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The Excavation of the Privateer *Defence*

by David C. Switzer

INTRODUCTION

During the early morning hours of August 14, 1779, a vessel sank in an inlet immediately west of Penobscot River on the coast of Maine. The vessel was a Revolutionary War privateer, the 16-gun brig *Defence*. Recently fitted out at Beverly, Massachusetts, *Defence* was one of a dozen privateers that sailed with the Penobscot expedition earlier that summer. Mounted by the State of Massachusetts and commanded by Dudley Saltonstall, the fleet included 20 odd armed vessels and as many supply ships and troop transports. The destination had been a small settlement on the upper reaches of Penobscot Bay called Majabagaduce, present day Castine, Maine. There, a small British occupation force was constructing a fort to guard the harbor. Majabagaduce was a strategic location providing the British with the possibility of establishing a small naval base from which harassing operations could be conducted against coastal towns. Important, too, was the fact that the location also provided the British with the opportunity to control the Penobscot River, an artery leading to white pine forests from which much-needed mast pines could be secured for Royal Naval vessels.

Due to a combination of factors such as poor planning, poor leadership, ill-trained and poorly equipped militia, and over confidence soon to be replaced by low morale, the expedition failed to interrupt the British activities. The arrival of a small Royal Navy squadron of five vessels under the command of Admiral Sir George Collier broke the siege that had been initiated by the American force. The troops were evacuated, and, pursued by the British, the American fleet retreated up the Penobscot River on August 13th. On that day, two American vessels were captured; the remainder of the day and into the evening saw the destruction of the rest of the fleet as ship after ship was run aground and set ablaze or scuttled in the river to prevent capture.

Meanwhile *Defence*, following a more westerly course, apparently sought to escape by hiding out in what today is known as Stockton Harbor. Pursued by a man of war, she was trapped. To avoid capture a charge was set; the crew rowed ashore. The captain of the pursuing ship, HMS *Camilla*, recorded hearing an explosion.

As *Defence* sank in 24 feet of water with her stern blown out, little did her officers and seamen realize that they would be making an important contribution to the understanding of our maritime past based on archaeological evidence. Indeed, not until 1975 would it be known that they had set the stage for a nautical archaeological project the goal of

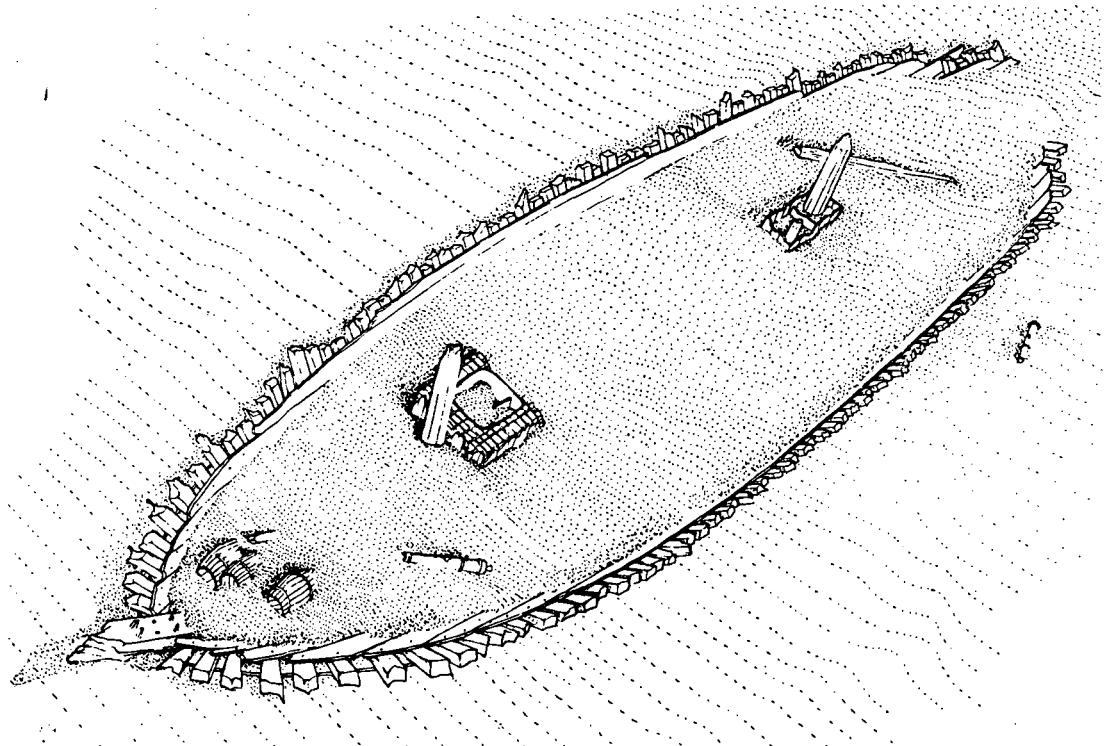


Figure 1. Imbedded hull with frame ends, mast stumps, stove, and shotlocker protruding above the seabed. (Drawing by Peter Hentschel.)

which was to recover the contents of an eighteenth century time capsule (Figure 1).

The wreck site was discovered in 1972 and reported to the Maine State Museum which granted a permit to the discoverers, faculty and students representing Maine Maritime Academy and the Massachusetts Institute of Technology, to conduct a preliminary survey of the site. Although plagued by poor visibility the divers produced a rough plan of the wreck, and in the course of two short summer seasons they recovered a few artifacts including two cannon, bottles, and ceramic material. All proved to be of eighteenth century origin; cast marks of one of the cannon indicated it had been produced in a Massachusetts foundry in 1778.

Research into Admiralty Records by Academy history professor Dean Mayhew tentatively identified the wreck as the vessel pursued by HMS Camilla on that fateful day in August. In 1975 Robert Damm, then the

Excavation, of course, could not have been carried out without proper conservation facilities. These were provided by the Maine State Museum which established a conservation laboratory where, under the direction of Stephen Brooke, organic, metal, ceramic, and glass material was desalinated, stabilized, and then chemically treated to ensure against deterioration. Important to the conservation effort was assistance provided by the Parks Canada conservation laboratory at Ottawa and the New York State Division for Historic Preservation at Peabees Island.

The third prerequisite to site work was the logistical support provided by the Maine Maritime Academy which also served as expedition headquarters. In addition to the work floats that were anchored over the wreck and a variety of vessels used to transport the crew over the 8-mile passage from Castine to Stockton Harbor, the naval architectural expertise of Professor David Wyman, the assistant project director, proved to be

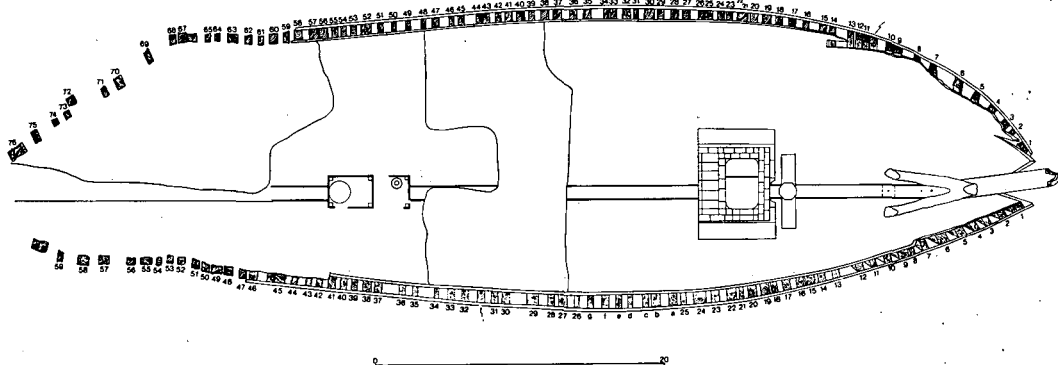


Figure 2. Site plan showing areas excavated as of 1978. (Drawing by David B. Wyman and Sheli O. Smith.)

Director of the Maine State Museum, organized an archaeological task force including the Museum, Maine Maritime Academy, and the American Institute for Nautical Archaeology recently established by Dr. George Bass. Between 1975 and 1981 six summer field seasons were devoted to excavating the wreck and documenting the mud-embedded structure that proved to be 40% intact.

In terms of historical archaeology in the United States the excavation of Defence proved to be a novel experience. It was to be the first wreck dating from the eighteenth century to be investigated and recorded systematically in situ. That aspect of the project was the responsibility of the American Institute for Nautical Archaeology (today the Institute for Nautical Archaeology based at College Station, Texas). INA-sponsored field schools provided training for more than 40 graduate and undergraduate students from the United States and Canada. It was their work along with that of two teams of Earthwatch volunteers that accomplished the major portion of the excavation.

invaluable to the task of documenting the excavated hull structure.

SITE SURVEY

Before excavation could begin in earnest it was necessary to learn something about the characteristics of the site in order to determine the excavation procedure. Also, to be prepared for the conservation task it was important that the conservators obtain a preview of the artifactual contents of the hull structure. The initial field season, therefore, was oriented toward conducting a survey of the wreck.

Because it was impossible to view the wreck in its entirety due to minimal visibility, one goal of the survey was to complete an accurate map or plan of the wreck. It was impossible to do so by means of a plane table technique; instead the perimeter of the wreck was mapped by means of triangulation. Ends of frames that protruded above the seabed were numbered. Stations or base points were established at stem, mast stumps, and designated frames. From these points the

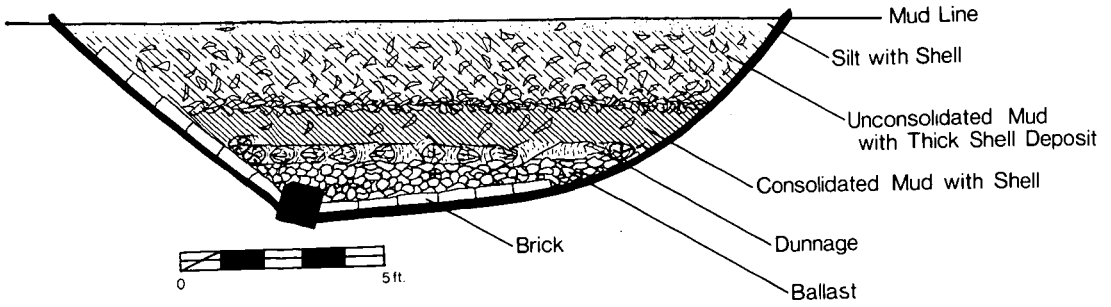


Figure 3. Transverse section of the hull at frame #25. The composition of the overburden was found to be consistent throughout the hull. Bricks, loosely laid, extended a few feet aft of the stove fire box, presumably as protection against sparks. (Drawing by Shell O. Smith.)

position of all exposed structure was triangulated using tape measures. Angular measurements combined with plan view dimensions of exposed structure provided the ingredients of an extremely accurate map of the outline of the imbedded hull (Figure 2).

Concurrent with the mapping process, test excavations by means of an airlift were completed in various locations within the hull which extended 72 feet from bow to stern with a maximum width or beam of 22 feet. The test pits provided the first indications that the hull of *Defence* was a time capsule in the best sense of the term. In the bow area intact provision barrels were exposed. Immediately aft of the stumps of the foremast, the brick built galley stove with its copper cauldron was discovered to be almost completely intact. Near the remains of the main mast a test trench provided a glimpse of the shotlocker and its concreted contents, cannon balls and wooden stands or stools for grapeshot.

Depth measurements obtained by means of a probe rod revealed that the hull was imbedded with a list to port of 15 or 16

degrees. While the starboard side was rotted away just above the turn of the bilge, the port side was intact to a point a bit below where deck timbers had once crossed. Thanks to the silt and viscous mud that comprised the overburden that had been deposited on the hull, an anaerobic environment had been created which protected the buried hull structure and its organic contents from decay or destruction by marine organisms (Figure 3).

The remarkable condition of the hull and the contents would not become fully apparent until full-fledged excavation began in 1976. However, with the completion of the survey, it was evident that future excavation strategy should entail documentation of the existing structure in company with the recovery of the contents. Considering the minimal visibility, such could prove to be a formidable task.

EXCAVATION

In 1976, the excavation process began in earnest in the bow area. To provide support and orientation for the diver/excavators, a 25 foot by 25 foot grid made of 5-foot squares

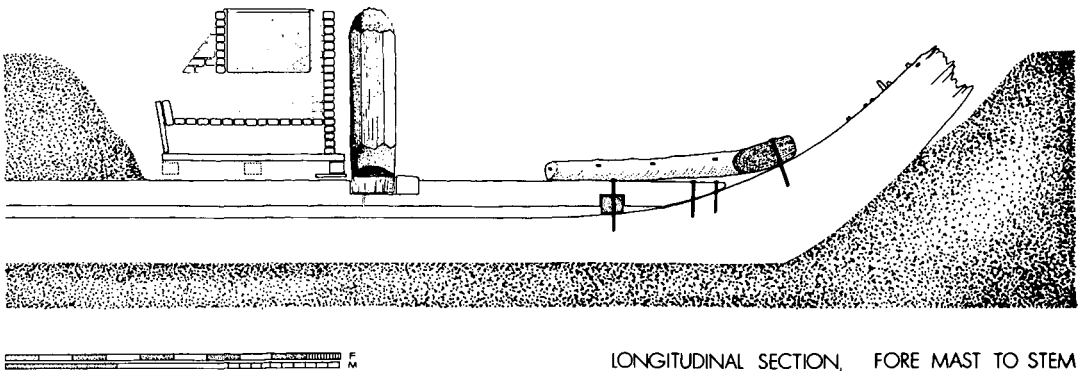


Figure 4. Bow in longitudinal section, foremast to stem. (Drawing by Peter Hentschel.)

was constructed from white PVC pipe and emplaced over the bow. Level and supported above the hull by vertical legs, the grid frame also provided a datum plane from which horizontal and vertical control could be maintained. The locations of airlifted finds were recorded with relation to a grid quadrant and their depth in the hull below the datum plane. As the excavation of the hull was extended from the bow to the stern in subsequent field seasons, the grid frame was enlarged and repositioned in an alignment consistent with its original position, thus ensuring datum plane continuity.

The excavation of the bow provided a forecast as to the amount and variety of material culture contained within the hull. An athwartship trench located immediately forward of the galley stove yielded representatives or samples of nearly every category of artifact to be recovered as the excavation of the hull progressed. The distribution pattern of the finds in the trench also provided information relative to the process of deterioration of that portion of the hull that had been exposed and unprotected from the effects of salinity and marine organisms (Figure 4).

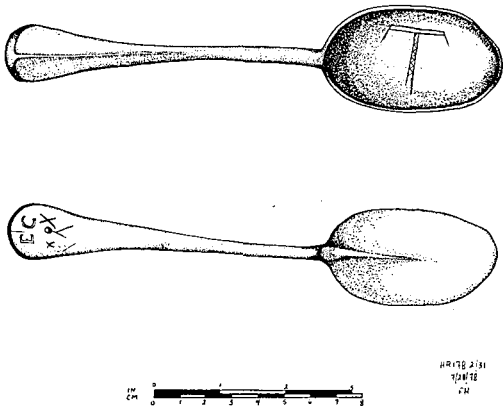


Figure 5. Pewter spoon bearing maker's mark EC and possibly the initial of its owner. Note the wear-induced indentation on the edge of the bowl. (Drawing by Faith Harrington.)

Apparently when Defence sank her deck and upper works were intact albeit damaged by an explosion-caused fire. Because bulkheads or partitions also remained intact, material stored or left on board by her crew members remained in locations specific to use or function. Buoyant objects floated confined by bulkheads and the deck; once waterlogged they sank, to be gradually ensilted as the deck deteriorated.

THE COLLECTION

The artifacts recovered from the forward area of the hull as well as elsewhere have been conserved and cataloged. The collection which represents an interesting blend of

tightly dated marine-related objects and those pertinent to land-based activities is stored at the Maine State Museum at Augusta.

Most prolific in terms of variety are those artifacts associated with provision storage, food preparation, and messing activities. Included in the collection are 17 pewter spoons with three distinct spatula and bowl shapes spanning styles from the early through mid eighteenth century. Represented are varieties of craftsmanship including what may be home molded as well as shop made. One spoon bears a London mark and the name Swanson; another with an embossed EC may be the product of a Boston pewterer, Ephraim Cobb (Figure 5). Many of the spoons have crudely scratched initials or enigmatic symbols. Among the eating utensils were also two wooden whittled spoons, one a fairly faithful copy of a pewter counterpart. Iron, unless cast, did not fare well during the period when the hull of Defence was subjected to a pre-embedding non-anaerobic environment. However, a bone handle of at least one knife was recovered from the galley area.

Evidence of some of the staples carried onboard Defence were found in the barrels stowed in the bow which contained the remnants reduced to ax-butchered beef and pork bones. The barrels, some intact, are 32-gallon capacity, many of the sharp croze wet variety. Along with barrel cooperage, stave-built containers include varieties of so-called white cooperage such as tankards and mess buckets or kids in which seamen received their portions of "salt horse" and "pease". Like the spoons, the kids and tankards bear graffiti such as carved initials and other markings, including a broad arrow (Figure 6).

Small wooden tags found in the galley area also carry initials and markings. Thought at first to be gaming pieces, the tags—some carved to resemble projectile points—are now known to have been used to designate a particular mess section of six or seven seamen. With string a tag was tied to a chunk of meat to be boiled down in the galley stove cauldron with the tag hanging over the side. At mess call, the "captain" of a mess section went to the galley with a kid and by means of the tag identified his portion which was carried back to be shared with his mess mates (Figure 7).

As unique as the tags is the cauldron of 68-gallon capacity. Constructed of rivetted sections of hammered native copper, it is an object often described or referred to in maritime literature; however, few have found their way to museum collections (Figure 8).

Rare, too, are examples of galley cookstoves. Although often depicted in reference books, examples of original structures are restricted to preserved or restored vessels such as Wasa, Victory, and Constitution. The brick stove of Defence standing five feet high and nearly as wide is,

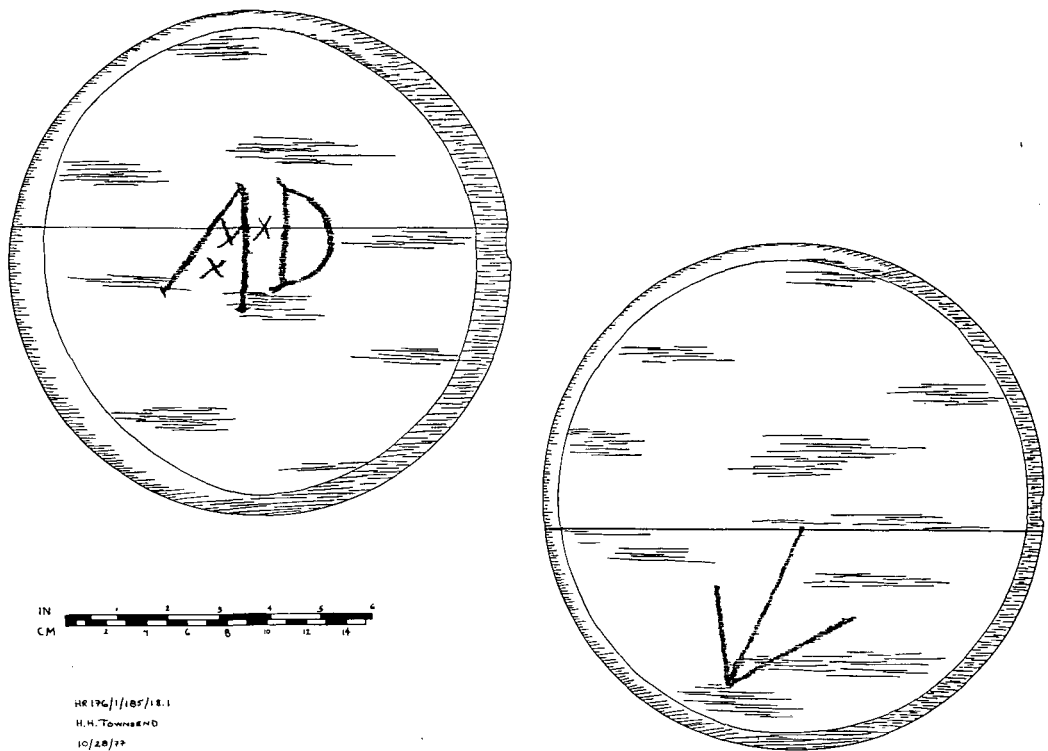


Figure 6. Base of a mess kid, a small stave-built container used to distribute allotted portions of food to a mess section. (Drawing by Helen H. Townsend.)

I believe, also unique. Further investigation of the American armed schooners Hamilton and Scourge in Lake Ontario may provide similar examples of galley equipment.

Excavation of areas adjacent to the stove and elsewhere within the hull yielded ceramic material one might expect to recover from a terrestrial site of mid to late eighteenth century origin. Sherds as well as incomplete and intact vessels associated with food processing, storage, and consumption reflect traditions of Massachusetts potters in forms such as earthenware milk pans, butter/storage pots, and mugs of various sizes, styles, and glazes. One mug closely resembles ware produced by a Newburyport potter, David Bayley. With the exception of sherds of Whieldon type ware, which when reassembled form a small teapot, and odd fragments of pearlware, the ceramic material is reflective of ware that is utilitarian/kitchen oriented.

As the ceramic material includes numerous styles and functional representatives, so, too, does the glass. In addition to the typical pottiled dark green wine bottles, different types and sizes of case bottles have been painstakingly assembled. Some still exhibit the original pale blue hue, a possible indication of French manufacture, not surprising considering the

French Alliance of 1777 and the fact that there was considerable trade with France during the Revolution.

Also included among the bottles are a number of free blown types with interesting distinctive shapes. Some may have been used for pharmaceutical purposes. Positively of a pharmaceutical nature are two stoppered vials; one contains pine rosin terpenoid, the other mercuric sulphide.

From the galley area, the bow trench, and at random locations throughout the hull were finds associated with other aspects of shipboard activities as well as personal effects. The latter included 13 intact shoes and the fragmental remains of a number of others. Interesting features of the shoes are the impressions caused by either bunions or hammer toes of the wearer. Under the counter of the heel of one shoe are the impressed words CUIR BOURG. One shoe sole appears to have been cut to conform to the shape of the owner's foot while the rest, including a boot sole, were made on a last that was non-specific in terms of left or right. In 20 heels as many as seven different patterns of pegging were noted. One pair of shoes were lace-type; the others were buckle. A number of shoe buckles were recovered; none, however, were found attached to a shoe.

Careful sifting of the upper strata of the ballast added a variety of buttons to the collection of apparel-related finds. Represented are 25 different styles of buttons including two pewter military buttons bearing the letters USA. More common are buttons of unadorned brass or bone, leather, and wood. In one instance wooden buttons were found in association with a garment of some sort. Found near the galley area, the folded fabric disintegrated upon touch in spite of efforts to exhume it intact. Laboratory analysis indicated that the fabric was linen.

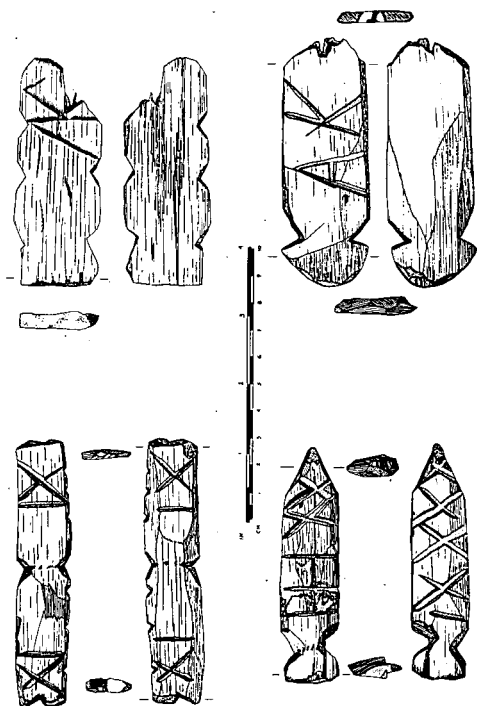


Figure 7. Four of a number of wooden tags found in the galley area. Their function, it is believed, was to identify portions of boiled down beef allocated to a particular mess section. (Drawing by Helen H. Townsend.)

The differences in quality and style of shoes, buckles, and buttons suggests variations in the socio-economic status of the wearers. More apparent as indicators of shipboard status or occupation are various tools, implements, and instruments. Whether *Defence* had a carpenter or cooper in her complement is not known. Tool handles such as gimlets and augers recovered from the bow trench can be related to either occupation. Also from the bow trench were tools typical to the duties of the bosun, fids and sail makers' palms. Who owned or used the brass dividers, parts of a Davis quadrant, and Gunter scale retrieved from the forward section is an intriguing question. Such navigation tools, especially the Gunter scale used to solve time and distance problems through trigonometric functions, would be considered valuable

possessions of an officer or the first mate. That they were left behind may be indicative of the haste with which the ship's company had to depart the vessel.

Among the remains of other tools or implements left on board were two ax helms of different strengths. The longer of the two appears to be that of a heavy duty chopping ax used in emergency situations to clear away fallen rigging from the deck. The other has been tentatively identified as the handle of a smaller boarding ax, the head of which would have been tomahawk-shaped. Unusual as shipboard tools are two shovels or spades. One with a T grip and the other with a stirrup-shaped handle, the spades may have been used as entrenching tools during the siege.

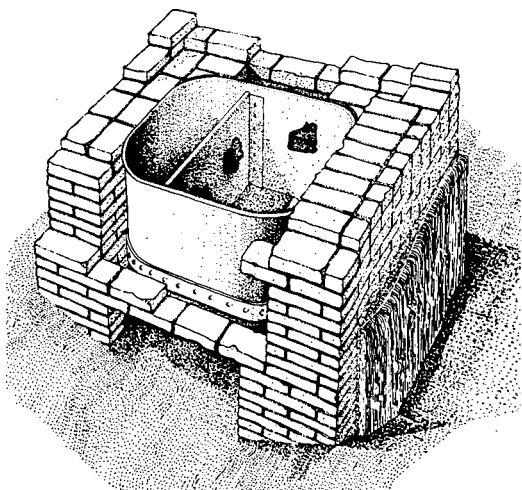


Figure 8. Galley stove with copper cauldron. (Drawing by Peter Hentschel.)

The naval mission of *Defence* is represented by numerous ordnance-related artifacts. As noted above, only cannon of her armament of 16 six-pounders have been recovered. Strong magnetometer readings outside the hull on the port side suggest that more cannon are deeply buried in the mud. Fear that deep trenching would injure the integrity of the hull precluded any attempt to search for the cannon. From within the hull, however, came various types of ammunition.

Frequent finds were cannon balls found deep in the overburden or in the concretions of ballast stones. Balls were also stacked in the shotlocker. Some are drilled and presumably are bar shot. One intact shot rack or garland was found with balls in place. Originally located on deck, it was deposited into the hull when the upper structure decayed and collapsed.

Complete stands of grapeshot were also recovered from concretions. A large number of wooden stands or stools were encountered in the bow trench where, in addition to the

bosun, the armorer or gunner may have kept stores.

A rather unique example of a type of ammunition was found in a ballast concretion raised from the stern. When opened, the concretion included a small canvas bag. In it were scraps of cast iron and nails. The bag and its contents are believed to be a type of antipersonnel ammunition known as langrage. Like grapeshot, langrage was used to clear the decks and/or destroy the rigging of the enemy.

Gun station equipment is also included in the inventory of ordnance-related artifacts. Oak handspikes or heavers with unidentified marks or symbols, normally deck

cap, and grenades. The latter, recovered from the stern area, were found in concretions. Unlike most of the cannon shot which exhibited very little residual iron and which had become carbonized as a result of chemical change, the grenades were well preserved with the wooden fuses intact. This rare instance of recovering minimally deteriorated iron objects may be attributed to the fact that the grenades had originally been "waterproofed" through immersion in hot wax.

Complementing the various examples of material culture described above, a number of items falling in the category of the vessel's equipage were recovered as the excavation progressed through the length of the hull.

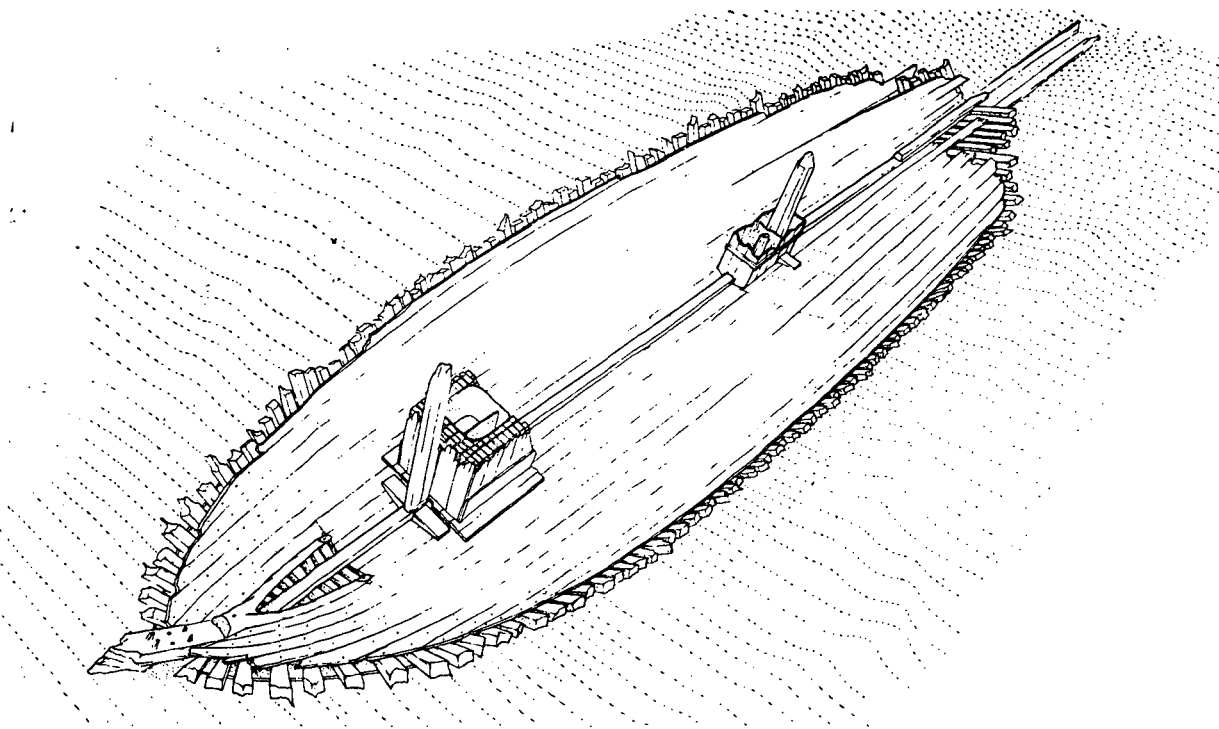


Figure 9. Excavated hull with the stern damaged as a result of the charge set off to scuttle the vessel. The structure surrounding the main mast is the bilge pump well and shotlocker. (Drawing by Peter Hentschel.)

equipment, were found in various locations in the midsection of the hull. Near the stove preliminary excavation by the discoverers of Defence produced a unique lead vent cover. Such covers were secured over the breech of a cannon to protect the touch hole from the elements. Excavation deep in the hull during the course of later field seasons revealed wooden muzzle plugs or tompions. They appear to be unused and may have been spares. Also presumably a piece of spare equipment was a truck or wheel for a cannon carriage.

The small arms arsenal of Defence is represented by relatively few finds such as gun flints, musket balls, a brass pistol butt

Immediately aft of the stem piece an assemblage of pulley blocks was found. Their location and disposition suggests they were spares. Elsewhere in the hull, fragments of block cheeks and numerous pulley axles and sheeves were randomly distributed. Fragments of cordage include a variety of rope sizes ranging from 1/2 inch to 2 1/2 inches in diameter, some laid with a right hand twist, others with a left hand twist. One fragment displays a short splice; another is whipped.

Deck fittings such as cleats were infrequent finds as were belaying pins. This is not surprising as deck equipment would have

been among the first objects to suffer destruction due to marine organisms.

SHIP CONSTRUCTION

Based on contemporary admiralty-type models it is possible to make educated guesses as to where cannon were mounted or the placement of hatches, etc. Of the configuration of the hull itself and the techniques used in the construction of Defence we can be more certain.

Unfortunately, the historical record is sparse relative to details such as who designed and built the vessel. All that is known is her rig, armament, tonnage, and home port. References to Defence are recorded in the documents and papers of those who shared in her ownership, but as far as clues as to her characteristics, these records are silent. It has been possible through archaeologically derived information to flesh out the bare bones of the historical record.

Documentation of the hull structure began in 1976, and each successive field season saw the accumulation of dimensional data and the recording of structural details. Through the length of the hull twelve transverse sections or profiles were measured. Removal of ceiling planking revealed hidden details of construction. This information has been incorporated into a naval architectural plan of Defence which depicts a number of interesting features (Figure 9).

For instance, Defence was not the usual full-bodied product of a New England shipyard. Rather, her hull in profile is more angular with considerable dead rise. Her bow instead of being bluff or "apple cheeked" is quite sharp, attested to by the absence of hawse pieces and the inclusion of canted frames. In general, the characteristics of the hull of Defence strongly suggest the influence of design migration. She very much resembles vessels constructed in the eighteenth century in the Chesapeake area. Referred to sometimes as "Virginia built," these sharply built vessels are examples of a design tradition that was distinctly American.

The shipwright who built the privateer may have worked from a half model from which the curve of the hull was derived and then duplicated full size in adze-shaped frames. Whenever he could, he made use of natural curves. The bow breast hook is the crotch of an oak tree; floor timbers of the sharp stern frames are also squared-up oak crotches. The planking making up the inside sheathing exhibit vertical kerf marks, as do the outside strakes. Apparently, the builder purchased that lumber from a mill equipped with a water-powered up-and-down saw.

Built entirely of oak, except the deck which fragments suggest was of pine or fir, there are a number of indications that Defence may have been cheaply and/or hastily

constructed. A number of what are construction "short cuts" have been noted. For example, many frames suggest that green or unseasoned wood was used. Considering the overall length, in excess of 80 feet, frame dimensions are a bit undersize. The method of framing up includes a curious mixture of traditional and non-traditional approaches; between the composite multiple futtock mould frames that determined the hull shape are intervening frames with futtocks which do not overlap, for example.

In-hull details also speak to hasty or cheap construction. The shotlocker, built of pine, provides many examples of mis-measurement and crude construction. Except in the bow, the use of iron fastenings is minimal. And in the instance of drift pins to secure the frames to the keelson and keel, the dimensions, less than an inch in diameter, are small enough to have contributed to structural weaknesses. Evidence of such weakness was recorded in the stern area. Other structural deficiencies include a keel scarp which runs in the wrong direction.

These and other details lead to the conjecture that Defence was designed and hastily built to gain her owners a quick profit through privateering ventures. Like other privateers of the day she may have been considered to be expendable. Newly built and fitted out, her involvement in the Penobscot expedition dashed the dreams of wealth.

SUMMARY

The Penobscot disaster has yielded, as a result of the discovery and excavation of the Defence time capsule, wealth of a different sort, with more to accrue as the interpretive efforts devoted to the material culture and the structure continue. Particularly important is what can be learned further to expose the artifactual blending of life at sea and life on shore in the eighteenth century.

Important, too, is to be able to gain a better understanding of the techniques of ship construction employed in that century. Until the discovery of Defence there were but two surviving examples of ship-building traditions dating from the colonial period or the Revolutionary War era. One, the gundalow Philadelphia, represents a style of construction typical to New England inland waters and used for naval purposes on Lake Champlain. The other, called the Brown's Ferry vessel, may be an example of construction common to the South Carolina coastal trade. The hull of Defence, preserved through documentation, bears witness to a third tradition of ship-building providing as it does hitherto unrecorded and unseen intricacies of construction.

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