>
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<tr>
<td>Ebenezar Bailey, Dto</td>
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<td>4 ---</td>
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</table>

November of 1775. After Colonel John Philip de Hass took command of the Battalion on 22 February 1776, several companies, including that of Benjamin Rue were dispatched to Canada to join the Northern Campaign. Rue's company marched from Philadelphia to New York City where its men were carried by sloop to Albany. From there Rue traveled up the Hudson River to Fort Edwards and on to Fort William Henry (Fort George). Once Lake George was crossed by bateaux, Bristol company marched the short distance to Fort Ticonderoga and traveled down Lake Champlain to Montreal.

Sometime between 15 April and 1 May 1775, Rue was given the command of a schooner on the St. Lawrence River, a position he held until the American retreat from Canada. After the evacuation, Rue followed the army back to Ticonderoga and was promoted to second lieutenant on 6 August 1776.

At age twenty-one, Rue took command of the Philadelphia on 1 August 1776, one day after it arrived at Mount Independence for masting, rigging, and arming. To aid Rue in fitting out Philadelphia he had the help of mate Joseph Bettys of New York, boatswain Ezekiah Budthomas, and private Robert Avery. The crew was supplemented on the 6th with the addition of boatswain's mate George Berry; a gunner and gunner's mate, both named James McIntire; Sergeant Thomas Savage, three marines, and two additional privates. Seven more marines and privates were added to the roll between the 9th and 15th. The remainder of the crew, including the Lieutenant, Jonathan Blake, New York Regiment, was added on the 16th for a total complement of forty-four men.

The payroll designates most of Philadelphia's crew as either "privates" or "marreans." Here, the word 'marrean' probably refers to the men whose duties were to act as sailors, while a private was supposed to fill the role of the traditional naval "marine." The payroll clearly delineates the wages of the men and the deductions charged against
each person. It is evident that the marreans and privates of the Philadelphia did not earn the substantially higher wages guaranteed to the sailors from Connecticut who later came to man the galleys. By the date of the final muster (16 October 1776), almost three-fourths of the salary of the Philadelphia’s crewmen was consumed by unspecified deductions. It appears that the men may not even have been paid. Captain Rue did not receive his wages until 1784.24

Curiously, eighteen crewmembers have a “x” placed in their row in the final column of the document. The payroll unfortunately does not include a heading for the notation. It has been suggested that the x’s represent men whose lives may have been lost at the battle. This does not seem to be true since it is known that Mate Joseph Bettys, who has an “x” in his row, survived the battle and went on to fight for the British. Alternately, the x’s could represent men who were not present at the final muster, but may have been taken prisoner by the British on 13 October. There are eighteen x’s and eighteen Philadelphia crewmen that appear on a British prisoner list made after the Battle of Valcour Island. Only five names, however, match both lists.

Virtually every crewmember of the Philadelphia can be traced in the historical record to his original militia or Continental regiment. As seen in Table 10.2, twenty-seven of Philadelphia’s crew were probably drafted from two New Hampshire regiments. Colonels Joshua Wingate and Isaac Wyman had been ordered “to furnish 12 Subalterns, 12 Serjeants, 12 Corporals, 5 Drums & 259 Privates to assist in manning the fleet.”25 Allowing some leeway for phonetic spellings and common names the remainder of the crew can be traced to Massachusetts (including present day Maine), Connecticut, and New York with the exception of one man whose last name may have been badly misspelled phonetically: Ezekiah Budthomas.
## TABLE 10.2

Crew Members of the Continental Gondola *Philadelphia*

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<thead>
<tr>
<th>Name</th>
<th>Residence</th>
<th>Company</th>
<th>Regiment</th>
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<tbody>
<tr>
<td>Avery, Robert</td>
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<td>Captain Woods</td>
<td>Colonel Ward</td>
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<td>Dunbarton, NH</td>
<td>Captain William Barron</td>
<td>Colonel Isaac Wyman</td>
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<tr>
<td>Barnum, Asa</td>
<td>Barrington, NH</td>
<td>Captain James Arnold</td>
<td>Colonel Joshua Wingate</td>
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<tr>
<td>Berry, George</td>
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<td>Captain James Arnold</td>
<td>Colonel Joshua Wingate</td>
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<td>Ballston Spa, NY</td>
<td>Captain Ball</td>
<td>Colonel Wynkoop</td>
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<td>Colonel Joshua Wingate</td>
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<td>Colonel Joshua Wingate</td>
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<td>Colonel Joshua Wingate</td>
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<td>Colonel Isaac Wyman</td>
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<td>Colonel Edward Wigglesworth</td>
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<td>Whitworth, Daniel</td>
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<td>Captain William Stilson</td>
<td>Colonel Isaac Wyman</td>
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</table>

The New England militia regiments from which these men came from did not receive a great deal of respect from the troops of Northern Army when they began to arrive at Ticonderoga in August and September of 1776. Captain Persifer Frazer, of Chester County, Pennsylvania, wrote upon the arrival of the New England troops that:

*I have not seen them yet but unless they are better than the greatest part of those that all have been here before them, they had better stay at home. No man was ever more disappointed respecting New Englanders in general than I have been. They are a set of dirty, low, griping, cowardly rascals. There are some few exceptions & very few. They may do well enough at home but every fresh man that comes here is so much loss to the army, as they will get sick with small pox or some lazy disorder & those that are seasoned must take care of them & by that means weaken the army.*

Arnold was much of the same opinion. He described the drafts from the regiments as “motley, a miserable Set;” the marines “the Refuse of every Regiment, and the Seamen, few of them, ever wet with Salt Water.” This statement may have been true for most of the men drafted from the units at Ticonderoga, but many of Philadelphia’s crew may have had a great deal of inland water experience judging from their hometowns. Maine, Massachusetts, and especially New Hampshire relied extensively on inland and tidal watercraft similar to Arnold's flat-bottomed gondolas. The indigenous Piscataqua and Merrimac River gundalows and the Durham boat had long been used in these regions for the transport of bulk cargoes such as marsh hay and timber. These flat-bottomed craft of similar size and construction used the same means of propulsion as did the Philadelphia: sweeps and square sails set upon a single mast.

The historical record also preserves clues to what happened to Philadelphia's crew following her sinking. Armed with a letter of commendation from Benedict Arnold, Benjamin Rue left Fort Ticonderoga on 27 October and returned to his home state of Pennsylvania. Here he raised a company of artillery and served under Washington at the
battles of Trenton and Princeton. Later, he took command of the armed vessel Firebrand of the Pennsylvania State Navy on the Delaware. Rue's final federal service occurred when President Washington gave him command of a cutter for the newly formed Revenue service. The soldier's land bounty plan allowed him to settle in Ohio in the 1800s and establish a tavern near Fort Washington (present-day Cincinnati, Ohio), and later, the Golden Lamb Tavern at Lebanon, Ohio. Rue was a colorful figure and popular host. He continued to dress in small-clothes, the fashion of Revolutionary times.

His pension petition submitted in 1818 was later rejected by the Federal government on the basis that he then possessed an estate of some 3,000 dollars an amount deemed too high to require the need for a federal pension. Benjamin Rue died in 1820 in Lebanon, Ohio, and was buried with full military honors.

The gondola's second and third officers, however, had far less patriotic careers than did Captain Rue. Lieutenant Jonathan Blake left the service in 1778. According to one historian, Blake was cashiered for "tearing and concealing a letter written by Colonel Kosciusko to Colonel Hay; absenting himself frequently without leave; employing in a clandestine manner several of his men upon his farm while he drew provisions for them from the public stores, and returning them present and fit for duty."

Mate Joseph Bettys, according to a very graphic sketch in Lorenzo Sabine's Biographical Sketches of Loyalists of the American Revolution, was hung in Albany, New York in 1782. Following his capture on board the galley Washington on 13 October, Bettys was befriended by the British and subsequently began recruiting operations for the Crown in Loyalist areas of New York, during which he was rumored to be involved in "ambuscades and arson incidents" that led New York state authorities to offer a reward for his capture. He was captured near Albany in 1782, with ciphered documents in his boots.
It appears that Joseph Bettys was the first crew member assigned to the *Philadelphia*. Cornelius Wynkoop sent Bettys to Ticonderoga with the gondola following its launching at Skanesborough on 30 July. Considering Bettys actions after being captured, it is interesting that Wynkoop wrote Gates: "I also send you one sailor [Bettys] out of my regiment down. I would be glad you would order him on board immediately, or I am afraid he will run off and leave you."

When Bettys joined the British after the Battle of Valcour Island he was made ensign in the 2nd Company of the King's Rangers. The regiment was raised on 1 May 1779 and functioned until 1784. The leader was Robert Rogers, famous for his service during the Seven Years' War. Two battalions of ten companies each were established for a total strength of 1,267 officers and other ranks.

Rogers' brother James was promoted to Major Commandant of the regiment's 2nd Battalion 2 June 1779, and immediately began to raise recruits for the corps in Nova Scotia. By September the regiment was quartered at Fort St. Jean on the Richelieu River (St. Jean, Quebec). Haldimand delineated the primary tasks of the King's Rangers as:

1. Scouting and reconnaissance for other corps, to include carrying dispatches.
2. Construction of fortifications and general garrison duties.
3. Assisting refugees in Quebec and aiding the escape of Loyalist families.
5. Employment in the secret service.\(^37\)

James Rogers' battalion was very active in scouting and recruiting along the frontiers of New York, Lake Champlain, and Vermont. It participated in the capture of the American Forts Anne and George and aided in a raid on Ballstown, New York, (Joseph Bettys' hometown) that netted many rebel prisoners. The battalion also provided secret service agents (or spies) for the crown forces in rebel territory. It was on one these
expeditions, that Joseph Bettys disguised as a civilian, was captured with the incriminating evidence hidden in his boots.

At least 32 of the remaining 41 Philadelphia crew can be accounted for. Following Philadelphia's sinking, most boarded the galley Washington and were made prisoners of the British when the galley's commander General Waterbury was forced to surrender to an overwhelming British force on October 13. The journal of Jeduthan Baldwin records, however, that

\[\text{\ldots Captain Rue [Rue] came in through the woods with 16 men, they left Genl. Waterbury just before he Struck, went into a battoe & went on Shore.}\]

The remaining 18 are listed among the 112 prisoners taken by the British on the 12th and 14th (Table 10.3). Nine members of Philadelphia's crew are missing from the historical record. Presumably, these men were killed in the battle on the 11th, or they may have boarded a vessel other than the galley Washington. It is likely that those wounded in the battle may have been carried aboard the fleet's hospital sloop (Enterprise) which returned safely to Ticonderoga.

Following the surrender of the galley Washington, the military service of the eighteen captured crew ended, at least temporarily. Governor Sir Guy Carleton released all of the American prisoners on their own parole after having sworn an oath "not to say or do anything that may be contrary to the interest of His Majesty's government".

Except for Benjamin Rue, few of Philadelphia's crew filed for or received pensions. Considering that the Pension Act of 1818 required a minimum service of six months for qualification it is not surprising that the men are not listed since the majority only served for four or five months before being taken prisoner by the British.
Table 10.3

Philadelphia Crew Members Listed as British Prisoners

<table>
<thead>
<tr>
<th>Robert Avery</th>
<th>Samuel Harris</th>
</tr>
</thead>
<tbody>
<tr>
<td>George Berry</td>
<td>James Mars</td>
</tr>
<tr>
<td>Joseph Bettys</td>
<td>Jacob Murrell</td>
</tr>
<tr>
<td>Jonathan Blake</td>
<td>William Sebestern</td>
</tr>
<tr>
<td>Joseph Chace</td>
<td>Thomas Shepperd</td>
</tr>
<tr>
<td>Michael Chapter</td>
<td>James Stewart</td>
</tr>
<tr>
<td>Samuel Cook</td>
<td>Edward Thomas</td>
</tr>
<tr>
<td>Ephream Davis</td>
<td>George Walton</td>
</tr>
<tr>
<td>Ephream Gile [Guile]</td>
<td>Richard Ward</td>
</tr>
</tbody>
</table>

Source: Haldimand Papers, Special Collections, John C. Pace Library, University of West Florida, Pensacola, FL.
Notes: Chapter X


2. *Ibid*.


17. Ibid., 46.

18. Ibid.


21. Pension Records of Captain Benjamin Rue, National Archives, Revolutionary War Orderly Books, M853, Roll 20, Book 147, 156.


23. Presumably, the James McIntires were a father and son team. Historical records indicate that both were from Portsmouth, NH, Philip K. Lundeberg, personal communication.

24. Pension records of Captain Benjamin Rue, 156.


27. Arnold to Gates, in Clark and Morgan, Naval Documents 6:884.

28. Pension records of Captain Benjamin Rue, 156.


CHAPTER XI

THE PHILADELPHIA II

In 1989 the Lake Champlain Maritime Museum (LCMM) undertook the task of building a full-sized replica of the gondola *Philadelphla*.¹ Founded in 1984 as the Basin Harbor Maritime Museum, the Lake Champlain Maritime Museum is located along the shores of Lake Champlain at Basin Harbor, Vermont. With steady yearly growth the museum developed into a sizeable complex, housing small craft, workshops, boat building activities, and exhibit areas to explore the lake's nautical history. As part of a series of ongoing projects, the museum has built replicas of several boat types that have seen use on Lake Champlain, Lake George, and other New England waterways. These reconstructions, based on archaeological evidence or modeled after surviving examples, have provided both students and historians firsthand experience with early maritime construction, sailing, and boat handling techniques.

One of the first projects undertaken by the museum was the replication of an 18th-century bateau, an important type of military vessel on Lake George and Lake Champlain during the French and Indian Wars and the American Revolution. Based on archaeological examples excavated from Lake George, New York, in 1960, the replica bateau *Perseverance* launched in 1987 provided an excellent model to evaluate 18th-century construction techniques. While being tested for handling and sailing abilities, *Perseverance* became the subject of a Vermont Educational Television documentary.² The success of the project, and the enthusiastic public response received from the documentary film provided the motivation for the LCMM to build more archaeologically-based replicas. To fulfill a documentary film crew's need for a authentic vessel that would dramatize the northeastern Vermont logging industry, museum boatbuilders also assembled a traditional log driving
bateau for the movie *Where the Rivers Run North*. Later, each of these replica vessels were incorporated into the growing collection of watercraft on display at the museum.

Relying on these experiences, the LCMM undertook the construction of a full-sized replica of the gondola *Philadelphia* in 1989. The detailed plans provided by the Smithsonian Institution assured an accurate reproduction that could be used to evaluate how *Philadelphia* was built, manned, sailed, and propelled by sweeps. The project would celebrate the birth of the United States Navy at Whitehall, New York, in 1776 and would also be timed to coincide with the bicentennial of Vermont’s admission into the Union as the fourteenth state in 1791.³

Construction of the *Philadelphia II* began as soon as a combined boat shed and exhibition hall were erected on the museum grounds. Like the gondola’s original builders at Skanesborough, the Lake Champlain Maritime Museum also had difficulties in securing timber for the replica. Since much of the countryside of Vermont and New York had been heavily deforested by the late 1800s it was necessary to scour the countryside for scattered stands of second-growth trees.⁴ This was accomplished with the help of local farmers who provided the museum with modern milling equipment, and most importantly, their time.

While, planks for the original *Philadelphia* were cut with a water-powered reciprocating saw in the captured mills of loyalist Philip Skene, the LCMM set up a portable saw mill and modified it to accept 30-foot logs.⁵ The Skenesborough shipwright’s tools, the broad ax, ship’s saw, and adze, were for the most part replaced with a standing, 36-inch band saw and, on occasion, a chain saw (figures 11.1). Project volunteers, however, were always encouraged to learn the use of the adze, drawblade, gimlet, etc. More visible timbers such as the stem and stern post were shaped with the traditional adze and hatchet as were the mast, yards, and boom of the replica.
Figure 11.1. *Philadelphia II*'s boatbuilders, John Gritter and Bill Swartz fabricate one of the replica's knees. Photograph courtesy Lake Champlain Maritime Museum.
The *Philadelphia II* replica project required three years of effort since the museum had only three shipwrights. Their work was often intentionally interrupted by the educational program that accompanied the project. As part of that program, however, the museum did rely on the help of numerous volunteers and even school children. In return, the apprenticeship program allowed children and adults the opportunity to learn traditional boat-building skills. The educational program also included temporary and permanent exhibits to interpret the Battle of Valcour Island and the eighteenth-century heritage of the Champlain Valley.⁶

Like the original *Philadelphia*, construction of the replica started with a flat building frame. In contrast to the construction technique used at Skenesborough, the bottom of *Philadelphia II* was built upside-down. Floor timbers were laid out on raised stocks and bottom planking was then laid over the floors and treenailed into them. Afterwards, the entire bottom assembly was turned over. In 1990, the museum's shipwrights added the stem, sternpost, and frames to the new *Philadelphia's* flat bottom.⁷ After nine months of framing work, the 48-foot, 11-inch keelson was installed by joining two scarfed white oak timbers to the replica's floors with ten iron bolts. During the same building season, the museum also constructed a blacksmith shop and forge so that the gondola's ironwork could be manufactured on site in a traditional manner. An extremely popular display in itself, the museum's blacksmiths shop fabricated almost all of the iron hardware needed for the vessel including gudgeons, swivel gun socket straps, ring bolts for the cannon breeches, and hundreds of iron fasteners.

Planking of the vessel took place in 1991, a process that required nine weeks and was accomplished by planking inside and outside simultaneously (11.2). Considering the time constraint and the speed with which the eight gondolas were built at Skenesborough,
all were probably built with green lumber. Because of the museum's difficulties in finding enough white oak timber at one time, some of the replica's planks had to be stored for nearly a year before being incorporated into the vessel. The use of this seasoned wood required the employment of a steam box to make them more pliable. Once the vessel was planked, the services of an expert caulker were secured to teach the modern boatbuilders the almost-lost art of properly caulking a wooden vessel (figure 11.3).

The original *Philadelphia* was not built with any idea of it lasting longer than would be necessary for the colonials to maintain control of the Lake Champlain invasion route. The LCMM, on the other hand, planned to build the *Philadelphia II* to last for at least twenty years. Protective modern paint and tar were used beneath the decks where it would not show.

The question of whether or not to use modern materials arose at other times, specifically in regard to the vessel's rigging. Because natural fibers tend to expand and contract with exposure to moisture, the museum knew that constant adjustments would be necessary if the replica was rigged with natural-fiber rope. Ultimately, natural fibers were used for the running rigging where texture was important. The choice of synthetic fibers in the standing rigging and for the sails would provide relative ease of maintenance and the assurance of greater strength."

The museum builders made only minor deviations from Hoffman's plans. In the interest of safety, additional cleats were added fore and aft for towing and mooring. To provide for more head room, the awning beams were set about an inch higher than specified. A small change was also made to the topsail running rigging to ease dousing the sail from the deck.
Figure 11.3. Caulking *Philadelphia II*'s seams with oakum. Photograph courtesy Lake Champlain Maritime Museum.
With the final addition of the decks and the barn door rudder, the hull was completed and ready to be rigged in mid-summer of 1991 (figures 11.4, 11.5, and 11.6). The standing and running rigging had been spliced and wormed, parcelled, and served in the traditional manner; ash blocks with lignum vitae sheaves had been fashioned; and the mast, yards, and boom had been shaped from white pine. With the aid of a local power company truck the newly-fashioned mast was stepped into the hull and the final rigging completed. One dozen ash oars, each 21 feet long, were placed aboard for propelling and maneuvering the new Philadelphia.

On 18 August 1991, the new Philadelphia was launched into the waters of Basin Harbor to the cheers of 4,000 spectators (figure 11.7). As Art Cohn, director of the project, stated "The career of the Philadelphia II as a floating history exhibit had begun."12

In its attempt to visually authenticate the original vessel in every practical way, the museum was fortunate in having three large replica concrete cannons donated to the project by the Rodney Hunt Company of Orange, Massachusetts (figure 11.8 and 11.9).13 Four cast iron swivel guns were obtained from West Bend Replica, West Bend, Indiana. These are operational guns, and were patterned directly from the swivel raised with the original Philadelphia.

To complete the appearance of authenticity, Philadelphia II was equipped with a brick fireplace, shot garlands, storage lockers, assorted gunners' implements, and anchors. A canvas awning and sweep storage rack were added as indicated in Howard Hoffman’s reconstruction of the original gondola.

Evaluating the Replica

Since 1991 there have been many opportunities to put Philadelphia II through its "sea trials." During the summers of 1992 and 1993 the museum maintained a busy tour
Figure 11.5. *Philadelphia II*'s classic "barndoor" rudder. Photograph courtesy Lake Champlain Maritime Museum.
Figure 11.6. Arthur B. Cohn assisting in *Philadelphia II*’s final rigging. Photograph courtesy Lake Champlain Maritime Museum.
Figure 11.7. Launch day, 18 August 1991. Photograph courtesy Lake Champlain Maritime Museum.
Figure 11.8. Twelve-pounder replica cannon in slide carriage. Photograph by author.
Figure 11.9. Philadelphia II's port side 9-pounder concrete replica. Photograph by author.
schedule that sent the new *Philadelphia* to many of the same historic places its namesake visited in 1776 including: Whitehall (the former Skanesborough), Fort Ticonderoga, and Valcour Island. Unlike the original, the new *Philadelphia* also traveled to the site of the 1776 British shipyard at St. Jean, Quebec, and passed by Fort Lennox on Île aux Noix where many colonial soldiers died during the American retreat in early May and June of 1776.

A traveling historical exhibit and a mostly volunteer crew dressed in 18th-century apparel completed the "living reflection of Lake Champlain's vibrant history" during *Philadelphia II*‘s inaugural tour. In 1992 alone, over 12,000 visitors stepped aboard the new replica. The crew, familiar with the vessel's place in history and archaeology, answered questions concerning the Battle of Valcour Island, Colonel Lorenzo Hagglund's recovery of the original *Philadelphia* in 1935, and a myriad of others such as where forty-four men might have found room to sleep on the crowded boat.

As expected, the *Philadelphia* type is primarily a rowing vessel. The square rig is designed for only running before the wind in relatively smooth waters. The rig is appropriate for the no-lateral-resistance hull. On Lake Champlain, ninety percent of the winds of any real strength generally blow north or south, so the vessel either has a fair wind and can run under sail, or has the wind in its teeth and cannot sail anywhere.

According to Roger Taylor, captain of the new *Philadelphia*, sailing the new vessel with a fair wind is "a treat" (figures 11.10 and 11.11). *Philadelphia II* can make three or four knots easily, but four is about maximum. As an experiment, the replica's crew brought the vessel up as close to the wind as its members could, approximately 90 or 100 degrees from the true wind. *Philadelphia II* forged ahead very slowly and made about as much leeway as headway. In practice, it was found that if a course of 120 degrees off the true
Figure 11.10. *Philadelphia II* under sail. Photograph courtesy Lake Champlain Maritime Museum.
Figure 11.11: Volunteers set *Philadelphia II*'s topsail during "sea trials." Photograph courtesy Lake Champlain Maritime Museum.
wind was steered the gondola made good a course approximately 150 degrees off the true wind. If it was sailed any closer, its performance decreased because the leeway increased so much.

The gondola has very high initial stability with its wide flat bottom, beam, and great weight, however, it has also proven to be unmaneuverable at times. *Philadelphia II*, with its heavy, shallow hull and with considerable windage in its rig, is very vulnerable to the wind when maneuvering under oars. In fact, the crew found it difficult to make progress sweeping against even a gentle breeze. Once, when the *Philadelphia II*’s towboat ran out of fuel, the crew was forced to row the vessel two miles to windward. The volunteer sailors could well imagine the exhaustion of Arnold’s seamen, as they worked to make slow and painful progress against the southerly wind on October 12th and 13th, 1776, desperately trying to keep ahead of the pursuing British. If the wind was of any real strength, however, the *Philadelphia II* would travel with it, regardless of the direction the vessel was pointed. On a calm day, however, the twelve oars skillfully applied propelled the vessel forward at a sustained speed of two and one-half knots (figure 11.12).

Captain Taylor concluded that one reason why Arnold fought his gondolas from moorings was that he realized how unmaneuverable they were, under oars, sail, or both. Essentially, the *Philadelphia* and its sisterships were floating gun platforms. The uncomplicated design was ideally suited to the colonials’ immediate need of a gunboat that could be quickly assembled with only a minimum of men and materials.

Today the *Philadelphia II* is tied up at a harbor adjacent to the museum’s grounds. Visitors to the museum unfamiliar with Lake Champlain’s history often mistake the replica for the original. The *Philadelphia II* project has made “a major contribution to history and nautical archaeology on all levels. It has combined the best elements of scholarly and
Figure 11.12. Philadelphia II is extremely maneuverable under sweeps during calm conditions. Photograph courtesy Lake Champlain Maritime Museum.
popular history in ways that attract, entertain, and educate scholars and the general public alike.
Notes: Chapter XI


2. Lake Champlain Maritime Museum Newsletter, Fall/Winter 1993-94.

3. Ibid.


5. Ibid., 69.


10. Ibid.

11. Donald DeWees, personal communication.


17. Ibid.


21. Ibid., 83-84.

23. Roger Taylor, personal communication.

CHAPTER XII

DISCUSSION AND CONCLUSIONS

Naval control of the rivers and lakes was the key to the British strategy of separating the New England colonies from those of the south. The strategic importance of Lake Champlain as an invasion corridor was well known to both the British and the Americans. In the early spring of 1776, when General Guy Carleton was poised to launch his offensive from Canada, the Americans possessed a loosely held control of the lake. Their deployment of the four vessels they had captured the year before effectively prevented the British advance. With only one avenue before them, the British began preparations to gain control of the lake in the late spring of 1776.

The Americans, lacking virtually every necessity to build, arm, and man a fleet, were forced to increase their strength by water when they learned of the British shipbuilding efforts to the north. Philip Schuyler began by ordering the construction of gondolas at Skenesborough, New York. These small, flat-bottomed craft were well-suited to the lake. With their shallow draft they could negotiate shoal water and land on nearly any shore and the simplicity inherent in their design and construction enabled the carpenters at Skenesborough to build one every two or three weeks. Had difficulties in obtaining iron and other materials not presented themselves, Schuyler’s New York carpenters might have filled their quota by building one every week. That this was possible, even with what were probably inexperienced shipwrights and house carpenters, is evident in Philadelphia’s construction.

*Philadelphia*’s floors are merely straight timbers which do not mate with futtocks. This method of frame construction saved a tremendous amount of time by avoiding the labor-intensive tasks of drilling lateral bolt holes through the floors and futtocks, and fitting
the frame timbers tightly together, a design also seen in the contemporary bateau. Howard Hoffman's survey of Philadelphia at the Smithsonian Institution determined that the independent side frames—essentially standing (or rising) knees—were mass-produced from one pattern. The use of single pattern frames in all eight gondolas saved time that the Americans could not afford to waste. The flat-bottomed, hard-chined, transom-less hull form did not require complicated shaping and bending of planks to conform to complex framing curves. By setting the frames perpendicular to the chine, there was no need to bevel their outside faces to accept the planking. Of necessity, the hulls of all of the Skenesborough vessels were built entirely of green timber, because the carpenters had to complete the gondolas when they were most needed by Benedict Arnold.

Although Schuyler repeatedly requested that an experienced shipwright be sent to Skenesborough to oversee the gondola construction, it does not appear that one arrived before the large influx of shipwrights from Pennsylvania, Connecticut, and Rhode Island. Following their arrival, Arnold turned the focus on construction to the larger and potentially more formidable galleys. It seems likely, therefore, that the model for the Skenesborough gondolas was adapted from the plan that Arnold drafted at Chambly on 3 May 1776. The elimination of the keel specified in Arnold’s plan is puzzling. The addition of a keel would not have added a tremendous amount of time and effort to the overall construction. Had an external keel been added, the vessel would undoubtedly have handled better under sail, as the keel's lateral resistance would have inhibited leeward movement.

Following the launching of the vessels, the next step in the assembly line construction process occurred at Fort Ticonderoga independent of the work at Skenesborough. When it came time to arm and rig Philadelphia, some modifications to the hull were necessary. In order to fit the cannons, two knees had to be removed from the
midship deck for the proper placement of the 9-pounders and the stem had to be cut down to allow for clearance of the 12-pounder bow gun. Likewise, the forecastay had to be divided into two legs, and a spreader placed between, in order to keep the single stay from obstructing the gun. Once the final armament plan had been determined stone ballast was added in the stern to counteract the weight the bow gun.

Historical sources indicate that the gondolas and the other vessels in Benedict Arnold's fleet were rigged from supplies taken from other vessels in New York and with locally manufactured blocks. Archaeological evidence supporting this trend is reflected in the variety of sizes of blocks, hooks, rings, and thimbles found with Philadelphia.

Further examination of Philadelphia's artifact collection provides insights into the types of weapons and ammunition that could be obtained from the limited American supply line. Aside from missing swivels, which were probably offloaded just before the vessel sank, Philadelphia was armed as specified by historical documents. That all but one of the Colonial warships were armed and rigged in time for the Battle of Valcour Island reflects well on the logistical abilities of Arnold, Schuyler and his aide Richard Varick. Certainly, cooperation from merchants and sloop owners in New York helped, as did the participation of Connecticut's Governor Trumbull. The presence of the Broad Arrow on the swivel gun and the finding of British uniform buttons confirms that the Americans also relied on captured supplies to meet their needs.

Philadelphia's small arms and personal possessions demonstrate that there was no standard uniform or weapons among the men who served aboard the gondola. The majority of the marines and privates on the vessel were drafted from New Hampshire militia units stationed at Fort Ticonderoga and each of these men probably carried his own personal weapon aboard. Their dress probably varied greatly, as was typical of Colonial
militia units. At least one man appears to have been wearing an overcoat captured from the British army. Ornate shoe and knee buckles may have been the personal possessions of officers aboard the small vessel. Other individuals left their personal marks behind when several initialed pewter spoons were lost with the vessel.

Although few of these crewmen filed for or received federal pensions, their names are still preserved in the historic record. The discovery of the vessel’s final payroll confirmed the names of the forty-four men that served aboard. Nearly every member in this group can be traced to his original militia unit or state regiment.

*Philadelphia* was not recovered using the modern principles of nautical archaeology. The 1935 salvage operation by Colonel Lorenzo F. Hagglund is commendable, however, in that the hull was raised without damage and a diligent search was made for artifacts within the hull.

Conservation treatments for waterlogged wood were virtually unknown in 1935. As a result, many of *Philadelphia*’s timbers have split and cupped, indicating that the wood has failed on a cellular level. Conservators at the Smithsonian Institution are fully aware of the problem and are seeking both funds and the advice of experts to plan for its long-term stabilization.

The Smithsonian’s present display of *Philadelphia* and its artifact collection have educated countless thousands of visitors about the importance and fragility of the small American flotilla on Lake Champlain in 1776. This same story was also brought alive when the Lake Champlain Maritime Museum completed the construction of a full-size working replica in 1991. This vessel is patterned in exact detail to the original and provides a first-hand opportunity to evaluate 18th-century construction, sailing, and handling techniques.
The remains of one other Skenessborough gondola have yet to be discovered. Historical sources suggest that this vessel lies off or near Schuyler's Island. If the location of this vessel is discovered, it would be interesting to compare the scantlings and artifact assemblage to determine how similar the eight gondolas were in terms of construction and armament. Provided this vessel does not rest in very deep water, such a survey could be conducted at a relatively low cost, completely underwater. Raising the vessel would be neither necessary nor desirable considering the great amount of time and expense required to stabilize and house the waterlogged wood. Its physical presence would only serve to duplicate work already given to Philadelphia.
BIBLIOGRAPHY


Accession Memorandum No. 229338, 30 January 1962, United States National Museum, Washington, DC.


Burlington Daily News, Special Historical Tabloid, August 1935.


Haldimand Papers: Correspondence with General Gage, 1758-1777 (Ontario: Public Archives of Canada, 1970 [Microfilm, Special Collections, John C. Pace Library, University of West Florida, Pensacola, Florida]).


Peterson, Harold L. Round Shot and Rammers (South Bend, IN: South Bend Replicas, Inc., 1969).


Revolutionary War Orderly Books, M853, Roll 20, Book 147, 156, National Archives, Washington DC.


Whitehall Times, Whitehall, NY, 30 October 1936 and 1 June 1961.


APPENDIX A

A CATALOG OF ARTIFACTS FOUND ON THE PHILADELPHIA

The following catalog includes all of the artifacts that were reported to have been recovered from the Philadelphia in 1935. A total of 719 objects (including the hull) were accessioned into the United States National Museum (now the National Museum of American History) following the Hagglund bequest.¹ Two other objects (a cannon ball for a 12-pounder gun and a shot canister) were later added. As indicated below, a small number of artifacts originally recovered in 1935 are not included in the Smithsonian collection and their whereabouts are unknown. At present, most of Philadelphia's artifacts are displayed in the Armed Forces History Wing of the National Museum of American History in Washington, D.C. either on board, or adjacent to the gondola. Those not displayed are stored on the fourth floor of the NMAH in the Armed Forces History collections.

Numbers in parentheses next to the artifact descriptions indicate the number of specimens if more than one example was found. Dimensions of objects are indicated if known. Locations of objects found on Philadelphia are also noted where possible.
Armaments

1. Twelve-pounder Bow Gun and Slide Carriage, *Figures A.1 and A.2*
   - Length overall: 102-1/2 inches
   - Weight: 3,490 pounds

2. Nine-pounder Broadside Cannons, *Figures A.3 and A.4*
   - Length overall: 93 inches
   - Average weight: 2,192-1/2 pounds
   - Found: The starboard gun was jammed against the carriage of the port gun on the midship deck.

3. Wooden Nine-pounder Carriage Trucks (5), *Figure A.5*
   - Reconstructed diameter: 13 inches
   - Reconstructed thickness: 3-1/2 inches
   - Found: Presumably, these were lying next to their respective carriages on midship deck.

4. Iron Carriage Rings (3), *Figure A.6*
   - A. Carriage Ring with Eyebolt
     - Length overall: 9 inches
     - Outer diameter of eye: approximately 2 inches
     - Inner diameter of eye: approximately 1 inch
     - Diameter of shank: 7/8 inch
     - Outer diameter of carriage ring: approximately 5-1/8 inches
     - Inner diameter of carriage ring: approximately 3-5/8 inches
   - B. Iron Carriage Ring
     - Exterior diameter of ring: 4-1/4 inches
     - Interior diameter of ring: 3 inches
   - C. Iron Carriage Ring (broken)
     - Exterior diameter of ring: approximately 4-1/8 inches
     - Interior diameter of ring: approximately 3 inches

5. Iron Keys for Trunnion Plate (7), *Figure A.7*
   - Length: approximately 3-1/2 inches
   - Maximum width: approximately 2 inches

6. Iron Swivel Gun, *Figures A.8, A.9 and A.10*
   - Length overall: 35-1/4 inches
   - Weight: 160 pounds
   - Found: Lying in the bottom of the aft cockpit.
7. Iron Yoke for Swivel Gun, *Figure A.11*

Length overall: 18 inches

Found: Next to swivel gun in aft cockpit.

8. Wrought Iron Shot Gauge, *Figure A.12*

Length overall: 13-3/4 inches
Outer diameter of ring: 5-3/16 inches
Inner diameter of ring: 4-7/16 inches

Found: On the midship deck next to port nine-pounder.

9. Wooden Double Shot Gauge for 9 and 12 Pound Shot, *Figure A.13*

Length: 25-1/4 inches
Maximum width: 6-7/8 inches
Hole diameters: 4-1/8 inches and 4 15/16 inches

Found: Resting on the aft deck.

10. Lead Apron

Found: Lying next to the port nine-pounder.

11. Wooden Tompions (3), *Figure A.14 and A.36*

Length overall: 5 inches
Diameter: 4-3/4 inches tapering to 4 inches

12. Gunner's Worm for Swivel Gun, *Figure A.15*

Length overall: 6 inches
Diameter: 1-3/8 inches

13. Rammer head for 12-pounder

Length overall: 4-3/8 inches
Diameter: 4-3/8 inches

*Shot*

14. Iron Bar Shot, for 12-pounder gun, *Figure A.16*

Length overall: 16-1/4 inches
Diameter of shot hemisphere: 4-7/8 inches
Width of connecting bar: 11/16 inches square

Found: According to Hagglund, this bar shot was found protruding from the muzzle of the bow gun, having slid forward and wedging itself in the tube following *Philadelphia's* sinking.
15. Iron Bar Shot, for 9-pounder gun, *Figure A.16*

   Length overall: 12-7/8 inches
   Diameter of shot hemisphere: 3-7/8 inches
   Width of connecting bar: 3/4 inches square

16. Iron Round Shot, for 24-pounder gun, *Figure A.16*

   Found: Underneath the forward deck.

17. Iron Round Shot, for 12-pounder gun (2), *Figure A.16*

   Diameter: 4-7/16 inches

   Found: Resting in one of the bow shot garlands.

18. Iron Round Shot, for 9-pounder gun (44), *Figure A.16*

   Diameter: 4 inches

   Found: Piled between the two knees forward of the port nine-pounder.

19. Iron Round Shot, for 6-pounder gun, *Figure A.16*

   Diameter: 3-1/2 inches

20. Iron Round Shot, for 4-pounder gun, *Figure A.16*

21. Iron Grape or Swivel Shot (108)

   Diameter: two sizes, 1-15/16 and 1-3/4 inches

22. Iron Grapeshot (10)

   A. Diameter: 1 inch (10)

   B. Diameter: 1/2 inch (1)

23. Tin Shot Canister with Wooden Sabot, *Figures A.17 and A.18*

   Length overall: 8-3/8 inches
   Diameter: 3-7/8 inches
   Length of sabot: 3 inches

   Found: This artifact was recovered from one of the nine-pounder cannons in 1935. The cannon was found to have been loaded with the canister, a nine-pound ball, three wads and powder.²

24. Iron Langrage Fragments (4), *Figure A.19*

   A. Length: 1-1/2 inches
      Width: approximately 1 inch

   B. Length: 1-3/8 inches
      Width: 1-1/4 inches
C. Length: 7/8 inch  
   Width: 5/8 inch

D. Length: approximately 3/4 inch  
   Diameter: approximately 3/4 inch.

Small Arms

25. Wooden Musket Stock (broken), Figure A.20  
   Found: On bottom of forward cockpit.

26. Musket Barrel Fragment, Figure A.22  
   Length: 9 1/2 inches  
   Width: 1-1/2 inches tapering to 1 inch

27. Brass Trigger Guards (5), Figures A.21 and A.23  
   A. Brass Trigger Guard  
      Complete guard with tang present on the forward end.
   B. Brass Trigger Guard  
      Identical to example A.
   C. Trigger Guard  
      Concreted to musket lock assembly.
   D. Trigger Guard (broken)  
      Concreted to musket lock assembly.
   E. Brass Trigger Guard (broken)  
      Width: approximately 1/2 inch tapering to 1/4 inch

28. Wooden Ramrod Fragments (5), Figure A.24  
   Diameter: approximately 5/16 inch  
   Length: various, 2-1/4 inches to 3-3/4 inches

29. Brass Ramrod Thimbles (3), Figure A.25  
   Length: 1-3/8 inches  
   Diameter: 3/8 inch

30. Brass Rear Ramrod Thimbles (2), Figure A.26  
   A. Length overall: 4-5/8 inches  
      Length of pipe: 2 inches  
      Diameter of pipe: 3/8 inch
B. Length overall: 2-5/8 inches
   Length of pipe: 1-3/8 inches
   Diameter of pipe: 3/8 inch

31. Iron Rear Ramrod Thimble (broken), *Figure A.27*

   Length of tang: 4-3/4 inches
   Width of tang: 13/16 inch tapering to a round point

32. Bayonet Fragments (9), *Figure A.28*

   A. Partial Blade, Shank, and Fragmented Socket
   B. Fragmented Blade and Shank
   C. Complete Blade and Fragment of Shank
   D. Blade Fragment
   E. Blade Fragment with Portion of Shank
   F. Portion of Blade, Shank, and Socket
   G. Blade Fragment with Shank
   H. Blade Fragment with Shank
   I. Blade Fragment with Portion of Shank

   Found: In the forward cockpit.

33. Gunflints (eight examples), *Figure A.29*

   A. Length: 3/4 inch
      Width: 7/8 inch
   B. Length: 1-3/16 inches
      Width: 1-1/4 inches
   C. Length: 7/8 inch
      Width: 1 inch
   D. Length: 1-1/16 inches
      Width: 1-3/16 inches
   E. Length: 1-3/16 inches
      Width: 1-3/8 inches
   F. Length: 1-3/8 inches
      Width: 1-7/16 inches
   G. Length: 7/8 inch
      Width: 1-5/16 inches
   H. Length: 13/16 inch
      Width: 1-1/8 inches
34. Wooden Cartridge Box Form, Figure A.30

Found: In forward cockpit.

35. Musket balls and Buckshot, Figure A.31

A. Lead Musket Ball (4)
   Diameter: 11/16 inch

B. Lead Musket Ball (2)
   Diameter: 5/8 inch

C. Lead Buckshot (349)
   Diameter: 3/8 inch

Found: In forward cockpit

Iron Fasteners

36. Iron Spikes and Nails, Square (18), Figure A.32

A. Length: 7-13/16 inches
   Width: 1/2 inch tapering to 1/4 inch

B. Length: 6 1/2 inches
   Width: 9/16 inch tapering to 3/16 inch

C. Length: 4-3/4 inches
   Width: 1/2 inch tapering to 3/16 inch

D. Length: 4-1/2 inches
   Width: 1/2 inch tapering to 1/4 inch

E. Length: 4-1/4 inches
   Width: 1/2 inch tapering to 3/16 inch

F. Length: 3-1/16 inches
   Width: 1/2 inch tapering to 1/4 inch

G. Length: 2-3/4 inches
   Width: 7/16 inch tapering to 3/16 inch

H. Length: 2-3/16 inches
   Width: 5/16 inch tapering to 1/4 inch

I. Length: 2-1/16 inches
   Width: 5/16 inch tapering to 1/4 inch

J. Length: 2-3/4 inches
   Width: 1/4 inch tapering to 1/8 inch

K. Length: 3-5/16 inches
   Width: 5/16 inch tapering to 1/8 inch
L. Length: 3-5/16 inches  
   Width: 5/16 inch tapering to 1/8 inch

M. Length: 4 inches  
   Width: 1/4 inch tapering to 1/8 inch

N. Length: 4 inches  
   Width: 3/8 inch tapering to 3/16 inch

O. Length: 3-3/4 inches  
   Width: 7/16 inch tapering to 1/8 inch

P. Length: 4-13/16 inches  
   Width: 7/16 inch tapering to 1/8 inch

Q. Length: 4-3/4 inches  
   Width: 7/16 inch tapering to 1/8 inch

R. Length: 4-9/16 inches  
   Width: 1/2 inch tapering to 3/16 inch

37. Iron Eye Spikes (3), *Figure A.33*

A. Length overall: 9-1/4 inches  
   Outer diameter of eye: 1-3/4 inches  
   Inner diameter of eye: 3/4 inch  
   Maximum diameter of shank: 3/4 inch

B. Length overall: 7-1/4 inches  
   Outer diameter of eye: 1-1/2 inches  
   Inner diameter of eye: 5/8 inch  
   Maximum diameter of shank: 5/8 inch

C. Length overall: 7-1/4 inches  
   Outer diameter of eye: 1-1/2 inches  
   Inner diameter of eye: 5/8 inch  
   Maximum diameter of shank: 5/8 inch

38. Iron Timbering Spike, Round, *Figure A.33*

   Length: 13-3/4 inches  
   Diameter of head: 2-1/2 inches  
   Diameter of shank: 1-3/4 inches

39. Iron Axe Heads (4), *Figure A.34 and A.35*

A. Length: 7-3/8 inches  
   Width of poll: 1-1/2 inches

B. Length: 8 3/4 inches  
   Width of poll: 1-1/2 inches

C. Length: 8 inches  
   Width of poll: 1-3/8 inches
D. Length: 7 inches (early American ax)
   Width of poll: 1-3/8 inches

Found: In the forward cockpit.

40. Wooden Mallet, Figure A.36

   Handle length overall: 16-1/4 inches
   Handle thickness: 1-3/8 inches tapering to 1 inch
   Mallet diameter: 4-1/2 inches
   Mallet width: 7-1/2 inches

41. Pitch Brush, Figure A.38

   Length overall: approximately 11-1/2 inches
   Brush width: approximately 3-3/8 inches

Found: Inside lead pitch dish in forward cockpit.

42. Lead Dish, Figure A.39

Found: At the bottom of the forward cockpit.

43. Iron Spade Blade, Figure A.41

   Length overall: 15 inches
   Length of handle: 3-1/2 inches
   Width: 8-1/2 inches tapering to 7-3/4 inches
   Opening for handle: 1-3/4 inches

Found: In the forward cockpit.

44. Iron File, Figure A.42

   Length overall: 12-1/2 inches
   Length of tang: 2 inches
   Width: 1-1/4 inches

Found: In the forward cockpit.

45. Iron Fascine Knives (2), Figures A.43 and A.44

   A. Length overall: approximately 14 inches
      Length of blade: approximately 9 inches
      Length of tang: approximately 5 inches

   B. Length overall: approximately 12-1/4 inches
      Length of blade: approximately 10-7/8 inches
      Length of tang: approximately 1-3/4 inches

Found: Presumably in forward cockpit with other tools.
46. Iron Chisels (2)

   Length: approximately 15-1/4 inches
   Blade width: approximately 1-1/4 inches

   Found: Presumably, these are included in the small tools recovered from the forward cockpit.

47. Iron Adze Head, Figure A.45

   Found: In the bottom of the forward cockpit.

48. Grindstone, (broken), Figure A.46

   Approximately 12 inches in diameter and 4 inches thick.

**Rigging Equipment**

49. Wooden Blocks, Figure A.47

   A. Double Block (12-inch)
   B. Double Block (10-inch)
   C. Single Block (10-inch)
   D. Single Block (8-1/2-inch)

   Found: Inside forward cockpit.

50. Wooden Sheave

51. Wooden Deadeyes (3), Figure A.48

   One example is a converted sheave

52. Iron Hooks and Thimbles (8), Figure A.49

   A. Hook with Clevis and Rope Thimble

      Length overall: 7-3/4 inches
      Length of hook: 5 inches
      Thickness of hook shank: 7/8 inch
      Length of clevis: 4-3/4 inches
      Diameter of clevis at pivot point: approximately 2-1/2 inches
      Diameter of thimble: approximately 2-3/8 inches

   B. Hook and Rope Thimble

      Length overall: 8-1/2 inches
      Thickness of shank: 1-1/8 inches
      Diameter of thimble: 2-1/4 inches
C. Hook and Rope Thimble
   Length overall: 6-3/4 inches
   Thickness of shank: 7/8 inch
   Diameter of thimble: 2-1/4 inches

D. Hook and Rope Thimble
   Length overall: 6-1/4 inches
   Thickness of shank: 7/8 inches
   Diameter of thimble: 2 inches

E. Hook and Rope Thimble
   Length overall: 5-1/2 inches
   Thickness of shank: 3/4 inch
   Diameter of thimble: 1-3/4 inch

F. Hook and Rope Thimble
   Length overall: 6-1/2 inches
   Thickness of shank: 7/8 inch
   Outer diameter of eye: 3 inches
   Inner diameter of eye: 1-3/4 inches
   Diameter of thimble: 2 inches
   Width of thimble: 1-1/2 inches

G. Iron Hook
   Length overall: 7-1/4 inches
   Thickness of shank: approximately 1/2 inch
   Outer diameter of eye: 2-5/8 inches
   Inner diameter of eye: 1-3/4 inches

H. Iron Hook
   Length overall: 6 inches
   Thickness of shank: 7/8 inch
   Outer diameter of eye: 2-5/8 inches
   Inner diameter of eye: 1-3/8 inches

I. Rope Thimble (broken)
   Diameter: 2-1/2 inches

J. Rope Thimble (broken)
   Diameter: 2-1/8 inches

K. Rope Thimble
   Diameter: 2-1/2 inches

L. Rope Thimble
   Diameter: 2-1/4 inches
53. Iron Hook, Thimble, and Rope Fragment, *Figure A.50*

*Anchors*

54. Starboard Bow Anchor

- Length overall: 67-1/2 inches
- Distance between arms: 34-1/2 inches
- Length of stock: 62 inches
- Weight: 112 pounds

Found: Sitting in the mud directly under the starboard cathead.

55. Port Bow Anchor, *Figure A.51*

- Length overall: 76-1/2 inches
- Distance between arms: 42-1/2 inches
- Length of stock: 74-1/4 inches

Found: Underneath port cathead.

*Sweeps*

56. Sweep fragments (2)

- Reconstructed length overall: 246 inches
- Blade width: 4 inches
- Length of handle: 11 inches
- Diameter of handle: 2-1/4 inches decreasing to 1-1/2 inches

Found: Underneath the forward deck.

*Navigational Equipment*

57. Time glass (broken), *Figure A.52*

Found: In one of the stern lockers.

58. Iron Dividers, *Figure A.53*

Surviving length: 6-1/8 inches

*Fireplace and Cooking Utensils*

59. Brick Fireplace, (approximately 64), *Figure A.54*

- Length of individual brick: 8 inches
- Width of individual brick: 3-3/4 inches
- Thickness of individual brick: 2-1/4 inches

Found: According to Haglund, the fireplace was located on the port side of the hull between the two knees just aft of the forward cockpit.\(^3\) Char marks found on the underside of the mast partner, however, suggest that the true position may have been in the well.\(^4\)
60. Wooden Chopping Block, *Figure A.54*

   Diameter: 13 inches
   Thickness: 4 inches

61. Cast Iron Cooking Kettle, *Figures A.55 and A.56*

   Height: 9-5/8 inches
   Diameter: 10-3/4 inches

   Found: On the brick fireplace.

62. Long-Handled, Wrought-Iron Frying Pan, *Figure A.57*

   Length overall: 25-3/8 inches
   Diameter of pan: 13 inches

   Found: In brick fireplace.

63. Cast Iron Pot and Bail Fragment, *Figures A.58 and A.59*

   Height: 6-7/16 inches
   Diameter: 9-3/4 inches

   Found to contain traces of ochre and paint brush.

*Personal Possessions*

64. Buttons (11), *Figure A.60*

   A. Large brass button
      Diameter: 1-1/8 inches
   B. Pewter Buttons of the British 26th Regiment (2)
      Diameter: 7/8 inch

   Found: On the forward deck.

   C. Pewter Button with Floral Design
      Diameter: 7/8 inch
   D. Pewter Button with Star Motif
      Diameter: 3/4 inch
   E. Pewter Button (plain)
      Diameter: 7/8 inch
   G. Pewter Button (plain)
      Diameter: 11/16 inch
H. Decorated Pewter Button
   Diameter: 11/16 inch

I. Pewter Button (plain)
   Diameter: 9/16 inch

F. Pewter Button Back
   Diameter: 11/16 inch

J. Wooden Button Body
   Diameter: 5/8 inch

65. Pewter Spoons, Figure A.61

A. Length overall: 7-3/4 inches
   Length of bowl: 2-7/8 inches
   Width of bowl: 1-5/8 inches
   Width of handle: 3/8 inch widening to 7/8 inch

B. Length overall: 7-1/4 inches
   Length of bowl: 2-1/2 inches
   Width of bowl: 1-5/8 inches
   Width of handle: 1/4 inch widening to 7/8 inch

C. Length overall: 7-1/4 inches
   Length of bowl: 3-1/4 inches
   Width of bowl: 1-1/2 inches
   Width of handle: 3/8 inch widening to 13/16 inch

D. Length overall: 7-5/8 inches
   Length of bowl: 2-3/4 inches
   Width of bowl: 1-5/8 inches
   Width of handle: 3/8 inch widening to 13/16 inch

E. Length overall: 5-1/2 inches
   Length of bowl: 2-5/8 inches
   Width of bowl: 1-11/16 inches
   Width of handle: 3/8 inch

F. Spoon (broken)
   Length overall: 4 inches
   Length of bowl: 2-15/16 inches
   Width of bowl: 1-5/8 inches
   Surviving width of handle: 3/8 inch tapering to 1/4 inch

G. Spoon Handle
   Length overall: 3-3/8 inches
   Width of handle: 5/16 inch widening to 7/8 inch
66. Knee and Shoe Buckles (8), Figure A.62

A. Intact Brass Shoe Buckle with Chape and Tongue
B. Rectangular Silver Knee Buckle Frame
C. Oval Silver Buckle Frame (broken)
D. Rectangular Silver Buckle Frame Decorated with Ridges
E. Oval Rectangular Silver Buckle Frame with Circle Motifs

Found: On the aft deck.

67. Ceramic cup, Figure A.63

Height: approximately 3 inches
Diameter: approximately 3-1/2 inches

Found: Inside one of the two stern lockers.

68. Coarse-grained Earthenware Fragments (2), Figure A.64

A. Bowl or cup base fragment
   Length: approximately 1-1/2 inches
   Width: approximately 1-5/16 inches

B. Fragment of body sherd:
   Length: 1 inch
   Width: 7/8 inch

69. Leather Shoe Fragments (25), Figure A.65

Found: Scattered about on the aft deck.

70. Canvas Fragment

71. Wooden Canteen

Found: In the forward cockpit.

72. Cuff Links

Miscellaneous Finds

73. Wrought-Iron Strap Hinges (2), Figure A.67

A. Surviving length: 13-3/8 inches
   Maximum width: 1-1/2 inches

B. Wrought-iron Strap Hinge
   Length: 11-5/8 inches
   Maximum width: 1-3/8 inches
74. Brass Belt Holder, *Figure A.68*

    Length: 1-13/16 inches
    Width of arms: 1/8 inch

75. Sulfur Fragments (7), *Figure A.69*

76. Medicine Bottle

    Found: In one of the two stern lockers.

77. Human Teeth (3), *Figure A.70*

    Found: On the forward deck.

78. Bone Fragment, *Figure A.71*

    Length: 1-1/2 inches
    Width: 5/8 inch

    Found: Inside cast-iron kettle.

79. Wooden Plugs, *Figure A.37*

80. Wooden Cleat\(^5\), *Figure A.36*

    Distance between arms: 13-1/2 inches
    Width at base: 4-3/4 inches
    Thickness: 1-1/2 inches
    Width of arms: 1-1/2 inches

81. Wooden Powder Horn Plug, *Figure A.72*

    Length: 1-9/16 inches
    Maximum width: 7/8 inch

82. Barrel stave and barrel end fragments

83. Firewood

    Found: Under the forward deck.

84. Carpenter's Chalk

    Found: Fragments of chalk were discovered underneath the decks during cleaning and recording operations at Smithsonian Institution.\(^5\)
Notes: Appendix A


4. Philip Lundeberg, personal communication.


6. Philip Lundeberg, personal communication.
Figure A.1. Twelve-pounder bow gun and slide carriage. Photograph courtesy of the Smithsonian Institution, NMAH/APH.
Figure A.2. Weight stamp of 12-pounder bow gun. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.4. Closeup of markings and touch hole on port 9-pounder. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.6. Iron carriage rings. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.

Figure A.7. Iron keys for trunnion plates. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.8. Swivel gun, side view. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.

Figure A.9. Swivel gun, top view. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.10. British Broad Arrow and weight stamp on swivel gun. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.

Figure A.11. Broken swivel gun yoke. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.12. Iron shot gauge. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.

Figure A.13. Wooden double shot gauge. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.14. Nine-pounder tompions. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.

Figure A.15. Swivel gun worm. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.17. Grapeshot canister, top view. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.

Figure A.18. Canister and sabot, bottom view. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.19. Langrage. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.

Figure A.20. Musket of rifle stock. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.21. Small arms finds. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.22. Musket barrel fragment. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.

Figure A.23. Brass trigger guard. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.24. Wooden ramrod fragments. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.

Figure A.25. Brass ramrod pipes. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.26. Brass rear ramrod guide. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.

Figure A.27. Fragment of iron rear ramrod guide. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.29. Gunflints. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.

Figure A.30. Wooden cartridge box. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.31. Buckshot and musket shot. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.32. Spikes and nails. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.33. Eye spikes and timbering spike. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.34. Axe heads, side view. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.

Figure A.35. Axe heads, 3/4 profile view. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.36. Twelve-pounder and 9-pounder tompions, cleat, and serving mallet. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.37. Wooden plugs. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.38. Pitch brush. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.

Figure A.39. Lead pitch dish. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.40. Iron spade with wooden handle recovered in 1935. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.41. Iron spade blade, bottom view. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.

Figure A.42. Iron file. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.43. Fascine blades, gunner's worm, tar brush, and iron auger. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.

Figure A.44. Closeup of fascine blade marking. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.45. 1935 artifact group, note adze blade in foreground, right. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.46. Artifact grouping from 1935 salvage project, note broken grindstone in foreground, center. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.47. Ten-inch wooden double block. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.

Figure A.48. Wooden deadeye converted from sheave. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.49. Iron hooks and rope thimbles. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.51. Port anchor. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.52. Time glass. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.

Figure A.53. Iron dividers. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.54. Wooden chopping block and reconstructed fireplace. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.55. Cast iron cooking kettle, front view. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.

Figure A.56. Cast iron cooking kettle, side view. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.57. Long-handled iron skillet. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.58. Cast iron cooking pot. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.

Figure A.59. Cast iron cooking pot, side view. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.60. Buttons. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.61. Pewter spoons. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.63. Ceramic cup. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.

Figure A.64. Ceramic fragments. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.65. Shoes. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.

Figure A.66. Textile fragment. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.67. Iron half-hinges. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.68. Brass belt hook. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.

Figure A.69. Sulfur fragments. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.70. Human teeth. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.

Figure A.71. Animal bone found in iron kettle. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
Figure A.72. Wooden powder horn plug. Photograph courtesy of the Smithsonian Institution, NMAH/AFH.
APPENDIX B

LETTERS OF PERMISSION
March 12, 1997

Mr. John Bratten
4619A Hickory Shores Blvd
Gulf Breeze, FL 32561

Dear John,

I am happy to give you permission to use any of the below listed illustrations in your text.

1. Philadelphia II’s boat builders, John Gritter and Bill Swartz fabricate one of the replica’s knees with a band saw.
2. Steam bending exterior planking into position
3. Caulking Philadelphia II’s seams with oakum
4. Philadelphia II’s amidship and forward decks
5. Philadelphia II’s classic “barndoor” rudder
6. Arthur B. Cohn assisting in Philadelphia II’s final rigging
7. Launch day, 18 August 1991
8. Twelve-pounder replica cannon in slide carriage
9. Philadelphia II’s port side 9-pounder concrete replica
10. Philadelphia II under sail
11. Volunteers set Philadelphia II’s topsail during “sea trials.”
12. Philadelphia II is extremely maneuverable under sweeps during calm conditions.

I am delighted to hear that you are moving ahead on your dissertation and I wish you the very best of luck.

Sincerely,

Arthur B. Cohn
Director

A non-profit organization for the preservation of the heritage of Lake Champlain
John Bratten
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Sincerely yours,

Paul F. Johnston, Ph.D.
Curator, History of Technology
VITA

John Raymond Bratten received his Bachelor of Science in Biology (1979) and Master of Science in Science Education (1980) from Northwest Missouri State University. He is a research associate at the University of West Florida and can be reached at 4619A, Hickory Shores Boulevard, Gulf Breeze, Florida, 32561.