

IN A NEWSLETTER



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INA NEWSLETTER



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Member Contributions Welcome!

We want to include you in future issues of the INA Newsletter.

Do you have an experience you would like to share with INA members? A trip? A photograph? A museum or site you've been to? A news item? A book you've read? A conference you've attended? A suggestion?

We're interested in what you have to say and contribute. Send submissions and queries to:

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Cover: A diver clears away coral and debris on the Molasses Reef Wreck with a water dredge. The floating cubes mark artifact locations. (Photo: Dennis Denton)

Editors: Cheryl Haldane and Diana Thornton
The INA Newsletter is published quarterly.

PROFILE

Frederick R. Mayer

Chairman of the Board

An interest in archaeology, love of the sea, and brother-in-law Duncan Boeckman first led Frederick Mayer to the Institute of Nautical Archaeology. Duncan Boeckman, who served as INA's Chairman of the Board in the early 1980s, brought Frederick and Jan Mayer to an annual meeting in the late 1970s. There, Frederick Mayer met George Bass and, when he joined the Board in 1981, became one of INA's staunchest supporters.

Frederick Mayer has been Chairman of INA's Board of Directors since 1985 and has watched INA's growth with pride: "I think the thing of most interest to me about INA has been to watch INA and nautical archaeology become recognized and respected throughout the archaeological world. I have been particularly pleased with the international acclaim and recognition that has come to George Bass."

As a Director, one of the greatest challenges he perceives is the efficient governance of a continually expanding institute. In working towards a policy of growth, he has set himself the responsibility of overseeing such governance and in developing the role of the Executive Committee. He also works with INA's new president, Robert Vincent, on a set schedule. This attention to administrative necessities, honed by his years in the petroleum industry, as well as Mayer's concern for INA's expanding archaeological activities, prompts words of admiration from those who know him.

INA President Robert Vincent commented, "It has been a pleasure working with Frederick. In his calm but firm manner he has been very supportive during my time at INA. He has been crucial in providing consistency during the transition period we have just undertaken. Lastly, but of great importance, he set the pace for INA's permanent endowment effort through his own exceedingly generous example."

His career in the petroleum industry began in 1953 when he founded Exeter Drilling Co. with a single rig. By 1980, when he sold the company, it had expanded to more than 40 rigs. Frederick Mayer serves on the Board of Directors of the American Petroleum Institute, is a member of the National Petroleum Council, and was named "Wildcatter of the Year" by the Independent Petroleum Association/Rocky Mountain States in 1983.

In addition to being interested in nautical archaeology, Frederick Mayer has been deeply involved in Costa Rican archaeology and through his collection of pre-Columbian Costa Rican art. He recently founded and funded the Center for Central American Art and Archaeology at the University of Colorado, and thus is particularly attentive to the search for



Columbus caravels in the New World. Mayer's association with Central American archaeology is also reflected in his two decades as a trustee and eight years as Chairman of the Board of Trustees for the Denver Art Museum.

Frederick Mayer is an avid scuba diver and sailor. His sail boat, *White Eagle*, is an 82-foot ketch that he has taken all over the world. Equipped for diving, it recently was used in some survey work on the Pedro Bank off Jamaica, and the Mayers plan to take her to Bodrum and Ulu Burun in the summer of 1990.

George Bass, INA's Archaeological Director, remarked that he not only appreciates the enormous help and leadership Frederick Mayer provides INA, but, "I, like all of us, really enjoy it when he and his wife Jan visit us at the excavations."

While in Bodrum, he will probably spend time with Don Frey, INA's vice president of administration for the Mediterranean. Frey is overseeing the development of INA headquarters in Bodrum, and Mayer notes that he is involved in getting the project funded and seeing it completed. The proposed headquarters will include art academic library, conservation laboratories, offices and workrooms in addition to housing for project volunteers and personnel.

Frederick Mayer is also interested in INA's newer projects, such as the possibility of working with Chinese nautical archaeologists and the potential for extending INA's scope beyond the limitations of scuba equipment. His dedication and optimistic view of the future provide encouragement for other Board members and INA officers and staff.

Cheryl Haldane

The Molasses Reef Wreck Project

by Donald H. Keith

Beginnings

"And what do you do for extracurricular entertainment?" Governor Bradley asked. That's a good question, I thought to myself. I used to have a more-or-less normal assortment of hobbies: hiking and camping, reading, rebuilding old cars, photography, building models, diving, drawing and painting among others. But that was before the Molasses Reef Wreck came along.

His Excellency Michael Bradley, Governor of the Turks and Caicos Islands, was in College Station for the express purpose of viewing the Molasses Reef Wreck artifact collection—now that the task of cleaning and conserving the objects is virtually finished—and formulating plans for its eventual return to the Turks and Caicos Museum of Maritime History. The Governor's question reminded me of the tremendous changes the Molasses Reef Wreck has wrought in my life as well as within the Institute itself.

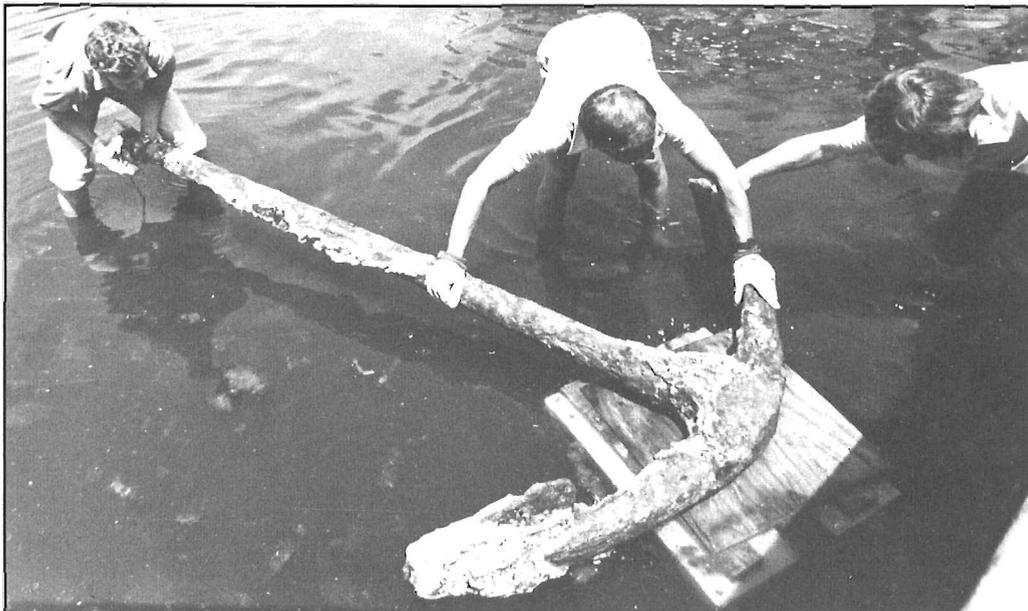
Almost eight years have passed since George Bass asked me to shelve temporarily my plans to research the little-known 15th-century Chinese Age of Exploration and Discovery and direct excavation of the Molasses Reef Wreck for INA. The Institute had become interested in locating an archaeological example of the quintessential ship of exploration, the caravel. Bass made it sound so simple: Just dig the site, clean and conserve the artifacts, analyze them and make sense of it all in a final site report. Easy. Even a graduate student could do it. Mercifully, neither of us suspected how difficult it would really be. By the time I realized I had a tiger by the tail, it was too late to let go.

Molasses Reef

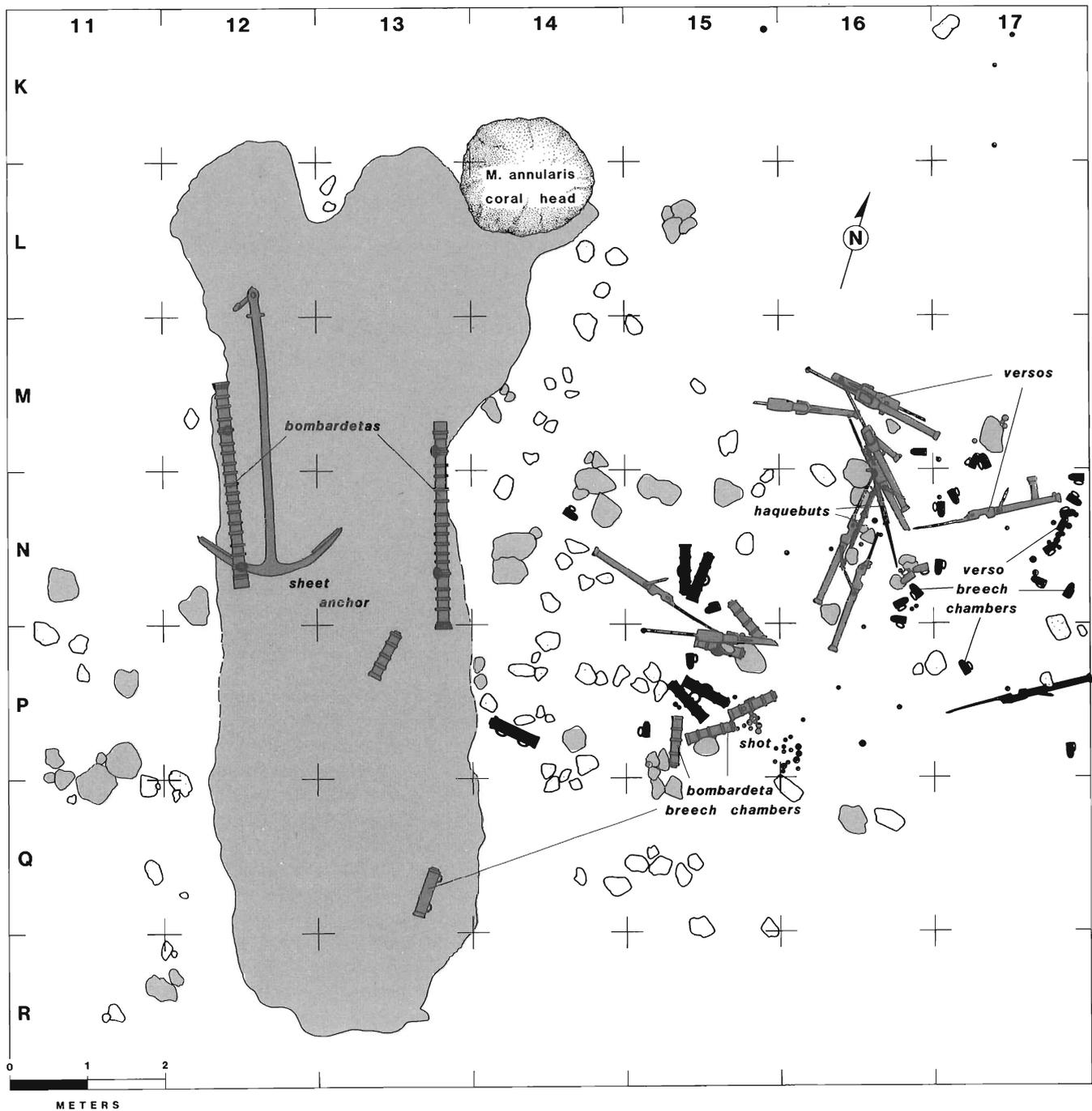
The beginning of the Project was not particularly auspicious. Amid an entanglement of controversy and confrontation with treasure hunters who insisted that the mystery wreck on Molasses Reef was Columbus' *Pinta*, we left Miami aboard R/V *Morning Watch*. The vessel's captain, Sumner Gerard, generously provided use of his ship for the first phase of the excavation. When we arrived on the site in the first days of April, 1982, an unpleasant surprise awaited us: the wreck had been blasted and ravaged by treasure hunters shortly before we arrived. We found the remains of home-made pipe bombs and detonators scattered across the site. A huge crater had been dug into the ballast mound amidships, and many artifacts had been intentionally mutilated. But if the treasure hunters hoped their deliberate vandalism would foil our project, we disappointed them. Fortunately, I had made a plan of the site in 1980, during my first reconnaissance of Molasses Reef, and this enabled us to make sense of the chaos of artifacts on the seabed.

Almost immediately, we found the first coin: a U.S. quarter dated 1965! Genuine artifacts were not so readily identifiable. Most were heavily disguised by a thick cocoon of marine encrustation. Our immediate task was to map the site, to assign each artifact a number, and record its location. In most cases, we would not know what the objects were until much later, after they had been cleaned in the laboratory.

Five weeks later *Morning Watch* was back in the U.S., making her way up the Miami River back to her slip. The morning was grey, overcast, and a light drizzle was falling on her decks littered with hundreds of artifacts from the Molasses Reef Wreck.



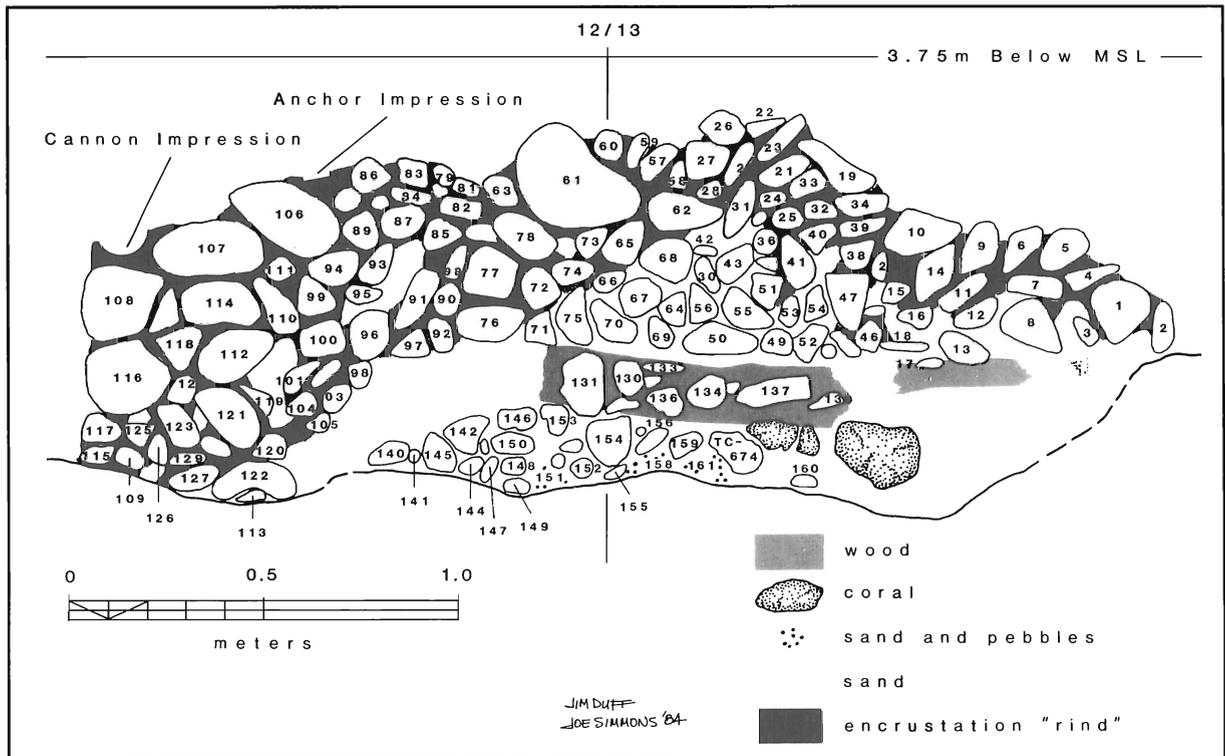
The first shipment of artifacts arrived at Texas A&M before the conservation laboratory had been fully equipped, so nautical archaeology graduate students pitched in to assist in the transfer and storage of concretions in an unused swimming pool. (Photo: Dennis Denton)



This plan of the Molasses Reef Wreck shows the distribution of ordnance within the site. That the armaments were a part of the ship's equipment and not merely being carried as cargo is argued convincingly by the fact that they were matched, balanced and paired, and by the fact that the Highborn Cay Wreck carried a very similar—almost identical—battery with respect to gun types and numbers.

The two *bombardetas* were in storage in the ship's hold when it sank, rather than at the ready. The swivel guns were on deck, and ended up in a cluster of pairs of equivalent types four or five

meters to the east of the ballast mound when the ship heeled over on its side—this horizontal difference reflecting the original distance between the keel and the main deck. Given the reconstructed dimensions of the Molasses Reef Wreck—about 19 meters in length and five or six meters in beam—the ordnance it carried would have added considerable clutter to its rails and decks, particularly the *bombardetas* which, when mounted in their carriages, would have had an overall length in excess of 4.5 m. It is no wonder they were kept below decks when the ship was under way. (Drawing: D.H. Keith and J.J. Simmons, III)



Careful mapping and sampling of the Molasses Reef Wreck's ballast mound enabled Bill Lamb to demonstrate that two common rock types may have come from Lisbon, Portugal. The rocks, a Mioene limestone and an Eocene high-alumina basalt, were among the largest in the ballast and may have served as the ship's "permanent" ballast, loaded into the ship immediately after construction to adjust its trim. (Illustration: J.J. Simmons, III and J.A. Duff)

There was no fanfare, no celebration. We knew that the real work had only just begun. We loaded the artifacts into two large U-Haul trucks, covered them with burlap and wet newspapers for protection, and set out on the 1,200 mile drive back to College Station.

All told, we conducted four seasons of field work between 1982 and 1986, totalling more than six months on Molasses Reef. Our agreement with the government of the Turks and Caicos Islands permitted us to take all the excavated artifacts, samples, ballast stones and hull remains back to our headquarters at Texas A&M University for cleaning, conservation and analysis. It was here that the real archaeology took place.

The Molasses Reef Wreck Conservation Laboratory

With the artifacts safely ensconced in a swimming pool, we set about modifying the building assigned to the Project, a fire station at the Texas A&M University Research Extension Annex. Although we all knew basic conservation theory, we had no idea how to tackle the job of cleaning and conserving thousands of artifacts—an entire shipwreck—efficiently and in a reasonable amount of time. After a number of false starts and some timely advice from Herb Bump and James Levy, conservators at the state of Florida's laboratory in Tallahassee, we designed and built an elaborate system which enabled us to clean and stabilize all the large iron artifacts simultaneously using electrolytic

reduction. With our main concern thus under control we turned our attention to other matters.

Not content merely to do what others before us had done, we experimented with new methods and analytical techniques. The most successful of these was the ballast study, in which nautical archaeology graduate student Bill Lamb managed to trace some of the stone ballast in the ship to its most likely place of origin: Lisbon, Portugal. Joe Simmons, our ordnance expert, directed a series of experiments designed to discover how the wrought-iron breech-loading ordnance was constructed and how the mysterious lead-iron "composite" shot were made. These experiments included cutting sections out of guns and shot, revealing their interior secrets. The scant remains of the Molasses Reef Wreck's wooden hull and pump mechanism were painstakingly analyzed by Tom Oertling, who derived the gross dimensions of the vessel and identified a set of construction features diagnostic of 15th- and 16th-century European sea-going ship design—despite the fact that less than 2% of the hull remained.

Another pioneering technique was less successful. We hoped that sclerochronology, the counting of annual growth rings on coral heads, would help us date the wreck, but the ship turned out to be far older than any of the surrounding corals.

The Molasses Reef Wreck

A number of independent lines of investigation, as well as artifactual clues, give us a window in time through which to view the ship that became the Molasses Reef Wreck: It was small to

medium in size for a ship of the period—about 19 m long, 5 - 6 m wide, and 2 m or slightly more in draft. It had at least three masts. The main and foremasts were probably square-rigged. It carried about 40 metric tons of stone ballast in addition to cargo and stores. The “permanent” ballast may have been loaded in Lisbon, Portugal, a possible indication of where the ship was built. It was heavily armed, but most of the armaments were stored and unloaded, rather than at the ready. Most of the ship’s provisions were carried in wooden casks and barrels, rather than in ceramic storage jars. The crew’s modest possessions were predominantly utilitarian, almost paltry. Even the tableware was spartan. The ship ran aground on Molasses Reef some time before the Lucayan Tainos, the native inhabitants of the Bahamas and Turks and Caicos Islands, became extinct in the middle of the second decade of the 16th century. Most, if not all, of the crew survived—although they never returned to salvage their ship.

So now we know a little more about at least one of the ships which explored the New World. But the mystery remains: We still know it only as the Molasses Reef Wreck. What ship was it? Who was the explorer? How can we identify it? Where did it come from? What was the nature of its voyage? And why are we having so much trouble fitting it back into history?

Oertling’s careful comparison of the Molasses Reef Wreck hull remains with those from other sites on both sides of the Atlantic led us to redefine the subject of our study as the Atlantic Ship, a broad concept including a variety of ship types and nationalities—a pool of nautical technology and experience to a great extent shared by seafarers along the Atlantic coast of Europe from Gibraltar to the Low Countries.

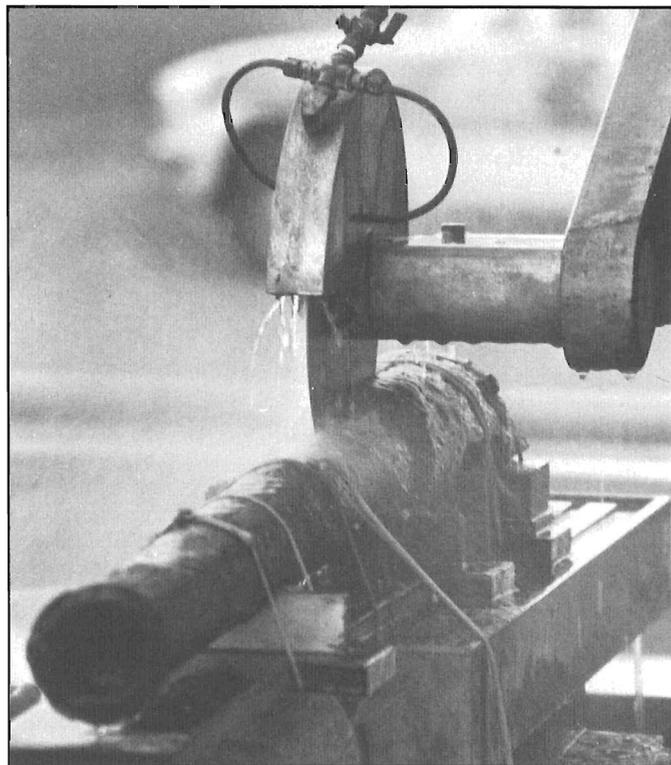
At the same time, the Project’s archival researcher Denise Lakey turned her attention to the problem of identifying the ship. Once again, our peculiar perspective gave us insights that terrestrial historians and archaeologists typically are not privy to. Reevaluating the traditional wisdom of history, we found an accommodation to the archaeological discoveries we were making.

First, we reduced exploration to its simplest terms, the objectives of which were:

- 1) To find something worth bringing back,
- 2) To take it away from whoever already had it,
- 3) To get it back to civilization and convert it to wealth and prestige, and
- 4) To make note of where it was found so that the explorer or his designates could go back for more.

It is easy to see how this process led to conquest and colonization. In fact, exploration, conquest and colonization are all part of the same continuum.

Reading accounts of the voyages of Columbus, Pinzon, Vespucci, Juan de la Cosa and the other “first order” explorers, one gets the impression that all discovery voyages began and ended in Spain, ignoring the fact that there was a permanent Spanish presence in the New World from 1493 on. The Spanish capitol in the New World was Santo Domingo. Its excellent harbor was home port for numerous ships owned and operated by traders and shippers who had taken up residence there. No place in the Caribbean was more than a few days sail from Santo



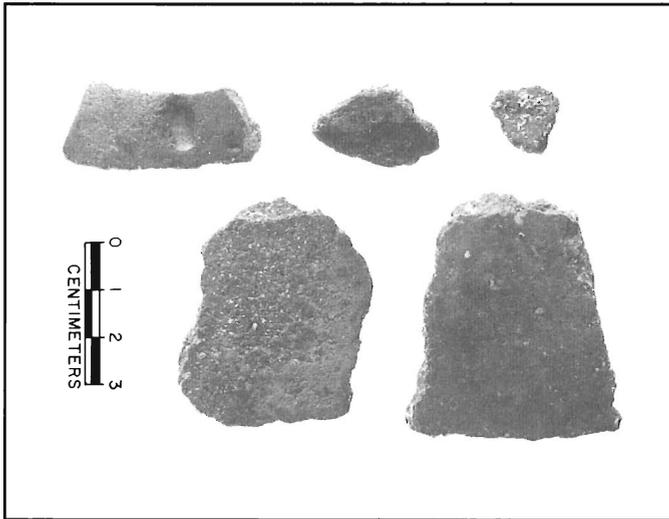
In order to determine how the wrought-iron versos, or swivel guns were built, ordnance expert Joe Simmons cut one in two, longitudinally. Not only did we learn how many individual pieces of iron were forge-welded together to make the guns and breech chambers, but also the order in which they were assembled. (Photo: J.J. Simmons, III)

Domingo. How much more logical it is to hypothesize that significant explorations were carried out from Santo Domingo than it is to assume that the mariners there sailed only for Spain. Santo Domingo was the hub of New World exploration.

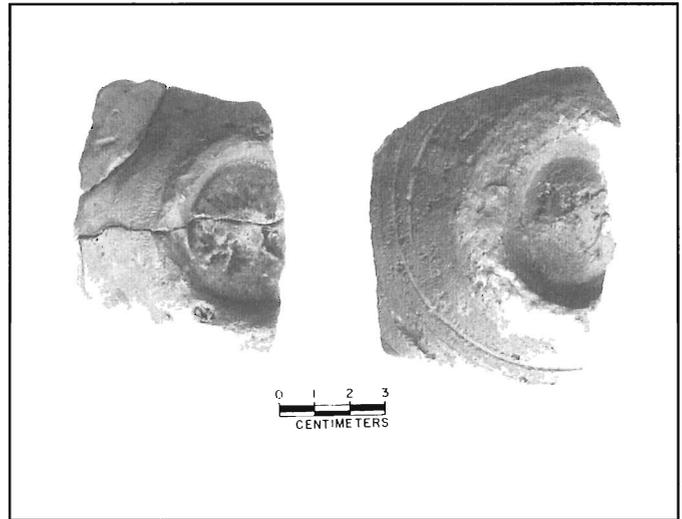
This would explain certain other discrepancies in the historical record as well; inconsistencies which have bothered historians for more than a century. One of the most troublesome of these discrepancies involves “cartographic prescience,” the apparent ability of 16th century map makers to represent correctly the shapes and locations of islands and continents in the New World even though, according to the tenants of traditional wisdom, no European explorer had been there.

Early maps show that Spanish navigators knew of and had often visited the Turks and Caicos Islands. The purpose of such voyages was to round up Lucayans to work in the mines and fields of Spanish Hispaniola. Could the ship which came to grief on Molasses Reef have been engaged in this enterprise? If so, are we wasting our time combing Old World archives for reference to a voyage which originated in Santo Domingo and may never have been documented officially?

We started out with the intent of finding the archaeological remains of a caravel, and from them, reconstructing the quintessential Ship of Discovery. Along the way we became suspicious that we were really researching the “Atlantic Ship,” not just the



Spanish ceramics on board the *Highborn Cay* and *Molasses Reef Wrecks* such as these sherds from utilitarian melado-ware bowls called *escudillas* indicate that the ships' crews were Spanish. The combination of paste, glaze and base shape matches that of *escudillas* manufactured before 1495, according to a seriation worked out for a the site of *Qsar-es-Seghir* in Portuguese Morocco. (Photo: R.M. Adams)



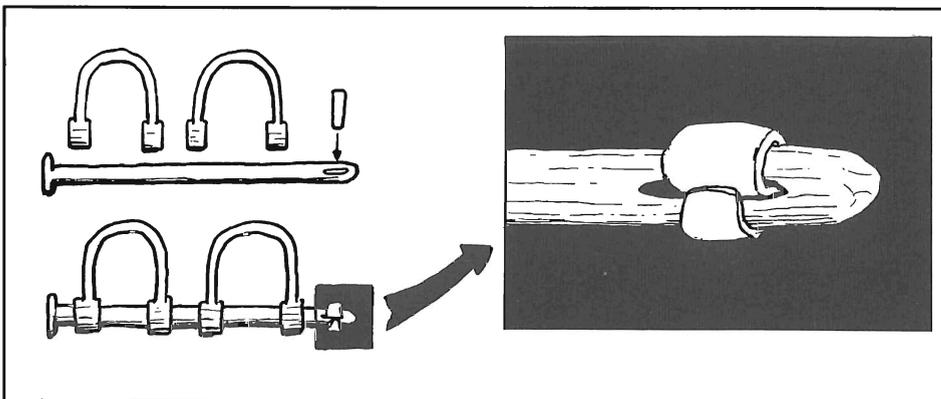
Even more intriguing are these sherds of a very distinctive ceramic type called "Palmetto Ware" which was made only by Lucayan Taino Indians—the people inhabiting the Bahamas and the Turks and Caicos Islands when Columbus arrived in the New World. These sherds, found on the *Molasses Reef Wreck*, indicate that the ship was contemporary with the Lucayans who, due to introduced Old World diseases and Spanish slaving raids, were nearly extinct by 1513. This gives us a *terminus ante quem*, or date before which the *Molasses Reef* ship sank. (Photo: J.J. Simmons, III)

caravel, and that much of the exploration of the New World was done by "second echelon" explorers: unknown, unsung, private entrepreneurs for whom discovery was just a natural consequence of the objectives of exploration.

Reflections

It now appears that the *Molasses Reef Wreck* may provide evidence of an alternative explanation for who actually explored the New World. But that is just the beginning. The small but dedicated team of researchers who first worked together on the *Molasses Reef Wreck Project* have created a new and vigorous thematic specialty: the *Ships of Exploration and Discovery Research Program*.

On a more personal level, the *Molasses Reef Wreck Project* reshaped my understanding of archaeology and taught me a number of invaluable lessons. In the course of completing the Project, I discovered that although the Director of any nautical archaeology project should be multi-talented, the only characteristic that is absolutely essential is persistence. Once a project advances beyond the exciting stages of excavation and discovery, most people begin to lose interest, archaeologists and sponsors alike. Before long, the project is all but forgotten and the Director is the only one who cannot walk away from it with a clean conscience. Very quickly, the Director learns that it is much easier to raise funding for field work—which constitutes only about 5% of the total project—than it is to fund the conservation, analysis, archival research, sample preparation, photography and final reporting.



A somewhat ominous artifact is this set of leg irons here shown in sketch form for clarity. The simple mechanism consists of four pieces: two ankle loops, one keeper rod with a head at one end and an eye at the other, and a soft iron wedge or key by which the irons could be locked. Upon clearing this artifact, we discovered that the key was in place in the eye of the keeper and peened over. It does not require much imagination to realize that these irons were "in service" when the *Molasses Reef* ship sank, locked around the ankles of a hapless prisoner. (Drawing: D.H. Keith)

In the eight years since the Molasses Reef Wreck Project began, the Turks and Caicos have had three governors and three chief ministers. INA has had three presidents. Literally dozens of people have been involved in the Project at one time or another, but only one has stayed with it from the beginning.

The Director learns that the penalty for limited funding is increased time required to finish the job. Perhaps this is why many an archaeologist's best work is done as a graduate student, before the idealistic zeal has run out. An archaeologist is lucky to see more than two site excavations through to completion during a normal 20- or 30-year career.

And the Director learns how difficult it is to balance the realities of fund-raising, management and public relations with the scientific requirements of the discipline. Often they are at cross purposes. The Director must be optimistic and confident that his research objectives will be met, but careful that this optimism does not impair his ability to recognize the truth and, when necessary, admit that he was wrong.

Because archaeology is not normally self-supporting, it relies on public support. The magnitude of that support varies directly in proportion to the value of the product the archaeologist returns to the public. Product? What product? Surely not the artifacts themselves. Pretty though some of them may be, they are but dumb objects having little intrinsic value. Answers, then: What the objects teach us about the past. Unfortunately, archaeology produces far more questions than answers. No, the product of archaeology is the *story* it tells, the key it provides to unlock our imaginations.

The Turks and Caicos Museum of Maritime History

The proper place for the telling of that story is in a museum. The last remaining objective of the Molasses Reef Wreck Project is the creation of a permanent home for the artifact collection. At present, no museum exists in the Turks and Caicos Islands, although there is a great deal of interest in creating one. I propose that it should be called the Turks and Caicos Museum of Maritime History, because the history of the Turks and Caicos Islands parallels the development of seafaring in the eastern Caribbean. The Molasses Reef Wreck collection will furnish the nuclear exhibit for the Museum, but appropriate attention will be devoted to the Lucayan Taino Indian, Spanish, English, Bermudian, and American Loyalist episodes in the Islands' past.

I thought again about the Governor's question and the hobbies I used to enjoy. Hiking and camping? Our search for Columbus's caravel *Gallega* last season was a two-month camping trip. Photography? Not only is it an integral part of archaeology, but also the places where archaeologists are required to go often offer spectacular exotic settings and photogenic action. Rebuilding old machinery? Plenty of opportunities for that in nautical archaeology, as well as for the design and construction of special mechanisms and devices to assist the tasks of excavation, survey, artifact analysis, and conservation. Building models? Why, it's a veritable sub-field within nautical archaeology, as are mechanical drawing, artistic sketching, and computer graphics. Reading science fiction? Archaeology is science fiction. I still do all of those activities; the difference is that they are no longer hobbies, but part of the job.

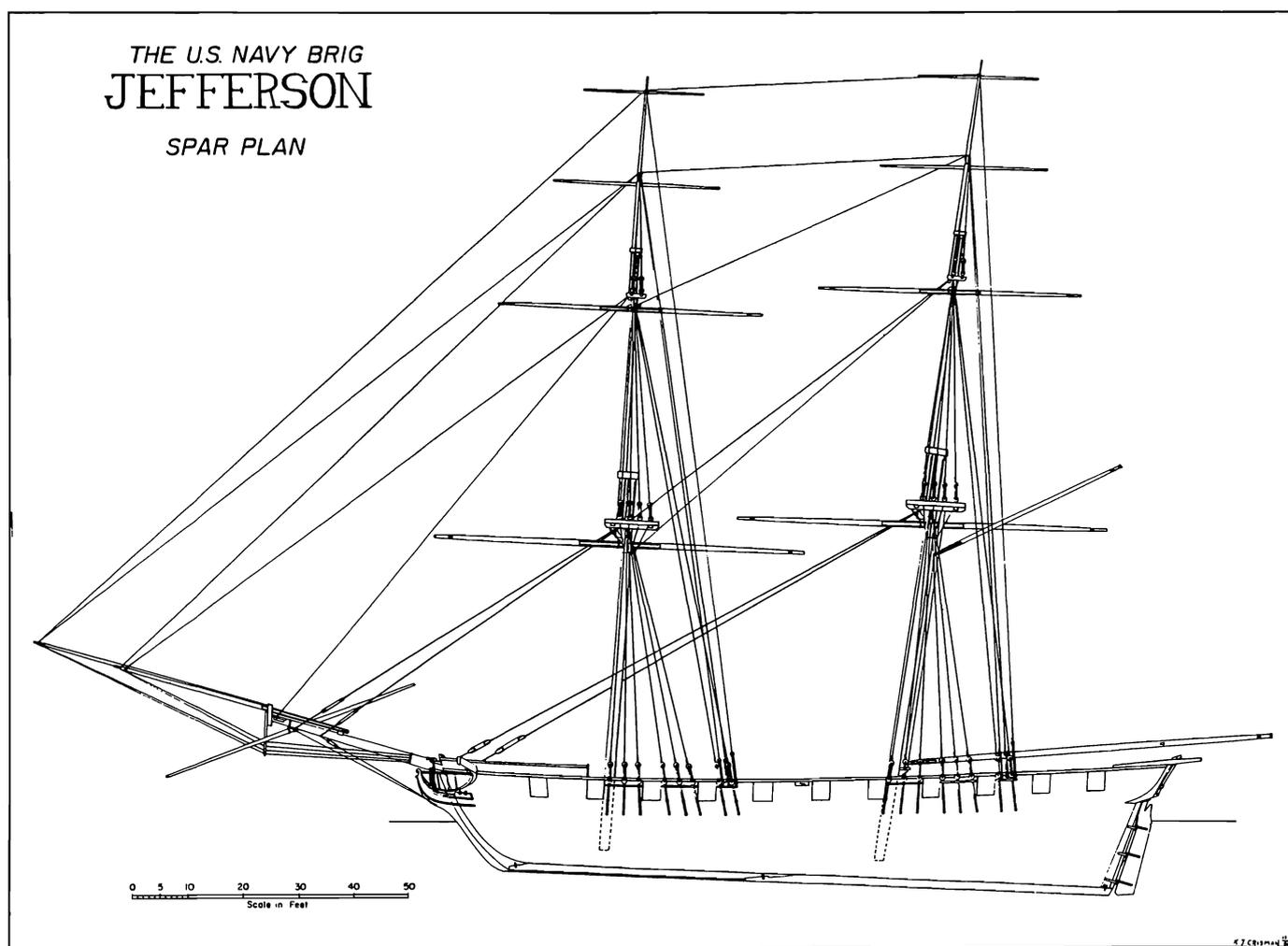
For Further Reading

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Mr. Eckford's Brig *Jefferson*



The spar plan of the Jefferson illustrates the large sail area available to her captain. Eckford's design combined fast sailing characteristics with good sea-keeping abilities. (Drawing: K. Crisman)

by Kevin J. Crisman

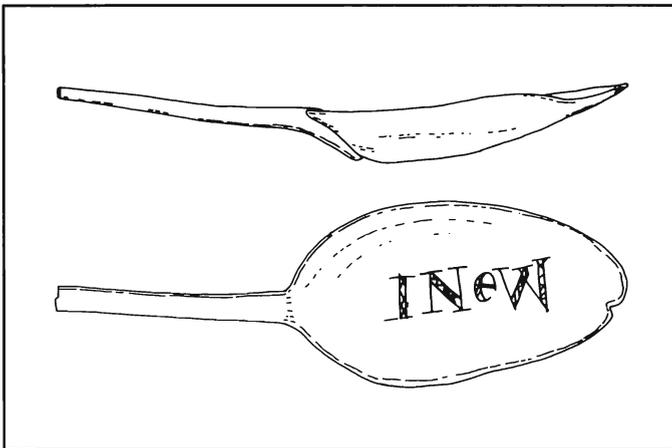
The first two decades of the 19th century saw tremendous innovation and experimentation in North American shipbuilding. Expanding maritime trade was threatened by piracy and prolonged wars in Europe, and shipwrights responded by creating swift-sailing designs such as the celebrated "Baltimore Clipper." While much has been written about developments in naval architecture during this period, few of the actual vessels have undergone archaeological study.

In September of 1988 the Lake Champlain Maritime Museum at Basin Harbor completed a five-year study of the U.S. Navy brig *Jefferson*, the only known survivor from the naval fleet that cruised the waters of Lake Ontario during the War of 1812. This brig was built by New York shipwright Henry Eckford, a recognized leader in the designing and building of fast-sailing merchant and naval craft. The archaeological investigation of the *Jefferson* has given insights into Eckford's building techniques,

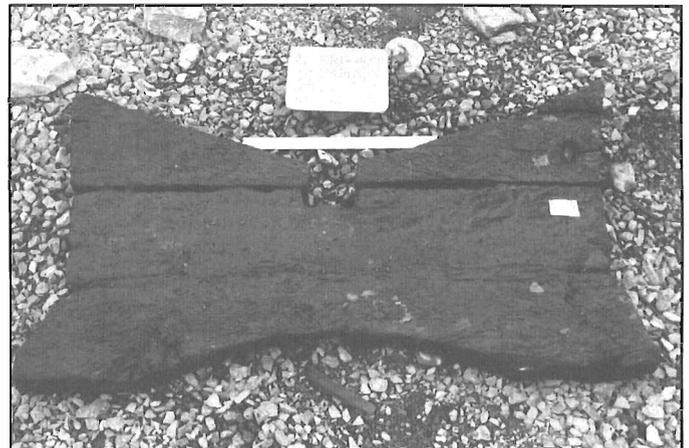
and has provided new clues for tracing the evolution of hull forms.

The *Jefferson* and her sister brig *Jones* were built in early 1814 for service in Commodore Isaac Chauncey's squadron. The two vessels sailed the waters of Lake Ontario that summer, maintaining a blockade of several British schooners moored in the Niagara River. In September the brigs were caught out on the lake during one of its notorious fall gales; *Jefferson* was knocked on her beam ends twice, and was only saved by the jettisoning of half of her guns. When the war ended in late 1814, the squadron was laid up and left to rot at Sackets Harbor, New York. The green-timbered *Jefferson* decayed very quickly and sank at her moorings in 1818. In 1825, the ships were sold to a salvager who converted some into merchant craft and broke up others, but the *Jefferson* was apparently considered worthless and was left on the bottom of the harbor.

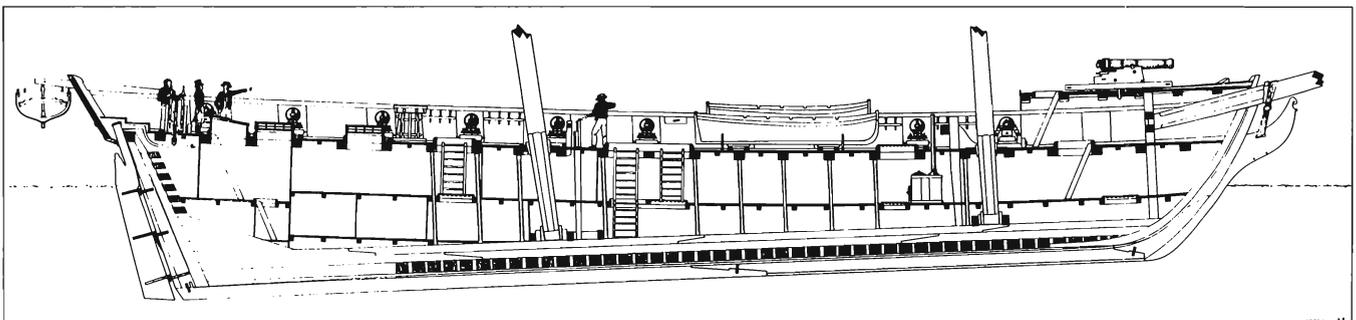
The inscription on this metal spoon confirmed the identification of the hull as the Jefferson. James New is listed on the brig's muster roll, but he deserted the Navy shortly after leaving the Jefferson. (Photo: K. Crisman)



This oak board puzzled excavators at first, but proved to be a wooden cradle for a small boat. The central notch supported the boat's keel. Such cradles may have been used inside larger boats or on deck. (Photo: K. Crisman)



A near-capsizing in September, 1814, suggests that the Jefferson's 20 guns may have been too much weight for the hull's design. Shortly after she came into service, her captain removed the pivot gun from the forecastle and shifted the mainmast three feet aft in an attempt to bring her bow up. (Drawing: K. Crisman)

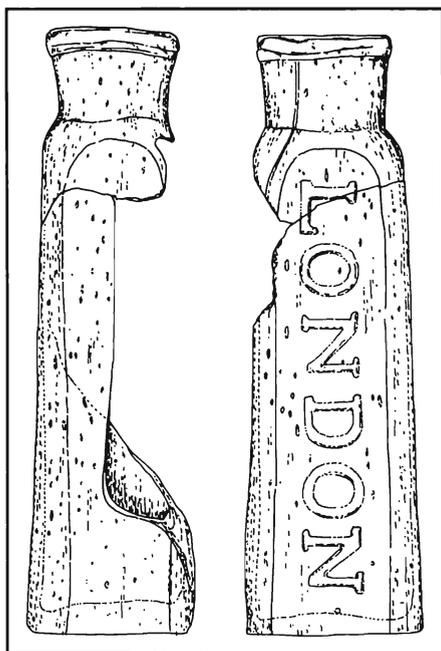


My interest in the *Jefferson* developed from the study of a similar vessel, the War of 1812-period Lake Champlain brig *Eagle*. I hoped to obtain comparative information from the *Jefferson's* hull, but was discouraged by reports that the wreck had been buried under tons of fill during the construction of a marina in the 1960s. However, in 1983, fellow Texas A&M nautical archaeology student James Duff told me that he had seen the wreck under the marina's docks when working on Lake Ontario a few years earlier.

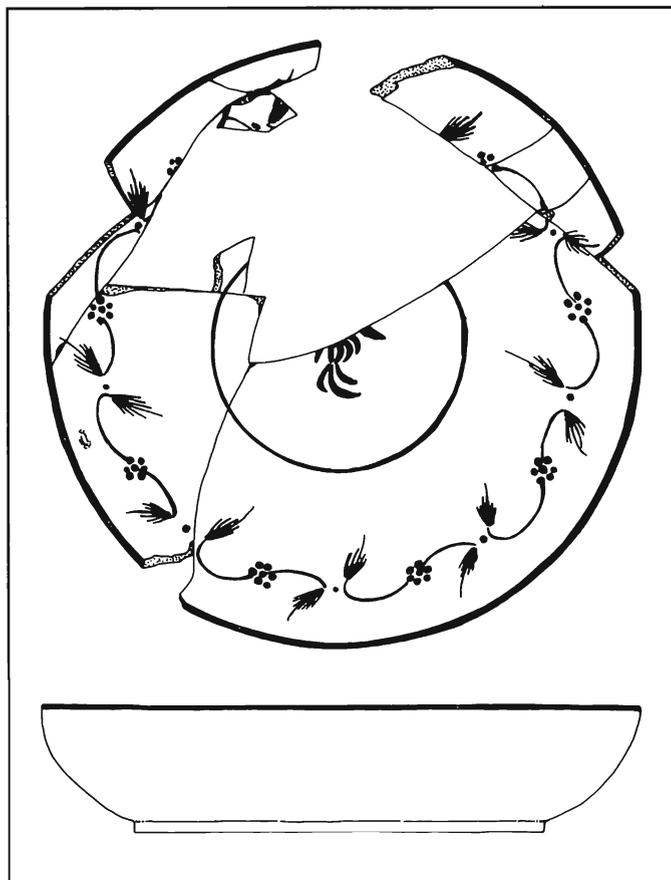
In May of 1984, Arthur Cohn and I went to Sackets Harbor to relocate the *Jefferson* and assess the condition of the hull. Our underwater search may hold the record for being the shortest in the history of nautical archaeology—we suited up on shore, walked twenty feet out on the marina's docks, hopped into the water, and landed on the brig's oaken keelson. A quick survey showed that the vessel lay on one side under four to twelve feet

of murky water. The starboard side of the hull and the forward half of the keel and keelson were missing, but the port side was mostly buried under lake-bottom mud and appeared to be well preserved.

The wreck presented some interesting possibilities. Practically nothing was known about the *Jefferson's* design (lines do not exist for any of the ships Eckford built during the war), nor was much known about the techniques and materials Eckford used to build vessels. A program of excavating and documenting selected parts of the hull was therefore begun, the goal being an on-paper reconstruction of the brig's appearance. We also hoped to learn something about naval life in the early 19th century, but the circumstances of the *Jefferson's* loss—abandonment rather than accidental sinking—suggested that there would probably be few crew-related artifacts within the wreck.



This glass "London Mustard" bottle held a popular condiment on board the brig *Jefferson*. Other artifacts associated with the crew include shoes, beef bones and naval buttons. (Drawing: K. Crisman)



Hand painted pearlware bowl and plate fragments were found in the officer's quarters. (Drawing: K. Crisman)



Half a dozen wooden gratings of various sizes were found during excavation of the wreck. Such gratings once covered hatches, scuttles and other openings in *Jefferson's* decks. (Photo: K. Crisman)

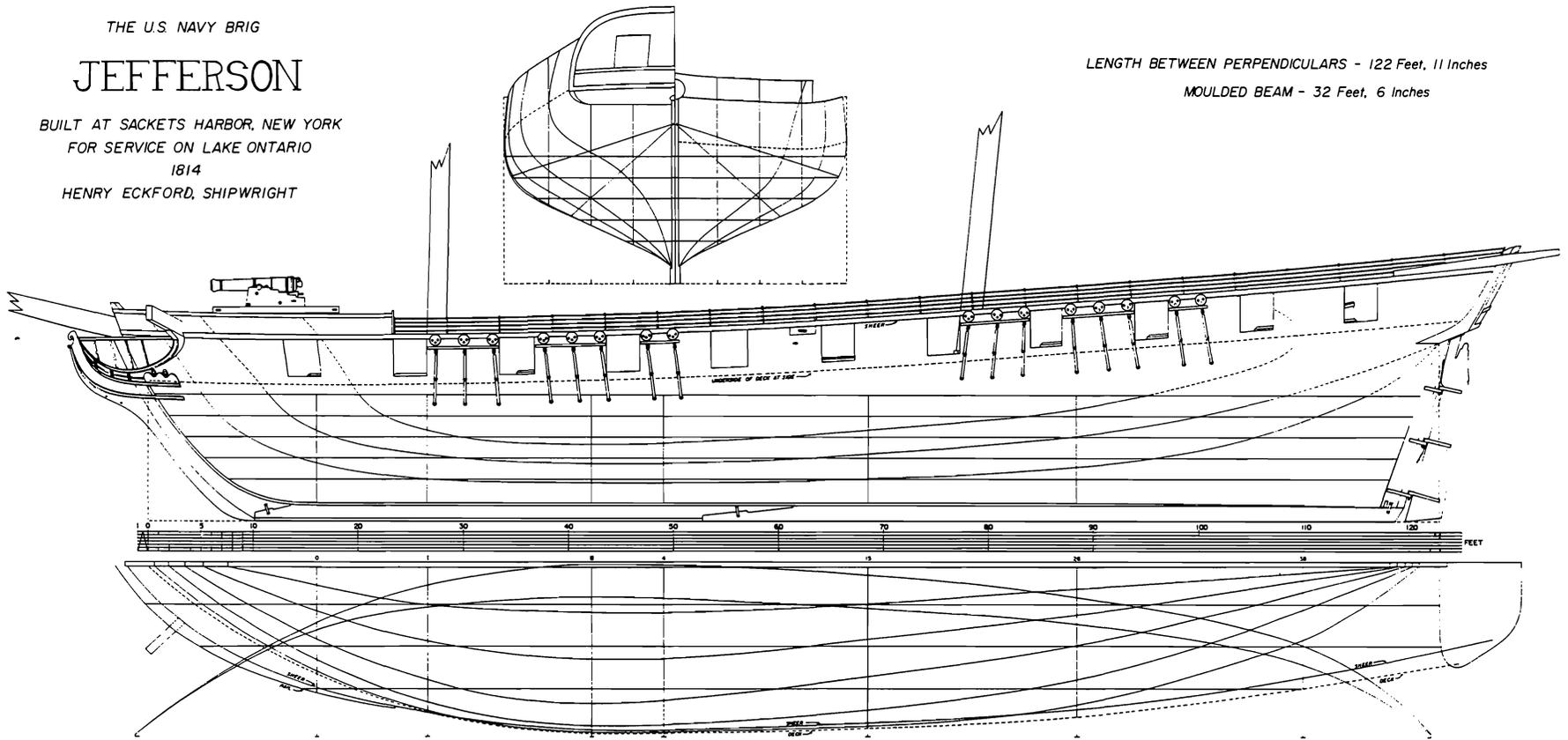
THE U.S. NAVY BRIG

JEFFERSON

BUILT AT SACKETS HARBOR, NEW YORK
FOR SERVICE ON LAKE ONTARIO
1814
HENRY ECKFORD, SHIPWRIGHT

LENGTH BETWEEN PERPENDICULARS - 122 Feet, 11 Inches

MOULDED BEAM - 32 Feet, 6 Inches



A soft, muddy bottom preserved the port side of the vessel and allowed Crisman's team to gather enough information to reconstruct the hull on paper. (Drawing: K. Crisman)

The wreck's location at the marina had both drawbacks and advantages. Field work had to be conducted on weekdays during the spring or the fall, since boating activity was too intense at other times. Diplomacy was also needed in dealing with the marina's clientele, many of whom were openly skeptical when told that there was a 20-gun brig sunk under their yachts. On the plus side, project logistics could not have been easier: we parked our cars within a few feet of the wreck and used the docks for entering and leaving the water.

The first phase of the fieldwork began in April, 1985, when the New York Bureau of Historic Sites sponsored a one-week preliminary survey. A trench was excavated across the interior of the port side, slightly forward of the mainmast step. This permitted us to examine the shape and assembly of a sample frame and reconstruct a section view of the hull. Portions of the wreck exposed above the mud were also documented with photographs and measurements during this time.

We returned again in May, 1987, to conduct three weeks of field work, funded by generous grants from the Bureau of Historic Sites, the National Geographic Society, and the Cecil Howard Charitable Trust. The objectives for this season were to uncover, measure, and sketch the brig's "spine"—the keel, keelson, and sternposts—and to expose a frame near the stern for study. We accomplished all of our goals, helped along by unusually good visibility that at times extended to 15 feet.

The third and final phase of the project took place in September of 1988, and was again sponsored by the organizations that funded our work in 1987. Our team spent three weeks recording key hull features. Two more frames were uncovered and recorded, the mainmast step was examined, and the heavy timbers that supported the main deck were measured. At the end of the 1988 season, we had enough data on file to prepare detailed reconstruction plans of the brig.

The soft, gooey mud that filled the interior of the port side contained a surprising number of ship- and crew-related artifacts. When the *Jefferson* was laid up in early 1815, no attempt was made to clear out the inside of her hull, and as a result, we found collapsed partitions and decks, ballast, gratings, scraps of sheet copper from the magazine lining, and other features that helped to reconstruct the inside of the ship. One particularly intriguing find was a brick stove with a cast-iron top, obviously intended to keep the after end of the brig warm during the cold winter months. The stove was located directly over the powder magazine, a hazardous arrangement but apparently preferable to living in a near-frozen state.

Crew-related artifacts consisted of such humble items as naval buttons, "London Mustard" condiment bottles, beef bones, pearlware plates and bowls, and shoes. A short-handled spoon with the name "I NeW" scratched into the bowl helped to confirm that this was in fact the wreck of the *Jefferson*, for a "James New" ("I" being the archaic rendition of "J") is listed on the brig's muster roll.

The inspection of the hull provided evidence of a high level of skill and craftsmanship in Henry Eckford and the carpenters working under his direction. Nearly all of the primary structural members were fashioned from the finest white oak and were

tightly fastened together with wrought-iron bolts and spikes. The care taken in the finishing and fitting of the individual timbers was remarkable; the *Jefferson* may have been a rush job, but Eckford obviously did not let this become an excuse for sloppy workmanship.

The construction of the *Jefferson* showed some deviations from accepted techniques of shipbuilding. Wooden knees, considered essential for bracing the insides of wooden hulls, were entirely omitted to save construction time and possibly to lessen the weight on the brig's topsides. Eckford instead braced the inside of the hull with a series of diagonally oriented rider timbers.

Speed under sail seems to have been the primary objective in designing the *Jefferson*. With its shallow draft and sharply rising bottom, the hull resembled the popular "Baltimore Clipper" form, but it was much larger than the average clipper schooner and considerably more heavily gunned. Sharp, shallow hulls and heavy cannon are a poor combination, and there is some evidence that the *Jefferson* was bow-heavy and somewhat crank. Not long after she was placed in service, her captain removed the pivot gun mounted on the forecastle and moved the mainmast three feet aft, probably in an attempt to bring her bow up. The near-capsizing in September of 1814 suggests, however, that the 30 tons of iron cannon carried on the main deck was simply too much weight for this design.

The *Jefferson* was clearly an experiment on Eckford's part in determining how best to combine fast sailing characteristics with good sea-keeping abilities. The experiment can be judged a success, insofar as the practical experience that Eckford gained during his stint on the lake no doubt contributed a great deal to his subsequent designing and building endeavors. Vessels such as the *Jefferson* tested the limits of sailing technology, and in doing so prepared the way for the "Clipper Ships" and other famous designs of the later 19th century.

Kevin Crisman has been working on American warships in the Lake Champlain area for nearly a decade. He graduated from the Nautical Archaeology Program at Texas A&M in 1984, and has written three well-documented books.

For Further Reading:

- Cassavoy, Kenneth and Kevin Crisman. "The War of 1812: Battle for the Great Lakes" in *Ships and Shipwrecks of the Americas*, George F. Bass, ed. (London and New York: Thames and Hudson, 1988).
- Chapelle, Howard Irving, *The Search for Speed Under Sail*, (New York: W.W. Norton & Co., 1967).
- Crisman, Kevin, *The Eagle: An American Brig on Lake Champlain During the War of 1812*, (Shelburne, VT, and Annapolis, MD: The New England Press and the Naval Institute Press, 1987).
- Roosevelt, Theodore, *The Naval War of 1812* (New York: G. Putnam's Son's, 1882).

NEWS AND NOTES

INA Staff Lectures

With the growth of interest in nautical archaeology, INA representatives have become more and more in demand as lecturers. Archaeological Director **George Bass** recently visited New York as the guest of the Archaeological Institute of America to deliver a lecture titled "Bronze Age Shipwrecks." Dr. Bass was elected AIA Vice President this year.

His Excellency Michael Bradley, Governor of the Turks and Caicos Islands, visited College Station in April to view the Molasses Reef Wreck artifact collection. The excavation of this shipwreck, one of the earliest in the Americas, was one of INA's first projects in the New World. Governor Bradley toured the MRW laboratory, and discussed plans for the collection's return to the new Turks and Caicos Museum of Maritime History.

The Hellenic Institute of Marine Archaeology recently celebrated its 15th anniversary by publishing the first issue of *Enalia*, an informative periodical. *Enalia* features an impression of the Bodrum Museum of Underwater Archaeology and INA's accomplishments there, as well as a variety of articles about underwater archaeology in Greece.

This fall, INA's archaeological director **Dr. George Bass** returns to the Scotland where he will be a Visiting Research Fellow at the Institute for Advanced Studies in the Humanities at the University of Edinburgh. In 1986, Dr. Bass held the Geddes/Harrower Chair of Greek Art and Archaeology at the University of Aberdeen. His earlier stay in Scotland allowed him to devote almost all his time to research centered on the Late Bronze Age Ulu Burun shipwreck; this time, Dr. Bass will concentrate on writing and editing the first volume of the Serce Limani Glass Wreck publication. Ann Singletary Bass will accompany him.



INA Adjunct Professor Faith Hentschel discussed the Egyptian aspects of the late Bronze Age Ulu Burun shipwreck and how the wreck's cargo reflects the international trade of the 14th century B.C. at a May lecture in Dallas. The lecture was part of a series designed to accompany the Ramses the Great exhibit there.

Long time INA member W.F. Bill Searle, Jr. has recommended *Hard Luck Iron Clad* by Edwin C. Bearss, published by Louisiana State University Press. It describes the salvage of the *Cairo* and explains what could be done with other ships, particularly with respect to the Abandoned Shipwreck Act passed last year. The *Cairo* is reconstructed and on display with the museum in Vicksburg, Mississippi.

The excavation of an ancient boat in the Sea of Galilee, *Kineret*, recently published by the Isreal Department of Antiquities, features contributions by INA/TAMU faculty member **J. Richard Steffy** and graduate student **Claire Peachey**. When this small first-century A.D. hull was discovered in 1986, Professor Steffy was invited to record and analyze the nearly intact vessel. Claire Peachey authored a chapter describing the boat model she built based on Steffy's information. The book may be ordered from the Isreal Department of Antiquities, P.O. Box 586, Jerusalem, 91004, Isreal, for about \$20.

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