ENGLISH AND AMERICAN SHIPBOARD CARPENTERS, ca. 1725–1825

A Thesis

by

BRENDAN JOSEPH MCDERMOTT

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

MASTER OF ARTS

May 2000

Major Subject: Anthropology
NAUTICAL ARCHAEOLOGY

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May 2000

Major Subject: Anthropology
ABSTRACT

English and American Shipboard Carpenters, ca. 1725–1825. (May 2000)

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Chair of Advisory Committee: Dr. Kevin J. Crisman

Maritime historians who write of life at sea have tended to focus their research either on the seamen or on the chief officers. Little has been said about the group of lesser officers situated between those two groups. These men were mainly specialists who helped maintain the ship and did much to ensure its smooth operation. The carpenter was one such specialist, and this thesis employs an interdisciplinary approach combining history, archaeology, and ethnography to illuminate the shipboard duties of the carpenter, and to explore where he fit in the crew hierarchy; how he was compensated; where he worked and lived aboard ship; what types of tools he used and for what purpose; and even gain a glimpse of his personal character. The historical research consists of a comprehensive review of eighteenth- and early nineteenth-century maritime documentation (e.g., British Admiralty regulations, ships logs, sailors' diaries). The archaeological analysis includes a catalog of artefacts, mainly carpentry tools, from two shipwrecks dating to the American War for Independence: the American privateer Defence in Maine, and the British collier Betsy in Virginia. The ethnographic analysis consists of several surveys from this century of how shipwrights used specific tools in constructing wooden vessels.

The evidence indicates that in the various maritime services examined, the Royal Navy, the Continental Navy, the American state navies, the United States Navy, privateers, and merchant ships, all carpenters performed the same basic duties and generally worked under the same conditions. It was in terms of compensation and career possibilities that the Royal Navy seems to have possessed an advantage over the others. As for the specific
shipwrecks, it is concluded that Defence had a professional carpenter in its complement, but that Betsy likely had a regular seaman performing those duties.
And further, by these, my son, be admonished: of making many books there is no end; and much study is a weariness of the flesh. For God shall bring every work into judgment, with every secret thing, whether it be good, or whether it be evil (Ecc. 12:12,14).

For my mother and father, married for 50 years and I've never heard them raise their voices to each other once.
ACKNOWLEDGMENTS

A great many people have contributed in large and small ways to the completion of this thesis, and I would be remiss if I did not take a moment to thank each of them for their kindnesses to me. Professor David Switzer, of Plymouth State College, graciously allowed me to examine and include in the catalog the assorted carpentry-related artefacts from the privateer Defence. He also provided me with drawings of many of those same artefacts which had been inked previously by Helen Hillhouse Townsend and Faith Harrington. John Broadwater of NOAA also allowed me to examine and include the artefacts from the Yorktown wreck Betsy. The staff of the Maine State Museum in Augusta were most helpful in providing me access to examine and record the Defence artefacts. Brian Sipe, Edwin Churchill, and Allyson Humphrey all assisted me at one time or another in early January, 1994. Carol Fisher-Crosby assisted me later in obtaining a photograph, which is included in the catalog, of one mallet head that could not be located in the museum’s collections. Lysbeth Acuff, of Virginia’s Department of Historic Resources, in December, 1995 retrieved artefacts belonging to the brig Betsy from the Commonwealth’s collections in Richmond for my examination. Lucinda Cockrell at the Yorktown Victory Center allowed me to sketch several Betsy artefacts while they were still in their display cases, and several months later provided me with measurements of those tools when the display case was opened.

Chip Vincent, then President of the Institute of Nautical Archaeology at Texas A&M University, awarded me a scholarship in 1993 that was much appreciated. The staff of the Institute as well as the Nautical Archaeology Program at Texas A&M deserve praise for their patience with yet another distracted graduate student. The staff of the Interlibrary Loan Office of Texas A&M’s Evans Library were instrumental in providing me with many of the materials that are referred to in this work. My research would have been severely hampered without their aid. My committee, Professor Kevin Crisman, Professor James Bradford,
and Dr. Fred Hocker, provided me with sound guidance and encouragement. The assistance of all of these people is most gratefully appreciated.
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CHAPTER I
INTRODUCTION

Any modern ship built for extended, deep water voyages is designed to be self-sufficient. Much care is taken to have all requisite supplies and equipment on board before the ship leaves port since the vessel may not put in at another harbour for weeks or even months at a time except in cases of necessity. The composition of the crew also reflects this goal of self-sufficiency with each member having a specific set of functions or duties to carry out. A ship’s crew is an interdependent community composed of officers, specialists, and lesser-skilled members such as able or ordinary seamen who nevertheless carry out essential tasks. This same situation was also true in the past to an even greater degree as ships generally were smaller, constructed of less durable materials such as wood rather than steel or fiberglass, and almost totally subject to the whims of wind, weather, and current. Once out of sight of land and lacking modern communications devices, a lone ship at sea was truly isolated and dependent upon its own resources. Each crew member played an important role in the ship’s smooth operation.

In the era of wooden sailing vessels, there were few occupations on board a ship more vital than that of the carpenter. Unlike shipyard carpenters, who built or repaired ships in port, the shipboard carpenter was a specific member of a ship’s crew. He kept the ship in repair at sea by performing a myriad of tasks, from the highest mast down to the keel and from the bowsprit to the rudder. He often proved to be the sole salvation for the crew in preventing the ship from sinking. If the ship was wrecked and the crew stranded, he often could fashion a small boat out of the remains for summoning rescuers or for transporting the survivors to refuge. On larger ships he would be assisted by one or more mates and often by numerous carpenter’s crew. Yet there is relatively little known about shipboard

This thesis follows the style and format of The Mariner’s Mirror.
carpenters since they were apparently so commonplace that passengers and even their
fellow officers and crew seldom mention them in their diaries, journals, or logs.
Shipboard carpenters themselves have left few written records of their activities, and the
most tangible evidence of their handiwork, the ships on which they served, have almost all
vanished. This is in contrast to carpenters on land, who have left behind for us some texts
on woodworking techniques and designs as well as actual standing structures.¹

It is the objective of this thesis to investigate all aspects of the lives and daily
occupations of English and American shipboard carpenters. My study will explore their
qualifications for serving aboard ships ranging from first-rate Royal Navy warships to
small merchant vessels; their daily duties and responsibilities; how they fit into the
command hierarchy in different sea services; what they might have been paid and their
prospects for promotion, job security, and upward mobility; where and how their
working and living areas were arranged; and what tools they used in their daily work. The
study will focus on carpenters as a class of professional artisans since, as was mentioned
above, there is little information to allow one to draw pictures of private individuals. The
range of time for the study, from approximately 1725 to 1825, is arbitrary, and is
designed to cover the fifty years on either side of the beginning of the American War for
Independence since the archaeological assemblages of carpentry tools that will form a part
of this thesis are from two shipwrecks that date to that period of conflict.

As N.A.M. Rodger has pointed out, social histories of eighteenth- and early
nineteenth-century seafarers, such as those in the Royal Navy, are relatively few.² Of
course, there are many works dealing with individual officers and numerous sailor’s
diaries have been published, but there is little dealing specifically with that group of
warrant officers (i.e., the boatswain, gunner, and carpenter) who served primarily as
shipboard specialists and could also act as an additional layer of authority between the
seamen and the principal officers (i.e., the captain and his lieutenants on warships, the
master on merchantmen). Social histories have tended to describe life in the Royal Navy by using broad themes such as crew composition, manning and impressment, discipline, pay, victuals, health, and liberty ashore. They often cover vast ranges of time and thereby sacrifice much detail for generalisation. In Christopher Lloyd’s work he dedicates separate chapters to seafaring of the Medieval, Tudor, early Stuart, and Restoration periods. Other chapters deal with manning and impressment, but in only one chapter does he describe life at sea and the ship’s company, and there only the boatswain, gunner, and master-at-arms are given even cursory attention. Peter Kemp spends more time in describing the Royal Navy of the eighteenth century, but he concentrates almost solely on the seamen of the lower deck and on the problems and reforms of naval administration. He does not address crew composition or the day-to-day functioning of a ship.

When social histories are temporally focussed, like those of Marcus Rediker or of Geoffrey Marcus, they are often restricted to examining only the lives of the seamen, or devote chapters to the main officers and the sailors only. In the standard works of Michael Lewis or John Masefield, when the carpenter or the other lesser officers are mentioned at all, it is usually with reference to them as a group, or at most one or two pages for each detailing their duties and responsibilities. Histories of eighteenth-century merchant seamen seem to be even scarcer, with Rediker’s work perhaps being the lone exception.

These same limitations apply to a similar extent to the American Continental and early United States Navies. Here, historians have restricted themselves for the most part to varied narrations of events consisting of individual heroic actions such as Decatur’s setting fire to the frigate *Philadelphia*, or of a series of ship-to-ship actions such as the taking of H.M. frigate *Macedonian* by the U.S. frigate *United States*, while neglecting the backgrounds, and working and living conditions of the majority of men who actually fought those battles. Typical works in this vein are represented by Edgar Maclay, Carroll
Alden and Allan Westcott, and Edward Beach, the latter of whom discusses a ship's crew in a single page.7 Historians have also focussed on broader themes such as the causes, policy disagreements, and difficulties of establishing a navy during and after the American War for Independence, or they have dwelled on specific personalities such as John Paul Jones and other officers without reflecting to any great extent on the crews they commanded. Christopher McKee's study of the United States officer corps, while going into great detail on life at sea, pointedly excludes warrant officers, since they were regarded by their superiors as not belonging together in the same social class.8 Charles Paullin and William Fowler provide some details of service in the early U.S. Navy, but Paullin is concerned primarily with administration, not the day-to-day functioning of ships, and Fowler's brief remarks are almost exclusively about seamen, not warrant officers.9 Harold Langley does describe several broad areas of social reform in the U.S. Navy prior to 1862. He covers such topics as the encouragement of religion and temperance among ships' crews, and the repeal of certain disciplinary measures such as the abolition of flogging.10 Langley seems to have grouped warrant officers with commissioned officers, since they are not mentioned specifically. Also, many of the reforms mentioned were initiated after 1825, and tend to be beyond the period under study here. James Valle does illustrate extensively the institution and eventual reform of discipline in the Navy, but that is his primary focus, and he does not detail the daily operations of a ship at sea or discuss warrant officers.11

John Masefield, author of one of the earliest social histories, is described as having drawn a portrait of life in the Royal Navy of Lord Nelson's time as one of hardship mixed with harsh discipline.12 Subsequent works seem to have done little to dispel this impression. Rodger believes that historians have largely neglected English and American maritime history of the eighteenth and early nineteenth centuries because they considered this portrayal of harsh discipline to be unfashionable and peripheral to the interpretation of
English society as a whole. Rodger feels, therefore, that the social history of seafaring, at least for the Georgian Period, is dated and out of step with the rest of English social history. This observation only reinforces the need to research classes of seamen, although it is not the intent here to see how carpenters fit into society as a whole, but rather how they fit into a ship's crew.

**RESEARCH DESIGN**

Rodger employed an extensive review of documentary sources, mainly personal and professional correspondence, to draw a social history of the Royal Navy during the Georgian Period. As mentioned above, however, shipboard carpenters have left few personal accounts of their daily activities; only one was encountered in the course of research for this thesis, and that was an unpublished manuscript at the Public Record Office at Kew in London that usually gave daily weather conditions, but few details on work routine and no personal observations. Shipboard carpenters also received scant attention from passengers and from their own officers and crewmates. They were seldom mentioned in ship logs or personal journals or diaries except in occasional cases where some part of the ship needed repair after having broken under the continual strain of being under sail. This scarcity of contemporary documentation hampers research, and compels us to seek other methods of gathering information.

Since carpenters have left us so few traces of their existence, any attempt to illuminate their lives requires an interdisciplinary approach combining history, archaeology, and ethnology. This approach was first advocated for the field of maritime archaeology by Keith Muckelroy who saw each discipline complementing the other two in a nonconflicting, nonhierarchical research framework. While Muckelroy saw the three fields as being complementary, he did believe that documentary and pictorial evidence was subject to the biases first of its contemporary recorder, and then of its modern interpreter.
Historical records also dwindled both in number and detail the further back in time one went, while ethnographic studies became more difficult to apply with certainty with the passage of time. Methods and routines observed in shipyards or on board a ship in the first half of the twentieth century might correspond directly to seafaring in the nineteenth century, but possibly not to seafaring in the eighteenth or earlier centuries. To Muckelroy, however, archaeological remains were “totally accidental and unintentional” in their original deposition, although they were still affected by the biases of the modern archaeologist in their interpretation. Muckelroy did admit that archaeology’s inherent weakness was its inability “to shed light on people’s motives and ideas”. Nonetheless, he did believe that in most cases maritime archaeology would prove to be the main source of information on ships and seafaring.\textsuperscript{16}

HISTORICAL SOURCES

The research for this thesis will include a comprehensive review of maritime historical documentation from the eighteenth and early nineteenth centuries. Admiralty regulations and instructions will be reviewed to provide an idea of what duties and responsibilities carpenters held in the Royal Navy, how many assistants they might be allotted, and what wages they might receive.\textsuperscript{17} These instructions will serve as a model for comparison with other marine services such as the Continental and later U.S. Navies, privateers, and merchant ships. Other written sources, such as officers’ and sailors’ diaries, ship logs, treatises on naval architecture, privateer commissions, crew lists, and equipment inventories, will be included. This accumulation of mostly brief and scattered references will flesh out the original framework established by the Admiralty instructions and provide additional details on carpenters’ daily activities, where they fit in the crew hierarchy, how much they were paid, where they worked and lived, what tools they used, and even give us a glimpse of individuals and their character. Modern secondary sources will provide us
with the qualifications required of carpenters to serve aboard Royal Navy vessels, how they were promoted, and how they were taken care of in retirement.

ARCHAEOLOGICAL ANALYSES

The archaeological component of this study will consist of the analysis of woodworking tool assemblages from two shipwrecks of the period of the American War for Independence. Approximately 25 wooden tool handles, minus their iron fittings, were recovered from the wreck of the American privateer Defence, which was built in 1779 in Beverly, Massachusetts. The owner's privateer commission lists it as being a brigantine of 170 tons, with 16 guns and a crew of 100. It was draughted in 1779 into an expeditionary fleet sent by the revolutionary government of Massachusetts to capture a British fort at the mouth of the Penobscot River in Maine, which was at the time a province of Massachusetts. The arrival of a superior British naval force sent most of the American ships fleeing up the Penobscot. When Defence tried to slip away at night, it was detected and its magazine set off to scuttle it and prevent its capture. The wreck was rediscovered in 1972 by students from the Massachusetts Institute of Technology and the Maine Maritime Academy who were looking for remains of the American fleet. It was excavated from 1975 to 1981 in a cooperative effort between the Maine State Museum, Maine Maritime Academy, Professor David Switzer of Plymouth State College in New Hampshire, and the American Institute of Nautical Archaeology (later the Institute of Nautical Archaeology) headed by Professor George Bass, and two of his students, Sheli Smith and Warren Riess. All of the recovered artefacts were conserved and are stored at the Maine State Museum in Augusta.

The second artefact assemblage is from the English brig Betsy (Virginia site number 44YO88). It consists of approximately nine tools, mostly without their iron fittings. It has been determined that Betsy was a collier, of approximately 176 tons, from the east
coast of England. It was built in 1772 and leased in 1780 by its owner, John Younghusband, to the Navy Board to transport stores to the British armies fighting in the colonies. Upon reaching North America it was appropriated by General Lord Cornwallis to assist in supporting his army in the south. It was scuttled in September 1781 in the James River at Yorktown along with numerous other vessels to deter an anticipated French amphibious assault at the start of the allied siege of that town.\textsuperscript{19} This vessel was rediscovered in the late 1970s during a survey to find remains of Cornwallis’ fleet in the James River. It was almost completely excavated between 1982 and 1988 by underwater archaeologists working for the Commonwealth of Virginia under the direction of John Broadwater. All of the recovered tools have been conserved and are stored at Virginia’s Department of Historic Resources in Richmond or are on display at the Yorktown Victory Center.

Permission to study the artefacts has been granted by the principal investigators of both shipwrecks, John Broadwater for \textit{Betsy}, and Professor David Switzer for \textit{Defence}. Most of the artefacts in Maine and Virginia have been examined, measured, drawn, and photographed. The measured drawings are presented in chapter VI as part of the catalog of tools. Two tools from \textit{Defence} could not be found in the museum’s collections, but a measured drawing exists for one and the other was photographed during conservation and this photograph is presented in the catalog.

While the iron of the vast majority of the tools has disintegrated completely, the wooden handles often retain features that can lead to their identification. The handles will be compared to illustrations of tools from other shipwrecks of the same general time period and also to tools pictured in works describing historical collections.\textsuperscript{20} This procedure will serve both to identify the tools and to see whether consistency and variation within specific tool types can be determined. The artefacts will also be compared to several existing equipment inventories taken for ships of the Revolutionary War era. This
comparison will permit us to see if the woodworking tools from both wrecks can be taken as representative samples. The archaeological proveniences of the tool assemblages from both vessels will be analysed for distribution patterns. Tool clusters could indicate locations of the carpenter’s storage and/or working areas. Lastly, both tool assemblages will be inspected to determine if individual tools were private possessions of the carpenter or were a part of the ship’s regular equipment. The archaeological analysis is intended to provide a basis for comparison with the information amassed from historical sources. The archaeological data can confirm, refine, or question conclusions drawn from the documentary testimony, or it can provide supplementary information where written records are inadequate.

ETHNOGRAPHIC ANALYSIS
The third component of Muckelroy’s research framework, maritime ethnology, will be applied in limited fashion to this thesis, since there are few sources that deal specifically with tools employed by ship carpenters.21 In addition, those works that have been written restrict themselves to the use of tools in shipyards and omit tool use aboard ship. John Horsley’s work on the tools used by shipyard carpenters also has been criticised severely for being too specific to a particular area (i.e., Brixham, England), and generalising to the rest of that country without accounting for regional variations in toolkit.22 Even Muckelroy himself questioned whether ethnology truly could be applied to seafaring prior to the nineteenth century.23 Yet we can still use these studies cautiously to compare tool use in shipyards a few decades ago with the historical records of how those same types of tools were used by shipboard carpenters. Comparisons with other archaeological assemblages may reveal whether the eighteenth-century shipboard carpenters favoured the same tools or used them in the same manner as their latter-day shipyard counterparts.
CONCLUSION

The carpenter was an important member of almost every ship’s crew, yet he and his colleagues, the boatswain and gunner, have been largely neglected by social historians. Researchers studying eighteenth- and nineteenth-century seafarers have tended to focus either on the principal officers of the ship, the captain, lieutenants, and masters, or on the seamen who comprised the majority of the crew. There were many occupations on board a ship at sea that, added together, made it a coherent and self-sufficient community. By neglecting the warrant officers, including the carpenter, we lose a part of the complete picture. In employing Muckelroy’s research framework that combines history, archaeology, and ethnology, we can illuminate the carpenter as one member of that shipboard community.

The review of historical documentation will provide the bulk of the data for this thesis. The written records will give us a model for the carpenter’s duties and responsibilities; where they fit in the ship’s hierarchy; how they were paid and promoted; where and how they lived and worked; and which tools they used. The archaeological and ethnographic analyses will test that model and provide supplementary information to refine those aspects that are unclear. It is through this complementary research process that we obtain a picture of the shipboard carpenter, and in so doing gain a broader understanding of life at sea.

The following chapters are organised topically. Material for the thesis was derived from several branches of the sea service: the Royal Navy, Continental and later United States Navy, state navies, privateers, and merchant shipping. To discuss each group completely before passing on to the next would deprive us of the ability to make ready comparisons between the different branches on specific subjects, so these subjects will be introduced and then each branch examined in turn to determine similarities or disparities.
ENDNOTES


9 Charles Paullin, *Paullin's History of Naval Administration 1775-1911* (Annapolis, 1968), passim; William M. Fowler, Jr., *Rebels Under Sail: the American Navy During the Revolution* (New York, 1976), chapters 13 and 14 deal respectively with a ship's officers and crew, but only on general topics such as enlistment and compensation. Warrant officers are excluded completely; William M. Fowler, Jr., *Jack Tars and Commodores: the American Navy 1783–1815* (Boston, 1984), 130 has the only mention of the ship's warrant officers as part of a breakdown of the crew.


14 P.R.O., Adm. 51/4541, fo. 124.


CHAPTER II

THE SHIP’S CARPENTER

In the eighteenth and early nineteenth centuries there were numerous branches of seafaring in the Anglo-American maritime world. The ones used for this study are the Royal Navy of England, the American Continental Navy and its successor the United States Navy, the state navies assembled during the American War for Independence by the individual colonies, and privateers and merchant shipping of both American and English origin. Each of these branches will be described briefly and then compared with the others. Since the Royal Navy of all the services has left us the most detailed accounts of its organisation and management it will serve as the primary model for comparison.

By the eighteenth century the Royal Navy had been for several hundred years the first and usually foremost line of defense for England. Nearly constant warfare with other European nations, particularly France, had led to an almost perpetual state of naval readiness and “to the development under the Lords Commissioners of the Admiralty of a permanent command structure”.¹ This command structure was organised from the Admiralty itself down to the warrant officers on each and every ship. The duties and responsibilities of officers serving at sea were spelled out in explicit detail by the Admiralty in what was known as the King’s Regulations and Admiralty Instructions.² These regulations and instructions were put into written form for the first time in 1731; prior to that point each commander-in-chief of a squadron reportedly issued his own instructions.³ The regulations were reprinted through the rest of the eighteenth century and into the nineteenth with the tenth edition being published in 1766, the eleventh in 1772, and another, unnumbered edition appearing in 1806, which was probably not the twelfth. It is these three editions that are used here to construct a model of shipboard carpenters’ duties and activities for comparison with the other sea services. Since the thesis is organised into separate subsections dealing with specific topics, each service will be discussed in turn
within each subsection rather than examining all topics for one service at a time.

THE CARPENTER’S PLACE IN THE COMMAND HIERARCHY
According to the established regulations almost every vessel in the Royal Navy carried one carpenter on board. The only exceptions, at least in the 1806 regulations, were ships such as schooners, cutters, gun vessels, and smaller fireships, and these instead carried one carpenter’s mate. The number of carpenters, mates, and crew assigned to each type of vessel is shown in Table 1. The carpenter was a warrant officer, appointed by the Navy Board along with the boatswain while the gunner was appointed by the Ordnance Board. These three men were assigned to a vessel when it was first ordered to be built and, in theory, the carpenter could stay with that ship for his or its entire career, or, as the historian N.A.M. Rodger put it “either he or she perished.” This tenure included periods when the rest of the crew and officers were paid off and the ship put into drydock or ordinary. This was done, it is presumed, both to maintain the vessel and retain a core of the crew that was familiar with the ship’s eccentricities, since in those days when nearly everything was still manufactured by hand, even two ships built from the same plans would likely not be identical in their construction details or sailing qualities. Just such an eccentricity is mentioned by Lieutenant James Gardner, who was assigned in 1801 to the 74-gun ship Brunswick. Shortly after his arrival the maintopmast carried away close to the cap. The carpenter, Mr. Yelland, whom Gardner said had been many years in the vessel and was “very much respected”, stated that it was a chronic problem caused by a particular jerk in the motion of the ship and that nothing could prevent it. The permanent stationing of warrant officers was also a convenient way for the Admiralty to provide aging or infirm veterans with a sinecure aboard a ship in ordinary if they were otherwise ineligible for a pension.

Since the carpenter and his associates, the boatswain and gunner, could remain with the ship throughout its career, they were referred to as “standing officers”. Indeed, they were
TABLE 1
Crew complements for Royal and U.S. Navies (by number of carpenters, mates, and crew)

<table>
<thead>
<tr>
<th>Rate</th>
<th>Guns/Crew</th>
<th>1766</th>
<th>1772</th>
<th>1806</th>
<th>1813 (crew: carp. crew)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>100/837</td>
<td>1,2, &amp; 12</td>
<td>1,2, &amp; 12</td>
<td>1,2, &amp; 12</td>
<td>839/13</td>
</tr>
<tr>
<td>2nd</td>
<td>90/738</td>
<td>1,2, &amp; 10</td>
<td>1,2, &amp; 10</td>
<td>1,2, &amp; 10</td>
<td>738/11</td>
</tr>
<tr>
<td>3rd</td>
<td>80/719</td>
<td>1,1, &amp; 8</td>
<td>1,1, &amp; 8</td>
<td>1,1, &amp; 8</td>
<td>719/8</td>
</tr>
<tr>
<td></td>
<td>74/640</td>
<td></td>
<td>1,1, &amp; 8</td>
<td>1,1, &amp; 8</td>
<td>640/8</td>
</tr>
<tr>
<td></td>
<td>74/590</td>
<td></td>
<td></td>
<td>1,1, &amp; 8</td>
<td>590/8</td>
</tr>
<tr>
<td></td>
<td>64/491</td>
<td></td>
<td></td>
<td>1,1, &amp; 8</td>
<td>491/8</td>
</tr>
<tr>
<td>4th</td>
<td>50/343</td>
<td>1,1, &amp; 6</td>
<td>1,1, &amp; 6</td>
<td>1,1, &amp; 6</td>
<td>349/6</td>
</tr>
<tr>
<td>5th</td>
<td>44/294</td>
<td>1,1, &amp; 5</td>
<td>1,1, &amp; 5</td>
<td>1,1, &amp; 5</td>
<td>320/5</td>
</tr>
<tr>
<td></td>
<td>38/284</td>
<td></td>
<td></td>
<td>1,1, &amp; 5</td>
<td>284/5</td>
</tr>
<tr>
<td></td>
<td>32/264–254</td>
<td></td>
<td></td>
<td>1,1, &amp; 5</td>
<td>254/5</td>
</tr>
<tr>
<td></td>
<td>32/219</td>
<td></td>
<td></td>
<td>1,1, &amp; 5</td>
<td>215/5</td>
</tr>
<tr>
<td>6th</td>
<td>28/195</td>
<td>1,1, &amp; 4</td>
<td>1,1, &amp; 4</td>
<td>1,1, &amp; 4</td>
<td>196/4</td>
</tr>
<tr>
<td></td>
<td>24/155</td>
<td></td>
<td></td>
<td>1,1, &amp; 4</td>
<td>175/4</td>
</tr>
<tr>
<td></td>
<td>20/135</td>
<td></td>
<td></td>
<td>1,1, &amp; 4</td>
<td>155/4</td>
</tr>
<tr>
<td>Fireships</td>
<td>56–45 men</td>
<td>1,1, &amp; 1</td>
<td>1,1, &amp; 1</td>
<td>1,1, &amp; 1</td>
<td>n/a</td>
</tr>
<tr>
<td>Hospital ships</td>
<td>n/a</td>
<td>1,1, &amp; 1</td>
<td>1,1, &amp; 1</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Store ships</td>
<td>n/a</td>
<td>1,1, &amp; 2</td>
<td>1,1, &amp; 1</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Sloops</td>
<td>18/121–65</td>
<td>1,1, &amp; 2</td>
<td>1,1, &amp; 2</td>
<td>1,1, &amp; 2</td>
<td>121/2</td>
</tr>
<tr>
<td>Bomb vessels &amp; sloops (≤50 men)</td>
<td>n/a</td>
<td>1,1, &amp; 1</td>
<td>1,1, &amp; 2</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Gun vessels</td>
<td>50–45 men</td>
<td>n/a</td>
<td>n/a</td>
<td>1 mate</td>
<td>n/a</td>
</tr>
<tr>
<td>Yachts</td>
<td>67–50 men</td>
<td>1,1</td>
<td>1,1</td>
<td>1,1, &amp; 2</td>
<td>n/a</td>
</tr>
<tr>
<td>Schooners</td>
<td>60–18 men</td>
<td>n/a</td>
<td>n/a</td>
<td>1 mate, 2 crew</td>
<td>n/a</td>
</tr>
</tbody>
</table>
officers in that they supervised or directed men in their charge and expected their orders to be carried out. Technically, however, they were not commissioned officers, or what was referred to as “not of ward room rank”.8 In practice this meant that they did not dine with the captain and his regular, commissioned officers since warrant officers were considered by their superiors to be of lower social standing. These three men, the carpenter, boatswain, and gunner essentially were the NCO’s of their day. They served primarily as shipboard specialists ensuring that the ship and its equipment were taken care of, but they also trained the raw recruits brought on board and helped turn them into useful seamen. The historian Christopher Lloyd refers to warrant officers as being “virtually part of the ship”, while Michael Lewis describes them as the backbone of the ship.9 Competent, dependable ones could make a captain’s life easier, while bad ones could range from being tedious nuisances to hazards to the ship and rest of its crew. There were numerous other warrant officers aboard ship who also served important functions, including the sailmaker, cooper, and armourer to name just a few, but these men were generally regarded as lesser warrant officers. Some smaller ships might not even carry certain officers such as the cooper, whose duties were usually taken over by the carpenter. Since the lesser warrant officers were seldom mentioned in relation to the carpenter, boatswain, and gunner, they will be omitted from further discussion here.

Unlike the Royal Navy, the Continental Navy had to be created from scratch in 1775 at the start of hostilities between the English and their American colonists. The Continental Congress established a Marine Committee, composed of several congressmen, and charged them with constructing and overseeing a naval force capable at least of harassing the British supply lines and protecting American merchant ships to some degree from the Royal Navy and the few English, Canadian, and Loyalist privateers. The Americans started the war with no established command structure, no officer corps, no set of regulations and instructions for any officers they would enlist, and especially no ships. Despite these
serious deficiencies, by the end of 1775 a small flotilla of merchant ships had been
converted to carry cannon instead of cargo, and officers and crews had been enlisted from
the ranks of the merchant fleet. These converted merchant ships were intended as a stopgap
until they were complemented in 1776 and subsequent years by purpose-built warships,
primarily small frigates, constructed by order of the Continental Congress.

The people in charge of establishing the Continental Navy apparently copied the Royal
Navy’s table of organisation, since the ships’ crews seem to have been drawn along the
same lines, with the carpenter, boatswain, and gunner maintaining their equal rank. There
was a marked difference from the Royal Navy, however, in that everyone on Continental
vessels aside from the commissioned officers typically enlisted for a single cruise. In 1777
General Washington was able to pressure Congress to allow him to require enlistees in the
Continental Army to sign up for three years or the duration of the war. This requirement
provided Washington with a more stable force of soldiers whose enlistments would not
expire at the end of each year and compel him constantly to train new recruits. This tactic
could not be used for the Continental Navy, which was already having difficulty finding
men due to competition from the numerous privateers being commissioned by Congress.
So, whereas the carpenter was a standing officer in the Royal Navy, assigned to his ship
when it was first ordered for construction and possibly staying with it for its entire career,
in the Continental Navy he might not even enlist until his ship was just about to sail. In
addition, there was a good chance that he would leave after the cruise was over for more
lucrative opportunities. The continuity that played a significant role in the Royal Navy was
singularly lacking in the Continental Navy.

In addition to the national navy established by Congress, many of the states funded
their own navies. The vessels that comprised these naval forces were mainly small and
specialised types such as floating batteries or galleys. The crews of many of these smaller
ships were composed mainly of marines with a few seamen included to operate them, but
many of the vessels included at least one carpenter, although in these cases the term “shipboard carpenter” was a relative one. The state navies normally stayed close to shore or even well upriver so that crewmembers could easily leave their ships for a few days to take care of business ashore. There are mentions in muster rolls of the Pennsylvania Navy of carpenters being absent for a day or more due to illness, or perhaps to get supplies, repair something that required the assistance of an armourer or other specialist, or for personal reasons. Still, the state navies did include seagoing ships and the crew organisations for these also seem to have been patterned after the Royal Navy, with the carpenter occupying the same position of authority as the boatswain and gunner. As with the Continental Navy, the crewmen in the state navies, including carpenters, enlisted only for short periods, an unsatisfactory situation that only worsened as the war continued and the Continental currency in which the soldiers and sailors were paid rapidly depreciated, making government service even less desirable.

The Treaty of Paris in 1783 ended the American War, and within two years the Continental Navy was effectively disbanded with the sale of its last warship, the 36-gun frigate Alliance. The state navies certainly were dissolved prior to this point. The new United States government recognised the need for a standing navy to protect its merchant shipping interests and in 1794 six new frigates were ordered for construction to form the nucleus of what was anticipated to be a larger navy. More ships were constructed in the late 1790’s and early 1800’s, largely through private subscriptions, in response to the Quasi-War being waged against Revolutionary France. There was, however, much internal debate in the government about the necessity of a seagoing navy, and during the Jefferson administration much of the fleet was placed in ordinary in favour of smaller gunboats that were designed to defend rivers and estuaries and supplement fixed-battery coastal defenses.

There was in 1801 with the end of the Quasi-War a two-thirds reduction in the size of the officer corps. Despite this, there was an effort made to maintain and strengthen the
corps that had already been established. Just how far down the organisational chart the corps extended is uncertain. Surely there was a standing force of captains, lieutenants, and midshipmen, but there is little indication in the 1800's that there was a permanent group of warrant officers. Charles Paulhain remarks that captains in the new navy often chose their own lieutenants and warrant officers, but a review of contemporary diaries suggests that captains were more obliged to find their warrant officers than to choose them. Judging by Harold Langley's discussion of the discharging of crewmen, it appears enlistments were for single cruises, a conclusion that is supported by historian James Valle. At the end of a cruise the entire crew was paid off. In 1809 Congress stipulated that men should not serve for more than two years, and it would seem from the primary documentation that warrant officers were included. For a cruise in 1804/05 of the brig Vixen Captain John Smith remarked that he had all of his officers present except for his carpenter, but that he expected to procure one shortly. Elijah Shaw spent his life in and out of the Navy. He was aboard Constellation assisting the carpenter during its engagement with the French Insurgente, and then served against the Barbary States. He worked thereafter in the Washington Navy Yard, but then went to New York to work for Noah Brown in his shipyard, and a little later still switched to the New York Navy Yard. In 1807 he was enlisted by the officers of the sloop Wasp to serve as carpenter, but then shipped out again elsewhere when that cruise was over. By 1812 he was back in the Navy, but with the end of the Algerian War in 1816 he was paid off and returned to coopering in upstate New York.

In 1802 we have what appears to be our first set of naval regulations issued by the President. These regulations were reprinted in 1809 with a few slight additions, and in 1812 they were included in a more general work on seafaring. Duties and responsibilities are enumerated for all officers, including warrant officers and even the chaplain. There is in 1813 also reference from another source to a standing force of carpenters, but it is a short list of 13 men who could not then have satisfied the needs of the entire navy. It is also
apparent that during that war carpenters joined privateers or merchant ships after having served at least one cruise aboard a navy vessel. For his cruise in *David Porter*, George Coggeshall took on several crewmen, including the carpenter, who had been discharged shortly before from the frigate *President*. In 1813 Captain William Henry Allen of the brig *Argus* first enlisted a carpenter’s mate, and then just prior to sailing he had to find a replacement for his carpenter, who had deserted.

In terms of crew hierarchy, the U.S. Navy again appears to have followed the example set by the Royal Navy. The carpenter is typically listed in company with the boatswain and gunner. American officers supposedly resented the Royal Navy but copied it in nearly all respects. This mix of Royal and Continental Navy practices is perhaps a reflection of the inactivity between the Barbary wars and the War of 1812 that the U.S. Navy endured during Jefferson’s and Madison’s presidencies. Lack of support from the government may have led to the erratic enlistment practices witnessed above.

In addition to the regular naval forces there was an irregular service that figured prominently in the prosecution of war at sea. Privateering, or the commissioning by a government of privately-owned ships for commerce raiding, was an occupation that dated back in one form or another to the 12th century. Enemy vessels captured by privateers that were ruled lawful prizes in Admiralty courts were sold along with their cargo, and the proceeds distributed as prize money among the government, privateer owner(s) and crew. Each European war in the eighteenth century saw the use of privateers, plus they were employed extensively during the American War for Independence and the War of 1812 by the United States. The Continental Congress, with only a few warships to oppose the Royal Navy, resorted to issuing hundreds of commissions, and the privateers were quite successful in preying on the English merchant fleet. There were also some English, Canadian, and Loyalist privateers outfitted, first to capture American merchantmen, and then French and Spanish ships after those countries entered the war in 1778 and 1779,
respectively. The last large-scale use of privateers was during the War of 1812 when the American government, again possessing only a small force to oppose the Royal Navy, issued hundreds of commissions. There were also a number of English and Canadian privateers outfitted in that war as well. After the War of 1812 the commissioning of privateers by governments was reduced substantially for a number of reasons. During the Civil War the Confederate government issued commissions, but the practice was effectively ended by international agreement in 1907.24

While privateers differed from government navies in that they were privately-owned business ventures oriented to make a profit, their crew organisation, not surprisingly, was nearly identical to that of warships. The captain and his lieutenants were usually supported by the same warrant officers we have seen elsewhere, the boatswain, gunner, and carpenter, although there was an extra officer known as the prizemaster, who tried to bring captured vessels in to safe ports where ship and cargo could be condemned and sold.25 Captain George Shelvocke began a privateer voyage in 1719 during an apparently minor conflict between England and Spain that ended in 1720. He eventually circumnavigated the globe, returning to England in 1722. Shelvocke appears to have retained the same hierarchical barrier between the primary officers and his warrant officers. The boatswain is reported to have been angered at not being invited to dinner with the captain, but the carpenter, gunner, and master were also excluded as one might expect to see on a regular warship.26

Privateers were in business to catch lightly-armed merchant ships, so they usually carried many more crewmen than they would in normal, peacetime conditions. Each vessel captured would have to be manned, thereby decreasing the number of men aboard the privateer. Despite this excess of crew, there do seem to be some instances in which privateers, particularly smaller ones, sailed without a carpenter. During the War of 1812 the American privateer *Flight*, for example, carried a crew of 28 that did not include a
carpenter. The Canadian sloop *Dart* sailed in 1813 with perhaps nearly 100 crew, and managed well enough without a carpenter until the captain finally shipped a man at St. John’s, Newfoundland.

Privateers also differed from the Royal Navy in that the entire crew, including the officers from the captain on down, enlisted for each cruise. Josiah Cobb mentions the carpenter of his ship coming aboard at the eleventh hour “to better his position.” Obviously, if the captain was successful on his cruise, then the owner(s) of the ship would want him to return for another, and he, presumably, would prefer to keep the officers and men that suited him, but nothing was guaranteed. The captain may have been content to retire with his prize money. If he returned, his officers might take opportunities to serve at higher ranks on other privateers or to command their own ship. If the captain was unfortunate in being unable to find merchantmen, or if the ship was not fast enough to overtake potential prizes, then the crew might seek luckier captains or better ships elsewhere. The obligation to serve only for a single cruise provided the crew with a degree of independence relative to their contemporaries in the government navies, but freedom was purchased at the price of job security. If the privateers could not get out of port, and the British did establish an effective blockade of the American coast during the War of 1812, then seamen, officers, and carpenters were unemployed.

The merchant marine differed from the other services in several ways. Primary among these differences was that merchant ships did not set sail with the intention to wage war. They were privately-owned business ventures, and whatever armament they might carry was meant for defense. This principle is illustrated amply in the log of John Boit, captain in the 1790’s of *Union*, a small merchantman trading for furs along the northwest coast of America. Violent incidents had transpired previously between Native Americans and other merchants, so prior to his arrival on the northwest coast Boit had his carpenter cutting loopholes in the bulwarks for muskets and fitting stanchions for boarding nets among other
precautionary measures.\textsuperscript{30}

Since they literally were not war ships, the crews of merchantmen were not organised along military lines. The ship still had its captain, referred to as its master, and instead of lieutenants he had mates, who also filled the roles of the boatswain and gunner if necessary. Aboard merchantmen the carpenter was usually in a position superior to that of the seamen, but inferior to the mates, although Marcus Rediker places carpenters as equals alongside boatswains and gunners.\textsuperscript{31} Although they were “idlers” (see below), carpenters could and often did stand or even direct watches on merchantmen.\textsuperscript{32} The captain’s command was paramount, although Rediker also states that since each inferior officer held specific, essential duties, they together constituted a second line of authority on board akin to that of the Royal Navy.\textsuperscript{33} The shipboard social stratification appears to have been the same for merchantmen as it was in the navies. Bartholomew James was a British officer who was on the beach with the end of the American War and the downsizing of the Royal Navy. He resorted to commanding merchant ventures and remarked that he had a New Year’s Day tradition of inviting all of his officers, including the boatswain and carpenter, to dine with him in his cabin, giving the impression that such an action was at least unusual.\textsuperscript{34}

It is apparent that many masters did not even carry a carpenter among their crew, but got by on a voyage by their own skills, particularly on shorter voyages across or around the Atlantic where serious problems might literally be jury-rigged before the ship put into a nearby port for repairs.\textsuperscript{35} On longer voyages, where friendly ports were few and far between, merchantmen almost always carried at least one carpenter and often two, especially on the trips to the west coast of America or to China.\textsuperscript{36} Even here, however, a captain might find himself without a carpenter. John Meares, on a fur trading venture in 1786 to the American northwest coast, was unable to obtain a carpenter, which he stated was most severely felt despite the fact that his crew was able at one point to erect a house
The crews of merchant ships were akin to those of privateers in that they were employed by the cruise. Merchant seamen, including carpenters, could leave their ships at some port in the middle of the voyage if they were dissatisfied with their situation even though they ran the risk of forfeiting at least part, if not all, of their wages. John Boit’s carpenter deserted him upon their arrival in Canton, China, but Boit was able to get by tolerably well without him on the voyage back to the United States.

In each of the services examined the carpenter always held a position of at least some authority. In the Royal Navy, the Continental and United States Navies, and the state navies he was a warrant officer rated an equal with the boatswain and the gunner. Aboard privateers we cannot refer to the carpenter as an official warrant officer since these ships were quasi-military private ventures, but he maintained his equal ranking with the boatswain and gunner. When he was aboard merchant ships, he was superior to the seamen, but usually inferior to the mates. In the Royal Navy he was a standing officer who could remain with a ship for his or its entire career, while in the Continental Navy and state navies he enlisted for the short term. In the United States Navy he might have a permanent position aboard a specific ship, but he could also choose to enlist for a single cruise. Aboard privateers and merchantmen he always had the freedom to leave when he desired, but at the cost of loss of job security and perhaps some or all of his wages.

In all services carpenters were commonly referred to as “idlers” in that they did not stand a regular watch with the rest of the crew. Ships were normally worked in four-hour shifts, or watches, with half the crew running the ship and the other half resting. In order to keep from working the same schedule every day, one watch was split into two, two-hour periods, or dogwatches. There was always at least one watch that fell in the middle of the night, so most of the seamen would have to be on deck at some point in the dark. The carpenter, however, was only required to work during the day, which technically made him an idler, although he was far from idle. There were many other positions aboard ship that
qualified as “idle”, but if all hands were required for some task at night, such as taking in sail or tacking, or if many of the regular seamen were unable to work due to illness, then these men could be draughted as well despite their idle status. These idlers could include the carpenter’s mates and crew.\textsuperscript{41} The carpenter was the one person aside from the cook who might be able to sleep through the entire night, especially on larger ships where he had assistants who could tend to simpler tasks such as sounding the well. However, the historian John Masefield reports that the carpenter typically arose at four, so an evening’s rest might not carry the same connotation it does today.\textsuperscript{42}

REQUIREMENTS FOR SERVICE

The Royal Navy maintained what seem to be stringent requirements for someone to become a shipboard carpenter. Men aspiring to the position were required to have worked in a shipyard for at least a year beforehand, and then they were to pass an examination before a quorum of master shipwrights before they were allowed aboard a ship.\textsuperscript{43} Even then, the applicant was not a ship’s carpenter, but a carpenter’s mate apprenticed to an experienced individual. In this capacity he had to serve at least one voyage before he could become a carpenter himself.\textsuperscript{44} There were exceptions to this last rule, but they usually involved special circumstances. During Admiral Anson’s circumnavigation of 1740–44 he promoted a carpenter’s mate, one John Knight, to carpenter of the Manila galleon prize that they had captured.\textsuperscript{45} Anson had already been at sea for several years by that time and many of his men had died of scurvy, so the stricture of having to serve one voyage before being promoted was presumably waived in consideration of the length of the voyage. One more rule mentioned by Masefield was that no applicant could obtain his position through jobbery or influence. Since Masefield does not cite a specific source for this statement we should be cautious in regarding it as an actual written rule. If truly a rule, how strictly it was adhered to is unknown but, as we shall see below, shipboard carpenters in the Royal Navy generally
enjoyed solid reputations for character and expertise. Rodger believes that carpenters had to start learning their trade young, while still boys, to gain the length of sea experience necessary to become proficient at their occupation while still maintaining the youthful vigor required to accomplish their tasks.\textsuperscript{46} It is difficult to determine the accuracy of this statement since there are few demographic data on how old carpenters were when assigned to a ship. One gains the impression from reading through all of the ships' logs and personal diaries that, at least for the Royal Navy, carpenters directed or supervised as much activity as they performed, and likely left much of the heavy work to their assistants.

In the Continental and state navies no listed requirements for being a shipboard carpenter have as yet been found. There was a corps of captains and lieutenants, with the captain's seniority list drawn up by Congress, but an established command structure appears to have stopped at the commissioned officers. Everyone else in the crew was recruited for each voyage. Many captains seem to have relied on their reputations to enlist their crew, much as officers in the Continental Army assembled their companies and regiments. Units in the Continental Army were raised and supported by their respective states (e.g., the 1st New Hampshire Regiment). There were just a few regiments for which Congress itself was responsible. The reputation of an officer might matter a great deal to the men who enlisted in his company or regiment, and it is assumed here that the Continental and state navies were the same. The captain and his lieutenants raised their own crew, so they might have their own criteria for selecting a ship's carpenter. Since Continental Navy officers were also perpetually in competition with privateers in the same ports for quality seamen, the standards for enlistment may have been lowered to enable a captain to round out his crew, and the same might hold true for the state navies as well.

There are also no known requirements for service in the U.S. Navy. Since the commissioned officers aspired to emulate the professionalism of the Royal Navy, one might expect a similar attitude to carry over to the warrant officers. However, when one considers
that many or most of the carpenters both before and during the War of 1812 were signed on for single voyages, then it may be unrealistic to assume that strict standards were applied to them for enlistment. We saw above how Captain Allen was obliged to find a carpenter just prior to sailing in the brig Argus. He could not have allowed himself to be too fussy in his selection. This is not to say that carpenters in any of these services were substandard, but simply that there is no basis upon which we can compare them to their counterparts in the Royal Navy.

Both privateers and merchantmen appear to have had little in the way of requirements for carpenters in their service. Rediker comments that carpenters of merchant ships were highly skilled, that they had learned their trade through an apprenticeship, and could themselves train a mate if they had one on board, although the information on which he bases this statement is obscure.47 Presumably the carpenter was taken aboard at the discretion of the captain or master, who had his own ideas on selecting his crew. As mentioned above, both privateers and merchant ships often sailed without a carpenter, so perhaps their captains could be more selective in whom they chose. This does not mean that the carpenters hired were superior to those in government service, although there were doubtless many fine carpenters aboard merchantmen. Captain Meares remarked in 1788 that his head carpenter had served his time in London, and that he displayed much ingenuity and professional skill.48

Carpenters in the Royal Navy had to pass through several tests and apprenticeships before they could hope to serve as carpenter aboard a King’s ship. There were no known requirements for serving in any of the other services, but for the Continental, U.S. Navies, and the state navies this lack of standards may have been caused by circumstances beyond the officers’ control. The competition with privateers for seamen of all rates compelled the navies to take whomever was available and willing to serve. This same competition for seamen extended to privateers and merchant ships as well. Obviously, in times of peace
this competition in general was much reduced as were the wages paid both for seamen and
the officers. However, the vagaries of the trade network often created manpower gluts and
shortages in different regions that might cause localised competition. Rediker notes that the
shortages could be taken advantage of by seamen, and captains were at times compelled to-
 lure seamen away from other ships, even Royal Navy vessels, but it is uncertain to what
extent carpenters and other ship’s officers were affected.49

DUTIES AND RESPONSIBILITIES

We have detailed the carpenter’s position in the ship’s hierarchy and listed his qualifications
for being appointed to a ship, but what did the carpenter actually do each day, and did his
duties and responsibilities vary from service to service? Although it was written several
decades after our period of study, a passage by seaman Richard Henry Dana well illustrates
the work situation of a carpenter:

...I would state, in order to show landsmen how little they know the nature of a ship, that a
ship-carpenter is kept constantly employed, during good weather, on board vessels which
are in what is called perfect sea order.50

The 1766 edition of the King’s Regulations and Admiralty Instructions detail what the
Royal Navy expected of a shipboard carpenter:

Article I.
The carpenter is to take upon himself the Care and Preservation of the Ship’s Hull, Masts,
Yards, Bulkheads, and Cabbins, &c. and to receive into his Charge the Sea-Stores
committed to him by Indenture from the Surveyor of the Navy.

II.
At Sea, he is to visit daily all the Parts of the Ship, and see if the Ports are well secured, and
Decks and Sides be well Caulked, and whether any Thing gives Way; and if the Pumps are
in good Order; and from Time to Time to inspect into the Condition of the Masts and
Yards, and to make a Report of every Thing to the Captain

III.
In an Engagement he is frequently to pass up and down the Hold with his Crew, and to be
watchful against all Leaks from Shot under Water, having Shot-Boards and Plugs of
Woods ready, and whatever else is necessary to stop them, and likewise to fish, or
otherwise secure the Masts and Yards.

IV.
As often as the Ship comes into Port, he is to draw up in Writing, an exact and particular
Account of the Condition of her Hull, Masts, and Yards, and what Works are wanting to be
done to her, and to present the same signed to the Captain, and also to the Master
Shipwright of the Yard, when she is to be refitted.

V.
He is not to lend any of the Stores under his Charge, without an Order in Writing from the
Captain, nor to expend any without his Direction, and to be very frugal in the doing
thereof; and, at the End of the Voyage, he is to deliver just Accounts thereof to the
Surveyor of the Navy, audited and vouched by the Captain and Master, with an Account
of all Stores that he hath been supplied with, either from the Yards, other Ships, or that
have been bought by the Captain; and of all Stores that he has been lent; and of all that
are in any way wasted, embezzled, or misapplied; and of all lost or destroyed, either
through Carelessness, or any unavoidable Accident, with the particular Circumstances
thereof, and of the Persons Names concerned therein; and of such as have been returned
to any of the Yards, with proper Receipts for the same, without which they will not be
allowed; and he is not to receive his Wages until the said Accounts are Passed.

VI.
If he has Cause of Complaint against any of the Officers of the Ship, with relation to the
Disposition of the Stores under his Charge, he is to represent the same to the Navy-Board
before the Pay of the Ship, in order to their doing Right between them and His Majesty,
before the said Officers receive their Pay.51

The instructions for 1772 are virtually identical to those of 1766 even down to the pages on
which the articles are located. In the 1806 edition the stipulations for the accounting of
stores are much more extensive. What this signifies is uncertain. It could mean that the
embezzlement of stores had risen sharply, or that the Admiralty had become more vigilant
regarding the costs of maintaining the fleet during what seemed to be an endless war with
France. The only effect on the carpenter was that he had to be even more watchful and
account for his stores more exactly than he already was.

A carpenter’s duties therefore could be summed up neatly in just a few lines, but
obviously his duties in practice were much more comprehensive. Articles I and II listed
above encompassed most of the carpenter’s physical labour each day. Any ship at sea is
constantly subjected to various stresses, and with wooden sailing ships these stresses were
manifested in the perpetual creaking and groaning of the joints and fastenings. Every day,
and especially after heavy weather, the carpenter would look first to the masts and yards to
see if any were sprung. The stress from the wind could spring a mast by creating a crack
along its length. If left to itself sooner or later the mast would snap and fall on the deck or
alongside the ship. Either case was a hazard to ship and crew, since the masts and yards
could crush anyone unlucky enough to be beneath them. If they fell overboard they could be dragged alongside by the rigging and punch a hole in the hull. The loss of the mast itself could create an unstable situation in the handling of the ship. Fixing a dangerously sprung mast or yard therefore was a priority, and there are numerous accounts of such tasks being done on a regular, almost monotonous basis.52

Masts were seldom replaced while at sea. That was a task that was best done while the ship was anchored, preferably in a port where there were facilities for such things, but it could also be done by the crew itself while at anchor if no port was within easy sail.53 Typically, a sprung mast was “fished”. This meant that one or two timbers that were fashioned specifically to fit the cylindrical mast were placed on the mast over the cracked or damaged area and then clamped in place with many windings of rope, or “woolded”. This activity usually consumed most of a day. In addition to the masts, the yards and other parts of the rigging were also subject to the same constant stress and frequently broke. Yards were easier to replace than masts. In fact, the yards were often taken down if the crew had warning of an impending storm. The carpenter usually kept a stock of spare spars lashed on deck from which he could take one of appropriate size and shape it into a replacement yard. If the carpenter did not have a spar of the right size he could also fish the yard until the ship reached port or he was able to go ashore and cut down a tree for the same purpose.

The carpenter was also required to inspect the ship’s hull each day for leaks and other signs of wear. All ships leak no matter how well they are constructed and caulked, so either the carpenter or one of his assistants sounded the ship’s well each day, each watch, or sometimes each hour, and measured the depth of water in the hold. Masefield states that the depth of water was not to exceed 15 inches, and that it should be frequently changed.54 Whether this maximum depth of water applied to all vessels or one specific rate of ship is unspecified. Pumping the bilges on a regular basis also gave the carpenter a notion of the rate the ship was leaking. If this rate suddenly increased, it indicated that one of the ship’s
seams or planks had broken open or that some other serious problem had developed and needed to be addressed. The carpenter then had to go below and search through the holds of the ship to find the source of the leak, moving aside whatever cargo or stores were in the way. Of course, if the ship ran aground or struck a reef the carpenter was supposed to sound the well immediately, determine if the hull had been holed, and report to the captain on the ship’s condition.55

Finding a leak could be as simple as that mentioned by Pascoe Thomas when Anson’s flagship Centurion was found to be making 12 inches of water in one watch. The source of the leak was soon identified and stopped.56 Oftentimes though, finding a leak was utterly frustrating. Another leak aboard Centurion was traced by the carpenters to the bow and they attempted to plug it while anchored at Tinian in the Pacific. The crew, most of whom were ill with scurvy, moved the ship’s stores and cannon aft to raise the bow out of the water, and the carpenters pulled off and replaced the exterior sheathing and the planking around the stem. The cannon and stores were hauled forward again, but the leak was found to be as bad as ever. This procedure was repeated twice before the carpenters concluded that the source of the leak could not be found until they reached a port with proper facilities. Upon anchoring at Canton, China, the bow was again taken apart, and the leak was tracked down to a loose bolt that had completely deteriorated in the scarf of the stem itself.57

Another procedure in the endless task of trying to keep the ship watertight was caulking. All Royal Navy ships larger than fourth rates had crewmen specifically designated as caulkers who were subordinate to the carpenter.58 If the ship did not have a caulk, or if the job was too much for a few men, then we find the carpenter and his crew caulking as well. A carpenter’s stores included sizeable quantities of oakum, caulking irons, and hammers; recaulking the entire ship took at least several days if not one to two weeks.59 The benefits to the crew, however, were much appreciated as caulking not only helped keep them dry in their berths, but also reduced the frequency of having to pump.60
As mentioned above, the ship’s bilges were pumped out periodically. If the ship started taking on water rapidly because of a sudden leak or because a storm was working the seams open, the pumps were used more frequently to keep the ship from sinking. In extreme cases a ship was able to stay afloat only through constant pumping. In light of this it is not surprising that the carpenter was also responsible for seeing that all of the ship’s pumps were in proper working order. If the pumps indeed were put to constant use, their parts could wear out quickly, so the carpenter not only had to contend with the leak that was filling the ship, he also had to be mindful that the pumps might need repair as well. Such a set of circumstances beset the 74-gun ship *Centaur* in 1782. The vessel had been labouring for days after a storm when the carpenter found its pump leathers nearly consumed and the pump chains practically useless. The crew thrummed a sail to cover the hull and reduce the leaking, but by then the well had been stoved in and the pumps themselves displaced. When the water reached the orlop the carpenter finally had to recommend building rafts to the captain, since he felt the ship could not remain afloat much longer.\(^1\)

The masts and yards, leaks in the hull, and the pumps were just the typical areas of the ship to which the carpenter paid attention. According to Admiralty instructions the carpenter also had to go through the ship each day inspecting all of its parts. This included all of the beams, knees, breasthooks, chainplates, and other material parts of the ship that he could see. Whatever the carpenter found to be defective he was to repair. If he was unable to repair the problem while at sea, he was to present a report to the captain and a master shipwright when the ship reached port as stated above in Article IV.

Other items aboard ship that required constant attention were the small boats. A ship’s boats were essential for maintaining contact with the shore; the ships themselves often drew too much water to be brought close in to land if the captain wanted to obtain wood for the ship’s stove or fresh water. Many ports did not have piers at which a ship could dock. Boats were also used for ferrying supplies and sailors between ships at sea. They could be
used during wartime to stage small-scale attacks on enemy positions or in cutting-out expeditions to capture enemy vessels. The boats were stored on deck and hoisted into the water when necessary. The constant pitching and rolling of a ship at sea provided numerous opportunities for a boat being hoisted alongside to collide with the ship itself, and there are many mentions in the logs and journals of carpenters having to repair damage to a boat after such a collision. The boats needed caulking and painting just as the larger ship did, and so provided a steady source of work for the carpenter.

Carpenters were kept fully occupied with the daily task of keeping their ship in good repair, but the Royal Navy was first and foremost a military organisation, and it was possible that the carpenter would be involved in battle at sea. A warship’s crew was normally given specific assignments or battle stations for when the ship was called to quarters. These stations corresponded largely to the watches that the sailors were on, with groups assigned to specific cannon. The carpenter, as we have seen, was considered an idler and therefore did not stand a watch, but he did have specific duties during action. As stipulated above in Article III, the carpenter was supposed “to pass up and down the Hold with his Crew, and to be watchful against all Leaks from Shot under Water”. Enemy shot that hit below a ship’s waterline needed to be plugged immediately. Before an engagement, the carpenter and his crew cleared a path along both sides of the hull on the orlop so that they could reach shot holes more easily. They also kept handy a number of wooden shot plugs, essentially short, tapered logs, which they would hammer into shot holes. Obviously, such an object would not provide a watertight fit, but it would stop the most serious inrush of water until such time as the carpenter could repair the hole properly.

William Robinson of the 74-gun ship Revenge at Trafalgar is just one person who mentions the carpenters plugging shot holes during a pause in the battle.

Stopping shot holes was the carpenter’s primary duty during action, but there were many other things that might require his attention. During the battle of the Glorious First of
June in 1794, a cannonball struck the rudder of the 80-gun ship *Caesar* driving a splinter into a block of the tiller rope, jamming the mechanism and forcing the ship to stay at a greater distance from the French than the captain wanted. The carpenter had to work quickly to free the tiller rope so that the ship could return to action.65

When the battle was over, and literally before the smoke had cleared, the carpenter set to work repairing the damage caused by enemy fire. Any prizes that had been taken would also need to have the same work done on them. First of all were the shot holes that had been plugged quickly during the fight. The damaged planks had to be patched over or replaced and recaulked, and the framing examined to determine if any were damaged seriously. Any one or all of the masts and yards also might have been brought down. Even if a mast was still standing it probably required fishing to reinforce it after having been struck by one or more shot. Anson was obliged after capturing the Manila galleon to repair the masts and hull of *Centurion* where Spanish shot had struck.66 Logs of the capital ships involved in the major fleet actions of the Napoleonic era are replete with comments of the same actions taking place after each battle: fixing shot holes and jury-rigging or fishing masts. The Glorious First of June,67 St. Vincent,68 Camperdown,69 the Nile,70 Copenhagen,71 and Trafalgar72 are virtually identical in this respect. The damage could take weeks to repair fully, and many major fixes could be done only when the ship had returned to port.

Carpenters might also be called into action on shore. There is at least one case where the officers of a squadron assembled a landing party to attack a strongly-picketed fort on the island of St. Lucia, and a number of carpenters was added to wield their broad axes and clear a path for the soldiers.73 It is questionable whether the squadron’s commanders employed their senior carpenters, since such men were too valuable to be placed frivolously in danger. More likely, some of their crew who could heft axes were assigned. Another instance occurred in the 1760’s in Tahiti, when Captain Wallis of *Dolphin* launched a
preemptive strike and had his carpenters use their axes to destroy the natives’ canoes before they could use them to attack his ship. Carpenters were also given more mundane tasks on shore. The carpenters of the fleet that established the first penal colonies in Australia were sent ashore to clear ground and construct barracks and ancillary structures for the colonists, thereby showing that they were not restricted in knowledge just to building ships. Captain Bligh of *Bounty* infamy also promised a Tahitian chief the assistance of his carpenters in building a house for him.

Finally, as spelled out in articles IV, V, and VI of the Kings Regulations and Admiralty Instructions, a shipboard carpenter in the Royal Navy was responsible for the stores entrusted to him. These stores included all of the spare masts and other spars secured on deck, and all of the tar, pitch, oakum, plank, nails, spikes, and other materials needed for working about the ship and which the carpenter secured in his storeroom below decks along with all of the woodworking tools that he used. It is mentioned that the carpenter had to make out each day a report of his stores to the captain for his review and approval. Requests for more supplies also went through the captain. At the end of the voyage the captain went over the accounts of all of his officers (including the boatswain, gunner, sailmaker, etc.). It was important that all stores be properly accounted for since the Admiralty would not release the officers’ and crew’s pay until all accounts had been cleared. There was so much paperwork, in fact, that one anonymous officer, who may have been a vice-admiral, in a 1758 pamphlet decried the obligation of captains having to oversee at least 29 books, many of which were kept by men he believed were scarcely able to write their own names. The effect of this pamphlet on the Admiralty seems to have been negligible, as the bureaucratic recordkeeping only increased.

As mentioned previously, the instructions for 1806 are far more detailed in respect to the accounting of carpenters’ stores than either the 1766 or 1772 editions. This is perhaps reflective of the almost constant service of the Royal Navy in the war against Revolutionary
France, which by this time had been dragging on since 1793 with only one brief respite. Government stores were always tempting targets for the warrant officers, and the expense of the wars would have prompted Admiralty to cut costs and reduce thievery and fraud as much as possible. Michael Lewis states that on board ship it was the boatswain who had the reputation of stealing government stores, a practice referred to as cap-a-bar, since he had ready access to material that was easily convertible to uses on shore such as rope, wood, paint, etc., and he apparently did not resist temptation often.\textsuperscript{78} Carpenters were also suspect, but those aboard ship appear to have been regarded as more honest than those ashore in shipyards, where stores were more easily stolen and sold. Commander James Gardner viewed favourably almost all of the carpenters with whom he had served, but was harsher in his appraisal of boatswains. For example, he referred to carpenter Douglas of the 74-gun ship \textit{Edgar} as “much respected,” and immediately thereafter referred to the boatswain, Johnny Bone, as “cap-a-bar”.\textsuperscript{79} Gunners were usually considered honest fellows if only because it was more difficult for them to sell their stores of cannon, gunpowder, and other munitions.

Of course, the regular seamen aboard a ship could easily prove to be the biggest thieves of all. While anchored at Tahiti the master of \textit{Dolphin} realised that iron spikes and nails were being traded by the seamen with women ashore in return for sexual favours. He quizzed the carpenter who replied that he had been keeping a careful watch over his stores and that nothing was missing. Shortly thereafter the carpenter surveyed the ship and reported that every cleat had been drawn and that two-thirds of the men were lying on the deck because the hammock nails were missing. It is reported that Captain Cook encountered this same problem in his voyages through the South Seas.\textsuperscript{80} This one incident on \textit{Dolphin} encapsulates the carpenter’s duty. He was being mindful of the stores entrusted to him, and surveyed the ship once he realised that the fastenings that were being traded ashore must have come from somewhere aboard the vessel.
The duties of a shipboard carpenter in the Royal Navy were spelled out in detail in the King’s Instructions and Admiralty Regulations. In practice, the carpenter’s duties were extensive and the captain and crew relied on his expertise to a great extent. This situation appears to have been no different in the rest of the services included here. No set of regulations and instructions for the Continental Navy has yet been identified, but the primary documentation suggests that carpenters performed many of the same types of duties. The same was presumably true for the state navies, but the documentation there is sketchy.

Information for the Continental Navy is limited to three vessels and a prize. The frigate Confederacy had all of its masts snap after the rigging slackened when it sailed into a warmer climate. The vessel spent several months at anchor in the Caribbean as its carpenters worked ashore fashioning new masts, piecing together old yards for a mizzen, caulking the ship, and launching a new rudder. Back at sea again several of its masts had to be fished and the main chainplate bolts of its weather shrouds had to be refitted. The frigate Alliance, anchored at L’Orient, underwent an extensive refit under the direction of John Paul Jones that included reducing the main and fore yards in size and length, enlarging the fighting tops, lengthening the quarterdeck, building a new orlop, fixing a new step for the mizzenmast on the lower deck, and altering the storerooms and the cockpit. Prior to the engagement between Bonhomme Richard and Serapis, the carpenter of Bonhomme Richard is said to have had no particular part of the ship assigned to him, but merely to do his duty. That duty appeared to have been below decks, most likely stopping shot holes, since he is reported to have come up at one point from below and, believing John Paul Jones and the other officers to be dead, begged for quarters from Serapis. Jones promptly sent him below again. After the surrender of Serapis, the carpenters tried to stop the leaks on Bonhomme Richard, but cried that they could not and that the ship was sinking. Upon transferring to Serapis they then started repairing damage and stopping shot
holes aboard that vessel, repairs that reportedly continued even after the prize reached the Netherlands.84

For the United States Navy the first set of regulations appears to have been issued by the President in 1802. Here the carpenter’s duties are listed as follows:

1. To take upon him the care and preservation of the ship’s hull, masts, &c. and also the stores committed to him by indenture.

2. To visit and inspect all parts of the ship daily, to see that all things are well secured and caulked, order the pumps and make reports to the captain.

3. In an engagement he is to be watchful, and have all materials ready to repair damages; and frequently to pass up and down the hold with his crew, to be ready to plug up shot-holes.85

These instructions mirror the first three articles of the Admiralty’s regulations regarding care and maintenance of the ship. The other three Admiralty articles concerning recordkeeping of stores would appear to have been omitted from the U.S. regulations until one reads some of the captain’s instructions:

3. To take inventories of all the stores committed to the charge of his officers respectively, and to require from his boatswain, gunner, sail-maker, carpenter and purser, counterparts of their respective indents.

4. To cause his clerk to be present, and to take an account of all stores and provisions that come on board, and when; which account he is to compare with the indents, in order to prevent any fraud or neglect.

5. To keep counter books of the expense of the ship’s stores and provisions, whereby to know the state and condition of the same; and to audit the accounts of the officers, entrusted therewith, once a week, in order to be a check upon them.

20. He is not to suffer the ship’s stores to be misapplied or wasted, and if such loss happens by the negligence or wilfulness of any of the ship’s company, he is to charge the value thereof against the wages of the offender on the muster and pay-books.86

There is one additional detail of the accounting procedures mentioned in the instructions for the sailing master, who was supposed to “…sign the carpenter’s and boatswain’s expense book, taking care not to sign undue allowances.”87 So one can see that the regulations and instructions for the U.S. Navy are parallel in letter and intent to those of the Royal Navy.

References are few in the primary literature about U.S. Navy carpenters at work. There
is a mention from 1826 by a passenger aboard the frigate \textit{Constitution} that there was a lathe room, which was seldom idle, in the forward part of the ship next to the carpenter’s quarters. The same passenger also noted one of the carpenter’s crew or “gang” uncovering the pumps during an evening watch and sounding the well.\textsuperscript{88} Elijah Shaw was serving aboard the frigate \textit{Constellation} when it engaged the French \textit{Insurgente}, and says that he was at first stationed with the carpenter at the pumps. He also states that in the middle of the fight he went over the side of the ship to plug a shot hole in the bow, which sounds as though he was embellishing his actions.\textsuperscript{89} It may be that the bow was inaccessible to the carpenters inside. William Godby, carpenter aboard the frigate \textit{Philadelphia}, testified at the court of inquiry investigating that vessel’s loss how he carried out measures to scuttle it such as boring holes in its bottom.\textsuperscript{90} Samuel Leech, while serving during the War of 1812 aboard the brig \textit{Syren}, mentions the carpenter making a coffin for the captain. By boring holes in both top and bottom instead of just the top, the coffin floated on the waves rather than sinking.\textsuperscript{91} The last reference is to the carpenter of the frigate \textit{United States} fixing a sliding plank for a burial at sea.\textsuperscript{92}

There were no set regulations for privateers other than instructions for the lawful seizure of prizes and treatment of prisoners, but there is a section from the 1813 edition of David Steel’s \textit{Seamanship, Both in Theory and Practice} titled “An Addition on Naval Discipline” that officers of privateers were encouraged to read and follow. The carpenter’s instructions are again similar to those of the Royal and U.S. Navies:

\begin{quote}
He is to take charge of the stores in his trust, and give a weekly account of their expenditure to the master. He is to keep the boats in good repair and fit for service, and attend carefully to every thing in his department about the ship. He will keep his axes always well ground and at hand, in case of an emergency. He, with his mates, will every morning go aloft and inspect the yards and spars, and make a faithful report thereof to the first lieutenant before eight o’clock.

He is to keep the pumps in good order, frequently inspect them, and have their gear constantly at hand. He will have a sufficient quantity of shot-plugs made for action. In a gale of wind, he will see the hatches well secured with tarpaulins &c. and also after the cables are unbent and stowed; he is to see the hawse plugs in the hawse. In action he will get the pumps rigged, axes upon deck, &c. and with his crew plug up the shot holes and
\end{quote}
repair damages; other duty depends upon the order of their superior officers.93

In the contemporary literature we find privateer carpenters faced with many of the same tasks we have seen in government navies. For the entire period under study (1725–1825) we see the same reports of sprung masts,94 the caulking or fixing of leaky vessels,95 working on the pumps,96 building or repairing boats,97 and the plugging of shot holes and fishing masts during or after battle.98 For the latter duty, we have explicit mentions in quarter bills or organisation of action stations that carpenters’ battle stations were down below.99 There are a few additional references to carpenters’ actions during battle. We find Shelvoke’s men cutting gunports for sternchasers and, a century later, the men aboard Chasseur sawing down the taffrail to give their sternchasers more room. We also see the carpenters aboard America partitioning off the berth deck to make room for prisoners.100 Lastly, one can see the value of fishing a sprung spar quickly when one reads how the privateer Rolla was captured in 1813 due to a weakened boom. Rolla’s crew encountered a British warship and were unable to haul to a wind due to the unfished boom, which led to their eventual capture.101

The responsibilities of carpenters aboard merchantmen are defined in at least one contemporary text. William Sutherland’s 1717 treatise Britain’s Glory: or, Ship-Building Unvail’d deals mainly with the techniques and costs of constructing ships, but he also included a section on enlisting a ship’s crew and the duties for which each officer was responsible. This book went through several subsequent editions and became one of the standard works for eighteenth-century shipbuilders. Regarding the carpenter, Sutherland wrote that he

...ought to look after the Fitting of the Ship, to see that every Thing that’s necessary and convenient for the good of the said Ship be done well and safe, that every part of the Ship be called (sic) tight, both for to keep the Goods dry, and also Mens Lodgings; to see that the Masts and Yards are fitted in every respect proper and convenient for the Use; that the Boats are also fitly adapted for the Use the Owner designs the Ship for, and that the Anchors be well stock’d; to see that he has a convenient Quantity of Sea Stores of every sort, that may be proper to supply the Want and Casualties that may happen both to the
Ship, and every other material wooden part belonging to her; also that he has help
enough to keep the Ship in a proper Condition; and that such a Crew have a sufficient
parcel of Tools proper and convenient to perform any Piece of Work that may be
requir'd to be done: But especially that he minds his Pumps, Rudder, Ports if any, and
Chain Plates, which are material parts of his Charge; also the Capstands.

That the Pumps, whether Chain or Hand Pumps, be in a very good Condition, well set and
well fitted with Brakes, or Winches, and every thing else that has been customary for a
Ship of the Magnitude to be fitted with, well Leather'd, either as Boxes or Chains; to see
that his Rudder Irons be firm, and not too much worn, but be of sufficient substance to
agree to that extraordinary strain, that will always attend such a Material; also that the
Chain Plates be firm, and not too much worn; and also that the Capstands be firm, and not
decayed, well fitted with bars, or handspokes for Windlesses.\(^{102}\)

Sutherland indicates that the carpenter’s obligations to the vessel’s owner(s) were akin
to the duties required by the Admiralty. This is not surprising, since most ships were
similar in their basic construction and function. The main duties of keeping the ship from
leaking too much and keeping the masts from snapping were the same, no matter in which
service a carpenter was employed. Again, the contemporary literature is filled with
references to carpenters, this time aboard merchant vessels, performing the same tasks as on
warships and privateers. Fitting or repairing masts,\(^{103}\) caulking or stopping leaks,\(^{104}\)
fixing pumps,\(^{105}\) and working on the boats were still much of the routine.\(^{106}\)

Merchant ships were not the same as warships, however, and this difference may be
detected in several ways. Carpenters on merchant ships seldom had to worry about the ship
being involved in a major battle. Of course, we have seen above where carpenters worked
on the ship’s defenses, such as preparing stanchions for boarding netting, cutting loopholes
for muskets, and even cutting gunports, but these were usually intended for use against
natives in canoes or other small boats.\(^{107}\) Carpenters might also be called upon to fashion
‘quakers’, or wooden imitations of cannon designed to make a merchant ship appear more
warlike than it truly was and thereby to deter pirates.\(^{108}\) For the most part, merchantmen
relied on speed and fortune to evade warships and privateers, and when these failed them
most merchant ships surrendered quickly.

Carpenters on merchantmen also seem to have been called upon to be more versatile.
There was much to be done below decks before a ship left port, as bulkheads and partitions were taken down and rebuilt to accommodate different cargoes being loaded. The hold of a ship was tailored according to what was being shipped and what space was needed for supernumerary crew or passengers.\textsuperscript{109} Tea, apparently, required extensive caulking of the planking in the hold before it could be securely transported. There is one account where the carpenter spent days caulking the deck planking of the forward hold only to have the captains of some Indiamen point out defects that needed to be addressed before the tea chests could be loaded.\textsuperscript{110} Carpenters were also called upon for odd duties. Samuel Kelly mentions two separate occasions of a carpenter making a coffin for someone who had died aboard another ship docked at the same port.\textsuperscript{111}

Carpenters in each maritime service were expected to perform roughly the same duties. This can be seen in explicit instructions for the Royal Navy and the United States Navy, in suggested regulations for privateers during the War of 1812, and in general responsibilities detailed by a master shipwright for merchant ships. These instructions are corroborated and additional details are provided in the logs and diaries of the period. The carpenter’s duties were extensive, and to keep the ship in good condition he usually needed help.

THE CARPENTER’S ASSISTANTS

As seen in Table 1 (page 15), most ships in the Royal Navy carried one carpenter. Ships also carried one or more carpenter’s mates and larger rates had a group of men referred to as the carpenter’s crew or carpenter’s yeomen. The carpenter’s mate, as we also saw above, was an apprentice to the carpenter so that he could be trained and eventually promoted to ship’s carpenter.\textsuperscript{112} First and second rates carried two mates, but it is unknown if there was any kind of hierarchy between them (e.g., chief mate, or senior and junior mate) aside from time served. The carpenter’s crew was composed of assistants taken from the ship’s crew itself. British warships were manned by volunteers and by men obtained through
impressment. Before these men were added to the ship's rolls each was quizzed as to his
previous work experience to determine their rating (e.g. able seaman, landsman, etc.)\textsuperscript{113}
This process helped determine if someone had any particular abilities that might be helpful
to one of the officers or specialists. If, for example, a man had bookkeeping experience, he
might become the captain's secretary. Men with woodworking skills often were taken by
the carpenter and added to his crew, or what was also referred to as the "carpenter's
family". This was just one of several such groups, or "families", on board; the boatswain
and gunner also had their groups of assistants, which have also been referred to as
"families".\textsuperscript{114} The use of the term is due to the fact that these men all worked and messed
together and slept in the general vicinity of the carpenter's quarters. They formed as
cohesive a unit as any group on the ship, including the regular seamen's messes. They did
not stand a regular watch, and therefore were referred to as "idlers", but if the situation
demanded that every able hand be involved in some operation such as furling sail, then they
could be roused in the middle of the night just like any watched crewman.

One may observe that as the size of the vessel grew, so did the numbers of the
carpenter's crew. There were several reasons for this growth of numbers. One explanation
is that there was simply more to maintain on larger ships. A second reason is that as ships
grew larger their structural elements, the beams, knees, frames, etc., also grew in
proportion and especially in weight. Just moving such pieces, let alone shaping and fitting
them, would require groups of men rather than just one or two. The same could be said for
fixing or replacing sprung masts and yards. It is possible that if all that was needed was
mere brute strength then the officers might detail some of the landsmen or ordinary seamen
aboard to assist the carpenter. It is presumed that the more highly-skilled able seamen
would not be risked in such potentially dangerous situations when those with lesser
experience were available.

In 1756 Jonas Hanway founded the Marine Society of England, which gave
rudimentary training to young boys for a life at sea. They were intended primarily as servants for the officers, but the ship’s carpenter was also allotted a few as well for apprentices. This was an avenue of advancement for boys who otherwise would have had few opportunities, and it was also a way for the carpenter to bring his son(s) aboard for training and a chance at a better future. John Cremer mentions the carpenter of Dover in 1708 having two of his sons aboard. In practice the actual number of mates, crew, and boys the carpenter had under his direction was not necessarily the number apportioned to him by the Admiralty. The official allotments appear to be upper limits for each position. There is at least one case where a carpenter was allotted two boys and had none aboard, which allowed him to take on Andrew Sherburne as an apprentice and thereby saved the captive American from having to serve against his will as a regular seaman.

The documentation is so sketchy for the Continental and states navies that we cannot say with certainty that a carpenter’s assistants were the same as they were in the Royal Navy. It is obvious that the carpenters in those services did have assistants, so we may assume that they were similar. The 32-gun Continental frigate Raleigh is reported in 1776 to have had one carpenter, one mate, and six crew out of a total muster of approximately 324. The Royal Navy would have had one less crew for a ship of that rate, but the total of the ship’s company exceeds by over 75 men what the Admiralty would have deemed necessary. This is unusual, considering that most histories of the Continental Navy describe how difficult it was to enlist the bare essentials of crewmen when in competition with the privateers. Raleigh, although built and launched quickly, also had to wait for months until cannon could be procured for it. Considering these two points, we may assume that many of the men on these first muster rolls of the frigate were discharged or, more likely, deserted since it is doubtful that seamen would stay on a ship lacking armament while more lucrative opportunities aboard privateers may have been available. Desertion is actually indicated in the muster in several instances. It was also a common practice of the
period, at least for officers in the Continental Army, not to report all desertions from their units primarily out of fear of the British discovering the weakness of their enemy. A second muster roll from 1778 for the same vessel has a total company of only 228, which is within the appropriate range for a 32-gun fifth-rate. The carpenter’s crew still numbers six, and there is even the addition of a carpenter’s yeoman, although the difference between crew and yeoman is obscure. So it would appear at least in this case that the Continental Navy carried more carpenter’s assistants than did the Royal Navy. Whether this difference is significant is impossible to say.

For the U.S. Navy we have the 1813 watch list for all rates of ships from Steel that was detailed in Table 1. The complements for carpenter’s crew that were apportioned in that watch list are almost exactly the same as complements for similar ships in the Royal Navy. One more crewman was added on both first and second rates, but since the U.S. Navy constructed few vessels of this size, the addition of an extra carpenter’s assistant seems of little significance. In practice, American ships may have carried more carpenters than the regulations allotted. George Jones, in his description of travels as a passenger aboard the frigate Constitution, refers to two carpenters mates and a “gang” of six to eight more who were kept constantly busy. American and British regulations stipulate that five crew was the proper number for a ship of that rate, so it would seem that Americans favoured sizeable crews of assistants for their warships.

The same principle may not apply to privateers and merchant ships. Both of these were financed privately, so it was in the best interests of the owner(s) to cut costs and keep the number of assistants to a minimum. In several instances we have even seen that captains set sail without a carpenter at all, so it is more than likely that assistants were also few.

Carpenters aboard warships needed help to complete the myriad of tasks they faced each day, and they were provided with mates and other assistants whose numbers were based on the rate of the vessel on which they served. The carpenter supervised his “family”
in maintaining the ship, but he also taught his aspiring carpenters the woodworking craft, a skill that was much in demand and was compensated accordingly.

THE CARPENTER’S REWARD
The shipboard carpenter was an artisan with a specialised and much needed skill. It was only fitting that he should be properly recompensed for his efforts. In the Royal Navy the carpenter was paid in standard wages each lunar month. These wages, which are shown in Table 2, were on a sliding scale, with the carpenters in first rates receiving the highest amount and those in lower rates receiving progressively less. The carpenter aboard each rate was paid the same as the boatswain and the gunner. In the early 1800’s carpenters began to be paid slightly more than their fellow warrant officers, which Lewis believes reflects a greater importance being placed by the Admiralty on the skills of the carpenter. Lewis also notes that after 1794 the servant system was abolished and each officer who had been allotted servants was given an allowance each calendar month as compensation. The carpenter employed two boys as servants and apprentices, but he could choose to go without them and pocket the money each month, which appears to have been £1 8s.

There are scant data for the other services. Edgar Maclay states that captains in the Continental Navy were paid $60 per month, while carpenters of ships greater than 20 guns were paid $15 and those of ships less than 20 guns were paid $13. Carpenters in the Pennsylvania State Navy in 1775 received $10, which was equivalent to the wages of the gunner and steward while the boatswain received but $8 and the captain was paid $20, or twice that of the carpenter. By 1777 with the depreciation of the currency the Pennsylvania government raised all wages so that now captains were paid $48, while carpenters, gunners, and boatswains received $16, now only one-third that of the captain instead of one-half, and the carpenter’s yeoman of the ship Montgomery received $13. Carpenters’ wages in the U.S. Navy do not appear to have risen much by the time of the War of 1812,
TABLE 2

Royal Navy pay scales (in £, s, & d)

<table>
<thead>
<tr>
<th>Rate</th>
<th>Carpenter</th>
<th>Mate</th>
<th>Crew</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1766</td>
<td>4,0,0</td>
<td>2,0,0</td>
<td>1,6,0</td>
</tr>
<tr>
<td>1772</td>
<td>4,0,0</td>
<td>2,0,0</td>
<td>1,6,0</td>
</tr>
<tr>
<td>1806</td>
<td>5,16,0</td>
<td>2,10,6</td>
<td>1,16,6</td>
</tr>
<tr>
<td>2nd</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1766</td>
<td>3,10,0</td>
<td>2,0,0</td>
<td>1,6,0</td>
</tr>
<tr>
<td>1772</td>
<td>3,10,0</td>
<td>2,0,0</td>
<td>1,6,0</td>
</tr>
<tr>
<td>1806</td>
<td>5,6,0</td>
<td>2,10,6</td>
<td>1,16,6</td>
</tr>
<tr>
<td>3rd</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1766</td>
<td>3,0,0</td>
<td>1,16,0</td>
<td>1,5,0</td>
</tr>
<tr>
<td>1772</td>
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<td>1,16,0</td>
<td>1,5,0</td>
</tr>
<tr>
<td>1806</td>
<td>4,16,0</td>
<td>2,6,6</td>
<td>1,15,6</td>
</tr>
<tr>
<td>4th</td>
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<tr>
<td>1766</td>
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<td>1,14,0</td>
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</tr>
<tr>
<td>5th</td>
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</tr>
<tr>
<td>1766</td>
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<td>1,12,0</td>
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<tr>
<td>6th</td>
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<tr>
<td>1766</td>
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</tbody>
</table>

Information: based on Great Britain, Regulations and Instructions Relating to His Majesty's Service at Sea (London, 1766, 1772, 1806).
as they are reportedly being paid $20 per month and two rations per day while mates received $19 and one ration.\textsuperscript{127} Langley states that between 1798 and 1812 wages for able seamen declined from $17 to as low as $10 before rising again to $12.\textsuperscript{128} Carpenters’ wages could have had a similar decline. In comparison, Dye states that able seamen aboard merchantmen in 1807 could expect $18.\textsuperscript{129} So while carpenters’ may have been better paid relative to seamen and other inferiors in the service, they may have been able to garner higher wages aboard merchant ships, which may help explain why American naval captains experienced difficulty in enlisting their non-commissioned officers. However, there were other inducements aside from the monthly wages.

All military services, of course, also had the possibility of prize money available to them during wartime. In the Royal Navy the group composed of the lieutenants of marines, admiral’s secretary, principal warrant officers, master’s mates, and chaplain all received equal shares in one-eighth of prize money. The group composed of midshipmen, inferior warrant officers, mates of principal warrant officers, and marine sergeants also shared equally in one-eighth.\textsuperscript{130} After 1808, reforms took this latter group and combined it with all seamen, servants, volunteers, and boys and increased the whole’s share to one-half, where before they had had a combined three-eighths.\textsuperscript{131} A sliding scale of shares within this new group ensured that the officers would receive more of the prize money than the seamen.

In the U.S. Navy prize money was distributed in slightly different proportions. An act of 1800 stipulated that chaplains, lieutenants of marines, surgeons, pursers, principal warrant officers, and master’s mates would share two-twentieths. Midshipmen, surgeon’s mates, captain’s clerks, schoolmasters, warrant officer’s mates, ship’s stewards, sail makers, master at arms, armourers, cockswains, and coopers all shared in three-twentieths and a half.\textsuperscript{132} The two groups appear to correspond approximately to those in the Royal Navy before the reforms of 1808, with carpenters in the Royal Navy receiving slightly more
in prize money than their counterparts in America. Carpenter’s mates, on the other hand, appear to have received slightly more in the U.S. than in the Royal Navy. It is not known if the U.S. altered its distribution shares after 1800, and with the 1808 reforms in the Royal Navy it becomes even more difficult to compare the two services with any certainty.

Privateer crews were paid in shares of the money derived from the prizes they captured. The ratios of shares among the crews vary widely, and there is little indication what rationale was employed for rewarding any particular crewmember beyond the presumed reasons of rank and experience. Shelvocke’s privateer Speedwell in 1719 had a crew of 100 and the carpenter, boatswain, and first and second mates each received two shares, while their mates received one and one-half shares and the seamen one.\textsuperscript{133} In 1741 the sloop Revenge carried 60 men total and its commander received two and one-half shares, its mate, boatswain, gunner and carpenter each received one and one-quarter and the seamen either one or three-quarters of a share.\textsuperscript{134} The shares aboard the brigantine Mars in 1762 were similar to Speedwell.\textsuperscript{135} On the sloop Bowdoin in 1779 the captain had six shares and the carpenter two.\textsuperscript{136} The system on Independence in 1776 gave the captain seven shares and the carpenter two.\textsuperscript{137} Aboard Comet and Yankee the captains both received 16 shares while the familiar triad of boatswain, gunner, and carpenter each received four and their primary mates received two and one-half.\textsuperscript{138} These in turn were similar to Highflyer from the War of 1812 where the captain received 14 shares, and the carpenter and mate 4 and 2 shares, respectively.\textsuperscript{139} However, the captain on the fifth cruise of the ship America in 1814–15 received 11 shares while his carpenter and boatswain received but two and his gunner was paid the equivalent of a seaman and received only one share.\textsuperscript{140} In all cases we can see that the carpenter was treated like his counterpart in the Royal and U.S. Navies in that he was paid usually twice as much as the seamen were, and either the equivalent or more than his fellow warrant officers the boatswain and gunner. It was in the number of
shares apportioned to the captain where we find the greatest variation, and that appears
generally to have risen over the course of the century in proportion to the rest of the crew.

On merchant ships the carpenter was paid in wages the same as the rest of the crew and
made more than the seamen, but usually less than the mates. Rediker notes that in the first
half of the eighteenth century the carpenter was one of the highest paid members of the
crew, making £3 to £4 a month depending on whether England was at peace or war.\textsuperscript{141}
These wages were superior to those of Royal Navy carpenters in all but the top three rates
of ship as one can see in Table 2. Rodger has noted that duty on warships was easier than
it was on merchantmen, since military requirements necessitated much larger crews for the
same size of vessel. Crews of merchantmen also had only the law to protect them from the
whims of discipline, and Rodger cites the example of the slaver \textit{Thetis}, where the carpenter
was put in irons and blinded by his captain. He later won £26 in damages.\textsuperscript{142}

It was also the custom for officers of merchantmen to be allowed transport of a specific
weight of cargo for their own private venture, referred to as “privilege”. This perquisite
dated back to at least the early Middle Ages, but it is difficult to say how widespread it
remained in the eighteenth and early nineteenth centuries. Rediker indicates that the custom
was probably not as common in the early eighteenth century as it had been, but that it was
considered a right by seamen.\textsuperscript{143} The carpenter of the ship \textit{Derby} in 1803 received $22
monthly wages and 12 hundredweight of privilege, while the second mate received $23 and
one and one-half tons, which in America equaled 1200 and 1500 pounds, respectively. In
comparison seamen were paid $18 without privilege. On a second voyage in 1804 \textit{Derby}'s
carpenter received $24 monthly wages and the same weight of privilege.\textsuperscript{144} Neither of
these contracts seems to consider the use of privilege unusual or outdated. One can also
surmise that even if privilege were not granted by the ship’s owner(s), the officers and crew
would find a way of smuggling their own goods on board.

In addition to a living wage, Royal Navy carpenters aimed for promotion as well. We
have witnessed already part of the pathway of promotion. Men brought aboard ships who
did or even did not possess prior woodworking experience might be added to the
carpenter’s group of assistants, or his crew. A promising carpenter’s crewman might be
promoted to replace a carpenter’s mate who had died or been promoted themselves to the
rank of carpenter. Such was the case in the extreme example of John Byron’s
circumnavigation of 1764–66 when he lost both his carpenter and mate. An able seaman
was promoted to the carpenter’s crew and one of the crew was made a mate.145
Presumably any member of the carpenter’s crew would eventually have to fulfill the
guidelines already established for becoming a mate (i.e., they would have to work ashore
for a year in a shipyard before being tested on their abilities by a quorum of master
shipwrights). Only then would they officially become a carpenter’s mate and apprentice for
a voyage under a ship’s carpenter. How all of this played out in practice is uncertain. One
can envision instances of men being promoted aboard ship up to warrant officer rank
without following the requisite steps ashore. Rodger did feel that lengthy sea service was
indispensable for a demanding task that often required great physical exertion.146
Experience at sea may have been a factor used by officers to bend the rules and permanently
promote someone who hadn’t gone through official channels. How often this may have
occurred is uncertain since we have no evidence for it.

As mentioned above, attainment of the rank of carpenter carried with it the status of
being a standing officer. This meant that the carpenter was appointed by the Navy Board
and could be terminated, Lewis says, only by the Admiralty; his captain was unable to
disrate him even if he wished to do so.147 The significance of different agencies appointing
and terminating a carpenter is obscure. Of course, the captain was free to discipline the
carpenter if the situation required, and there are at least two instances of carpenters being
either courtmartialed or at least arrested. James Gardner mentions the carpenter of the
frigate Blonde being broken, the reason being unspecified, and the carpenter of the 74-gun
Defiance was arrested after Trafalgar for cutting without orders the standing parts of the inner and outer gammoning of the bowsprit in order to fish it. Beyond this, the captain seems to have been able to disrate lesser officers such as the mates and crew. This left the carpenter himself with a certain sense of job security, since theoretically he was assigned to his vessel until it was broken up or otherwise lost. In practice, however, carpenters must have moved from ship to ship and from ship to shore and back to ship again. Rodger noted this aspect of carpenters spending part of their careers in the dockyard and part aboard ship as being unusual for the Royal Navy as a whole.

The promotion ladder upon reaching carpenter rank consisted of working one’s way from smaller rates to larger ones until becoming carpenter of a first-rate ship-of-the-line or perhaps even working ashore directing a shipyard. A carpenter was never demoted back to a smaller ship. The promotion process often was carried out in the field, as admirals promoted within the fleets under their command. This was amply portrayed by Rodger where in 1758 during the Louisbourg expedition Admiral Boscawen promoted scores of men of all ranks including five carpenters, one mate, and one crew. Promotions were especially common when enemy territory or ports were captured. These “battlefield promotions” were subject to the Navy Board for confirmation, and the closer the theater of operations was to England, the greater control the Board exercised over the process, yet there seems to be little evidence of an admiral’s promotions being overturned. When hostilities ceased and captured possessions were returned, many of the men who had been promoted lost their positions, but they now had a claim for both a compensating position (if one could be found) and a pension. Promotion did not necessarily stop with the carpenter position. Samuel Walters was the son of a carpenter from Ilfracombe who apprenticed as a shipwright, was a mate on the transport Ocean, and later was made a lieutenant. Rodger mentions one carpenter who, starting in 1760 as an able seaman, reached the rank of first lieutenant aboard a flagship before his death in 1782. He would most likely have received
the next available command vacancy.\textsuperscript{153}

As we have seen previously, the Continental Navy seems to have allowed its commanders to enlist carpenters and other crewmen for each voyage, and with most all of the vessels in that navy consisting of smallish frigates there would appear to have been few options for promotion even if such were desired by a carpenter. The same situation held true for the state navies. The U.S. Navy may have differed from its predecessors in this regard since it appears that it patterned itself after the Royal Navy. We have seen that, at least during the War of 1812, there was a core group of carpenters, but we have also seen that carpenters were hired for individual voyages or cruises. The Navy seldom had many ships on active duty in any case, even after the War of 1812, and the lack of capital ships meant little room for promotion for the few permanent carpenters employed. Even if there were ships available, historian James Valle states that promotion to commissioned status was closely held by the President and dispensed primarily to those with more aristocratic backgrounds, which was an ironic development for the young republic. There was little chance of a talented warrant officer being able to work his way up through the ranks to midshipman and beyond.\textsuperscript{154}

Privateers and merchant ships, by their mercurial nature, precluded possibilities for advancement, unless a carpenter wished for transfer to a larger ship owned by the same merchant or even for promotion to master’s mate. Such occurrences seem unlikely judging from the documentation examined, although they would not be unreasonable. It is more likely that carpenters viewed privateers much as everyone else did who enlisted: as an opportunity to collect a large sum of money in a fairly short period. Promotion aboard merchant ships might be similar to privateers, with the carpenter transferring to a larger ship owned by the same merchant or perhaps becoming a mate. As Rediker notes, however, one of the major appeals of merchantmen for sailors was their ability to leave any ship for a more lucrative opportunity aboard another ship, although they often risked forfeiting part or
all of their original wages in doing so.155

Royal Navy carpenters had other perquisites. Since they were standing officers they were assigned to their vessel even when it was in drydock for repair or laid up in ordinary during periods of peace. Being thus tied to the ship, their wives and children were allowed to live on board with them.156 The same held true for the other standing officers, the boatswain and the gunner. Carpenters could even bring their families with them on voyages depending on the tolerance of their commanders.157 This last liberty was supposedly restricted to only noncombatant ships such as supply transports or troopships, but in an age when many warship captains brought their wives or mistresses along with them, it would not be surprising to find other women aboard as well.158 A carpenter’s sons, of course, were also brought aboard ship as servants. As mentioned previously, John Cremer, while aboard Dover in 1708, noted that the carpenter had two of his sons with him.159 It was from such small beginnings that the boys could serve their apprenticeship and, depending on their abilities, possibly surpass their father and rise to the rank of lieutenant, captain, or even higher in status.160 Rodger cites a number of examples of children of humble birth rising to high rank. John Pasco, the son of a caulkier, died a Rear-Admiral. Admiral Cornish was said to have risen to that rank from a foremastman.

There is no evidence to say that carpenters in any of the other services did or did not enjoy the same perquisites as those in the Royal Navy. The practice in the Continental and state navies of enlisting carpenters by the cruise suggests that there was little incentive for carpenters to remain on board after the ship reached port, let alone to bring aboard their wives and children. The carpenter and assistants aboard the frigate Raleigh did stay on the ship’s muster for some time, according to the rolls, but whether they stayed aboard the ship during its time in port is unknown. The U.S. Navy could have kept carpenters and other warrant officers aboard ships in the 1800’s when much of the navy was in ordinary, and some of these men could have had their families with them, but there is no indication that
this ever occurred. As for bringing wives or other women on a cruise, article 36 of a U.S. naval captain’s regulations stipulates that “he is not to carry any woman to sea, without orders from the navy office, or the commander of the squadron.”\textsuperscript{161} This would seem to mirror the attitude of the Admiralty. Valle states that there was a double standard practiced in the U.S. Navy in that senior petty officers and warrant officers from technical departments were allowed clandestinely to bring their wives, or at least consorts, on cruises. He cites one example of the “wife” of the captain of the forecastle giving birth in 1803 aboard \textit{Chesapeake} while on a cruise in the Mediterranean. The gunner, boatswain, carpenter, and corporal all had their wives aboard as well. Valle does not know if the number of women aboard Chesapeake was typical, or if wives were taken aboard smaller vessels. He further adds that the practice seems to have died out during or after the War of 1812.\textsuperscript{162} There is one instance of a carpenter’s wife accompanying him aboard a merchant ship. The Margate hoy was bound for London in 1802 when it encountered a storm and was wrecked. The carpenter, realising the ship was lost, went to save his wife but was unsuccessful.\textsuperscript{163}

When the Royal Navy was reduced in size in the eighteenth century during periods of peace, and particularly with the end of the Napoleonic Wars in 1815, those few warrant officers who were eligible were often retired and given pensions, or superannuated. Men had to have served at least 15 years before they could apply for superannuation, which, if accepted, entitled them to receive a pension equal to their pay in the highest rate in which they had served.\textsuperscript{164} Those men who were not superannuated were often taken care of in other ways. Some of them might be promoted to a lieutenancy and receive half pay as a form of a pension. Others might be assigned to an old and obsolete ship that was sitting in ordinary and which might continue to sit for years before the Admiralty ordered it to be broken up or, conversely, they might be assigned to new ship that was still building. Most of these subversions of the pension process were done with the tacit approval or even overt
influence of the Admiralty, whose aim was to reward lengthy and devoted service to the navy, and thereby encourage the enlistment of other able recruits.\textsuperscript{165} Invalided warrant officers were also allowed a spot at the Royal Hospital in Greenwich or, failing that, at least an out pension. Superannuated officers as well as commissioned officers were excepted from care in Greenwich for reasons that are obscure.\textsuperscript{166} Perhaps the Lords of the Admiralty believed that the pensions and half pay allowed officers to procure their own medical treatment.

The U.S. Navy appears to have followed the Royal Navy at least partially with regards to pensions and medical care. Paullin states that the navy deducted 20¢ each month from the pay of its officers, seamen, and even merchant seamen for the support of Naval and Marine hospitals which dispensed medical care for those seamen who desired it. The facilities were described as inadequate, and the few men who used them were primarily from the merchant fleet.\textsuperscript{167} There is little evidence pertaining to pensions, but there is the curious case of the carpenter of the brig \textit{Argus}, one James White. He was wounded in 1813 while in action against the Royal Navy brig \textit{Pelican} and died two days later. On August 20, 1814, however, it appears the same man was promoted to midshipman, and a year and two days after that his commission was resigned.\textsuperscript{168} One can only surmise that this unusual procedure was done for the benefit of his family or other relatives. Whether there was a monetary reward involved is impossible to say now.

For carpenters in all sea services there was always the opportunity of having a second occupation on shore which might be completely unrelated to carpentry. Carpenters in the Royal Navy might resort to this second life during periods of peace. James Gardner mentions lodging in the house of a hop merchant who was also the carpenter of a line-of-battle ship.\textsuperscript{169} The carpenter on seaman Josiah Cobb’s privateer was a partner in a pump and block business on Broad Street in New York City, but wasn’t making money quickly enough, so he signed on to cruise for prize money.\textsuperscript{170} Carpenters aboard merchantmen had
the freedom to shift between ship and shore as much as they were able, but when the press
gangs were out they probably preferred to remain aboard their ship. By an act of
Parliament, the major officers of English merchant ships that exceeded 50 tons burden were
supposed to be protected from impressment into the Royal Navy while their ships were still
at sea.\textsuperscript{171} This protection extended to them when they reached shore as well, but they had
to confirm their protected status quickly upon docking before a press gang seized them and
ignored their exemption.\textsuperscript{172} The officers covered by this protection included the master, his
chief mates, the boatswain, and the carpenter. The lesser officers, such as the carpenter’s
mates, were not protected and had to be wary whenever they were out and particularly when
their ship approached its destination. Dudley Pope also mentions that if one of the crew
was determined to be a deserter from the Royal Navy, then everyone’s protections were
invalidated and they all could be pressed.\textsuperscript{173} Sometimes Parliament was not the most
effective protection from the press gangs. In 1794 one impressed carpenter in Liverpool
was freed by a mob of shipwrights who used a spar as a battering ram to beat down his
prison door. Another time, a carpenter did not wait for others to save him and leaped out a
window, leaving behind his hat and shoes.\textsuperscript{174}

Finally, carpenters in all services and aboard all types of vessels had access to sea
stores that they could sell illicitly. We have seen above that the Royal Navy instituted an
elaborate system of accounting of stores chiefly to prevent just such theft, and the
regulations and instructions for 1806 go into far greater detail on the accounting of stores
than did previous editions. The U.S. Navy appears to have had a similar system of
accounting. Lewis remarks that neither boatswains nor carpenters were renowned for their
honesty because of their ready access to stores that could be easily sold, while gunners were
more respectable by dint of the difficulty of their having to embezzle cannon and munitions.
Pilferage by ship carpenters, however, does not seem to have been a serious problem. The
same high opinion cannot be expressed of shipyard carpenters. Lewis does point out that
where carpenters had easier access to sea stores and the markets to sell them, they were more likely to take advantage of the opportunity.\textsuperscript{175} Samuel Kelly mentions one instance of seeing a carpenter and boatswain being caught trying to sell a coil of rope from a packet ship. They were put in a cage at Shadwell so passersby could jeer at them until their captain secured their release.\textsuperscript{176} Rediker also observes that embezzlement aboard merchantmen was practiced by all, and was considered a basic part of one’s social wage.\textsuperscript{177}

CONCLUSION

The carpenter’s duties and position did not vary much from service to service. In the Royal, Continental, U.S. and state navies, aboard privateers and merchant ships he was supposed to inspect the hull, masts, bulkheads, and cabins. He was to maintain the vessel while it was at sea and report any defect he could not fix himself to shipwrights when it reached port. He was to keep detailed records of the stores he received. Aboard warships his position was nearly always equal to that of the other primary warrant officers, the boatswain and gunner. Even aboard merchant ships he was almost always superior to the able and ordinary seamen. In all services he held a position of some authority, and was considered a skilled craftsman in an essential position. For this he was paid more than the regular crew, received other perquisites, and was usually provided with one or more assistants.

It is perhaps in his career prospects that we see a difference between the various maritime branches. The Royal Navy seems to have offered carpenters a genuine opportunity to advance themselves based on their merits. If the carpenter did not climb the ladder of upward mobility, then perhaps his children might. He was also eligible for a pension and medical care (such as it was) after he retired. My impression is that the position was a desirable one for many men. The Continental and state navies did not last long enough to establish themselves as tempting career opportunities, but in any case it
seems that most of their crews were enlisted on a short-term basis. The early U.S. Navy patterned itself in most respects after the Royal Navy but was hampered by inconsistent support from successive presidential administrations. By the War of 1812 there appears to have been a nucleus of permanent warrant officers, but a few captains were still obliged to find some of their most important crewmen just before the ship set sail. Career opportunities likely improved after the war, but it probably took some time before the U.S. and Royal Navies were comparable in this respect. Privateers and merchantmen, by their nature, tended to discourage any great advancement or benefits for their crew beyond their straight wages. Carpenters aboard these types of ships were much like the seamen, but they also had the advantages the seamen did in being able to leave when they wished for a better situation.
ENDNOTES


8 Lewis, *Social History*, 261.

9 Lloyd, *British Seaman*, 233; Lewis, *Social History*, 266.


18 *A Complete List of the American Navy* (Boston, 1813), 22 where the carpenters are the smallest group of officers listed. The men named are Robert Fell, George Painter, John Nicholson, Jonathan Gedney, John Frazer, John Kane, James Maine, John Berrein, Bradsh. Bairns, Michael Mullaney, James Sturges, William Pook, and James Spaulding.


Dana, *Two Years*, 98, 131, 185–6 where the brig *Pilgrim* and the ship *Alert* had nine and twelve men before the mast, respectively, including the carpenter.

John Meares, *Voyages Made in the Years 1788 and 1789 from China to the Northwest Coast of America* (New York, 1967), iii–iv.


Boit, *Log of the Union*, 92, 103–11.

Bowdoin Bradlee Crowninshield, *An Account of the Private Armed Ship “America” of Salem* (N.p., 1901), 62 where the carpenter and his assistants are all included on the list of idlers.

Dana, *Two Years*, 9, 197, 231 where the “idlers” were called up to rig the pumps and to furl the foresail; Jacob Nagle, *The Nagle Journal: A Diary of the Life of Jacob Nagle Sailor, from the Year 1775 to 1841* (New York, 1988), 106 mentions just such an instance of scurvy incapacitating much of the crew; John Masefield, *Sea Life in Nelson’s Time* (Freepre, 1969), 112.


Rediker, *Between the Devil*, 84.

Meares, *Voyages*, 88.

50 Dana, *Two Years*, 18.


53 Leo Heaps, *Log of the Centurion* (New York, 1973), 63 for jury-rigging the *Tryall* while at anchor.

54 Masefield, *Sea Life*, 111.

55 William Bradley, *A Voyage to New South Wales: The Journal of Lieutenant William Bradley, RN, of HMS Sirius 1786–1792* (Sydney, 1969) 194 where the carpenter does just that when the storeship *Sirius* strikes a reef; George Hamilton, *A Voyage Round the World, in His Majesty's Frigate Pandora* (London, 1793), 104; Archibald Campbell, *A Voyage Round the World from 1806 to 1812* (Amsterdam, 1969), 43–4 the carpenter of the merchantman *Eclipse* does the same after it strikes a reef; Kelly, *Samuel Kelly*, 137 the well is sounded after they strike a reef within Skerry Island, but the ship was not leaking.

56 Thomas, *A True and Impartial Journal*, 137; James, *Journal*, 85 mentions another leak aboard *Camel* that was simply patched over with a piece of lead.

57 Heaps, *Log*, 180; Walter, *Voyage*, 273, 286–7, 329; Carteret, *Carteret's Voyage*, I, 159, 164, 182 mentions a leak in the bow and similar procedure in trying to stop it, which failed, as Anson's carpenters had, but did manage to reduce it greatly.

58 Masefield, *Sea Life*, 112.


60 Rediker, *Between the Devil*, 91.


62 William M. Merrine, ed., 'Excerpts from the master's log of his Majesty's Ship *Eagle*, Lord Howe's flagship, 1776–1777', *Pennsylvania Magazine*, Vol. XXXVIII (1914), 214, 223 where the carpenter repaired the launch and fitted a sloop to carry cannon prior to the assault on Philadelphia; Charles Loftus, *My Youth by Sea and Land from 1809 to 1816* (London, 1876), I, 169–70 where they capture two coastal traders and refit them to
carry cannon.

63 Thomas, *A True and Impartial Journal*, 107; Walters, *Voyage*, 170; Byron, *Narrative*, 38; Robertson, *Discovery of Tahiti*, 62, 110, 112; Carteret, *Carteret's Voyage*, I, 132, 135, 245–50; Loftus, *My Youth*, I, 227 mentions losing the captain's gig during a storm, that it had been built by the ship's carpenter and was superior to anything they could have received from the dockyard.


69 Ibid., I, 267, 280, 289–90.

70 Ibid., II, 34, 49, 55, 61, 63, 68, 71.

71 Ibid., II, 114, 126.

72 Ibid., II, 191, 222, 248, 266, 277, 288, 290, 292, 294.


74 Robertson, *Discovery of Tahiti*, 164.

75 Bradley, *Voyage*, 65; Watkin Tench, *Sydney's First Four Years: Being a Reprint of "A Narrative of the Expedition to Botany Bay" and "A Complete Account of the Settlement at Fort Jackson*" (Sydney, 1979), 33, 57.


78 Lewis, *Social History*, 264, 266.


80 Robertson, *Discovery of Tahiti*, 207, 208fn.


83 Fanning, Fanning’s Narrative, 38, 44–5.

84 Bon Homme Richard (Ship), The Log of the Bon Homme Richard (Mystic, 1936), 47; Barnes, Logs, 22–3, 25; Fanning, Fanning’s Narrative, 52, 65.

85 U.S. President, Naval Regulations (1802), 22.

86 Ibid., 4, 7.

87 Ibid., 15.

88 George Jones, Sketches of Naval Life, with Notices of Men, Manners, and Scenery, on the Shores of the Mediterranean, in a Series of Letters from the Brandywine and Constitution Frigates (New Haven, 1829), 1, 99, 50.

89 Shaw, Short Sketch, 9.

90 Valle, Rocks & Shoals, 155.

91 Samuel Leech, Thirty Years from Home, or a Voice from the Main Deck (Boston, 1844), 183.

92 Nathaniel Ames, A Mariner’s Sketches (Providence, 1830), 189.

93 David R. Steel, Seamanship, Both in Theory and Practice, Revised edition (New York, 1813), 240.


95 Jameson, Privateering and Piracy, 398; Crowninshield, An Account, 12, 21, 33; Shelvocke, Voyage, 113.

96 Harris, ‘Log of a Canadian Privateer’, 439; Jameson, Privateering and Piracy, 406–7, 413 where neglect of the pumps by the carpenter almost led to the sinking of the ship.

97 Shelvocke, Voyage, 113–14; Noah Jones, Journals of Two Cruises Aboard the American Privateer Yankee by a Wanderer (New York, 1967), 47 where the carpenter broke his thumb while repairing the jolly boat; Jameson, Privateering and Piracy, 418.

98 Henry R. Howland, ‘A British Privateer in the American Revolution’, American Historical Review, Vol. 7 (1901), 299–300; Shelvocke, Voyage, 113; Chasseur (Ship)
‘Log of the *Chasseur*,’ 233;


100 Shelvoke, *Voyage*, 110; Chasseur (Ship), ‘Log of the *Chasseur*’, 218; Crowninshield, *An Account*, 13.


109 Dana, *Two Years*, 50; Boit, *Log of the Union*, 90; John Wordsworth, *The Letters of John Wordsworth* (Ithaca, 1969), 158 where the carpenters are so busy before a voyage in repairing the bow that they do not have time to put up cabins or shift bulkheads as usual.

110 Beresford, *Voyage*, 298, 302.


128 Langley, *Social Reform*, 78.

129 Dye, *Fatal Cruise*, 44.

130 Lewis, *Social History*, 318.


132 Steel, *Seamanship* (1812), 201.

133 Shelvocke, *Voyage*, xviii.


141 Rediker, *Between the Devil*, 122.


143 Rediker, *Between the Devil*, 130–2.


150 Lewis, *Social History*, 261.


152 Marcus, *Heart of Oak*, 213.


156 Lewis, *Social History*, 261.


161 Steel, *Seamanship* (1812), 173.

162 Valle, *Rocks & Shoals*, 175, 179.


166 Lewis, *Social History*, 415.


175 Lewis, *Social History*, 264, 266.


CHAPTER III

WORKING ENVIRONMENT, STORES, AND TOOLS

SHIP DESIGN AND LAYOUT

In the previous chapter we detailed the carpenter’s daily activities, but we touched only briefly upon the environment in which he worked, i.e., the confines of his ship. All ships were constructed with several intentions, one of which was to use the space aboard most efficiently and maximise storage capacity. This storage efficiency came often at the cost of living and working space for the crew. Therefore, activities and work aboard ship had to be coordinated within these limitations, and the carpenter was no different in this respect than any other crewmember. Fortunately for him, the carpenter was considered an essential specialist, and ships were typically designed with an allowance of space for his personal living quarters, for storage of his supplies, and for an area in which he could work.

In terms of living quarters, the peacetime Royal Navy is said to have allowed carpenters and boatswains to sling their hammocks on the lower gundeck.\(^1\) During wartime each warrant officer was assigned a cabin usually situated in the fore cockpit near their respective storage rooms and workshops.\(^2\) The evidence and reasons for this rearrangement in sleeping quarters between periods of war and peace are obscure and unsubstantiated in any of the primary documentation, leaving us to suspect the authenticity of such claims. Since a carpenter’s cabin is almost always indicated on ship plans, it makes little sense that it would not be used in both war and peace. Placement of the carpenter’s cabin is verified by Andrew Sherburne who, while a prisoner aboard the 18-gun sloop *Fairy*, noted that the boatswain and carpenter each had a small room forward of the fore hatchway.\(^3\) Modern reconstructed plans of a number of eighteenth-century warships, which are presumably based at least in part on those or similar ships’ original drafts, tend to support placing the carpenter’s cabin forward next to his storeroom or on the deck directly above.\(^4\) There are exceptions where the carpenter either has a cabin with the rest of the officers abaft the
mainmast, or at least an area near the mainmast where temporary cabins could be erected out of light wooden panels or canvas stretched over frames.\textsuperscript{5}

For the other sea services, an inventory of the Continental frigate \textit{Raleigh} mentions the boatswain’s and carpenter’s respective cabins being forward and on either side of the between decks.\textsuperscript{6} For the U.S. Navy, Ira Dye has conjectured, based on scattered references and comparisons with similar British and French ships, that the after part of the berth deck of the brig \textit{Argus} was given over to the commissioned and warrant officers. The carpenter, boatswain, and gunner all had small rooms that also functioned as their offices.\textsuperscript{7} Since the carpenter’s cabin in the Royal Navy was usually, but not always, placed in the forward part of the ship, Dye’s conclusion would appear to be inconsistent with standard Royal Navy practice. However, larger U.S. Navy ships appear to have had this same cabin arrangement. Plans for the frigate \textit{Essex} show the boatswain’s cabin located on the port side in the after part of the vessel and his storeroom forward on the orlop.\textsuperscript{8} Since plans of British warships always placed the carpenter’s cabin opposite the boatswain’s, we may cautiously assume that the carpenter’s cabin in \textit{Essex} was on the starboard side aft. The rooms in 1825 for the warrant officers aboard the frigate \textit{Brandywine} were abaft and on either side of the mainmast.\textsuperscript{9} Whether this variation in cabin placement from that of the Royal Navy is significant is impossible to say. For merchant ships, our one reference is from Richard Henry Dana, who mentions that the carpenter and sailmaker had their living quarters in steerage.\textsuperscript{10}

The Royal Navy usually allotted the carpenter a room for his stores on the orlop deck towards the bow of the vessel in company with similar rooms for the boatswain’s, gunner’s, and occasionally the sailmaker’s stores.\textsuperscript{11} The storerooms aboard the U.S. brig \textit{Argus} and the frigate \textit{Essex} appear to have been in approximately the same area as those of British ships.\textsuperscript{12} Samuel Kelly, while aboard the \textit{Grenville} packet in 1781, reported that the
carpenter discovered flames from the fireplace burning through the deck from above when he went into his storeroom in the cockpit. Several books by William Sutherland on naval architecture for this period also provide schematic plans and profiles for merchant ships on how this division of storage space in the bow might be laid out as can be seen in Figure 1. Just why the carpenter’s cabin and storeroom were located where they were is not explained in any of the sources examined here. Since the storerooms of all the principal warrant officers, and of some lesser warrant officers such as the sailmaker, were located in close proximity, I suppose that English shipwrights and seamen of the period considered placing all of the storerooms forward to be the most efficient use of space. Perhaps the bows provided the most room and easiest area in which to work out of the way of the guns and crew. Perhaps the sailing trim of the vessel was best with the storerooms placed forward, usually at or below the waterline, while heavier cables and casks of water and provisions occupied the central part of the orlop. Lacking the necessary evidence, definitive answers are impossible. There does appear to have been a strict separation of stores, at least for government vessels, between the gunner, boatswain, and carpenter. An inventory of the Continental frigate Alliance shows the carpenter and boatswain both had their own supplies of tar and tallow. The most likely reason for this separation would be for accounting purposes. The more materials that were shared would make it more difficult to keep track of what had been used and by whom.

The varied placement of the carpenter’s cabin is also unexplained. Since his cabin was usually next to his storeroom, at least in the Royal Navy, I presume that the carpenter was supposed to watch over his stores, or that it was simply convenient to put him there. In the other cases where his cabin was placed in the after part of the ship with the other officers, a simple separation of officers from seamen might be the reason. Nineteenth- or twentieth-century journals or shipbuilding treatises might supply some illumination on this question, but until an eighteenth-century source is identified any explanation remains speculative.
Fig. 1. Sketch plan and profile of typical eighteenth-century English ship showing locations of various storerooms (After William Sutherland, The Ship Builders Assistant, or, Marine Architecture [London, 1794], Plate 5, Fig. 5 [top]; after William Sutherland, Britain’s Glory or, Ship-Building Unvail’d [London, 1729], 33 [bottom]).
As mentioned in chapter II, the carpenter often had to replace or reinforce broken masts or other spars. In the Royal Navy, his stock of spare mast timber was not kept below with the other stores but was usually placed on the upper deck between the fore- and mainmasts and underneath the ship's boats to make the most efficient use of the limited space available. 15 This situation was most likely true of all ships, but we have only two references to support it. The crew of the American privateer *Chasseur* heaved their spare spars overboard from the deck to lighten the ship during a chase. 16 John Meares' crew did the same when they realised that the extra weight of the spars was helping to open their vessel's seams during a storm. 17

The carpenter's work area encompassed the ship. Wherever something needed to be fixed the carpenter could clear an area around the problem spot and work on it in place, but he also had specific areas where he could bring something to be repaired or prepare something to replace a broken part of the vessel. In fair weather, carpenters usually brought their work out onto the upper or main decks, often underneath the booms where the light was best. Masefield remarks that this was the same area where the other craftsmen worked and where the animals were penned. 18 This space gave him the most room for his larger projects such as fishing yards or sawing plank. He was also provided with space in the fore cockpit for a workroom when the weather turned inclement. The U.S. frigate *Constitution* had a workroom on the starboard side of the main deck that was completely equipped for the carpenter's “gang” of 6–8 men. Next to the workroom was another small room for a lathe, which was said to be always busy, but it is uncertain if lathe rooms were typical for most ships or a rarity. 19 The frigate *Serapis* is reported to have been provided with a turning machine while anchored in the Netherlands after John Paul Jones captured it and was repairing battle damage. This machine, or another one like it, was later transferred to the *Alliance* frigate when Jones was obliged to give up *Serapis*. 20 Finally, the carpenter's mate of the merchant brig *Betsey* on a voyage in 1797–99 had previously been
employed in the turning business and "contrived to furnish himself a lathe and set of turning tools" to make some 'quakers', or false wooden cannon. A lathe capable of turning a piece of wood sizeable enough to make a false cannon, even a small swivel gun, must have taken up a large amount of space. Perhaps some items could be manufactured in sections on a relatively small machine and pieced together, or maybe the machine could be disassembled when not in use.

One might think that a lathe would be of limited use aboard ship since many shipboard items are too large to be turned easily. Spare items could also have been carried in respective storerooms rather than produced aboard ship. Still, many of the carpenter's and cooper's tool handles might be fashioned on a lathe, as well as ramrod and sponge handles, tampions for cannon, wheels for gun carriages, belaying pins, posts for railings, and even bowls for the ship's mess. Spring-pole lathes can also be adapted to become foot-operated band saws, also called sash saws, for sawing shorter lengths of board or plank (see below). Again, the near lack of contemporary evidence regarding lathes allows us only to speculate on their exact use and necessity aboard ship.

One of the most essential articles for any carpenter is his workbench, but these are mentioned only twice in the documentary sources reviewed. Charles Herbert, an American prisoner aboard the 74-gun Burford, mentions obtaining the use of the carpenter's bench and tools for ordinary carpentry work while the ship was anchored in port. Dana also mentions several times the carpenter of Alert working with his tools at his bench both off to one side between decks or, in peaceful weather, bringing the bench up to the waist and working there. There are no details given about the workbenches aside from their presence. Since the carpenter of Alert had his bench brought to the waist, we may infer that this particular example was small enough to be moved, or perhaps could be taken apart and the components carried to a spot where they were reassembled, but this latter suggestion seems wasteful of time.
Carpenters also worked on shore when presented the opportunity. The carpenter’s main occupation ashore, and often the reason why the ships had approached land in the first place, was the cutting of trees for spare spars, plank, or even just for firewood for the galley stove. There are numerous mentions in the primary documentation of a work party being sent ashore to fell trees for spars or firewood. Sometimes the captain might have sawpits dug to have the trees sawn into plank immediately, such as Captain Bligh did during a stop on his infamous voyage to Tahiti. But plank could also be sawn aboard ship, as is mentioned in the journal of James Cook’s last voyage to the Pacific. Nathaniel Portlock also refers in the late 1780’s to having cedar sheathing worked up for his vessel off the northwest American coast. Perhaps this is where the spring-pole lathe mentioned above would have proved useful.

Often, however, the carpenter had complicated repairs to make to the ship that were best prepared on land. During the American War the Continental frigate Confederacy was completely dismasted through a quirky combination of weather and slack rigging. The carpenters spent much time ashore fishing and tonguing old and spare spars to prepare new masts for the vessel. The carpenters of the frigate Alliance, while anchored at L’Orient, readied a new set of tops for the ship. The carpenters of Argonaut, a merchantman trading in 1790 with the natives along the northwest American coast, refitted their ship at a small Spanish colony by digging pits to produce charcoal for their armourer, taking out the bowsprit and replacing it, and unrigging their masts. Lastly, the merchantman Columbia, also trading in 1790 on the northwest coast, carried with it some frames and the keel of a smaller vessel that the ship’s carpenters erected ashore. They also dug sawpits and cut trees for additional frames and planking and launched the completed craft in about five months.
SHIP'S STORES AND TOOLS

As we saw in Chapter II, captains of every sea service were supposed to provide the carpenter with the raw materials or sea stores he needed to maintain the ship. The carpenter was to keep records of what he received and used. We see, for example, the American crew of the prize frigate *Serapis* receiving aboard supplies of oakum, tar, pitch, board, plank, nails, spars, mast parts, oars, rigging, and a turning machine as they proceeded to repair that vessel's battle damage. Peleg Hozey, captain of the privateer sloop *Independent* of Rhode Island, purchased some plank for his carpenter. An inventory of the Maryland State ship *Defence* includes the entry "Boatswain, Carpenter, Cooper, Steward & Cooks Stores Compleat". Many of the expenses listed in outfitting the merchant ship *Columbia* for its trip to the northwest American coast were for numerous items of ship's stores and tools.

In addition to his stores, the carpenter also seems to have been supplied with whatever tools he might need (see next section below). Tools do not appear to have been stowed loosely in the store or work rooms, but were gathered securely in tool chests. An inventory in 1745 of the *Willem* prize included three chests of carpentry and coopering tools along with stores of nails and paint. When Anson and many of his crew were temporarily marooned on Tinian, they were relieved to find that the carpenters of *Tryal* and *Gloucester* had both brought their tool chests ashore. The carpenter of *Bounty* was also allowed to keep his tool chest, against the judgment of several of the mutineers, when Captain Bligh and his loyal crewmen were cast adrift. Bligh soon had the tools removed from the chest and turned it into a storage locker for their bread.

When the tools weren't in use, the tool chest was stowed either in the carpenter's storeroom, with his workbench, or even in his sleeping quarters. When the carpenter was using his tools during the day he may have occasionally left some of them out where they could be picked up by other crewmen. One notable example of this occurred in 1724 when
the carpenter Edward Cheeseman and others, on a prearranged signal, picked up loose
adzes and broadaxes, dispatched their pirate captors, and retook the sloop on which they
were held.\textsuperscript{40} Joshua Penny relates a secondhand story of the captain of the whaler \textit{John} of
London, while near the Cape of Good Hope, killing one of his crew and injuring another
with a broadax that he likely picked up in a fit of anger.\textsuperscript{41} John Jewitt mentions an Indian
stealing a loose carpenter's chisel while the ship was anchored in 1803 in Nootka Sound.\textsuperscript{42}

There were also some tools that were purposefully left on deck in case of emergency.
If a ship were caught in a storm or sudden squall, the crew might have to cut away one or
more of the masts to preserve the vessel or to clear the wreckage if a mast snapped.\textsuperscript{43} The
remains of at least two axes from the excavated wreck of the privateer \textit{Defence} in Maine
have been identified as boarding axes. These were to be used in attacking another vessel at
close quarters or to clear away rigging and masts brought down by enemy cannonfire, but
they could also have been used in case of a squall. Alternatively, there are also reports of
the crew desperately needing tools and being unable to find any. The worst case scenario
was realised in 1758 when the English first-rate \textit{Prince George} caught fire. The captain
ordered scuttles to be cut to douse the blaze, but two of the carpenters could find only a
hammer and chisel apiece with which to work, and the vessel ultimately was lost. There are
other, similar examples.\textsuperscript{44}

Tools were also employed for purposes beyond their intended function. Bartholomew
James, aboard the 32-gun frigate \textit{Orpheus} in winter 1777–78, mentions using a cross-cut
saw to cut off pieces of frozen meat.\textsuperscript{45} In a general work on piracy, David Cordingly refers
to an incident where a carpenter, for lack of a surgeon aboard, amputated a seaman's leg
with one of his largest saws and cauterised the wound with a heated broadax.\textsuperscript{46} Such a tale
would seem fantastic, but a similar story is related by William Robinson who, during the
blockade of Rochefort in the early nineteenth century, says that the shipboard surgeon, who
could not find his own tools, used one of the carpenter’s fine saws for amputations.\textsuperscript{47}

TOOLS AS PERSONAL POSSESSIONS OR SHIP’S SUPPLY

It is impossible to say how many of the tools used on board any given ship were supplied by the vessel’s owners, but as we have seen above, documentary sources suggest that most belonged to the ship and that the carpenter perhaps brought along just a few of his own. Inventories taken aboard two warships, 	extit{Montgomery} of the Pennsylvania State Navy and the frigate 	extit{Alliance} of the Continental Navy, detail lengthy lists of tools and classes of stores used aboard. These inventories are itemised in Appendix 1. It is doubtful that these inventories would have included the shipboard carpenter’s personal tools any more than they would have included anyone else’s personal possessions, so we should regard the inventories as lists of a ship’s stock.

The inventory from 	extit{Alliance} seems to contain nearly every type of tool a carpenter would require for jobs both large and small aboard ship, although the quantity of tools may have been less than desired (see below). The days of regular soldiers supplying their own weaponry and uniforms were past by the eighteenth century, although recruits still had to pay for certain items, so presumably all of the government services would have supplied their warships with tools and related stores. It therefore would seem unnecessary for a carpenter to bring aboard any of his own personal tools. This logical inference does not exclude the possibility that some carpenters did just that and brought a favoured tool aboard.

The picture is less certain for privateers and merchant ships. Independent carpenters on land were expected to possess their own tools when being hired out to build a house, add an ell to an existing structure, etc., but there is little evidence to indicate whether or not the same was true for shipboard carpenters. There are records of expenditures for the outfit and cargo for the American merchantman 	extit{Columbia} prior to its the second voyage in 1790. These expenditures include a variety of tools much like the inventory of the frigate 	extit{Alliance},
so perhaps the owners of merchantmen were expected to stock their ship much as a
government would stock its own.\textsuperscript{48} However, this was at least the second voyage of this
vessel, so one might suppose that most of these implements should already have been on
board from the previous trip. An expenditure for “24 wood axes” also seems excessive in
comparison to the \textit{Alliance} inventory. Perhaps the various charges are for both
replacements for tools lost or broken on the first voyage and cargo or trade goods for the
second. One final, small datum on this point is that when his carpenter deserted him in
Canton, China, John Boit states that he took with him “his broad ax”, implying that that
particular tool belonged to him.\textsuperscript{49} Boit says nothing about any other tools, so either the
carpenter brought only the ax aboard, or he left his other tools behind, which is rather
unlikely considering the replacement value of tools during that period. The two pieces of
available evidence therefore suggest that merchant ships were similar to warships in that the
carpenters seem to have been provided with whatever they needed, and were not obliged to
carry their own tools with them.

It is interesting to see just how many of each type of tool was kept on board \textit{Alliance}.
For example, we have 48 gimlets in all of different types. The rationale behind keeping so
many of each type of tool was never mentioned in any of the contemporary sources, but it is
not difficult to imagine. As mentioned in the introduction of chapter I, a ship at sea is truly
isolated and dependent on its own resources. Tasks varied in size and scope, and different
sizes of tools were therefore necessary. Even the most careful carpenter and his assistants
sooner or later would lose a tool overboard or drop one into the bilges or another
inaccessible area or perhaps break one when they were repairing something.\textsuperscript{50} A tool’s
working edges also wore down, and extra items allowed the carpenter simply to pick up
another tool of the same kind without having to stop and sharpen the dull one. A large
supply of spare tools would be essential, especially for longer voyages. Having so many
tools aboard also enabled the carpenter and his assistants to work in several areas of the ship
at once, often a necessity on older, worn-out ships. If anything, the tool stores aboard
Alliance may have been less than what were needed. A list of supplies considered
necessary for a frigate of 36 guns, the same rate as Alliance, enumerates approximately
twice the total number of tools than were carried aboard the actual ship. This list is itemised
in Appendix 2. For example, the list specifies six broadaxes, six dozen gimlets, and two
dozen augers, among other necessary tools. According to its inventory Alliance carried
three axes, 48 gimlets, and 12 augers. This apparently half-stocked store of tools raises the
question: to what extent did the quartermaster corps supply the Continental Navy during the
American War?

The stereotypical view of the provisioning of the Continental Army during the American
War is that of constant hardship and privation. Supplies were late in arriving and when
they did they were usually of insufficient quantity and often of poor quality. The situation
apparently was little different for the Continental Navy. Ships might lie at anchor for
months due to lack of equipment. The newly-built frigate Raleigh was delayed for months
in getting to sea because cannon could not be procured for it. The original fitting-out of
such ships was usually done by an agent of the state in which the vessel was being
constructed. Later provisioning may have been done through the Continental quartermaster
corps. A list of supplies, itemised in Appendix 3, for General Nathanael Greene’s army
in the southern colonies includes numerous types of ship’s stores, tools, and other
hardware. Most of these supplies were likely intended for army river transports; General
Greene is stated as having made good use of the inland waterways for the support and
transport of his army. Seagoing ships such as schooners, sloops, and snows are also
listed, leaving open the question of whether the Continental Navy was also supplied by the
quartermaster. In sum, the number and type of tools listed in inventories or actually found
in shipwreck excavations should be interpreted with caution. Situations may have arisen
where the carpenter’s stores were not fully stocked even at the outset of a voyage. Actual
inventories may not reflect what the captain and crew thought was the proper amount to have aboard.

As mentioned above, there is little evidence as to whether the carpenter brought along his own favoured tools to supplement those provided by a ship's owner(s). If he did, he may have brought them in his own toolchest, akin to a sailor's scachest, but the owners may have provided that as well. Just what was considered to be the most essential tool by a carpenter? Sir Westcott Abell, who was quoting Sutherland, said that either the saw or auger could be considered most necessary. The primary sources rarely define a carpenter's favourite implement, but we occasionally read of him using axes, particularly broad axes. Broad axes are often described as being all-around utilitarian tools especially when used by someone skilled in their use. Grindstones and whetstones, if not exactly favourite tools, were also essential shipboard implements for keeping those tools honed. There are scattered references in the primary literature to grindstones, and a grindstone was recovered from the wreck of the privateer Defence. Somewhat surprisingly, grindstones may not have been ubiquitous as there is one reference to Peleg Hozey's carpenter going ashore to grind his tools.

Lastly, there is one category of tools that might be found on board ship that had nothing to do with the daily running and repair of a vessel, and that was tools carried as trade items. Such tools were brought along on merchantmen to trade with natives of the Pacific and northwest America who were unfamiliar with iron, a substance that was wonderfully hard yet could be sharpened once its edge dulled. We saw in chapter II how crewmen on both Wallis's and Cook's voyages of discovery traded spikes and nails with the natives in return for sexual favours. Portlock specifically mentions trading gimlets for furs with the Indians, who were mystified as to how such tools were used. Among the miscellaneous papers relating to the first voyage (1787-90) of the American merchantmen Columbia and Washington is a calculation of Washington's cargo, which includes 91 "shingling
hatchetts”, 73 “large axes”, 52 “small axes”, 49 adzes, 26 “pole axes”, and 115 “hatchetts”. An inventory of Colnett’s ship Argonaut lists such items as 67 two-handed adzes, which were obviously not all intended for shipboard use. Colnett is also said to have loudly asserted during his captivity among the Spaniards that his “trade stores” were being looted.

CONCLUSION

The carpenter’s working environment was similar for each sea service. He was usually allowed separate sleeping quarters and a room for his stores and tools. He worked throughout the ship, but was also reserved space for a workroom and bench or for working on deck in fair weather. He was also adept at working ashore when the job required it. The government or owners generally provided him with the materials and tools he need to keep the ship in good repair, and he was responsible for keeping records of what he had used or of what had been lost or was no longer usable. He might also bring some of his own favourite tools aboard if he wished. Tools might also be brought on a voyage as trade goods. The interpretation of tools and other stores excavated from shipwrecks must therefore be approached cautiously. Quantity and provenience of tools may indicate any number of realities aboard ship: the carpenter’s storage room in the bow of the vessel, a personal toolchest he kept stowed in his own cabin, a consignment of trade tools in the main hold, or even tools that were in use and lying around loose when the ship sank. The number and kind of tools recovered should not necessarily be taken as representative of what the ship was or should have been carrying. As we have seen, at least for the Continental Navy, the inventoried number of tools aboard one particular ship was approximately half what some considered necessary.


4 John McKay, *The 100-Gun Ship Victory* (Annapolis, 1987), 15, 45, 71 the carpenter’s and boatswain’s cabins are said to have been originally on the middle deck near the galley stove and were moved in a later period down to the orlop near their respective storerooms; Brian Lavery, *The 74-Gun Ship Bellona* (Annapolis, 1985), 17, 52–3 where again the cabins are located one deck directly above their storerooms; Karl Heinz Marquardt, *Captain Cook’s Endeavour* (Annapolis, 1995), 42–3, 62–3; John McKay, *The Armed Transport Bounty* (Annapolis, 1989), 12, 68–9; Peter Goodwin, *The Bomb Vessel Granado 1742* (Annapolis, 1989), 13, 58; Chris Ware, *The Bomb Vessel: Shore Bombardment Ships of the Age of Sail* (Annapolis, 1994), 6, 40, 43–4, 62, 69.


10 Richard Henry Dana, *Two Years before the Mast* (New York, 1936), 250.


13 Samuel Kelly, *Samuel Kelly, an Eighteenth Century Seaman, Whose Days have been Few and Evil, to Which is Added Remarks, etc., on Places He Visited During His Pilgrimage in this Wilderness* (New York, 1925), 29.


17 John Meares, *Voyages Made in the Years 1788 and 1789 from China to the Northwest Coast of America* (Amsterdam, 1967), 273.


28 Portlock, *Voyage*, 262.


30 Barnes, *Logs*, 69, 71.

32 Howay, Voyages, 247–76.

33 Barnes, Logs, 31, 33–5.


36 Howay, Voyages, 448–53, 457–9, 461–2.


39 Bligh, Voyage, 157, 178.

40 Jameson, Privateering and Piracy, 329.

41 Joshua Penny, Life and Adventures of Joshua Penny (Brooklyn, 1815), 18.


43 Archibald Duncan, The Mariner’s Chronicle; Being a Collection of the Most Interesting Narratives of Shipwrecks, Fires, Famines and Other Calamities Incident to a Life of Maritime Enterprise (London, 1805), I, 122 where a hatchet left hanging near the fireplace of the 80-ton sloop Betsey was used to cut the shrouds when the ship was upset; IV, 69 for a typical scene aboard Peggy in 1785 when the carpenter quickly and efficiently cut away the mizzen; Whitfield J. Bell, Jr., ‘Adam Cunningham’s Atlantic Crossing, 1728’, Maryland Historical Magazine, Vol. 50 (1955), 199; Herbert, A Relic of the Revolution, II, 120–1; Howay, Voyages, 169–70.

44 Duncan, Mariner’s Chronicle, II, 332; Kelly, Samuel Kelly, 137 when after striking a reef someone had to run below to find an ax to cut loose the lashings of the ship’s boat; James, Journal, 85 where James’ ship Camel was laid on its beam ends by a squall, but the masts could not be cut away for lack of an ax. The ship eventually righted itself.

45 James, Journal, 23.


48 Howay, Voyages, 448–64 but especially 457–9.


52 Huston, *Logistics of Liberty*, 145.


54 Boit, *Log of the Union*, 92; Jacob Nagle, *The Nagle Journal*: *A Diary of the Life of Jacob Nagle, Sailor, from the Year 1775 to 1841* (New York, 1988), 306 the carpenter defended Nagle with his broad ax, which he was said to have always kept ready; George Coggeshall, *Thirty-six Voyages to Various Parts of the World* (New York, 1970), 144 for when the crew was in a mutinous state, the carpenter, who was a large man, picked up a huge broad ax to defend the captain and quiet them down.


CHAPTER IV
CAPABILITIES OF CREWS WITHOUT CARPENTERS

The previous chapters have detailed what the carpenter’s primary tasks were and some of the necessary repairs he made to his ship. He was a skilled craftsman in an essential position, but his value went beyond merely maintaining the ship. During his circumnavigation of 1740–44, Lord Anson several times relied upon the ability, judgment, and advice of his carpenters in condemning and scuttling ships of his squadron. One of those vessels, the pink Anna, had been leased by the Royal Navy from private owners.¹ Scuttling meant that the Navy was to be held accountable for its financial worth, so this was a decision of no little consequence. Anson would not scuttle the storeship or any of his warships until his carpenters had reported on whether their condition left them unfit for further service.² There are other instances of a commander sending his carpenter to another ship to survey and report on a problem.³ In this regard, we obtain another perspective on the carpenter’s value and the respect in which they were held by their officers.

There are many recorded instances of the carpenter saving the rest of the crew after their ship has been wrecked and everyone marooned. In such cases the carpenter might have several options depending on what had been saved from the doomed vessel. If the ship’s boats had been brought ashore, then they might be used as is or with minor repairs to send away just a few men to summon assistance. If keeping everyone in one place to wait for help was unfeasible, then the carpenter might be able to lengthen a boat to accommodate all of the survivors. This is just what occurred when Wager, of Anson’s squadron was wrecked shortly after rounding Cape Horn. Cummings, the carpenter, carefully divided the ship’s longboat amidships and then added 12 feet of keel and planking to increase its capacity.⁴ Anson, when stranded on Tinian, was fortunate that the carpenters of the scuttled ships Tryal and Gloucester were ashore along with their toolchests. After consulting them, Anson ordered a prize bark they had be lengthened 12 feet and thereby
increased to 35–40 tons.\textsuperscript{5}

In many instances the small boats were destroyed along with the ship itself. The carpenter was then forced to retrieve as much wreckage as could be found and try to construct a boat or raft from that. If the area of wrecking possessed its own natural forest resources, then these too could be employed in ship construction. Much depended on what the carpenter had available to him in the way of wood and tools. Even the best, most resourceful carpenter would be hard pressed to build a boat or raft if all of his tools had been lost. If he had the proper equipment and supplies, and the time to do the job, the carpenter’s skill apparently enabled him to construct a ship of whatever size was needed.\textsuperscript{6}

During the American War, the British dismantled three vessels of between 80 and 59 feet in length, transported them from the St. Lawrence River to Lake Champlain and then reassembled them. They also brought frames from England to the lake and constructed numerous gunboats averaging 37 feet in length.\textsuperscript{7} Precut frames for a frigate were transported from England to Lake Champlain during the War of 1812 as well.\textsuperscript{8} It is uncertain in either war if carpenters from the Royal Navy were detailed to assist in building the vessels or if local craftsmen were employed. There are also the three examples of merchant ships voyaging to the northwest American coast to trade for furs. Two of these vessels actually carried lengths of keel and frames that the carpenters used once the ship reached its destination to help construct smaller coasting vessels.\textsuperscript{9} Aboard the third, the carpenters prepared moulds and models.\textsuperscript{10} In all cases the carpenters erected buildings ashore, cut trees, dug sawpits, and spent at least 3–4 months constructing vessels of 40–50 tons that could be used to trade with the natives, either closer inshore than the main ship, or separately from it. This should not be surprising in a system where carpenters in the Royal Navy were required to have apprenticed in a shipyard, and most carpenters outside the Royal Navy probably received their early training in shipyards as well.

What, though, of the crew if their carpenter was somehow incapacitated, ill, dead, or
simply unable to return to his ship? What were the capabilities of the crew without their carpentry specialist? Some of the crew may already have had some prior experience in carpentry before becoming seamen. Many recruits came from an agrarian background, especially in the North American colonies, which should have given them familiarity with some tools such as axes and saws.11 We have seen how warrant officers in the Royal Navy quizzed recruits on their background when they joined a ship’s crew. Those with previous woodworking experience might be added to the carpenter’s crew to assist the carpenter. Other seamen might pick up some skills in their idle moments by watching the carpenter at work, so there must not have been a complete lack of experience on many warships. Often, however, one hears of how disheartened the crew became when the carpenter was unavailable or separated from them due to shipwreck.12 Midshipman John Byron’s plaint “…and now our carpenter was gone from us, we had no remedy for these misfortunes but the little skill we had gained from him” neatly summarises what must have been the feeling of most officers.13 Some of the field expedients employed by the unskilled would be laughable if the circumstances weren’t so serious. The men who tried to plug leaks by using slices of beef prove the saying that “necessity is the mother of invention”.14

In contrast to warships, the crews of merchant ships seem to have been better able to get by without a carpenter. We mentioned above that many merchant ships did not even enlist a carpenter for many voyages. This does not mean that merchant ships needed less care and maintenance than a warship did, but in many cases there was someone aboard who was capable of repairing a problem without being dedicated for that task. There are several examples of ship captains or crew members fishing masts or repairing storm damage or other problems and then returning to their usual duties after the problem had been fixed.15 One should also keep in mind that many merchant vessels did not stay at sea for lengthy periods of time on patrol as warships did. If a major problem arose, a merchantman could seek help in the nearest port. It should be noted that in the later eighteenth century and on
into the early nineteenth century, many mercantile voyages became more far-ranging, branching out into the southern Atlantic and the Pacific, to the west coast of the Americas and across the Pacific to China and the South Seas. These ships were now far removed from most ports of refuge, and their crews seem almost always to have included at least one carpenter.

CONCLUSION
The carpenter’s skill often meant the difference between life and death for the rest of the crew, but it was not unusual for other crewmen to have some carpentry knowledge as well. Even if the crew could not saw a plank, dire necessity could prove to be the best incentive for learning. Warships almost always carried at least one carpenter or mate, but merchant ship owners or captains might have an eye on their profit margin and decide not to carry a carpenter among the crew. The ships that did not carry a carpenter dedicated for that purpose usually were engaged in the North Atlantic trade or had someone on board who could fix a problem satisfactorily when it arose.
ENDNOTES


2 Ibid., 271–2; Leo Heaps, Log of the Centurion (New York, 1973), 132 for the scuttling of Tryal, 174 for the abandonment and burning of Gloucester; Pascoe Thomas, A True and Impartial Journal of a Voyage to the South-Sea, and Round the Globe, in His Majesty’s Ship the Centurion (Amsterdam, 1971), 147.


4 John Byron, Narrative of the Honourable John Byron (London, 1768), 43.

5 Thomas, A True and Impartial Journal, 156–8; Walter, Voyage, 291–3.

6 Archibald Duncan, The Mariner’s Chronicle; Being a Collection of the Most Interesting Narratives of Shipwrecks, Fires, Famines and Other Calamities Incident to a Life of Maritime Enterprise (London, 1805), I, 25–41 for the East Indiaman Doddington. The carpenter found tools and planking along shore and a seaman found a bellows enabling them to make the tools they could not find. It took seven months to finish a boat 30 feet in length by 12 broad; IV, 136, 158 for the peaceful wrecking of the Antelope packet in the Pelew Islands. Necessary materials were recovered from the wreck, trees were felled, and the crew eventually sailed away in a ‘schooner’; George Shelvocke, A Voyage Round the World (London, 1928), 118–35 where the carpenter and armourer built a two-masted, 20-ton vessel despite obvious personal differences with Shelvocke; William Bligh, A Voyage to the South Sea (Adelaide, 1969), 157 where the Bounty mutineers did not want to let Bligh’s carpenter or mates and their toolchest go with him for fear that they would be able to build a better boat for him. Eventually, the mates were kept on board supposedly against their will; Glyndwr Williams, ed., Documents Relating to Anson’s Voyage Round the World 1740–1744 (London, 1967), 133 where a forge was used to manufacture what had not been found or brought ashore.


8 Kevin J. Crisman, The Eagle: An American Brig on Lake Champlain During the War of 1812 (Shelburne, Vermont, 1987), 26, 33, 63.


10 John Meares, Voyages Made in the Years 1788 and 1789 from China to the Northwest Coast of America (Amsterdam, 1967), 88, 116, 129, 181, 186, 192, 220.
Andrew Sherburne, *Memoirs of Andrew Sherburne: A Pensioner of the Navy of the Revolution* (Freeport New York, 1970), 32 indicates that his father was a carpenter; Charles Herbert, *A Relic of the Revolution* (New York, 1968), 14, 27, 29, 45–95 could be a carpenter, carver, shoemaker, or merchant to prevent starvation. He constructed a table and chest while aboard the 74-gun *Burford*, and made boxes and repaired odds and ends while imprisoned at Old Mill Prison; Benjamin F. Palmer, *The Diary of Benjamin F. Palmer Privateersman* (New Haven, 1915), 141 while at Dartmoor prison in 1815 remarked on the avocations of his fellow captive seamen that included carpentry work; John Rodgers Jewitt, *A Journal Kept at Nootka Sound* (New York, 1976), 12–13 was able to make daggers out of old bolts.


*Ibid.*, 46, 65 et seq. where he and other officers appear to have kept their boat afloat, but suffered many hardships along the way.

Duncan, *Mariner’s Chronicle*, I, 164, 175 where they sealed the ship’s boat using tow and boiled Canada Balsam; 179–82 where they despaired of fixing the boat but managed to keep it afloat until reaching relative safety.

Archibald Campbell, *A Voyage Round the World from 1806 to 1812* (Amsterdam, 1969), 52 saved themselves by caulking and nailing hatbox fragments over the larger holes in the ship’s boat that had washed ashore; John Cremer, *Ramblin’ Jack: The Journal of Captain John Cremer, 1700–1774* (London, 1936), 112–5 repaired a deadlight broken in during a storm and saved the ship; Samuel Kelly, *Samuel Kelly, an Eighteenth Century Seaman, Whose Days have been Few and Evil, to Which is Added Remarks, etc., on Places He Visited During His Pilgrimage in this Wilderness* (New York, 1925), 159 while Kelly was chief mate of *Thetis*, the captain fished the bowsprit himself. Kelly referred to him as ‘one of the most complete and expert seamen and mechanics’; 168, 182, 195–6, 198 while master of *John* bound for Philadelphia Kelly himself fished a sprung mast and repaired the ship after it lost its spars in a gale; Richard Jeffry Cleveland, *Voyages and Commercial Enterprises of the Sons of New England* (New York, 1968), 50, 54 the mate Reuben Barnes, a 19–20 year old from Nantucket, was more than capable of doing the usual carpentry tasks, and even repaired the railing after Cleveland’s vessel collided with the English frigate *Stag*; 102 after striking a ledge off of China, Cleveland’s ship was ‘repaired as well as time and means would permit’.
CHAPTER V
THE CARPENTER AS A SOCIAL BEING
The introductory chapter stated that while this thesis is a social history, the documentary sources are too meager to provide us with a satisfactory picture of carpenters as individuals. There is little that has been written by carpenters themselves that would allow us to examine any particular views they had on life at sea. Without trying to overgeneralise or stereotype, there are personal references by diarists, ship's logs, and some secondary sources that give us a indistinct portrait of the physical and personal character of the carpenter, and how he spent his leisure time.

One of the more obvious characteristics of any person serving aboard a vessel would be their nationality. Personal logs and diaries are of limited use in this regard, but there are numerous muster rolls and logs for the Royal Navy, the various American and state navies, and privateers. In these cases, we must infer nationality from a name on the crew list, and a name can easily disguise a man's actual ethnic background. Unsurprisingly, most of the carpenters of English and American warships have Anglo-Saxon or Scots-Irish surnames. On merchantmen, however, crews appear to have been more mixed and we often see foreign nationals employed as carpenters.

Whenever the physical stature of the carpenter is mentioned in the contemporary sources, he is always described as being large. It is difficult to gauge how accurate or objective these observations are, since the stereotypical image of a carpenter might be akin to that of the village smithy, with arms like bands of iron. If the carpenter had been of slighter build then we might surmise that he would not have made as strong an impression upon the observer. Still, the carpenter's occupation called for raw strength as well as finesse, so these descriptions of them may have merit.

The personal character of the carpenter is as problematic to determine as his physical stature. As we saw in chapter II, the secondary sources on the Royal Navy are fairly blunt
in stating that carpenters of that service were not renowned for their honesty, especially where the pilferage and sale of government stores on the black market was concerned. This probably was more accurate for carpenters working in shipyards than for those aboard ships, but many of the latter must have apprenticed in a shipyard at some time in their career, so they would at least have been aware of the opportunities for profiting from the theft of naval stores. Of the warrant officers, the boatswain is usually designated as the main culprit for stealing government property, while shipboard carpenters enjoyed a slightly better reputation and little was said about gunners. If gunners had been able to steal commodities more saleable than cannon, shot, and gunpowder, then perhaps we might have heard more about them in this respect.

There are also few mentions of Royal Navy carpenters being court-martialed. Thomas Newport, of the frigate Blonde, is reported to have been broken by court-martial for an unspecified offense. As mentioned in chapter II, another carpenter was arrested after Trafalgar for cutting without orders the gammoning of the bowsprit. His ultimate fate was not mentioned. Bartholomew James, while Acting Lieutenant in 1778 aboard Chameleon complained of being pestered with a drunken gunner, boatswain, and carpenter, which was "very uncomfortable for a young man who had nothing to recommend himself but his attention to duty". The gunner was later court-martialed, and the boatswain and carpenter should have been as they were the source of many distresses for him.

There is at least one instance of carpenters involved in a mutiny, and that is the infamous uprising aboard Bounty. By Bligh’s account, neither the carpenter nor his two mates wanted to be taken with the mutineers. The carpenter was allowed to go with Bligh, but the two mates were kept on board, and they loudly protested to Bligh to remember that they were being held against their will. When the British learned of the mutiny they sent the warship Pandora to track down and capture Bounty and its crew. Pandora arrived at Tahiti and found some of the mutineers still on the island, whom they immediately arrested.
The two carpenter’s mates who had so loudly protested their being taken do not appear to have been among those prisoners, suggesting that they went with the rest of the mutineers to Pitcairn Island either again by force or of their own volition. 8

In contrast to these negative reports we also have seen how Royal Navy officers valued the opinion of their carpenter. 9 In chapter IV we saw how Anson sent his carpenter aboard other ships in his squadron to survey them and report on whether or not they were still serviceable. Anson deferred to his carpenter’s judgment in scuttling those vessels. Several officer’s memoirs describe their carpenters in favourable, even fond terms. James Gardner provided lists of the men with whom he served, and references to his various carpenters include such descriptions as “our worthy old carpenter”, “a good man; no dandy”, “a quiet, good man; clever in his profession”, “a good man, a good bread-and-cheese carpenter”, “highly respected”, “a droll fellow”, “a good timber head of his own”, and “a very worthy fellow”. 10 We also have seen how the warrant officers of a Royal Navy ship remained on board even after the ship had been placed in ordinary and the officers and the rest of the crew had been paid off. This longevity of service and familiarity with a vessel was something that many commissioned officers relied upon from their warrant officers. The primary sources suggest that the ship’s carpenter seldom failed his officers’ expectations.

Other brief descriptions provide us images of the carpenter in the Royal Navy during his leisure time. John Cremer, aboard Dover in 1708, mentions the doctor spending an evening with the boatswain and carpenter, “two good well-behaved men who loved a can of flip”. 11 James Gardner roomed briefly at the house of a hop merchant who was also carpenter on a line-of-battle ship. This carpenter was something of an eccentric, as Gardner says that “his name was John Cowdray and on his table linen was marked in large letters Sir John Cowdray, baronet and Knight of the Bath...his wife was also a strange being”. 12 Another carpenter’s humanity is evident in the story of Andrew Sherburne who, as an adolescent, shipped aboard an American privateer and was captured and taken aboard the 18-
gun sloop *Fairy*. The carpenter took him in as a servant to save him from being beaten into helping work the ship. When the sloop reached port, its captain was assigned another command and a new captain took over *Fairy*. The carpenter advised Sherburne to request a transfer to the Old Mill Prison in Portsmouth as an American prisoner and even gave him some clothing before he left.\(^{13}\)

There is precious little information on this topic for the Continental and U.S. Navies. John Paul Jones' carpenter aboard *Bonhomme Richard*, apparently believing that all the senior officers had been killed in action, started begging for quarters from *Serapis*. Jones ordered him and the master-at-arms to be shot, and they returned, reportedly skulking, to their stations below.\(^{14}\) Whether begging for quarters could be categorised as cowardice or prudence on the part of the carpenter is difficult to say. Valle mentions two carpenters of the captive crew of *Philadelphia* joining with three other crewmen and their Tripolitan captors and turning on their shipmates by assisting in punishment, supervising forced labour gangs, and helping build gunboats and fortifications for the Bashaw. Curiously, none of the five Americans was ever tried for his actions after the crew was repatriated.\(^{15}\)

William Henry Allen, while recruiting in 1807 for the frigate *Chesapeake*, had a prospective carpenter's mate desert on him, taking with him his advance money. Allen also had his carpenter desert him in 1813 just before he was to set sail on the brig *Argus*.\(^{16}\) Such actions would have been unusual in the Royal Navy, and is perhaps a reflection of the uncertain situation of the U.S. Navy that it could not offer long-term job security to its more senior crewmen. There were also doubtless better offers from privateers or merchantmen which could have lured the men away. Lest the only image we have of carpenters in the U.S. Navy be unfavourable, the man who replaced the deserted *Argus* carpenter, James White, was mortally wounded in that brig's engagement with *Pelican*.\(^{17}\) As noted in chapter II, he was promoted posthumously to midshipman, perhaps as a token of recognition and appreciation of his sacrifice.
The references to carpenters aboard privateers and merchant ships are more derogatory than those for the Royal Navy. The reasons for this may be several. It may be simply that carpenters who carried out their tasks professionally did not draw as much attention as those who were incompetent or deserted. We did note in Chapter II that the Royal Navy appears to have put prospective carpenters through a strict training and testing system before allowing them to serve aboard a warship. Captains of privateers and merchant ships followed no such system, and may have been obliged to find a warm body to enable them to set sail. There is only one reference to a carpenter, in company with a boatswain, being caught while trying to sell a coil of rope from his packet. There are certainly tales of incompetence and even some highly regarded carpenters deserting their vessels. There are other stories of drunkenness and cowardice in the face of danger. There is the sloop that ran aground in 1780 at Cap-Breton after nearly sinking in the Gulf of St. Lawrence. The carpenter refused to try to swim to shore since “he did not think proper to trust himself in that manner, or probably was unable to stir, having used his bottle too freely during the night”. The man made it to shore only to die the next day of exposure. A Dutchman shipped by George Coggeshall is perhaps the extreme example of a bad carpenter. Coggeshall was forced to punish him due to his

...violence and gross insubordination of language and manner, especially when my situation most critical and perilous...leave me no alternative but that of making an example of him, or abandoning all discipline. He was of a quick and fiery temper, and in some way had obtained liquor; and with its added fury became a most dangerous man. He foamed at the mouth like a mad dog, but after being severely chastised and literally drenched with water, which I found necessary to have thrown upon him to cool him, he became orderly, and continued so during the rest of the voyage.

Coggeshall quickly hired another man whom he said had a better temper, and was “in every respect a good man and an excellent carpenter”.

Another reason that privateer and merchant ship carpenters have been described in harsher terms may be the lack of formal military command hierarchy as found in the Royal and U.S. Navies. As noted by historian Marcus Rediker there was often tension and
confrontation between seamen and the merchant shipowners over wages and work conditions. Carpenters aboard merchantmen may have been ranked higher than the seamen, but they were still part of the crew, so it is not surprising that they might be involved in labour disputes. Captain Joseph Barnes discovered this in 1735 when he asked his carpenter Henry Twine “what he came to Sea for if he would not do his Business & Duty as Carpenter”. Twine “replyed that he came to Sea for his Pleasure & would do what he pleased & nothing more”. Another such instance occurred in 1808 aboard Highlander, then anchored at Spithead, when the chief mate had a falling out with the carpenter and beat him. In response, the carpenter instigated trouble aboard by telling the rest of the crew that their voyage was out, or finished, according to the articles they had signed, and that if they continued on to Liverpool they would all be pressed. Sometimes the disaffection was due to differing views on seamanship. Richard Dana, aboard Alert, tells of the ship in peril from pack ice and the captain delaying when a fair wind rose. This delay irritated the carpenter, who is described as an intelligent, thorough seaman, and influential with the crew. He exerted his influence to have the crew request that the captain run with the fair wind, and even went so far as to have the crew consider mutiny. The situation was ultimately defused with no apparent ill consequences.

Aboard privateers money often proved to be the root of discontent. So it was with Shelvocke’s circumnavigation of 1719. The crew, carpenter included, petitioned Shelvocke for an early return to England and division of spoils. Much later, when their ship had been wrecked in the Pacific, Shelvocke had major difficulties in getting the carpenter to build a small boat for their rescue. Only the promise of money could stir him from indifference and induce him to work, and Shelvocke believed that he was influenced by others in the crew.

Of course, many carpenters aboard privateers and merchantmen reflected those finer qualities found in carpenters of the Royal Navy. Josiah Cobb held the carpenter of his privateer in high regard, and said that “his services were valuable, as he possessed an able
head to plan, with a ready hand to execute any alteration or improvement.” Charles Herbert referred to one as “our worthy and most excellent carpenter”. Richard Dana was most pleased to have the carpenter on watch with him as he a man of some education and accounted the best helmsman on the ship. They had numerous conversations, but after five or six watches they were talked out and Dana passed him on to talk to someone else. Jacob Nagle relates a story of the carpenter telling the captain that the bows on their ship were rotten and that they cannot make it to England. Reminiscent of officers in the Royal Navy deferring to their carpenter’s judgment, the captain put into Rio de Janeiro and paid the crew off. One captain said that his carpenter and armourer were first-rate workmen, while yet another described his carpenters as diligent and hardworking, and needing no urging to start their work. Finally, from a landsman’s perspective, the noted author Henry Fielding, while on a voyage to Lisbon, tells of a conversation with the captain who “frequently intermixed summons to the commanding officer on the deck, who now happened to be one Morrison, a carpenter, the only fellow that had either common sense or common civility in the ship”.

There are also tales of heroism such as the story mentioned in chapter III of the carpenter Edward Cheeseman. He and others were being held in 1724 by the pirate captain John Phillips. On a prearranged signal Cheeseman and several others seized tools that were lying on deck, swiftly dispatched their captors, and retook the vessel. David Cordingly notes that carpenters and their mates seldom turned pirate themselves and often had to be impressed onto pirate ships due to their desirable skills. Lastly, there is the story of the carpenter aboard the privateer Jason during the American War. The crew supposedly caught a shark which they hauled up thrashing on the deck. While the boatswain distracted the shark, the carpenter struck at it with an ax and nearly beheaded it. The story sounds fantastic, but Fielding also notes a similar occurrence on his voyage.
Descriptions of carpenters' leisure activities are limited to two references from just beyond either end of the time period under study here. Jack Cremer mentions that in the 1710's, while he was a second mate aboard Goodfellow Galley at Minorca, the carpenter first got him into trouble with two English officers at a bawdy house and then escaped scot free, leaving Cremer to deal with the two officers. Richard Dana, aboard Alert in the 1840's, speaks of the mate coming down to steerage "in a fine trim for fun" and rousing the carpenter into coming up and bringing his fiddle.

CONCLUSION

Shipboard carpenters in the Royal Navy appear to have had the respect and trust of their superior officers. There were exceptions, of course, but in general they exhibited the traits of professionalism and integrity. There is insufficient information to be able to assess the carpenters of the Continental or U.S. Navies, but here the warrant officers may not have been as devoted due to the uncertainty of enlistment in both services. Carpenters of privateers and merchant ships seem to have been less well regarded by their officers. This may be just an aberration in the primary documentation, or it may reflect tension inherent in a system where captains and owners had less control over their crew, and carpenters identified more closely with the crew than with the officers. Carpenters were professional craftsmen, often in positions of at least some small authority, but it is not surprising to see in them the same noble aspirations, foibles, and self-indulgences that one often sees in their fellow crewmen.
ENDNOTES


2 Jacob Nagle, *The Nagle Journal: A Diary of the Life of Jacob Nagle, Sailor, from the Year 1775 to 1841* (New York, 1988), 306 aboard *Levant* the crew was mainly Spanish and Portuguese, but the carpenter was a Dane; John Rodgers Jewitt, *A Journal Kept at Nootka Sound* (New York, 1976), 48 aboard the American ship *Boston* the crew was mixed, and the carpenter, Adam Siddle, was from Yorkshire; Richard Henry Dana, *Two Years before the Mast* (New York, 1936), 40, 193 the carpenter of *Pilgrim* was German and that of *Alert* was a Swede; Nathaniel Ames, *A Mariner's Sketches* (Providence, 1830), 165 aboard *Louisa* of London the crew of 60–70 was mainly of Lascars, but most of the officers were white and the carpenter was a Manxman; George Coggeshall, *Thirty-six Voyages to Various Parts of the World* (New York, 1970), 235 where his carpenter was Dutch; also See Duncan, *Mariner's Chronicle*, I, 25; III, 217; John Boit, *Log of the Union* (Portland, 1981), 92; Nathaniel Portlock, *A Voyage Round the World: but More Particularly to the North-West Coast of America* (Amsterdam, 1968), 6; Noah Jones, *Journals of Two Cruises Aboard the American Privateer Yankee by a Wanderer* (New York, 1967), 47; John Franklin Jameson, *Privateering and Piracy in the Colonial Period: Illustrative Documents* (New York, 1923), 323, 325, 384, 394; 'Revolutionary War Manuscripts', *Essex Institute Historical Collections*, Vol. 75 (1939), 16, 382–3; Charles W. Farnham, 'Crew List of the Privateer Independence, 1776', *Rhode Island History*, Vol. 26 (1967), 127; Wilfred H. Munro, 'The Last Cruise of the Privateer Yankee', *Rhode Island Historical Society Collections*, Vol. 13, pt. 2 (1920), 67.

3 Nagle, *Nagle Journal*, 306 the carpenter is referred to as being stouter than Nagle, and apparently unafraid to pick up his broad ax and help defend Nagle from the rest of the crew of Portuguese and Spaniards; Coggeshall, *Thirty-six Voyages*, 144, when the crew was in a mutinous state the carpenter, described as 'a powerful man', picked up a huge broad ax to defend Coggeshall, 242 where he describes carpenter George Patterson as being 6' 2" and large in proportion; Elijah Shaw, *Short Sketch of the Life of Elijah Shaw* (Rochester, 1843), 15 Shaw describes himself as weighing 210 lbs. and that 'nature blessed him with uncommon strength'.

4 James Anthony Gardner, *Recollections of James Anthony Gardner, Commander*


7 William Bligh, A Voyage to the South Sea (Adelaide, 1969), 157–8 Bligh also lists the men who mutinied.

8 George Hamilton, A Voyage Round the World, in His Majesty’s Frigate Pandora (London, 1793), 25 the men captured on Tahiti are named.

9 Duncan, Mariner’s Chronicle, I, 206–8 the carpenter of Centaur told the captain that the ship could not be saved and it was time to prepare rafts.


12 Gardner, Recollections, 7.


17 James Inderwick, Cruise of the U.S. Brig Argus in 1813 (New York, 1917), 13, 21, 23.

18 Samuel Kelly, Samuel Kelly, an Eighteenth Century Seaman, Whose Days have been Few and Evil, to Which is Added Remarks, etc., on Places He Visited During His Pilgrimage in this Wilderness (New York, 1925), 64–5.

19 Jameson, Privateering and Piracy, 406 aboard the privateer sloop Revenge the carpenter is sarcastically characterised as ‘carefull’ and who ‘neer had a pump-box rigged or fit to work’; Cremer, Ramblin’ Jack, 232–3 the carpenter was riding for free from Lisbon to Genoa, and Cremer described him as an ‘honest West Country carpenter who knew neither good nor harm’, who ‘could hardly leather a pump box’, and together they made one good carpenter. The man may have been mentally deficient; Boit, Log of the Union, 92 Boit’s carpenter deserted in Canton, China; Richard Jeffry Cleveland, Voyages and
Commercial Enterprises of the Sons of New England (New York, 1968), 297, 317, 329–30 Svend Anderson is described as an excellent carpenter, but deserts with others to join the patriots in South America. He is later killed; Kelly, Samuel Kelly, 288.

20 Duncan, Mariner's Chronicle, III, 243–4 the carpenter of the American ship Hercules, en route from Bengal, only increased everyone’s terror by bursting into tears and crying that the ship was sinking.

21 Ibid., I, 170, 173.

22 Coggeshall, Thirty-six Voyages, 237.

23 Ibid., 242.


25 Ibid., 97.

26 Nagle, Nagle Journal, 276.

27 Dana, Two Years, 328–9.


29 Josiah A. Cobb, A Green Hand's First Cruise (Boston, 1841), I, 53.


31 Dana, Two Years, 193, 340–1.


37 Joshua Davis, A Narrative of Joshua Davis (Boston, 1811), 9–10.

38 Fielding, Journal, 123.

40 Dana, *Two Years*, 197.
CHAPTER VI
TOOLS RECOVERED FROM TWO VESSELS OF THE
AMERICAN WAR FOR INDEPENDENCE

This chapter examines carpentry and other tools excavated from two shipwrecks dating to the period of the American War for Independence. The first of these ships was the American privateer Defence. Its privateer commission lists it as being a 170-ton brigantine of 16 guns, with a crew of 100. It was built in 1779 in Beverly, Massachusetts and drafted shortly thereafter into an expeditionary force sent by the revolutionary government of that state to attack a British outpost at the mouth of the Penobscot River in Maine, which was then part of Massachusetts. The Americans laid siege to the fort, but the arrival of a superior British naval force caught the Americans off guard and sent most of their flotilla fleeing for safety up the Penobscot where nearly all of them were either scuttled or beached and burned. Defence tried a different tactic by detaching from the main group, apparently hoping to escape during the night, but the ship was detected by the British and scuttled by its crew. The wreck lay undisturbed for nearly 200 years until 1972 when it was rediscovered by students from the Massachusetts Institute of Technology and Maine Maritime Academy, who were searching for traces of the ill-fated expedition. The wreck was excavated from 1975 to 1981 in a cooperative effort between the Maine State Museum, Maine Maritime Academy, Professor David Switzer of Plymouth State College in New Hampshire, and the American Institute of Nautical Archaeology (later the Institute of Nautical Archaeology) headed by Professor George Bass.

The second ship is the brig Betsy (Virginia site number 44YO88). It has been determined that Betsy was a collier of approximately 176 tons, or the same relative size as Defence. It was from the east coast of England, built in 1772 and leased in 1780 to the Navy Board by its owner, John Younghusband, to transport stores to the British armies fighting in the colonies. Upon reaching North America the ship was appropriated by
General Lord Cornwallis to assist in supporting his army in the south. It was scuttled in September, 1781 in the James River at Yorktown along with several other vessels to deter an anticipated French amphibious assault at the start of the allied siege of that town. This vessel was rediscovered in the late 1970s during a survey to find remains of Cornwallis’ fleet in the James River. It was almost completely excavated between 1982 and 1988 by underwater archaeologists working for the Commonwealth of Virginia under the direction of John Broadwater.

All of the excavated artefacts from both shipwrecks have been conserved and preliminary studies have been done already of some of the tools. Shelley Smith, one of the excavators of Defence, included a table of the tools in her dissertation and briefly discussed the different shipboard activities represented. She also added photographs or crude sketches of several of the tools in question. John Broadwater included in his final report on Betsy a table and brief discussion of carpenter’s stores, and some sketches of tools.

During the course of this study numerous discrepancies were discovered between Smith’s list and what was present in the collections of the Maine State Museum. Several artefacts in the museum were not on her list, and some tools on her list could not be located either in the collection or museum records. For the purposes of this thesis, the artefact designations will be those numbers labeled on the tools themselves. These numbers have been checked against the artefact cards/conservation records at the Maine State Museum and found to be the same. The provenience information cited for each tool is taken from its artefact card. Reference will be made to Smith’s list when there is vague, confusing, or conflicting information in the museum records.

A similar circumstance arose with respect to the Betsy artefacts. Approximately half of the tools listed by Broadwater in the final report could not be located either in the offices of the Virginia Department of Historic Resources in Richmond or at the Yorktown Victory Center. The catalogue from the final report lists the status of all of these missing artefacts as
being uncertain as to whether or not they had completed the conservation process successfully. Several of the artefacts in Richmond displayed signs of extreme deterioration even after conservation, so it is possible that the missing tools did not survive. The following Table 3 lists only those artefacts that were found in their respective museum collections and that are included in this catalogue.

It should be noted that the great majority of the tools from both wrecks are lacking their most important feature (i.e., the iron shank, or the “working part” of the tool). The rusting or complete corrosion of iron artefacts is an occurrence common to shipwrecks, particularly those vessels that sink in salt water. The aerobic environment of salt and water bring about an electrolytic reaction with the iron causing it to revert (i.e., corrode) to its original, more stable state as iron ore. In warmer waters, carbonates in the water can combine with sand to form a concreted mould of the artefact before the iron deteriorates. This mould often retains the shape of the iron and can be cleaned out and filled with epoxies or other materials to obtain a detailed replica of the original tool. In colder, more northerly latitudes such as Maine and Virginia, where our wrecks lie, these concretion moulds usually do not form, so the iron simply corrodes and disappears, leaving us with only the wooden haft, or handle, into which the tool was set. Iron corrosion can be delayed to an extent if the artefact is quickly buried in mud, thereby creating an anaerobic environment and retarding or halting the electrolytic reaction. This is presumably what happened with several of the artefacts from Betsy that still possess portions of their iron. While the iron tool itself may be absent, many of the wooden handles still retain nail or rivet holes, impressions, faint residues of corrosion, or other features that may assist us in identifying their original function.

The wooden handles themselves were also subjected to deterioration in the form of breakage during or after immersion, erosion from exposure to currents, and being eaten by the Teredo navalis, or shipworm. Waterlogged wood must also be conserved carefully once it has been removed from the water. The cellulose in wood cells, which provides the
TABLE 3

List of possible tools recovered from the privateer *Defence* and collier *Betsy*

**Defence**

<table>
<thead>
<tr>
<th>Artefact Number</th>
<th>Provenience</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRX 1/119</td>
<td>Unknown</td>
<td>Ax Handle</td>
</tr>
<tr>
<td>174/1/12</td>
<td>Unknown or B2</td>
<td>Awl Handle(?)</td>
</tr>
<tr>
<td>175/1/45</td>
<td>B4</td>
<td>Auger or Saw Handle</td>
</tr>
<tr>
<td>175/1/93</td>
<td>B11</td>
<td>Spade or Shovel Handle</td>
</tr>
<tr>
<td>176/1/144</td>
<td>B4</td>
<td>Unknown Handle</td>
</tr>
<tr>
<td>176/1/167</td>
<td>A4</td>
<td>Auger or Saw Handle</td>
</tr>
<tr>
<td>176/1/175</td>
<td>A4</td>
<td>Auger or Saw Handle</td>
</tr>
<tr>
<td>176/1/180</td>
<td>A4</td>
<td>Gimlet Handle</td>
</tr>
<tr>
<td>176/1/196</td>
<td>C4</td>
<td>Gimlet or Tap Auger Handle</td>
</tr>
<tr>
<td>176/1/208 and</td>
<td>D5(?)</td>
<td>Unknown Handle</td>
</tr>
<tr>
<td>HRX/1/103</td>
<td></td>
<td></td>
</tr>
<tr>
<td>176/1/217</td>
<td>C4 and D4</td>
<td>Offset Awl Handle</td>
</tr>
<tr>
<td>176/1/248</td>
<td>B4</td>
<td>Ax/Hatchet Handle</td>
</tr>
<tr>
<td>176/1/298</td>
<td>C4</td>
<td>Bow Drill Nave(?)</td>
</tr>
<tr>
<td>176/1/32</td>
<td>C4</td>
<td>Gimlet Handle</td>
</tr>
<tr>
<td>177/1/185</td>
<td>C3</td>
<td>Bow Drill Stock(?)</td>
</tr>
<tr>
<td>177/1/266</td>
<td>C4</td>
<td>Bow Drill Handle(?)</td>
</tr>
<tr>
<td>178/1/38</td>
<td>A6</td>
<td>Round Shave Handle(?)</td>
</tr>
<tr>
<td>178/1/60</td>
<td>B10</td>
<td>Spade or Shovel Handle</td>
</tr>
<tr>
<td>178/1/170</td>
<td>B7</td>
<td>Raceknife Handle</td>
</tr>
<tr>
<td>178/1/172</td>
<td>B6 and B7</td>
<td>Boarding Ax Handle</td>
</tr>
<tr>
<td>181/1/15</td>
<td>B5(?)</td>
<td>Mallet Head</td>
</tr>
<tr>
<td>181/1/16</td>
<td>B5</td>
<td>Adze Handle</td>
</tr>
<tr>
<td>181/1/27</td>
<td>B5</td>
<td>Ax or Hatchet Handle</td>
</tr>
<tr>
<td>181/1/84 and</td>
<td>B11</td>
<td>Boarding Ax Handle</td>
</tr>
<tr>
<td>181/1/192</td>
<td></td>
<td></td>
</tr>
<tr>
<td>181/5/5</td>
<td>B11 and B12</td>
<td>File or Rasp Handle(?)</td>
</tr>
<tr>
<td>unlabeled</td>
<td>Unknown</td>
<td>Auger or Saw Handle</td>
</tr>
</tbody>
</table>

**Betsy**

<table>
<thead>
<tr>
<th>Excavation Register Number*</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>211J12-1</td>
<td>Spade or Shovel Handle</td>
</tr>
<tr>
<td>315K07-01</td>
<td>Spade</td>
</tr>
<tr>
<td>315K12-13</td>
<td>Bevel</td>
</tr>
<tr>
<td>403C08-01</td>
<td>Gimlet Handle</td>
</tr>
<tr>
<td>403C14-08</td>
<td>Hammer or Hatchet Handle</td>
</tr>
<tr>
<td>407M4-01</td>
<td>Shovel or Spade Handle</td>
</tr>
<tr>
<td>503S-01</td>
<td>Gimlet Handle</td>
</tr>
<tr>
<td>506M2-12</td>
<td>Unknown Handle</td>
</tr>
<tr>
<td>Unknown</td>
<td>Broad-bladed Adze</td>
</tr>
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* For *Betsy* the excavation register number indicates the provenience of the artefact.
wood with much of its structural support, is slowly lost over time. Water then becomes the
primary support for the cell, and when wood is dried out incorrectly the cell loses that
support and can collapse, causing the artefact to shrink and warp. Conservation is an
inexact science, and even wood treated properly may still exhibit signs of shrinking and
warpage. Any such signs of deterioration will be noted in the catalogue as necessary.

Identification of the artefacts is based on several sources, including Henry Mercer's
excellent work *Ancient Carpenters' Tools*, which is an extensive summary of eighteenth-
and nineteenth-century woodworking equipment, R.A. Salaman's *Dictionary of Tools Used
in the Woodworking and Allied Trades*, and John Horsley's *Tools of the Maritime Trades.*
Many tools from the privateer *Defence* were also examined by Lester Ross of Parks
Canada, a person well-acquainted with carpentry tools from his study of artefacts from the
French frigate *Le Machault*, sunk in 1760. His proposed identifications have been
incorporated into the catalogue where applicable.

The catalogue proper is preceded by *Figures 2, 3 and 4*, which contain a series of
drawings of how the artefacts may have appeared in their original state when both tool and
handle were combined. For the sake of consistency, artefact entries are in the same order as
they were originally compiled by the site excavators, Shelley Smith for *Defence* and John
Broadwater for *Betsy*. Dimensions, description, and possible identification of each artefact
is provided on the first page, and a scaled drawing(s), sketch, or, in one case, a
photograph, of the artefact is provided on the page(s) following.
Fig. 2. Sketches of several of the tools mentioned in the text. (Brendan McDermott)
A. Auger handles (top) and open pit saw

B. Standard gimlet

C. Taper auger

Fig. 3. Sketches of several more of the tools mentioned in the text. (Brendan McDermott)
Fig. 4. Sketches of several other tools mentioned in the text. *(Brendan McDermott)*
CATALOGUE

DEFENCE

Artefact number: HRX 1/119

Provenience: Unknown

Max. length: 72.9cm

Max. width: 3.3cm

Tool type: Ax handle, probably to a felling ax

Type of wood: Unidentified

Description: The artefact is illustrated in Figure 5. Straight handle, teardrop in section at head changing quickly to a racetrack oval section 57 cm from the butt end. Handle then tapers gradually over the rest of its length with the flat sides shortening, becoming almost circular at the butt end. In good condition, but there are some surface cracks apparent on the lower half, possibly from drying out during conservation. A longitudinal crack in the head appears recent (i.e., post excavation). There are no other noticeable marks.

The head contains numerous traces of iron corrosion, indicating that it had an axhead attached to it rather than just being a spare handle, but there is no indication that any kind of wedge was ever driven into the top of the handle to secure the head. The handle is straight, not offset, eliminating the broad ax as a possibility. The pattern of corrosion suggests that the axhead had the type of lugs that Mercer classifies as belonging to an Anglo-American, British, or American felling ax. Examples are shown in Figure 2A. The differences between these three types are in the axhead rather than the haft, but their basic function is the same, i.e., felling trees, in this case either for masts, frames, planking, firewood etc. Horsley also refers to this as an American ax or a Kent pattern felling ax, and mentions that they were the two main types used in the English woodlands. Salaman even refers to this type of ax as a shipwright’s ax, to be used for roughing out masts and similar tasks.
Fig. 5. Drawing of artefact HRX 1/119. (Brendan McDermott)
DEFENCE

Artefact number: HR 174/1/12. This may be the same tool that Smith has listed, probably mistakenly, as HR 76.1.12 (in Smith’s numbering system she dropped the first ‘1’ and substituted periods for slashes). Her dimensions are approximately the same, and the records for 176/1/12 indicate that it was redeposited on the wreck.

Provenience: Unknown. Smith lists the provenience of HR 76.1.12 as B2

Max. length: 7.1cm

Max. diameter: 1.8cm

Tool type: Scratch or brad awl handle(?)

Type of wood: Several prominent rays in the cross-section suggest that this is a type of oak.

Description: The artefact is illustrated in Figure 6. Small handle, circular in section, nearly cylindrical, but tapering slightly from butt to head (1.8–1.5cm). Good overall condition with some slight cracking, mainly at the head, possibly from the conservation process. There is some slight erosion of the wood which is more pronounced on one side than the other. There are no other noticeable marks, and no signs of battering or crushing on the butt end. There is no trace of the shank, or iron tool, which had a square tang. The diminutive size of the handle leads us to suspect that it may have served a less strenuous purpose such as a scratch awl, the eighteenth century version of the carpenter’s pencil. Lacking the iron itself, it is also possible that this could have been a brad awl for starting holes for flat, slender nails.8 If the handle could withstand the use, then it is also possible that this was one handle to a small drawknife, or for a rasp, file, or gouge, although gouges would probably display evidence of pounding on their butt end.9 Examples of drawknives and an awl are shown in Figure 2C.
Fig. 6. Drawing of artefact HR 174/1/12. (Brendan McDermott)
DEFENCE

Artefact number: HR 175/1/45

Provenience: B4 (Northeast corner)

Max. length: 24.1cm

Max. diameter: 2.3cm

Tool type: Auger or saw handle

Type of wood: Unidentified

Description: The artefact is illustrated in Figure 7. Circular in section, nearly cylindrical. Tapering gradually to both ends from a slight bulge at the centre. One end was not cut exactly perpendicular to the length. Single, small conical indentations at either end indicate that this was turned on a lathe. Centre has been circumscribed with two oblique, parallel lines or shallow incisions. In excellent condition.

There are three other artefacts almost identical to this example, and all have been identified at some point by Lester Ross as auger handles, which is entirely possible. Similar examples are illustrated by Mercer, but almost all of those show that the handle was drilled through to secure the shank, and none of these was drilled. Mercer states that there were augers that were secured by a band around the handle, but that they were rare.10 It is also possible that these were spare handle blanks. Another, more likely possibility is that these handles are for what Mercer describes as open pit saws, also commonly, and incorrectly, referred to as whip saws. These artefacts compare well with the tiller handles of pits saws, which were often attached with a band instead of drilled as may be seen in Figure 3A. Mercer describes open pit saws of the eighteenth century as “superannuated survivals used for odd work” such as sawing ship timbers or for boards and plank when there was no saw mill available for the task.11 It is also entirely possible that these four artefacts could have been used for both augering and sawing. Either tool could have been aboard the privateer. Since the artefacts have no real distinguishing features, it is also
possible that they served a different purpose than as tool handles. They are first described in the museum conservation records as possible stool rungs. Since no other recognisable parts of any stools were identified, this suggestion seems unlikely. It is uncertain for what other purpose this artefact may have been suitable.
Fig. 7. Drawing of artefact HR 175/1/45. (Brendan McDermott)
DEFENCE

Artefact number: HR 175/1/93

Provenience: MM1 (against ceiling). Smith notes the provenience of this as B11.

Max. length: 74.7cm

Max. width of handle: 4.1cm

Max. width of grip: 10.1cm

Max. width of hod: 7.95cm

Tool type: Shovel or spade handle

Type of wood: Ring-porous hardwood with visible rays. Most likely some type of oak.

Description: The artefact is illustrated in Figure 8. In excellent condition. One can still see the impressions in the wood on both sides made by the iron plates of the blade. Even the depressions made by the .8cm rivet heads are evident on the lower side of the handle. The flattened section of the handle at the blade end suggests that the blade itself was flat, and possibly square rather than curved and rounded, which would make this a spade rather than a shovel. This handle was carved out of a single piece of wood. The edges around the grip of the handle have all been beveled to reduce splintering and protect the hands of the user.
Fig. 8. Drawing of artefact HR 175/1/93. (*Brendan McDermott*)
DEFENCE

Artefact number: HR 176/1/144

Provenience: B4

Max. length: 15.7cm (broken)

Max. diameter: 3.2cm

Tool type: Unidentified handle

Type of wood: Unidentified

Description: The artefact is illustrated in Figure 9. Damaged at both ends from erosion, small-scale shipworm, and slight splitting of the wood in drying after conservation. Circular in section, but has shrunk after conservation to more of an oval section at the butt end. The working end is damaged sufficiently to preclude us from determining its use. There is no sign of a tang, but this may have been an unused spare. Tools that could have employed a short, relatively thick handle without a tang may include slices (also called slicks), which were for paring or planing off thin bits of wood. Short axes may also have used this type of handle. In reality, this may not be a tool handle at all, since its shape also resembles one end of a belaying pin.
Fig. 9. Drawing of artefact HR 176/1/144. (Brendan McDermott)
DEFENCE

Artefact number: HR 176/1/167

Provenience: A4

Max. length: 24.1cm

Max. diameter: 2.0cm

Tool type: Auger or saw handle

Type of wood: Unidentified

Description: The artefact is illustrated in Figure 10. Circular section, nearly cylindrical except for a slight thickening towards the centre. The centre of the tool is circumscribed with a single, shallow incision or impression. In good condition overall, although there are single, small chips taken out of both ends. There is also a series of three small nicks near the centre. It cannot be determined if any of these marks is pre- or post excavation. Conical indentations on both ends indicate that this was lathe turned. This is essentially the same type tool as HR 175/1/45, and the discussion for that artefact is the same for this.
Fig. 10. Drawing of artefact HR 176/1/167. (*Brendan McDermott*)
DEFENCE

Artefact number: HR 176/1/175

Provenience: A4

Max. length: 24.2 cm

Max. diameter: 2.55 cm

Tool type: Auger or saw handle

Type of wood: Unidentified

Description: The artefact is illustrated in Figure 11. Circular section, nearly cylindrical with a thickening towards the centre. There is a single, shallow incision or impression extending around half of the tool at its centre. In good condition overall, although there are two short, parallel cuts near the centre along with other assorted dents. It cannot be determined if any of these marks is pre- or post excavation. Conical indentations on both ends indicate that this was lathe turned. See the discussion under HR 175/1/45 for this same type of artefact.
Fig. 11. Drawing of artefact HR 176/1/175. (Helen Hillhouse Townsend)
DEFENCE

Artefact number: HR 176/1/180

Provenience: The preliminary artefact record for this object gives a provenience of either squares A2, A4, or B3. Smith gives it a provenience of A4.

Max. length: 7.6cm

Max. diameter: 3.3cm

Tool type: Gimlet handle

Type of wood: Unidentified

Description: The artefact is illustrated in Figure 12. Circular in section, tapering to semi-flattened points at either end. Possibly lathe turned, but lacks the conical depressions exhibited in the previous possible auger or saw handles. In good condition with some slight surface erosion at one end. This small, egg-shaped drilling device is the most basic form for the type. An example with a slightly different type of handle is shown in Figure 3B. Mercer remarks that these and other small augers were used for the simple drilling of small holes until the Middle Ages, when they were superseded by the brace and bit. They were of use aboard ship, perhaps for getting into narrow, difficult spaces where there might not be enough room for the brace and bit, such as working on the pumps. Gimlets could be used for drilling or starting smaller holes through planking to prevent the wood from splitting when a nail was driven through. Thinner planking was used to construct interior bulkheads for cabins, workrooms, and storerooms which, as we see from the historical documentation, were often built or shifted around prior to a voyage and sometimes even during a voyage. The captain and other officers might have beds, shelving, or other fixed furniture in their quarters that required the use of smaller drills. Gimlets could also start holes for larger augers. There are doubtless other applications.
Fig. 12. Drawing of HR 176/1/180. (Helen Hillhouse Townsend)
DEFENCE

Artefact number: HR 176/1/196
Provenience: C4
Max. length: 9.45cm
Max. diameter: 3.65cm
Tool type: Gimlet or tap auger handle
Type of wood: Unidentified

Description: The artefact is illustrated in Figure 13. Circular in section. Thickest at centre, then decreasing in a steady curve until reaching minimum width approximately 1cm from either end, then flaring outward at both ends. In good overall condition. There is some surface erosion around the tang itself. Lester Ross suggested that this might have been a tap auger handle. There is a good parallel to this particular handle shape illustrated in Mercer, which he refers to as a tap or taper auger. The primary difference between gimlets and tap augers appears to be in the bit, or the working edge of the tool. Gimlets were meant for drilling small, straight holes or for starting holes for larger augers, while the bits of tap augers were half-funnel shaped and end in side-sharpened points to pare away wood diagonally and create a tapering hole, hence the name. An example is shown in Figure 3C. Tap augers were typically used by coopers for cutting holes in casks either for bungs or spigots. They could also be used by carpenters for such things as chair sockets or cabinets, but those employments are less likely here.
Fig. 13. Drawing of artefact HR 176/1/196. (Helen Hillhouse Townsend)
DEFENCE

Artefact number: HR 176/1/208 and HRX/1/103

Provenience: Recorded as having been found “on the starboard side of the cookstove”, which would most likely place it in square D5.

Max. length: 10.9cm (broken)

Max. diameter: 2.7cm

Tool type: Unidentified handle

Type of wood: Unidentified

Description: The artefact is illustrated in Figure 14. Two pieces joining to form a broken handle of uncertain use. It is circular in section with a stepped shoulder at the head indicating that the tool was fitted with a ferrule to help keep the iron shank in place. Handle diameter widens gradually from the shoulder to the broken end, which is partially splintered but mostly broken cleanly. HRX1/103 is slightly smaller than the other piece, which is probably a result of conservation. The depth of the tang is a relatively short 3.3cm, and the tang was inserted at an angle to the handle proper. This handle could be for nearly any type of woodworking tool. Gouges and chisels would be the most likely type to need a ferrule, but files, rasps, or even drawknives might be possibilities here. Lacking the tool and the end of the handle it is difficult to be certain.
Fig. 14. Drawing of combined artefacts HR 176/1/208 and HRX/1/103. (Brendan McDermott)
DEFENCE

Artefact number: HR 176/1/217

Provenience: C4 and D4

Max. length: 7.8cm

Max. diameter: 2.5cm

Tool type: Identified by Lester Ross as an offset awl handle

Type of wood: Unidentified

Description: The artefact is illustrated in Figure 15. Small handle, circular in section, widening from its minimum diameter at the head to its maximum .5cm from the butt end, which is slightly rounded. In good condition, with some slight erosion and one mark or dent on the butt end, origin unknown. Ross’s description of this as offset is possibly due to the way the tang was slotted into the handle. Mercer only lists two types of awls, as we saw with artefact HR 174/1/12, the scratch and the brad. None of the other sources consulted here contained any reference to an offset awl. It has also been suggested that this handle might be for a screwdriver, or turnscrew in the terminology of the period.14
Fig. 15. Drawing of artefact HR 176/1/217. (Helen Hillhouse Townsend)
DEFENCE

Artefact number: HR 176/1/248

Provenience: B4

Max. length: 16.6cm (broken)

Max. width: 2.5cm

Tool type: Ax handle

Type of wood: Unidentified, although it is a ring-porous wood without visible rays, which classifies it as a type of hardwood.

Description: The artefact is illustrated in Figure 16. Central section and butt end of a broken handle, circular in section and cylindrical except for a slight widening in diameter at the very end of the butt. Slightly shrunken after conservation with seven to eight small splits in the butt end. The early wood of the annual rings stands out from the surface of the handle, indicating that it had a slightly greater diameter before being conserved. A square nail appears to have been driven a short depth into the centre of the handle 2.35cm from the butt end. Its purpose is uncertain. The entire handle is not present since another piece has broken off cleanly at some point. This joining portion was recovered during the excavation and was recorded in place with this fragment. I was unable to find any piece of wood in the collection that resembled the missing fragment. Shelley Smith has designated this as an ax, but the reasons for this are obscure. Perhaps the missing piece had some identifying marks upon it. There is nothing of a similar shape to this artefact in Mercer or any of the other sources consulted here.
Fig. 16. Drawing of artefact HR 176/1/248. (Brendan McDermott)
**DEFENCE**

**Artefact number:** HR 176/1/298

**Provenience:** C4

**Max. length:** 8cm (from illustration)

**Max. diameter:** 3cm (from illustration)

**Tool type:** Identified by Lester Ross as a bow drill handle

**Type of wood:** n/a

**Description:** The artefact is illustrated in **Figure 17**. This artefact was one of two that could not be found in the collections of the Maine State Museum. The item had been on display once at the museum, but was placed in storage with the other artefacts and is now missing. Judging from the illustration, it appears that the handle, or nave, is pierced for its entire length, which is probably what encouraged Ross to classify it as from a bow drill. Mercer illustrates several such drills, which resemble this artefact somewhat. An example of the complete tool is shown in **Figure 4B**. Bow drills performed functions similar to gimlets in drilling relatively small holes, but they did it much more rapidly. Bow drills required more room than gimlets, since the carpenter needed freedom of movement for the bow as he moved it back and forth to turn the stock (also called a chuck) and the drill bit.

Another artefact, HR 177/1/185, in adjacent square C3, is similar to the bow drill stocks illustrated by Mercer, so perhaps these two artefacts are from the same composite tool. It is difficult to tell from this drawing, but the hole diameter appears to be about .8—.9cm, while the spindle diameter of the stock is only .5cm and .6cm square for the bit. Artefact HR 177/1/185 is shrunken and deformed from drying out after conservation, which may account for some of the discrepancy between the two diameters.
Fig. 17. Drawing of artefact HR 176/1/298 (*Helen Hillhouse Townsend*)
DEFENCE

Artefact number: HR 176/11/2

Provenience: C4

Max. length: 8.0cm

Max. diameter: 3.3cm

Tool type: Gimlet handle

Type of wood: Unidentified

Description: The artefact is illustrated in Figure 18. Circular in section, curving from its maximum width at centre coming almost to a point at either end. Slight areas of erosion at one end and where the tool was fitted to the handle. The tang appears to have pierced the entire width of the handle. The centre is circumscribed with a shallow incision or impression the purpose of which is obscure. Perhaps the line acted as a guide when centering and setting the tang into the handle, or perhaps the line is a simple residue of the handle having been turned on a lathe. There are no identifiable marks on either end to show that this was lathe-turned, but that would probably have been the easiest method of manufacture. This is a small, egg-shaped gimlet handle virtually identical to HR 176/1/180.
Fig. 18. Drawing of artefact HR 176/11/2. (Helen Hillhouse Townsend)
DEFENCE

Artefact number: HR 177/1/185

Provenience: C3

Max. length: 6.8cm

Max. diameter: 3.8cm

Tool type: Bow drill stock(?)

Type of wood: Unidentified

Description: The artefact is illustrated in Figure 19. Shrunken and somewhat misshapen from drying in conservation. The artefact is almost circular in section, forming a short cylinder, and was likely perfectly circular prior to conservation. The object is slightly recessed at both ends, with a hole running its complete length. As a stock, it matches up well with those parts of bow drills illustrated in Mercer and shown in Figure 4B, even if the hole in the artefact does appear to be slightly off centre. As mentioned above, this artefact may match up with the possible bow drill nave HR 176/1/298, which was excavated in adjacent square C4. It is also possible that this could be a spool from a chalk line, used for laying out long, straight lines.
Fig. 19. Drawing of artefact HR 177/1/185. (Brendan McDermott)
DEFENCE

Artefact number: HR 177/1/266

Provenience: C4

Max. length: 9.05cm (from illustration)

Max. diameter: 3.65cm (from illustration)

Tool type: Bow drill handle(?)

Type of wood: Unidentified

Description: The artefact is illustrated in Figure 20. Circular in section, roughly s-shaped in profile. There is a circumferential, semi-circular rib at the head. Judging from Townsend's 1977 drawing, this artefact was already marked, cracked, or broken in several places prior to conservation. It did not fare well during that process and has shrunk and warped considerably, rendering any further measurements meaningless. The hole for the tool runs the length of the handle. This tool in form resembles HR 176/1/298, the bow drill nape. However, it has been suggested that, based upon the shape of the holes, one being an oblong square, this artefact might be a bow drill stock rather than a nape, or perhaps even a crank handle for another object entirely. If the piece were a bow drill stock that was being used rather than a stored spare, then presumably there would be some surface polishing at its narrowest point. Unfortunately, the poor preservation of the object has erased any evidence of use that might have existed.
Fig. 20. Drawing of artefact HR 177/1/266. *(Helen Hillhouse Townsend)*
DEFENCE

Artefact number: HR 178/1/38
Provenience: A6
Max. length: 12.7cm
Max. diameter: 2.85cm
Tool type: Round shave handle(?)
Type of wood: Unidentified

Description: The artefact is illustrated in Figure 21. Circular, cylindrical object in good condition. There are still traces of iron corrosion at what appears to be the working end of the tool. The tool was evidently slotted into the handle and then held in place with an iron band. A type of tool that might use this type of short, thick handle would be a round shave or scorpener, which was a one-handled, circular iron knife often used to level or plane down the joints between staves in a cask or tub, or to hollow out bowls. Such tools are normally used by coopers, but carpenters could use them as well. Several examples similar to this piece are illustrated in Mercer. However, both Horsley and Salaman illustrate round shaves with simple tangs fitted into a standard handle much like a chisel, gouge, or file. Salaman describes a tool with the same kind of stubby handle as a chincing iron, which was used by coopers to force dried rushes into the croze groove of a barrel to allow it to be reused. An example of a round shave and of a chincing iron are shown in Figure 4C. There did not appear to be any other tools in the sources consulted that used such short handles.
Fig. 21. Drawing of artefact HR 178/1/38. (Faith Harrington)
DEFENCE

Artefact number: HR 178/1/60. Listed by Smith as 81.1.A.

Provenience: B10 (west quad). Smith lists this as B9.

Max. length: 80.8cm

Max. width of handle: 3.7cm

Max. width of grip: 11.3cm

Tool type: Shovel or spade handle

Type of wood: Unidentified

Description: The artefact is illustrated in Figure 22. In good condition overall. A square iron nail fastens the small, t-shaped grip to the long handle. The handle is almost circular in section where it joins with the grip. The handle then thickens gradually in width although not in height, becoming oblong or oval in section before flattening out at the working end. There is a slight concavity approximately 28cm from the end in both the top and bottom sides whose function, if any, is obscure. Three circular nail or rivet holes indicate that this shovel had an iron blade attached, although there are no impressions in the wood to confirm this. The top rivet is centered on the handle, but the next two are increasingly off center. The flattening of the handle suggests that the blade was flat, and presumably square, which would make it a spade rather than a shovel.
Fig. 22. Drawing of artefact HR 178/1/60. (Brendan McDermott)
DEFENCE

Artefact number: HR 178/1/170

Provenience: B7

Max. length: 9.4cm

Max. width: 4.0cm

Max. thickness: 2.7cm

Tool type: Cooper’s racenknife handle

Type of wood: Rays are visible in the cross-section, and there is pronounced ray fleck visible as well, indicative of some type of oak.

Description: The artefact is illustrated in Figure 23. Slightly trapezoidal block of wood in fairly good condition. There are some cracks or gaps in the wood visible on either end, that are probably from the drying of the artefact during conservation. Rectangular in section tapering gradually on all faces from the butt end to the head. All exterior edges except for those at the head are neatly bevelled or rounded. This feature presumably made the handle more comfortable to grip and apply. Race knives illustrated by Mercer are more rounded in shape, but the basic tooling appears to be the same and is shown in Figure 4D.22 This instrument would have several attachments. One prong could incise straight lines or mark the centre of a circle while one or more adjustable scoop knives cut arcs around it. There is still a slight amount of iron corrosion remaining at the base where the scoop knife or knives were hinged. Combining the straight lines and arcs could form any number or letter. This tool could be used by carpenters for marking large timbers to be joined in house framing, but was more commonly associated with coopers who marked barrels and casks with them.
Fig. 23. Drawing of artefact HR 178/1/170. (Brendan McDermott)
DEFENCE

Artefact number: HR 178/1/172

Provenience: B6 and B7

Max. length: 57.15cm (measured prior to conservation)

Max. diameter: 3cm (measured prior to conservation)

Tool type: Boarding ax handle

Type of wood: Unidentifiable

Description: Originally in one complete piece, now splitting badly along the handle’s length and broken in two after conservation and therefore not illustrated. Artefacts HR 181/1/84 and HR 181/1/192 form two parts of a much better preserved example of this type of ax handle, and are shown in Figure 27. William Gilkerson’s work on boarding weapons depicts a British ax that resembles both of these handles as shown in Figure 4A.23 He illustrates a handle with a knobbled butt end, circular section, and a slight thickening near the head before the handle tapers away into the shaft of the tool. This circular, tapering section at the head of the handle is unlike other axheads, which usually have thicker, teardrop-shaped heads much like artefact HRX 1/119 shown in Figure 5. A tapering handle would be useless for keeping a normal axhead in place, but the head of a boarding ax appears to have been attached by means of rivets or nails driven through the langets, or tongues of iron projecting from the axhead on either side of the handle. Square nail holes appear in the appropriate locations on artefact HR 181/1/192 of our second example, but the splitting of HR 178/1/172 has obscured any evidence that may have existed of similar features upon it.
DEFENCE

Artefact number: HR 181/1/15. Most likely what Smith refers to as 81.1.C.

Provenience: There was no artefact card found for this object. Smith's mallet is from square B5.

Estimated length: 21cm (based on scale in photograph).

Estimated diameter: 11cm

Tool type: Mallet head

Type of wood: Unidentifiable

Description: This is the second of two tool-related artefacts that could not be found in the Maine State Museum's collections, although a photograph of this particular object was taken most likely prior to conservation and is shown in Figure 24. The battered appearance of both working surfaces may be a result of decay while submerged. Aldren Watson states that "the wooden mallet is designed primarily for one job—to drive chisels without mushrooming or splitting their handles." He further adds that "if a mallet is used for nothing but striking wood-handled chisels it will last a good long time. But when substituted for a hammer to drive nails, bolts, or a nail set, the smooth face so necessary for reliable chisel work is soon mutilated beyond repair." It is possible that this mallet was used for more general purposes, such as caulking, that would have battered its working faces, but it is difficult to say without further study of the artefact. Otherwise, the mallet head appears typical for its type. There is one peculiar feature visible in the photograph. There appears to be a shallow groove running lengthwise along the top of the head. If this is a deliberate groove, then the mallet may have been a particular type used for serving rigging such as shrouds or clews. This mallet type is illustrated in the works of Blanckley and Lever. The groove in those examples seems to be much deeper and wider, so the groove in 181/1/15 may either be accidental or even an optical illusion in the photograph, but without the physical specimen it is impossible to draw any definitive conclusions.
Fig. 24. Photograph of artefact HR 181/1/15. (Photo courtesy of Maine State Museum, Augusta, Me.)
DEFENCE

Artefact number: HR 181/1/16

Provenience: B5

Max. length: 74.2cm

Max. width: 3.7cm

Tool type: Adze handle

Type of wood: Unidentified

Description: The artefact is illustrated in Figure 25. In good condition, although there is some slight twisting or warping of the handle along its length. This handle is described by Smith as being broken, but there is no indication of that here. The handle changes shape in section several times over its length. It is oval at the butt end, becoming more rounded at midlength before changing to an extended octagon 16cm from the head. The head itself is slightly trapezoidal, nearly square. This flaring, squarish head is the distinguishing feature that indicates this was an adze handle. Graham Blackburn notes that the square head is what kept the tool in place since the haft was slipped onto the handle from the butt end.27 The surface is moderately eroded in several spots, but there is still some light crosshatching visible near the butt end in a convenient place for gripping. This particular handle closely resembles ones illustrated by Mercer and referred to as shipwrights’ adzes.28 Examples are shown in Figure 2B. Salaman quotes shipwrights as saying that this tool was impossible to control without a handle with a double curve, but that his seventeenth-century sources showed adzes with straight handles.29 Mercer believes, based on his examination of contemporary texts, that the curving of the handle was an eighteenth-century innovation, probably among English ship’s carpenters.30 Whether fitted with a straight or curved handle, adzes were used for shaping, finishing, and trimming both flat and curved planking and framing. They could even be used for the rough shaping of masts, but were generally reserved for finer work.
Fig. 25: Drawing of artefact HR 181/1/16. (Brendan McDermott)
DEFENCE

Artefact number: HR 181/1/27

Provenience: B5

Max. length: 41.6cm

Max. diameter: 3.9cm

Tool type: Ax or hatchet handle

Type of wood: Unidentified

Description: The artefact is illustrated in Figure 26. Teardrop-shaped in section. The handle tapers in depth gradually from the butt to just below the head and then appears to flare outward at the head. The head of the handle has either decayed or broken off with the loss of the iron axhead itself. The remainder of the handle is in good shape, with cross-hatching visible on much of the surface that may have been left by the tools used to make the handle, or perhaps for better gripping. Even the cross-hatching near the head would have served a purpose as holding the handle there would have provided the user with the greatest control of the tool at the cost of the force he was able to apply. There is no sign of a wedge, but this is not unusual considering that much of the head of the handle itself is missing. Without the axhead it is impossible to determine the type of hatchet this may have been. Several varieties of small hewing hatchets are illustrated by Mercer. All seem to have served the same basic purpose of cutting pieces of wood that were too small for the larger axes or for hewing where more control was needed. Hatchets would have been useful for trimming branches off trees that had been felled for masts.
Fig. 26. Drawing of artefact HR 181/1/27. (Brendan McDermott)
DEFENCE

Artefact numbers: HR 181/1/84 and HR 181/1/192

Provenience: B11

Max. lengths: 24.3cm and 29.5cm, respectively (combined length 53.8cm)

Max. diameters: 3.1cm and 2.9cm, respectively

Tool type: Boarding ax

Type of wood: Unidentified

Description: The artefact is illustrated in Figure 27. These pieces were recovered separately from the same square towards the stern of the vessel, but they appear to be from the same long handle. There are some incidental marks on HR 181/1/84 that may have occurred in 1779 or during excavation. There are also traces of iron corrosion and several nail holes evident on HR 181/1/192. A conical indentation in the head of HR 182/1/192 suggests that it was lathe turned. The heart of the wood is visible on the butt end, indicating that the handle was probably from a branch or sapling. As mentioned above, two other fragments, HR 178/1/172, from squares B6 and B7, are nearly identical to these two, but they are poorly preserved. The shape of the handle, with its slightly bulbous butt end and tapering head, and the pattern of nails near the head induced the site excavators to classify this and HR 178/1/172 as boarding axes, as can be seen in Figure 4A. The nail holes are in the proper location if the axhead had langets for securing it to the handle. William Gilkerson illustrates boarding axes used in the mid-eighteenth century by the Royal Navy that do appear similar to our examples, although he does not state their length. As mentioned in chapter III, these axes may have served a dual purpose, as weapons in close combat and for clearing fallen masts and rigging during battles or storms.

Another possible use for this handle (and for HR 178/1/172) would have been as ship scrapers. Salaman illustrates one of these items which displays the same general handle shape as a boarding ax and can be seen in Figure 4A. Salaman reports scrapers as
being from 10–20 inches in overall length, while our example from the *Defence* is just over 21 inches long. The iron attachment of a scraper was triangular in shape. The tool was used for cleaning the decks and removing excess pitch after caulking.
Fig. 27. Drawing of artefacts HR 181/1/192 and HR 181/1/84. (Brendan McDermott)
DEFENCE

Artefact number: HR 181/5/5

Provenience: B12 and B11.

Max. length: 11.7cm

Max. width: 3.5cm

Width at ferrule: 1.9cm

Tool type: File or rasp handle(?)

Type of wood: Unidentified

Description: The artefact is illustrated in Figure 28. Much of one side of this handle has been eaten away, and a large part of the remainder is covered with iron corrosion, but the main features of the handle remain discernible. The handle is hexagonal in section, which is unusual and has no parallels among Mercer’s examples. It may possibly have been a lathe tool for turning, but this is unlikely since their handles are usually longer and the tang of the tool appears to have been fairly short in proportion to the handle. There is no evidence of a lathe being carried aboard the privateer. Also, with space at a premium on a brigantine carrying upwards of 100 men, it is doubtful the captain would have tried to fit a large machine such as a lathe aboard. It is probably not a chisel, since its butt end is not squared off. It is more likely that this is some type of file or rasp. Mercer illustrates a number of files, several of which appear to have short ferrules similar to our example.
Fig. 28. Drawing of artefact HR 181/5/5. (Brendan McDermott)
DEFENCE

Artefact number: Unlabeled

Provenience: Unknown

Max. length: 24.7cm

Max. width: 2.4cm

Tool type: Auger or saw handle

Type of wood: Unidentified

Description: This handle is in excellent condition. The surface appears to be varnished, which is probably residue from conservation. This artefact is nearly identical to three other handles discussed under artefact HR 175/1/45; since this tool so nearly resembled the other handles, and since it was unlabeled and unprovenienced, it is not illustrated here.
Excavation register number: 211J12-1*

Max. preserved length: 26cm (broken)

Max. diameter of handle: 4cm

Tool type: Shovel or spade handle and blade fragment

Type of wood: Unidentified

Description: The artefact is illustrated in Figure 29. One of the few artefacts from Defence or Betsy where the iron is partially preserved. There is another, unnumbered handle section 32.8cm in length that may be related either to this artefact or to 407M4-01. All of the pieces were found together with just one tag number, and the registration number of this artefact was determined only recently. It appears that the blade is formed of two sheets of iron fitted over the wooden handle and held in place by a single rivet. How the sheets are attached to each other is indeterminable. The blade is nearly flat in section, which would suggest that it was a square spade rather than a round shovel. Both of the handles from Defence also appear to have been to spades, but the significance of this observation is uncertain. If I were digging sawpits ashore, my personal experience is that it would be done more easily with a shovel than with a spade.

* The excavation register number of each artefact indicates its provenience.
Fig. 29. Drawing of artefact 211J12-1. *Brendan McDermott*
Excavation register number: 315K07-01
Max. preserved length: 42.5cm (broken)
Max. diameter of handle: 4cm
Max. diameter of grip: 3.8cm
Diameter of dowel attaching handle to grip: 1.8cm
Tool type: Shovel or spade handle
Type of wood: Unidentified

Description: The artefact is illustrated in Figure 30. Examination of this piece was hindered by the residue of what was probably a heavy molecular weight of polyethylene glycol (PEG) remaining from conservation. This thick coating obscured the wood’s finer grain, making it impossible to identify, but the wood’s annual rings are still evident. The coarser grain that is visible tends to curve back and forth across the breadth of the handle, suggesting that it was turned from a larger piece of wood rather than using a smaller branch. The grip has shrunk slightly and split, causing the grip to separate from the handle. The grip was held in place with a wooden dowel, rather than the square nail we saw with Defence artefact HR 178/1/60. Since the blade end of the handle is missing, the shape of the iron blade cannot be determined.
Fig. 30. Drawing of artefact 315K07-01. (Brendan McDermott)
Examination register number: 315K12-13

Max. length: 38.7cm (measured by staff at Victory Center)

Max. width: 2.5cm (measured by staff at Victory Center)

Max. height: 3.2cm (measured by staff at Victory Center)

Tool type: Bevel

Type of wood: n/a; in display case and could not be examined closely

Description: The artefact is illustrated in Figure 31. This is the first of three artefacts that were in a display case at the Yorktown Victory Center and inaccessible for close examination by the author. Measurements were obtained by the staff when the case was opened later. The bevel shows minimal warping from conservation with only slight erosion or damage at one end, but the original shape was probably more square than it is now. It is otherwise in good condition. It does not appear to have any markings for forming angles. There is a circular stain where the arm of the bevel was attached to the body, presumably for a nut that could be tightened once the desired angle had been found. John Broadwater remarks that the arm of this artefact had once split and been mended neatly with small nails.36 This tool appears to be a fairly standard, homemade bevel, several of which are illustrated in Mercer.37 Horsley states that their main shipboard use was for fitting interior partitions and for built-in furniture.38 Hocker replies that a bevel’s use was more extensive, that they were “...used for any task where one piece of wood has to be fit to another at a particular angle...for everything from setting out frame bevels to laying out mortises."39
Fig. 31. Sketch drawing of artefact 315K12-13. (Brendan McDermott)
Excavation register number: 403C08-1

Max. length: 18.4cm (measured by staff at Victory Center)

Max. diameter: 4.8cm (measured by staff at Victory Center)

Tool type: Gimlet or small auger handle

Type of wood: n/a; in display case and could not be examined closely

Description: The artefact is illustrated in Figure 32. This is the second artefact that could not be examined closely since it was in a display case. It is in apparently good condition. Center staff report that the letters “BR” and the number “7” are inscribed in the middle of the handle just below where the shank was inserted. There is a small indentation at either end, which suggests the handle was turned on a lathe. This also appears to be a standard gimlet, similar to those found aboard the privateer Defence, only larger and more elongated, which brings it closer to being in the class of a small auger.40
Fig. 32: Sketch drawing of artefact 403C08-1. (Brendan McDermott)
BETSY

Excavation register number: 403C14-08

Max. length: 30.1cm

Max. width: 3.45cm

Max. breadth: 1.95cm

Tool type: Hammer or hatchet handle

Type of wood: Unidentified, but the visible annual rings show that it was fashioned from a piece of heartwood, possibly a branch or a sapling.

Description: The artefact is illustrated in Figure 33. Rectangular in section, this handle has warped extravagantly, with the wood splitting wide open on one side for over two-thirds of its length. There are also numerous other smaller, yet still sizeable, splits in the wood and damage from erosion and corrosion under water. The regular impression around one end of the handle combined with the presence of some residual corrosion indicates that this is where the tool was attached. There also appears to be a wooden wedge driven into that end of the handle, but it is difficult to determine precisely due to the handle’s poor condition. It may just be splitting at that end. The elongated rectangular shape of the handle (it is nearly twice as wide as it is broad) is more typical of hammers or small sledges illustrated by Mercer.41 Certain small hatchets, such as polless broad axes, also use similar handles.42
Fig. 33. Drawing of artefact 403C14-08. (Brendan McDermott)
**BETSY**

**Excavation register number:** 407M4-01

**Max. preserved length:** 48.4cm

**Max. diameter:** 3.6cm

**Tool type:** Shovel handle

**Type of wood:** This is a ring-porous hardwood with no visible rays, which eliminates most types of oak. It may possibly be hickory since there appear to be rings of pores in the early wood, but they are not the wavy rings that one would expect to see if the wood were elm.

**Description:** The artefact is illustrated in Figure 34. This handle is much decayed and warped despite attempts at conservation. It has broken into several pieces which can be rejoined. Two rivets affixed the blade to the handle. This handle comes to a point at the blade end, unlike three other spades from *Betsy* and *Defence*, which were flattened, so we may have a rounded blade instead of square one, but the evidence is inconclusive.
Fig. 34. Drawing of artefact 407M4-01. (Brendan McDermott)
**BETSY**

**Excavation register number:** 503S-01

**Max. length:** 17.1cm (measured by staff at Victory Center)

**Max. diameter:** 4.3cm (measured by staff at Victory Center)

**Tool type:** Gimlet or small auger

**Type of wood:** n/a; in display case and could not be examined closely

**Description:** The artefact is illustrated in Figure 35. This is the third and last artefact that could not be examined closely at the Victory Center. Measurements were obtained later when Center staff opened the case in which it was displayed. It is in fair condition; there is some twisting evident from shrinkage. The socket for the tool shank was not visible. Small indentations at either end suggest that it was turned on a lathe. One can still see the initials “WS” carved into the surface towards one end. This gimlet or small auger is similar in size and shape to 403C08-1.
Fig. 35. Sketch drawing of artefact 503S-01. (Brendan McDermott)
BETSY

Excavation register number: 506M2-12

Max. preserved length: 42cm in two rejoined pieces

Max. diameter: 4cm

Tool type: Unknown

Type of wood: Unidentified, visible annual rings suggest that it is a hardwood.

Description: The artefact is illustrated in Figure 36. This was described by the conservators as a tool handle with an octagonal cross section, but shrinkage during the conservation process left the handle with practically no discernible shape. The artefact is also broken approximately through its centre, but this is due to a shipworm hole. There are no indications that this was ever actually used as a tool handle. There are no rivet or nail holes, no signs of a wedge, and no indentations or impressions that would indicate that any type of tool was ever attached. It is possible that this is an unused spare handle, but its octagonal cross section is rather unusual. It is possible that this is not a tool handle but some other shipboard item, perhaps a treenail blank.
Fig. 36. Drawing of artefact 506M2-12. (Brendan McDermott)
BETSY

Excavation register number: None

Max. preserved length: 45cm (broken)

Max. width: 6.6cm

Max. existing width of blade: 19.4cm

Tool type: Broad-bladed adze

Type of wood: Unidentified

Description: The artefact is illustrated in Figures 37 and 38. This artefact is mentioned specifically in the project's final report and there is even a picture of it in situ, but it is not included in the list of carpentry tools. Broadwater describes it as being found “near the forward bulkhead” in the main hold, which could place it in squares 212–14, 312–14, or 412–14. Conservation of the adze seems incomplete. The wooden handle appears to be in good condition, but an indeterminate length of its lower part is missing. The photograph of the object in situ shows that it was broken or decayed prior to excavation. The handle is circular in section for 11cm from the broken end before slowly increasing in thickness and becoming triangular in section at the head. A sizeable portion of the blade remains attached to the upper part of the handle, but most of it is obscured by thick concretion that was not removed during conservation. This concretion also rendered any measurements of the blade only approximate. The blade is held to the handle by a collar 5cm long by 5mm thick. The collar may extend above the end of the handle for perhaps one centimeter. There is no indication that the adze may have had a poll of any kind, a feature common to the tool type particularly for ships. The back of the handle exhibits some signs of damage that may have been caused by battering or use prior to the ship's sinking. This may also just be the result of the drying of the wood during or after conservation. Mercer has no illustrations of adzes with blades that appear to be this broad. This particular adze was almost certainly being used to square off and hew notches in logs, which is a shipboard occupation usually
reserved for broadaxes. Numerous logs of various sizes, both worked and unworked, were found in the hold of *Betsy*. This adze was "near the forward bulkhead, next to a partially-worked log and numerous buried wood chips." Why the adze was being misused for this purpose is uncertain, but considering the lack of any other sizeable tool aboard the vessel, it might have been the only implement available.
Fig. 37. Drawing of unnumbered artefact, broad-bladed adze. (Brendan McDermott)
Fig. 38. Plan drawing of head of unnumbered artefact, broad-bladed adze. (Brendan McDermott)
ARCHAEOLOGICAL ANALYSES

As is apparent from the preceding catalogue, many of the handles included could not be identified with certainty as carpentry tools or, if they were used by the carpenter, it was only occasionally, and were of more general use to a ship's crew. The shovels and felling ax, for example, might have been used respectively for digging sawpits ashore and cutting down trees for spars or plank. Concentrating on tools that were probably used daily by the carpenter might provide us with a clearer picture of activities aboard the two ships.

Eliminating the indeterminate and peripheral tools leaves us with the following group of sixteen tools for Defence and five for Betsy:

<table>
<thead>
<tr>
<th>Artefact Number</th>
<th>Provenience</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>174/1/12</td>
<td>Unknown or D2</td>
<td>Awl Handle (?)</td>
</tr>
<tr>
<td>176/1/180</td>
<td>A4</td>
<td>Gimlet Handle</td>
</tr>
<tr>
<td>176/1/196</td>
<td>C4</td>
<td>Gimlet or Tap Auger Handle</td>
</tr>
<tr>
<td>176/1/208 and</td>
<td>D5 (?)</td>
<td>Unknown Handle</td>
</tr>
<tr>
<td>HRX/1/103</td>
<td></td>
<td></td>
</tr>
<tr>
<td>176/1/217</td>
<td>C4 and D4</td>
<td>Offset Awl Handle</td>
</tr>
<tr>
<td>176/1/248</td>
<td>B4</td>
<td>Ax/Hatchet Handle</td>
</tr>
<tr>
<td>176/1/298</td>
<td>C4</td>
<td>Bow Drill Nave (?)</td>
</tr>
<tr>
<td>176/1/11/2</td>
<td>C4</td>
<td>Gimlet Handle</td>
</tr>
<tr>
<td>177/1/185</td>
<td>C3</td>
<td>Bow Drill Stock (?)</td>
</tr>
<tr>
<td>177/1/266</td>
<td>C4</td>
<td>Bow Drill Handle (?)</td>
</tr>
<tr>
<td>178/1/38</td>
<td>A6</td>
<td>Round Shave Handle (?)</td>
</tr>
<tr>
<td>178/1/170</td>
<td>B7</td>
<td>Raceknife Handle</td>
</tr>
<tr>
<td>181/1/15</td>
<td>B5 (?)</td>
<td>Mallet Head</td>
</tr>
<tr>
<td>181/1/16</td>
<td>B5</td>
<td>Adze Handle</td>
</tr>
<tr>
<td>181/1/27</td>
<td>B5</td>
<td>Ax or Hatchet Handle</td>
</tr>
<tr>
<td>181/5/5</td>
<td>B11 and B12</td>
<td>File or Rasp Handle (?)</td>
</tr>
</tbody>
</table>

**Betsy**

<table>
<thead>
<tr>
<th>Excavation Register Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>315K12-13</td>
<td>Bevel</td>
</tr>
<tr>
<td>403C08-01</td>
<td>Gimlet Handle</td>
</tr>
<tr>
<td>403C14-08</td>
<td>Hammer or Hatchet Handle</td>
</tr>
<tr>
<td>503S-01</td>
<td>Gimlet Handle</td>
</tr>
<tr>
<td>Unknown</td>
<td>Broad-bladed Adze</td>
</tr>
</tbody>
</table>

How do these tools compare with carpentry tools recovered from other, contemporary shipwrecks? Can standardized types of tools be defined for the period? There are few other artefactual assemblages from shipwrecks to which we can compare these tool handles from Defence and Betsy. A survey of the literature regarding the excavation of ships dating to
this period revealed few mentions of tools. In general, when carpentry tools were recovered, it was as single finds, and they were seldom illustrated except in photographs.

The only other large assemblage of carpentry tools from the wreck of a seagoing ship of this period is that of the fifth-rate French frigate *Le Machault*, which was scuttled in 1760 by its crew. While this is a French vessel and we are studying English and American shipboard practices, carpentry tools were not restricted by national borders in their distribution, particularly in North America where numerous groups had brought their regional toolkits with them when emigrating from the Old World.

As mentioned at the start of this chapter, Lester Ross of Parks Canada studied the carpentry tools from *Le Machault*. His listing of the range of implements identified includes several types of tools that were also recovered from our vessels (axes, claw hammers, a bevel, a gouge, gimlets, augers, saw handles, drawknives, and chisels and files).

Unfortunately, Ross illustrated just a few of the tools, and most of those pictured were not found aboard either of our ships. Only the chisels and files might have been represented aboard *Defence*, and those handles illustrated by Ross are just vaguely similar to ours. So it would appear that there is limited standardisation of tool handle types based upon the scanty evidence available. This result should not be considered unusual in an early-industrial society where most objects were still produced largely by hand.

In any case, the usefulness of comparison here is questionable. In most instances, it is the iron tool rather than the wooden handle that distinguishes one implement from another, and that is the element that is missing from most of our assemblage. Identifying the age and origin of the tools is also difficult, as we cannot say that the tools from either wreck were new when they were left aboard their respective ships. Since *Defence* was probably on its maiden voyage, we can say that those tools were new to the ship, but they may have been older tools purchased by its owners, or even the carpenter’s personal kit that he may have inherited after generations of use. The same scenario would apply even more to *Betsy*,

which was nearly nine years old when scuttled. These problems were recognised by John
Leavitt in a discussion of shipwrights’ tools from the period of the American War. He also
noted that the design of many types of tools changed little in the period before colonisation
of North America, and that there were few innovations afterward.\footnote{This lack of innovation
in tool design is also likely to be due to the limited access to new technologies or materials.
} Therefore, as temporal or stylistic markers, carpentry tools are not of great value. They are most useful in
illustrating shipboard activities.

One of the first observations to be made regarding the tools themselves from both
shipwrecks is just how few were actually recovered. There were 26 from Defence and just
nine from Betsy, and these included a number of non-carpentry related items such as
shovels and cooperage tools. If we were to derive the number of tools present from the
ship inventories in Appendix 1, then we might reasonably have expected to find at least
100 or more tools on each vessel. We should also keep in mind that the number of tools in
the inventories might be even less than what the crew thought necessary for maintaining the
ship.

This perceived lack of tools may have numerous causes, the first of which would be
that the crews of both vessels had warning that their ship was going to be scuttled and
therefore had the opportunity to transport necessary items the short distance to shore. As
mentioned in chapter III, carpenters typically stored their tools in chests, and these would
have been easy enough to get off the ship. There is also in both cases the possibility that the
vessels were salvaged subsequent to their sinking, either by the military or local civilian
population. Both ships appear to have sunk in approximately 25–30 fect. Salvage would
have been hampered by murkiness and currents, but this would not have been an
insurmountable obstacle. Subsequent to the salvaging, anything remaining on board the
wrecks was subject to the ravages of salt water, storms, and erosion. For Defence, this
meant that anything composed purely of iron, such as saw sets, wedges, or caulking irons,
would have corroded completely without leaving a trace.\footnote{The iron components of
Tools, such as saw sets and wedges, would have corroded completely without leaving a
trace.} Preservation aboard Betsy
appears to have been marginally better, since the adze and two of the shovels retained some of their iron component, but no tools composed solely of iron appear to have been found. Conversely, some wooden handles that were not weighted down by an iron tool may have floated away, and this may have occurred aboard Betsy. Aboard Defence, David Switzer noted that many once-buoyant objects were recovered from the lower levels and often were overlain by parts of the collapsed upper deck, indicating that at least some objects had been contained within the ship by bulkheads and other restrictions and had not wandered too far from their point of use or storage. It is also possible that the excavators of the sites did not recognise some of the tools as they found them. Some of the composite tools, such as frame saws, may have separated into their constituent parts, none of which may have been recognisable on its own. Judging by the examples from the frigate Le Machault, planes may also resemble just odd, slotted blocks of wood if their irons and wedge have disappeared. Similar blocks may have been sketched and then either returned to the site in the case of Defence, or catalogued as an unidentified piece of timber in the case of Betsy.

Bearing these considerations in mind, we may look to see if there are any patterns evident in the dispersal of tools within either wreck. The artefacts from Defence are presented in Figure 39, with the tools being sorted by their 5-foot square provenience. There appears to be a distinct cluster of artefacts towards the bow of the vessel, in a 100-square foot area to the port side and forward of the cookstove. Approximately 10 of the 16 identifiable carpentry-related tools, or 62.5%, are present in this area. If we had more precise provenience information then this area might be even more narrowly defined. This clustering is consistent with the documentary and pictorial evidence that was presented in chapter III, which indicated that the carpenter’s storeroom and even his berth were usually located forward. However, the cluster should not be taken as proof-positive that this is precisely where the carpenter stored his tools. A small, secondary cluster seems to be present aft near the mainmast where four tools were located, but only one of these is a
Fig. 39. Dispersal of tools aboard Defence. (*Brendan McDermott*)
carpentry-related tool. The others consist of a boarding ax and two spades or shovels. Switzer has suggested that the spades may have been entrenching tools related to the siege onshore. Shelley Smith suggested that this cluster may have indicated the storage of general-use items near the shot locker. Considering that Betsy also was carrying three spades or shovels, we might consider the Defence examples to be general-use shipboard items, perhaps for shifting ballast. While Betsy had sand ballast, Defence had stone, which is difficult to move with either spades or shovels. The Defence specimens may have been procured before the ship was ballasted, or they may have been intended for other purposes such as digging sawpits on shore, which happened occasionally but not often, or some other unknown use. If the spades were entrenching tools, then it would be more logical for them to have been in use ashore than on board the ship since the fort was still under siege. Smith's suggestion that the spades and other tools by the mainmast were for general use appears to be the more likely one.

The only other archaeological evidence on the Defence that may relate to the carpenter is the presence of some matched boards near the cookstove. The boards formed a shelf lengthwise against the ceiling. Hay, identified as mattress stuffing, was also found in this area. Switzer believed the shelf and mattressing to have been the bunk either for the cook or for an "idler" such as the carpenter. This observation would also be consistent with the historical documentation that places the carpenter's berth in the forward part of the vessel, but lacking any definitive evidence we cannot say for certain that the Defence carpenter bunked near the cookstove.

The information for Betsy is less clear. The vessel had been anchored and probably had most, if not all, of its movable equipment removed long before it was scuttled. As can be seen in Figure 40 there is no clear pattern for the few carpentry tools recovered. The number of tools present is insufficient to draw any conclusions. Even the location of some of the tools raises questions. The two gimlets and the possible hammer were found at the
Fig. 40. Dispersal of tools aboard Betsy. (Brendan McDermott)
very stern of the vessel, which is contrary to the documentary evidence. Carpentry tools may have been stored in that area, but it is also possible that these tools were dropped or misplaced during a repair to the stern or perhaps even during the ship’s original construction. Without more information as to their precise location (e.g., between frames), such speculation cannot be proved.

There is no archaeological evidence from Defence to say whether or not any of the tools found there were the personal possessions of the carpenter. All of the tools recovered may have been purchased by the privateer owner(s) as part of its normal stores as we saw from documentary evidence in chapter III. The evidence for Betsy is more concrete. Here we have two gimlet handles bearing initials, presumably those of their respective owners who have yet to be identified. The question remains of when these tools were actually left in the stern. Since the ship had been in service for approximately nine years at the time of its sinking, the two gimlets could have been left there accidentally any time. The remaining tools from Betsy are uninitialied, so they may have been ship’s equipment, but again, we cannot be certain.

ETHNOGRAPHIC ANALYSIS

References have been made occasionally in the above catalogue as to which uses certain tools might have served aboard ship. Those comparisons drawn by Mercer, Horsley, and Salaman were based usually on observation or conversation with shipwrights who were still practicing their craft even as late as the 1970’s. There has been little written in the way of marine woodworking ethnography beyond the works of these three authors, and their intentional viewpoint has been tool specific. This is best evidenced by Horsley in the introduction to his book, where he talks of the divergence in the seventeenth century of shipwrightry from its main field of carpentry:

As specialisation came into being, so specialist adaptations of tools came into existence, and eventually special tools themselves were evolved to meet the specialist
craftsmen’s needs in addition to the basic tools of any woodworker.

The complex curves of comparatively massive wooden structures such as are found in wood shipbuilding do not appear in any other trade. Therefore the tools used would be those most suited to shaping and working large shapes of highly individual outline from timber of very heavy scantlings. Frequently the shapes had to be cut straight from the log, which could be of tremendous size. Only hand tools were available. The saw was not always the best way to cut the log, and so it was that some of the largest axes in the world came into being for ‘blocking out’, as this operation was known...

So from the ancient range of tools the axe and the adze were obvious choices, adapted to their special tasks. The adze is the particular tool of the shipwright’s trade, and no other could be so adaptable for working the curves and shapes. The hammer, too, in a range of types seldom known as hammers, but certainly belonging to the same family of tools, was adopted. These three, and the saw, remained the basic shipwrights’ tools, as indeed they still are in some parts of the world. Perhaps one should add an auger with which to make holes.\textsuperscript{53}

Mercer, Salaman, and Horsley are most useful for identifying specific tools. They did not take one through the complete process of constructing a ship, from the laying of the keel to the final fitting out, and indicate which tools were used at each step, leaving the uninitiated with, at best, a vague understanding of the process. Even more vague is the use of tools aboard a ship once it had been finished and sent to sea. The historical documentation is also lacking in that the activities of carpenters are seldom, if ever, mentioned in combination with specific tools. While it is useful to know which tools were favoured by shipwrights and for what reason, it does not provide us with a broad picture of ship carpentry. Ethnography is of little help to us here, but while shipwrights may have been a specialised field, its essence was still that of carpentry. Mercer organised his collection of eighteenth-century tools into a number of broad categories based on their function. Comparison of his set of functional groups with the historical documentation may show how shipboard carpentry fit into broader patterns of carpentry and where it differed. We may also see where gaps lie in the archaeological evidence or if there are artifact clusters of specific functional groups that might indicate whether any particular activities were being conducted just before the vessel sank. Mercer’s groups consisted of the following:

1. \textit{Felling, splitting and log sawing}. This group consisted of harvesting timbers and converting them into semi-finished material. Splitting timbers was more related to making
fence rails, or clapboards and shingles for structures on land than for ships, but cutting trees for masts, boards, and plank was typical for carpenters, especially on longer voyages. Examples of tools in this group include felling axes, hatchets, open pit saws, frame saws, and crosscut saws. The felling ax from *Defence* is a prime example for this category. Four other handles from *Defence* may be open pit saw tiller handles or auger handles.

2. **Moving.** Mercer had logging rather than shipbuilding or ship repair in mind when he conceived of this category. Shipyard carpenters would concern themselves with moving timbers around the yard, perhaps by hand or on wagons. Still, if a ship’s carpenter were cutting mast timber then presumably he would need to move it at least some distance to the shore before it could be brought to the ship. None of the tools Mercer mentions, such as log grabs, chains, drag shackles, or cant hooks can be found in any of the inventories included in the appendices or in the archaeological remains from *Betsy* and *Defence*. If these tools were brought aboard at all then it may have been for longer voyages where friendly ports were few and far between and trips to the forest more likely to occur. Mercer does mention the crow, or crowbar, which is included in tool inventories as “croze” or “crowes”, so perhaps these were used to move timbers into place at least. Otherwise, ship crews may have used brute strength or block and tackle to transport timber, or perhaps carpenters devised field expedients such as sleds or skids.

3. **Surfacing, chopping, and paring.** Once the timber and plank had been brought to the shipyard or on board ship it would be worked into more usable pieces or sections. Examples of tools here would include axes, especially broad axes, hatchets, open pit saws like those from *Defence*, frame saws, adzes, larger chisels and mallets, perhaps like the adze and mallet from *Defence* or the adze from *Betsy*, and drawknives. This category could be further divided into a separate section for finer surfacing or surface finishing, although there would certainly be some tools that fit into both sections. Surfacing tools
could include round shaves, such as that from *Defence*, the various types of planes, files, rasps, etc. The ship’s boats would be just one example of where fine surfacing would be necessary.

4. **Shaping and fitting.** Shaping is related to the actions included above in group 3, while fitting consisted of making different pieces meet in tight joins. Hull or deck planking and the lids of gunports would be just a few of the items requiring finer fitting. This seems to be a general grouping for Mercer since he includes lathes and turning tools, presumably as shaping devices, and various types of boring tools such as gimlets, augers, and bowdrills, examples of which were found on both *Betsy* and *Defence*. Both classes of tools might be placed more properly in separate categories. Mercer also wanted to draw a distinction between the larger pit saws of group 3 and other types of saws such as open handsaws, keyhole saws, and bow saws, which were for relatively finer work. Smaller and more specialized chisels and mallets would also fall into this group as would adzes and gouges.

5. **Fastening and unfastening.** This group is self-explanatory, and would include hammers, screwdrivers (or turnscreeans), mallets for driving treenails, and perhaps brushes for a glue pot if such an item were aboard. The possible hammer from *Betsy* would fall into this group.

6. **Holding and gripping.** Tools of this category would seem to be necessary for someone working on a rolling ship. It is a small surprise therefore that only the work bench referred to by Mercer is represented in the historical documentation, and that only in two references from contemporary diaries which do not include descriptions of the benches. The benches presumably had a vice attached to them, but none of the inventories or other sources mentions other clamps or vices, which are commonly used in land carpentry. Clamps would have been too small for use on main timbers, but for smaller tasks aboard ship, such as partitions or the boats, clamps would seem to be useful, so
their absence is unexplained.

7. **Measuring and marking.** Mercer paired measuring with moving (group 2), but these are dissimilar actions, so it seems appropriate to separate the two. Measuring devices include chalk lines, plumb lines, squares, compasses, bevels like the one from *Betsy*, gauges, levels, and rules, while marking implements would include the raceknife and the possible scratch awl from *Defence*. Most of these items are also mentioned in one or more of the inventories.

8. **Sharpening and other maintenance.** This group includes grindstones, whetstones, saw sets, files, etc. All of these items are listed in the ship inventories, and a grindstone was recovered from *Defence*.

9. **Caulking.** This is an activity not mentioned by Mercer, who was more concerned with the details of building structures on land rather than ships. As was seen in both the ship inventories and the other historical evidence, many crews included one or more caulkers as a separate position, but carpenters also performed these duties, and one would expect to find caulking irons and mallets on most any vessel, although none was found on either *Betsy* or *Defence*.

Most of these groups are represented either in the inventories presented in the appendices, in the other historical documentation, or in the actual tools recovered from the two shipwrecks. Only two groups, moving and holding and gripping, do not seem to be represented for reasons that are uncertain. Whether their absence is significant is also difficult to say. Otherwise, shipyard and shipboard carpentry fit well into the broad activity patterns established for more conventional terrestrial carpentry. The differences between the two worlds of land and sea lie in more specialised tool use, and our sources are inadequate for that level of detail. As mentioned above, little evidence has been found from the eighteenth and early nineteenth century documentation surveyed here that connects specific carpentry activities with particular tools.
The archaeological evidence is problematic for determining specific activity areas aboard either Betsy or Defence, or if any particular tasks were being conducted just before either vessel sank. The five carpentry tools from Betsy are scattered throughout the vessel, and several of those may have been left behind accidentally years prior to its sinking. John Broadwater, the site excavator, did believe that the adze was being used shortly before the vessel was scuttled due to the tool’s association with partially-worked logs and numerous wood chips, but squaring and notching logs was not a typical shipboard activity. The tools from Defence are clustered mainly in the forward part of that vessel around the cookstove, but there does not seem to be a sufficient number or variety of them in any one of the 5-foot excavation squares to indicate that a specific activity was taking place there when the vessel was surprised. Since a carpenter might need only one tool for a job, it is difficult to determine just what a significant number of tools might be. Tools from Defence represent five of the nine functional groups listed above, but in many cases we are dealing with single examples of a tool type, primarily the smaller tools, whereas we might expect anywhere from six to 2–3 dozen of particular types. It would seem that Muckelroy’s “filtering agents”, the combination of removal of equipment before sinking, salvage, and time and erosion have made our view on the past nearly opaque. The division of tools into functional groups and analysis to determine patterns may still prove useful for shipwrecks with a larger and more varied assemblage of material.

CONCLUSION

The artefacts recovered from the wrecks of Defence and Betsy, while few in number, represent a range of shipboard carpentry activities. The provenience analysis of the tools from the Defence indicated a cluster in the forward part of the ship that is consistent with historical and pictorial documentation which places the carpenter’s storeroom in that area. The clustering is not proof-positive by any means that this is precisely where the carpenter
stored his tools. Other tools recovered near the mainmast were less carpentry and more
general-purpose in function, and may have been stored near the shot locker in that location
as originally suggested by one of the site excavators, Shelley Smith. Another of the site
excavators also suggested that the carpenter of *Defence* may have had a bunk in the
forward part of the ship near the cookstove, but there is no evidence either to support or
disprove this theory.

The tools from *Defence* incorporate five of the nine main functional groups as defined
by Mercer: felling, surfacing and paring, shaping and fitting, measuring and marking, and
tool maintenance. However, most of the tool types are represented by just one or two
examples, such as the single adze, and there are many classes of tools that are completely
absent such as frame saws or planes. The archaeological remains do not provide any
indications that particular tasks were in progress when the vessel was surprised and tried
to flee before being scuttled.

The few tools from *Betsy* provide a more problematic picture. They are widely
dispersed throughout the vessel, and provide us little clue as to where the carpentry
storage may have been. The site excavator did believe that logs in the hold were being
squared and notched a short time prior to the vessel’s scuttling, but this was not a typical
shipboard activity and may have been intended for supplying the land fortifications of
Yorktown. No other carpentry activities were identified aboard the vessel. For both ships
we are hampered by the few tools available, probably the result of tools being removed
either by the crew or salvagers, and by the scarcity of ethnographic data linking tools with
specific shipboard tasks.
ENDNOTES

1 Gardner Weld Allen, Massachusetts Privateers of the Revolution (Boston, 1927), 110.


5 Henry C. Mercer, Ancient Carpenters’ Tools: Together with Lumbermen’s Joiner’s and Cabinet Makers’ Tools in Use in the Eighteenth Century, 5th ed. (Doylestown Pennsylvania, 1975), 3, Fig. 2; 5, Fig. 4; 7, Fig. 6.


8 Mercer, Ancient Carpenters’ Tools, 61; 64, Fig. 61.

9 Ibid., 97; 100, Fig. 94; 166–7, Fig. 152; 291–5, Fig. 242.

10 Ibid., 180; 178, Fig. 161C for a ringed auger; other auger types can be seen on 185, Fig. 166; 187, Fig. 167; 191, Fig. 169.

11 Ibid., 21–5; 27, Fig. 27.

12 Ibid., 202–4; 203, Fig. 178A.

13 Ibid., 192; 191, Fig. 169A.

14 Personal communication, Professor Frederick M. Hocker.

15 Mercer, Ancient Carpenters’ Tools, 212–13; 211, Fig. 185.

16 Ibid.

17 Ibid., 53–4; 56, Fig. 54.

18 Personal communication, Professor Frederick M. Hocker.

19 Mercer, Ancient Carpenters’ Tools, 97; 101, Fig. 95.


22 Mercer, *Ancient Carpenters’ Tools*, 50–1; 51, Fig. 49.


25 Mercer, *Ancient Carpenters’ Tools*, 171–5; 170, Fig. 155.

26 Thomas Riley Blanckley, *A Naval Expositor, Shewing and Explaining the Words and Terms of Art Belonging to the Parts, Qualities, and Proportions of Building, Rigging, Furnishing, & Fitting a Ship for Sea* (Ashley Lodge Rotherfield, 1988), 102; Darcy Lever, *The Young Sea Officer’s Sheet Anchor, or a Key to the Leading of Rigging and to Practical Seamanship* (Mineola New York, 1998), 3, fig. 7.


28 Mercer, *Ancient Carpenters’ Tools*, 92–4; 95, Fig. 89.


31 *Ibid.* , 85–8; 86, Fig. 82; 87, Fig. 83.


33 Salaman, *Dictionary*, 446.

34 Personal communication, Professor Frederick M. Hocker.

35 Mercer, *Ancient Carpenters’ Tools*, 291–5; 294, Fig. 242.


37 Mercer, *Ancient Carpenters’ Tools*, 57–8; 60, Fig. 58.


39 Personal communication, Professor Frederick M. Hocker.

40 Mercer, *Ancient Carpenters’ Tools*, 202–5; 203, Fig. 178.
41 Ibid., 264; 263, Fig. 220.

42 Ibid., 85; 83, Fig. 80.


44 Ibid., Vol. II, L-12, Fig. L-13.


46 Lester Ross, 'Eighteenth-Century French Naval Duties as Reflected in the Tools Recovered from the Fifth-Rate Frigate Le Machault Sunk in Chaleur Bay, Quebec, A.D. 1760: a Summary Report', in Wilburn A. Cockrell, ed., In the Realms of Gold: the Proceedings of the Tenth Conference on Underwater Archaeology (San Marino California, 1981), 63; 65, Fig. 6.


48 Smith, The Defence, 163.


51 Smith, Defence, 185.


CHAPTER VII

CONCLUSION

Life at sea in the era of wooden sailing ships was seldom described as a leisurely pursuit. The daily routines of shipboard duty required many hours of toil, and these were interspersed with frequent periods of terror when nature chose to hurl its fury on small, wooden vessels alone in the great gulf of the ocean. Each member of a ship’s crew relied upon his fellow seamen and officers to perform their duties and help bring their journey to a secure end. The shipboard carpenter was just one member of the crew, but his responsibility to the rest of his shipmates was large. This viewpoint has often been overlooked by maritime historians, who have tended to focus their research energies either on the upper-echelon officers or on the seaman, to the neglect of those specialists in between who often formed the ship’s backbone and ensured its smooth operation.

Carpentry is an ancient craft, and shipwrights built and repaired wooden vessels for thousands of years until the introduction of steam and steel ushered out the age of sail. By the eighteenth century, the ship carpenter’s position was well defined. They were nearly always in a position of authority relative to the seamen, often commanded numerous assistants, and were paid accordingly for their expertise. Maritime historian N.A.M. Rodger has pointed out that for his study of the Royal Navy, what was valid in 1750 did not necessarily hold true for 1800 or 1825. For the carpenter, however, the years did not matter, as his tasks continued on unchanged by the flow of events around him. His essential duties were to keep the ship moving by keeping the masts in place, and to prevent the ship from sinking by stopping leaks, caulking, and repairing other defects in the hull and framing. As simple in concept as these duties may appear, they required unceasing labour both by him and his assistants. This was true for all sea services: Royal Navy, Continental and U.S. Navies, privateers, and merchant ships.

Towards the end of the eighteenth century, shipbuilding, and by extension shipboard
carpentry, began to be influenced by the Industrial Revolution and the introduction of new manufacturing techniques and materials. As maritime historian Peter Goodwin has noted, increasing shortages of timber in England beginning in the seventeenth century brought about changes in the construction of ship framing, with the use of longer, naturally-curved pieces being replaced by shorter pieces fastened together. New woods such as teak also began to be employed along with the increasing use in the later eighteenth century of wrought iron for fittings and structural elements, which precipitated a series of alterations in ship design. Copper hull sheathing was introduced into the Royal Navy in the late 1770's, and within a short period virtually all British warships carried this protection. These changes were not as noticeable in the Americas, where ample supplies of timber existed at least into the mid-nineteenth century and the Industrial Revolution started later than it did in England. How these changes affected shipboard carpenters unfortunately is uncertain, for there is no information on the subject from any of the source material consulted here.

Further research in shipbuilding treatises would most likely illuminate this general trend towards new materials and techniques, but shipboard diaries appear never to have reached the level of detail necessary to distinguish such patterns.

While their basic working environment and duties did not vary greatly between any of the maritime branches, carpenters' career prospects were not the same. A carpenter's position in the Royal Navy seems to have been highly desirable despite the lower pay rate relative to the merchant service. Duty aboard warships was likely easier due to their having crews much larger than comparable merchantmen. Also, there were genuine avenues of advancement for the intelligent and industrious, or, if not for themselves, then perhaps their children. Royal Navy carpenters were also less subject to a capricious officer in terms of discipline, since they were appointed directly by the Navy Board and could only be removed by Admiralty authority. The Royal Navy also tried to care for their retired warrant officers either by granting them pensions or placing them in sinecures, all in an effort to
encourage able recruits and maintain the quality of the service. In this the Admiralty was apparently successful, for there are few unfavorable reports of carpenters, who often enjoyed the respect of their immediate superiors.

Carpenters in the Continental and later U.S. Navy were in much different positions than their contemporaries in the Royal Navy. Americans usually enlisted for a single cruise, and had scant opportunity at promotion or pension. It is only towards the end of the period under study here that we see the U.S. Navy maintaining a core group of carpenters, and it is open to question whether they were retained once the War of 1812 ended. Carpenters of privateers and merchantmen were in a similar situation. One could categorise this as independence, or as a different avenue of opportunity, but a carpenter's freedom relative to being in the Royal Navy came at the price of an uncertain future once the voyage was over. All indications are that carpenters in the Royal Navy maintained a high degree of professionalism and expertise. Carpenters in the other sea services may have been less devoted, but the evidence is mainly anecdotal and inconclusive.

What then can be said of the two shipwrecks under scrutiny here? Did either or both carry a carpenter in its complement? For the privateer Defence the answer seems to be most likely that it did. While not all privateers carried a carpenter, Defence had a crew of 100, which was sizeable enough to allow for the inclusion at least one, if not more. Other Massachusetts privateers of equal or slightly greater numbers of guns and crew all seem to have been carrying carpenters, as may be seen in Table 4. The information for the table is derived partially from records of mariners captured by the British during the American War. The British often noted such details as from which ship the seaman came, his occupation aboard that vessel, and the date on which he was captured, or "committed". Prisoners listed as being carpenters of specific ships were then compared to Massachusetts privateer commissions issued for ships of the same name, and seven likely matches were drawn.3

In addition to historical documentation we also have supporting archaeological evidence
### TABLE 4
Massachusetts privateers and carpenters who were likely captured in them

<table>
<thead>
<tr>
<th>Ship</th>
<th>Date of Commission</th>
<th>Guns/Men</th>
<th>Likely Carpenter</th>
<th>Date of Capture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angelica</td>
<td>early 1778</td>
<td>16/98</td>
<td>John Connor</td>
<td>7/7/1778</td>
</tr>
<tr>
<td>General Glover</td>
<td>8/26/1779</td>
<td>14/50</td>
<td>Thomas Taylor</td>
<td>10/14/1779</td>
</tr>
<tr>
<td>Hannibal</td>
<td>9/8/1780</td>
<td>24/130</td>
<td>Nathaniel Bartlett</td>
<td>1/16/1781</td>
</tr>
<tr>
<td>Hercules</td>
<td>7/31/1781</td>
<td>20/120</td>
<td>John Farnum</td>
<td>10/15/1781</td>
</tr>
<tr>
<td>Oliver Cromwell</td>
<td>4/29/1777</td>
<td>16/130</td>
<td>James Connor</td>
<td>10/13/1777</td>
</tr>
<tr>
<td>Rising States</td>
<td>10/18/1776</td>
<td>20/100</td>
<td>Christopher Clark</td>
<td>6/14/1777</td>
</tr>
<tr>
<td>Wexford</td>
<td>8/4/1781</td>
<td>20/120</td>
<td>Richard Springer</td>
<td>10/21/1781</td>
</tr>
</tbody>
</table>

for Defence. The provenience analysis of the carpentry tools recovered from the shipwreck indicates a cluster forward and to port of the cookstove, near the bow of the vessel, suggesting a possible storage area for carpentry tools and stores. This placement of the carpenter's store room is consistent with the historical and pictorial evidence, but the archaeological evidence by itself is not certain proof that this is where the store room actually was. In addition, there was a possible bunk for an "idler" like the carpenter situated near the cookstove, which would also be consistent with the historical documentation, but its identification as that of the carpenter's bunk is speculative.

The carpentry tools recovered represent a range of possible tasks with which the historical and ethnographic evidence indicated a carpenter would be involved, although many classes of tools are absent or represented by single artefacts. Most of the tools once on board must have been either taken from Defence by its crew, salvaged after its sinking, or lost in the two centuries before it was excavated. While the tools represent many possible tasks there are no particular clusters that might indicate if specific activities were being carried out on the vessel when the British surprised the Americans. If there was not a trained carpenter aboard Defence, then there was certainly someone charged with carpentry duties as part of his daily routine. Who this carpenter was, where he came from, and what he did aboard Defence in its short sailing career remain unknown. It is more than likely that he was recruited from Beverly, Massachusetts, where Defence was built, or from one of the seafaring towns along the shore north of Boston such as Salem, Gloucester, Rockport, or Essex. Lacking a muster roll for the privateer, we can only trace enlistment routines established by other privateers and American warships.

The evidence for the collier Betsy is more problematic. There were few tools found aboard the vessel, and their distribution suggests no coherent pattern that could indicate a carpenter's store room or living area. Around 1789 the estimated average capacity for colliers was 150–600 tons. At 176 tons Betsy seems to have fallen on the low end of the
average scale. Crew sizes for colliers appear to have been fluid. In 1703 there was an estimated average of 7–8 men per ship. In 1787 it is stated that a representative ship carried 10–12 men, or one man for every score of chaldrons of coal. A chaldron was a unit of dry measure equal to 32, 36 or more bushels. By 1824 the average was again placed at 10–11, but with the end of the Napoleonic Wars in 1815 it is reported that the crews demanded a minimum manning of five men and a boy for every 100 tons of capacity. This would raise the average crew size to 13, and suggests that owners had reduced their crews both to cut costs and because there were few available seamen who had escaped impressment.  

Judging from these estimates, it would be fair to say that *Betsy* probably carried about ten crewmen.

Richard Henry Dana sailed in the early 1840's on two vessels similar to *Betsy* both in size and crew complement, and both carried a carpenter. However, both vessels were also voyaging to the west coast of North America, and we have seen that ships traveling beyond the North Atlantic nearly always had a carpenter aboard. There were other merchant ships sailing in the same region as *Betsy* that did not carry a carpenter, so our historical evidence is inconclusive in this regard. John Broadwater, the site's excavator, has stated several times that carpentry aboard *Betsy* was conducted by a skilled crewman. This belief is based primarily on the observation of the hole that was chiseled carefully through the ceiling planking and the hull in order to scuttle the vessel. Whoever scuttled the ship must have been familiar with its construction since the hole was chiseled neatly between two frames just below the lower deck clamp. This interpretation is plausible but not conclusive; someone relatively new to the vessel could also have determined the frame spacing based on the fastening patterns on the ceiling planking.

We are hampered in our analysis by the fact that *Betsy* was anchored at Yorktown and no longer serving in its primary purpose as a transport. Instead, the presence in its hold of partially-worked logs has led Broadwater to aver that the ship was being used as a floating
factory for the manufacture of fortification components for the shore defenses and the repair
of other items. Other archaeological evidence is contradictory. Broadwater emphasises the
professional skill involved in cutting the scuttle hole, but there were also two bulkheads
separating the hold of the vessel into three compartments, and these are described by
Broadwater as being “somewhat crudely made”. The bulkheads were composed of
American yellow pine, and were likely added some time after the ship reached North
America. The carpenter would have been responsible for constructing the bulkheads, but if
this is so, then why was he crude at this task that was meant to last for an indefinite period,
and yet so professional at a task intended to sink the vessel? Since both observations were
made by the same person we must question the assumption that both tasks were performed
by the same individual, or that someone’s skill level can be divined from such scant
remains.

It is more likely that Betsy sailed to North America without a carpenter. One of its crew
or even the captain may have carried out the carpenter’s basic duties, as Broadwater
believes, but he was not a skilled professional. He, then, would have built the bulkheads
some point prior to the ship anchoring at Yorktown. Once Betsy was anchored and it
became apparent to Cornwallis that a siege was imminent, most of its stores were removed.
The few, odd tools remaining aboard the ship may have been overlooked or purposefully
left behind as useless. It is then possible that a trained carpenter was detailed to work
independently on Betsy from one of the Royal Navy warships anchored nearby. Space
aboard any ship was at a premium, and it is known from the historical documentation that
carpenters would work on shore if they had a job that required space. It is quite plausible
that there were so many tasks being carried out at the same time that carpenters and their
mates did not have enough room on the warships. Cornwallis’ army numbered nearly
10,000, not including camp followers, making Yorktown quite crowded. It may have been
safer and easier to use the empty hold of a collier for repairing odd items and fashioning
logs into fortification components and then ferrying them ashore rather than occupying busy space along the waterfront or being exposed near the forward lines. The reason for the scuttle hole being neatly chiseled then becomes clear, for it may have been a carpenter of the Royal Navy who did it with their hallmark professionalism. This scenario is consistent with the historical and archaeological evidence presented.

As with the carpenter of *Defence* we cannot say who this carpenter was or from where he came. The available historical, archaeological, and ethnographic evidence can only take us so far in interpreting these two wrecks, but the distance traveled has not been inconsiderable. Much has been done to illuminate the duties, responsibilities, and tools of one member of a ship’s crew. The carpenter was just one of several specialists on board any given ship, and it is hoped that each of these positions will be examined in turn so that we may gain a more complete picture of life at sea.
ENDNOTES


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APPENDICES
APPENDIX 1

INVENTORY OF CARPENTER'S STORES ABOARD THE PENNSYLVANIA STATE
SHIP MONTGOMERY AND THE CONTINENTAL FRIGATE ALLIANCE

Montgomery

29 lb Spikes
34 lb 2/ & 2/6 d. Nails
10 lb 10 d. & 20 d. do.
162 lb Bolts
5 1/2 doz. Large & Small Steples
1 Boat Hook
4000 Pump Nails
2,500 Sprigs
13 p. hand Sheakle
2 Pump Gallises
3 Set Pumps Geers

450 Willding Nails
1 doz. Willding Hooks
4 1/2 doz. Rings & fore locks
36 feet 3 Inch plank, pine
18 feet 2 Inch do.
27 feet 4 Inch Oak Plank
10 do. 2 1/2 do. do.
18 do. 2 do. do.
24 Leader Bolts
1 iron Pitch pot & Ladle
2 Spare Topmasts
1 Lower Yard

Alliance

Jibb Boom
Spritsail Topsail Yard
Bowsprit
Spritsail Yard
Fore mast
Fore top mast
Fore top Gallant mast
Fore yard & 2 Studding Sail Booms
Fore top sail yard & studding Sail Boom
Fore top gallant yard
Fore royal yard
Main mast
Main topmast
Main top Galt mast
Main yard & 2 Studding sail booms
Main topsail yard & 2 Studding sail Booms
Main top gallant yard
Main royal yard
Mizen mast
Mizen Topmast
Mizen top gallant Mast
Mizen yard boom & Ring boom
Cross jack yard
Mizen top gallant yard
Mizen Topsail royal yard [sic]
36 Oars for Boats [number originally left blank, filled in later]
1 sett of studding sail yards fore and aft
4 lower Studding sail Booms

1 Ensign Staff
Top & Caps Compleat
Futtock plates & Dead Eyes Compleat
10 Esses for Chain plates
Chain Plates & dead Eyes compleat
1 Set of Chain Pumps
2 Wooden Pumps
3 Axes
3 Adds [adzes]
3 Mauls
3 Handsaws
12 Chizels
10 Spike Gimblets
10 Decknail do.
24 small do.
1 Pr Cannippers (calipers?)
4 Compasses
4 Rules
4 Chalk Lines
1 Iron Square
1 Whip Saw
1 Cross Cut Saw
1 Key hole Saw
1 Pannel Saw
6 Hand Saw files
6 Cross cut do.
2 Whip Saw do.
1 Handsaw Sett
1 Whip saw Sett
2 Caulking Mallets
12 Caulking irons
1 Jointer
2 Bead plaines
2 smoothing Plaines
1 fore Plain
6 Hammers
6 Cold Chizels
2 qr Bolts
1 qr Spikes
50 wt deck nails
50 do. 2/ nails
50 wt double Tens
6 m Board nails
3 m 4d do.
3 Crows
72 Fore locks
12 Sticking Candlesticks
6 Iron Wedges
72 Rings
96 Staples
12 Spare Chain Bolts
12 Augers
6 Foothook plates
14 spare dead Eyes & Chain plates
28 wt Brimstone
1 qr Sheet Lead
4 Hide Pump Leather
6 Pump Spears
6 Lower Pump Boxes
2 Pump Hooks
2 Sounding Rods
6 Pump Breaks
6 Boat Hooks
1 Haser Gauge
4 small Guage
3 Drawing Knifes
2 Starting Hammers
14 Scupper Nails
4 Pump Tacks
39 wt 6d Nails
3 m Clapper Nails
6 Padlocks
2 Barils Pitch
2 do. Turpentine
3 do. Tarr
1 qrs Tallow
10 gallon Oyl
30 wt Putty
60 wt Chalk
6 Ringbolts
12 Eyebolts

2 Sets spare Hatch Barr for Lower Deck
1 set spare Chains for ye Chain Pump
2 Grind Stones
1 Rat tale file
2 drift Bolts
6 wood Axes
4 2/ nail Gimblets
2 tin Lanthorns
200 feet Oak Boards
600 feet pine boards
300 feet Oak Planck
12 Boat Hook poles
1 Main Cap
1 Topmast Cap
10 yds woolen Cloth for Ports
*4 Spoon bladed 16 feet Oars for Pinnace
*5 Common do. 14 do. for yawl
*8 ditto 18 do. for Cutter

*These are crossed out, see note on oars above]
1 Spare Jibb boom
1 do. fore Topmast
1 do. fore Topgalnt Mast
1 do. fore top gallt yard
1 do. royal yard
1 do. main yard
1 do. main Topsail yard
1 do. main Top gallt yard
1 do. royall yard
4 Upper Deck Hatch Barrs
6 Spare Studden Sail Yards
Sundry fishes made up on Board last
Cruise fit for use again

All these store mentioned to be under the Care of the Carpenter include what was on hand & what Recd at Boston

Stores Received by the Carpenter at the Port of L'Orient & now in his care or as follows
L'Orient 6 Feby 1782
25 wt of 2/ Nails
50 wt Double Tenns
2000 10d nails
3000 Clapper nails
20 wt Nails 5 inches Long
3000 Scupper Nails
2 Topmasts
3000 6d Nails
2200 pump Nails
3 Lower Dead Eyes
100 wt Oakum
APPENDIX 2

"MATERIALS FOR A FRIGATE OF 36 GUNS"

Document prepared by the Continental Marine Committee possibly carried by Benjamin Franklin to France in Fall of 1776 and intended as a “shopping list”.

Carpenter’s Stores

6 Doz Pad Locks
12 Doz Door, Cupboard & Closet Locks
300 lb 30 dny
300 lb 24 dny
300 lb 20 dny
300 lb 10 dny
300 lb 8 dny
300 lb 6 dny & 300 lb 12 dny Nails
30 m 6 dny Scupper, 50 m Pump & 25 m Clapper Nails
10 m Sprigs assorted
10 m Clous Nails sorted
2 Doz 6 Inch 2 1/2 Doz 7 Inch 2 1/2 Doz 9 Inch & 1 Doz 10 Inch HL Hinges
4 Doz Door Bolts
1 Doz Pump Hammers
3 Doz Claw Hammers
6 Broad Axes
6 Hatchets
6 Steel plate hand Saws
6 Grindstones from 20 to 30 Inches
6 Pin Mauls
6 Adzes
1 Doz Gauges assorted
6 Pr Compasses
6 Doz Gimblets from Spike to 3 dny
2 Cross Cut Saws
6 Doz Scrapers
4 Doz hand Saw & 1 Doz Cross Cut Saw files
1/2 Doz Pitch Ladles assorted
2 Doz Chizzels assorted from 1/2 Inch to 2 Inches
1/2 Doz Drawing Knives
1/2 Doz Jack Planes with Irons
1/2 Doz smoothing Planes with Irons
2 Doz Augur assorted from 1/2 Inch to 2 Inches
2 Sets of Caulking Irons
1 Doz Rasps assorted
1/2 Doz Harpoons
1/2 Doz Fish Giggs
2 Doz Mopps
1 Groce Fish hooks assorted
6 Doz Iron bound Shovels
3 Pr Double Jack Screws
*600 lb White Lead
*100 lb Yellow Ocre
*100 lb Black paint
*100 lb Spanish Brown
*all ground in Oyl
25 lb Letharge
500 lb Whiting
1 Crate of Sheet Glass
4 Sides Pump Leather
500 lb Brimstone

APPENDIX 3

ITEMS FURNISHED BY THE QUARTERMASTER’S DEPARTMENT TO THE ARMY
OF NATHANAEL GREENE FOR THE PERIOD 1778–1780

Tools and Hardware

Adzes
  Carpenters
  Coopers
  Foot
Anvils
Augurs (various sizes)
Awl Hafts
Axes
  Broad
  Coopers
  Filling
  Narrow
  Post
Barrows
  Hand
  Wheel
Bellows
Bill Hooks
Bit Stocks
Bits
Bolts
  Eye
  Round
Boxes
  Cutting
  Carpenters
Buttresses
Cables
Caulking Tools
Chalk
Chalk Lines
Chisels
Cold
  Wood (various sizes)
Compasses
Coopers Tools
  Bits
  Bung Augurs
Compasses
Frows
  Jointer Irons
Cooper Hoops
Cordage, Coils of
Corking Irons
Crowbars
Drilling Tools
Files
  Crosscut
  Flat
Half Round
Hand Saw
Pitt Saw
Rasp
  Rat Tail
  Square
  Tenon Saw
  Whipsaw
Gauges
Gimlets
  Small
  Spike
Gouges
Carving
  Framing
Grindstone Cranks
Grindstones
Hammers
  Masons
  Riveting
  Shoemakers
Sledge
Stone
Handbarrows
Hasps
Hatchets
  Fascine
  Nailing
  Shingling
Hinges
  Chest
  Closet
  Dovetail
Intrenching Tools
Iron Squares
Iron Stands
Iron Wedges
Jacks (mason’s)
Knappers
Knives
  Cutting
  Draw
  Fascine
  Paring
  Scalping (for skinning)
  Shoemakers
Locks
  Chest
  Hand Cuff
  Hooks or Hook Locks
  Padlocks
  Small Closet
  Stock
  Thumb Latches
Marking Irons
Mattocks
Maul Rings
Mauls
Nail Rods
Nails (various sizes)
  Common
  Ribbon
  Shingle
  Spikes
Paint Brushes
Pickaxes
Picks
Pincers (Pinchers)
Planes
  Grooving
  Jack
  Long
  Smoothing
Plugs
Pump Hooks
Pumps
Punches (shoemaker’s)
Rakes
Rasps
  Flat
  Round
Rivets
  Long and Small
Rules
Sliding
Two-Foot
Saw Files
Saw Sets
Cross-Cut
Hand
Tent
Saws
Compass
Cross Cut
Framing
Half-Round
Hand
Mill
Panel
Pit
Tennant
Tent
Whip
Scales
Brass
Steelyards
Tin
Scale Beams
Scale Weights
Scrapers

Screw Drivers
Screw Plates Screws
Scythes (brush scythes)
Scythe Stones
Shears
Fullers
Shoemakers Needs
Leather Soles
Pegs
Punches
Sides Seal Leather
Tacks
Thread
Upper Leather Sides
Shovels
Sledges
Smith's Tools
Anvil
Awl Hafts
Awls
Bellows
Hammers
Tongs
Vices
Spades

Spikes
Plain
Barrel
Squares
Iron
Wood
Staples
Steels (for cutting boxes)
Tackle Blocks
Tentmaker's Equipment
Bodkins
Geese
Hooks and Eyes
Leather Palms
Needles
Scissors
Thimbles
Thread
Wax
Tomahawks
Tongs (smith's)
Trowels (mason's)
Turk Knives
Vices
Wedges
Wheelbarrows
Whetstones
Wood Squares

Transportation Items
(Water)

Anchors
Blocks
Boat Furniture (boxes of)
Canvas
Chain Plates and Bolts
Chains
Clamps for Gun Carriages
Clamps for Swivels
Deck Nails
Gimbals
Grappling (hooks?)
Hoops for Masthead
Lynch Pins and Hoops
Main Yard
Marline
Masts
Oakum, barrels of
Oarlocks

Oars
Pitch Kettles
Pitch Ladles
Pump Gallows
Pump Hooks
Pumps
Ring and Eye Bolts
Rope
Tarred
White
Rudder Fro
Sail Needles
Sails
Shole Pins
Spunyarn
Straps for Yards
Suits of Colours
Tar
Thrums for Mops

Vessels
Barges
Bateaux
Durham Boats
Flat-bottomed Boats
Gun Boats
Pettaugers
Row Galleys
Schooners
Scows
Skiffs
Sloops
Snows
Wagon Boats
Whale Boats
Xebeques
Winches
Wythes for Yards
Unfinished Products

Bees Wax
Brimstone, barrels of
Calf Skins
Canvas
Charcoal
Cloth
  Brown Linen
  Drilling
  Hemp Cloth
  Linen Cloth
  Oznabrigs
  Rovena Duck
  Russia Sheetting
  Sail Duck
  Tow Cloth
Glass, boxes of
Glue
Hides
Iron Bars
Lime, Bushels of
Linseed Oil
Lumber
  Oak
  Pine
Neats Leather
Oil, barrels of
Paint, kegs of
Rosin
Sheepskins
Sheet Iron
Shingles
  Cedar
  Pine
Steel
Tar, barrels of
Tin, sheets of
Twine
White Lead
Wire

APPENDIX 4

LETTER OF PERMISSION

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Brendan J. McDermott
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VITA

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Educational History

M.A., Anthropology (Nautical Archaeology Program), Texas A&M University, May 2000
In M.A./Ph.D. Program since September, 1995, Department of Archaeology, Boston University.

Awards

National Merit Scholar, 1981.
Herman F. Heep Academic Excellence Award, Texas A&M University, 1992.
Student Deposit Academic Excellence Award, Texas A&M University, 1993.
Institute of Nautical Archaeology Scholarship, 1993.

Field Experience

I have participated in or supervised more than 40 archaeological projects since 1984. These included work in Massachusetts, Rhode Island, Connecticut, New Hampshire, New York, California, the U.S. Virgin Islands, and Turkey. The sites involved ranged from prehistoric habitations and lithic workshops to historical period industrial sites, rural farmsteads, Spanish Colonial missions, Caribbean sugar plantations, and urban sites in downtown Boston. My most recent work has involved the underwater excavation of a Late Bronze Age trading vessel off the south coast of Turkey.

Statement of Professional Interests

I am most interested in the Late Bronze Age period of the Black Sea area, particularly with regards to patterns of seafaring and trade between the eastern Mediterranean and the regions of Eastern and Central Europe.