

"Do They Really Pay You to Do That?"

By Paul Johnston

(September 1996)



Research vessel Piliialoha at the end of the rainbow



Hanalei Bay



Pier into the Bay

"Do they really pay you to do that?!" The answer is yes. But as an underwater archaeologist who occasionally works in exotic places, I am accustomed to dodging this question after I give lectures on historic shipwrecks. However, the shipwreck I am currently researching makes a glib answer impossible: it is located in one of the most beautiful spots on earth.

If you have ever watched the movies *South Pacific* or *Jurassic Park*, you will understand my dilemma: the wreck site is located on the Hawaiian island of Kauai, where these and other films were shot. The question becomes even harder to answer without stuttering, because the site is in the middle of Hanalei Bay, on the north end of the island. Even the Hawaiians consider this tiny one-mile notch in their coastline as arguably the loveliest spot in their fair isles. Not being a travel writer, I lack the vocabulary to make readers quit their jobs and book one-way tickets to Princeville, the airport nearest to Hanalei. Nevertheless, I'll take a stab.

The little bay is stunning, with gorgeous blue and green water punctured by spinner dolphins leaping from the waves like marine dervishes. Entirely surrounded by low, jagged mountains, one of whose peaks is the wettest spot on earth, Hanalei Bay forms the head of the famous volcanic Na Pali coast. The hills, whose rich greenery barely swathes their gaunt, eroded valleys, are draped with waterfalls like silver necklaces that gather into three rivers and empty into the bay.

Single and double rainbows of all sizes are frequent daily occurrences throughout the bay and hills, especially in the mid-afternoons when light, warm showers often pass through.

But the ineffable beauty of the place is merely a distraction from the reason why I am here. For that, we must travel 180 years back in time to 1816 and 7,000 miles from Hawaii to Salem, Massachusetts, where one of the most bizarre and fascinating stories in American history begins.

From Cleopatra's Barge to Ha'aheo o Hawaii



Model of the Barge

I learned the story of Cleopatra's Barge, the first deepwater yacht built in the United States, on the first day of my first job after graduate school when I was hired as Curator of Maritime History at the Peabody Museum in Salem, Massachusetts. A colleague ushered me into a small period room decorated lavishly with dark, exotic woods highlighted in rich red velvet and gold leaf. Small cabinets lining the room were filled with glass, silver, leather and porcelain curiosities, and the adjacent rooms were filled with ship models, rare furniture, log books from old ships, memorabilia and beautiful watercolor portraits of those same ships. All the contents of these three rooms - hundreds of artifacts and curios - were related to George Crowninshield, Jr. (1766-1817) of Salem, hero of this story and owner of the famous hermaphrodite brig Cleopatra's Barge.



Period room at the Peabody Museum

Cleopatra's Barge began life in Salem, Massachusetts. In 1815, the local shipping firm of George Crowninshield & Sons was dissolved upon the death of its founder, who had made his fortune as a Privateer. In the spring of 1816, the eldest surviving son and namesake,

George Jr., commissioned a new vessel from Retire Becket, one of Salem's most prominent shipbuilders. Built for his private leisure, the new hermaphrodite brig measured 100 ft. on deck, 23 ft. in beam, 11.5 ft. in depth of hold and 192 41/95 tons. In its purpose and dimension, it was unlike any pleasure boat ever built.



Napoleon's boots

Named Cleopatra's Barge after some evocative lines in Act II, Scene ii of William Shakespeare's *Anthony and Cleopatra*, the first oceangoing yacht built in the nation cost \$50,000 to construct and another estimated \$50,000 to fit out and furnish. Remember, those dollars are ca. 1815. No expense was spared at a time when a conventional deepwater merchant vessel cost one-tenth as much. Crowninshield commissioned special china and silver for his fancy new toy. As many as 2,600 people visited the unique ship each day during the winter of her construction and fitting-out.

In March 1817, armed with letters of introduction from such luminaries as James Monroe and John Quincy Adams, Crowninshield embarked in his new yacht upon a "voyage of pleasure" to "...one or more ports, places, cities, islands, towns, boroughs, villages, bays, harbors, basins, rivers, creeks, lakes, inlets, outlets, situated in the known world...once or more times." This became a six-month Mediterranean cruise, during which he underwent a series of adventures (and misadventures) in 16 ports, hosting up to 8,000 visitors each day. He returned in August 1817 with a collection of curiosities, including a pair of Napoleon's boots, and died that



Original China from Barge

November while planning his next cruise. After an unsuccessful attempt by a brother to steal the the yacht, Cleopatra's Barge was auctioned in July 1818 for \$15,400. Prior to the sale, the famous brig was stripped of her furnishings by the Crowninshields; many of these items adorn the above-mentioned galleries at the Peabody Essex Museum in Salem, MA.

Ha'aheo o Hawaii



King Kamehameha

In 1820 the Boston merchant firm of Bryant & Sturgis sent the Barge to Hawaii under Captain John Suter. Active China traders, Bryant & Sturgis planned to sell the famous yacht to King Kamehameha II (Liholiho) in exchange for Hawaiian sandalwood, a commodity highly prized by Chinese artisans for its use in making incense and decorative arts objects. The king inspected the ship within 24 hours of her arrival on November 6, 1820 at Lahaina Roads. Nine days later she was his, for 8,000 piculs of sandalwood (at about \$10 per picul, for a total of \$80,000). Liholiho cherished his yacht. He re-named her Ha'aheo o Hawaii (Pride of Hawaii) and used her as his royal yacht for the next three years.



Contemporary drawing of the newly renamed Ha'aheo o Hawaii

In late 1823, the king sailed to England to meet King George IV, but aboard a different ship. Meanwhile, his royal court took Ha'aheo for a cruise around the island of Kauai. On April 5, 1824, the brig grounded on a reef in Hanalei Bay, on the north end of the island. The king never learned of the incident, though; while he and his wife were awaiting a royal audience in London, they both died of the measles.

Despite a valiant rescue attempt by local Hawaiians, Ha'aheo could not be

salvaged and was declared a total loss. A section of her hull washed ashore during a storm on December 30, 1844 and was declared "in quite a sound state." The last historical reference to her dates from the mid-1850s, when a Native Hawaiian salvaged her remains. He recovered two cannon and a wooden and metal object, possibly a capstan, before ending his search.



Contemporary drawing of King Kamehameha II and his wife

The yacht and her New England story are so renowned that no fewer than three books have been written about her, along with several articles and book chapters. However, little is known of her Hawaiian history, and nothing of her ultimate fate is known aside from the recovery attempt made in the 1850s.

It was this unknown Hawaiian chapter in Cleopatra's Barge's short-lived but intense career that appealed to me. What was left of the famous storied ship, and what could it tell us about the material culture - the significance of objects and how they were used - of the early Hawaiian monarchy - our nation's only authentic royalty? Due to the tropical environment of the Hawaiian islands, almost nothing is preserved from the early 19th century, and fewer than a handful of artifacts remain from Liholiho's reign, which was a significant one. Liholiho was responsible for the breakup of the royal system of taboos in Hawaii and he permitted Christian missionaries to pursue the conversion of native Hawaiians, yet virtually nothing remains from his reign outside its historical legacy. His ship and her contents promised to amplify that sparse story, and also provide information about early New England shipbuilding, the origins and development of recreational watercraft in the United States, and much more.

Swashbuckler?

The remainder is spent behind a desk, either on the telephone, in a library or blinking at the baleful screen of a computer monitor.

The public perception of underwater archaeology commonly embodies a vision of bronzed, swashbuckling heroes diving on shipwrecks in exotic places and recovering massive oak seachests overflowing with gold, silver and precious jewelry, all the while fighting off sharks and other denizens of the two-legged variety.

However, few of us bear much resemblance to Indiana Jones, and the actual fieldwork of any serious scientific investigation only represents a small fraction - perhaps 5-10% - of an archaeologist's time. The remainder is spent behind a desk, either on the telephone, in a library or blinking at the baleful screen of a computer monitor. The archeologist must possess the varied skills and expertise of a professional writer, psychologist, diplomat, detective, surgeon, fund-raiser, general contractor, logistician, cheerleader and mechanical draftsman. I also frequently exercise the cut-and-paste skills I picked up in preschool and kindergarten. Leaven all this with the patience of Job, the persistence of Moses, and a ready sense of humor - and you qualify for the job.

Just a Few Details Before You Go



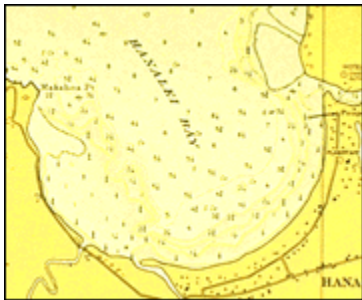
The Na Pali Coast - Home of the wettest spot on earth

I first contacted the State of Hawaii regarding a survey for the wreck of Cleopatra's Barge in January 1994. On the basis of my experience elsewhere, I expected to obtain a permit through the State Historic Preservation Office and begin diving that summer in Hanalei Bay. However, I quickly learned that my permit application was the first ever received by the state for a scientific

underwater archaeological survey, and that consequently, there was no process in place for such an application. Moreover, another underwater scientist wishing to use sonar to track whales in Hawaiian waters had recently run afoul of environmentalists who misunderstood his methodology. So the state was extremely sensitive to any underwater investigations. As a result, I would need to submit a formal Environmental Assessment for review by 26 state and federal agencies as well as the general public, and that a separate permit would be required by the U.S. Army Corps of Engineers. In other words, I was required to undergo the same regulatory process for the excavation of a few shallow test trenches in Hanalei Bay's sandy bottom as for the construction of a 500-room hotel on its shores! Moreover, one of the state agencies reserved a year's review period "after receipt of a complete application," and informed me that there were 60-70 applications ahead of mine!

I had always believed the federal government taught the class on bureaucracy, but I am now convinced the State of Hawaii came up with the concept and wrote the definitive textbook. Nearly a year after my initial inquiry, I emerged from the process - dazed, amazed and confused - with five different state and federal permits, one non-permit, and a total of 44 discrete conditions to meet during the survey. And that was only for permission to look for the wreck - what on earth might be required if we found something warranting fuller investigation?

I had always believed the federal government taught the class on bureaucracy, but I am now convinced the State of Hawaii came up with the concept and wrote the definitive textbook.



Nautical chart of Hanalei Bay

...I was now the world's foremost expert on how to get permits - however reluctant!



Piliialoha anchored and ready to work

Hundreds of phone calls, faxes and letters and an estimated two months of full-time work went into the process, exacerbated by the five-six hour time difference and roughly 7,000-mile distance between Honolulu and Washington, DC. It was small consolation to hear from several state administrators that my application had set a speed record. Needless to say, we did not conduct the survey in Hanalei Bay in 1994, but I did receive an invitation from the University of Hawaii to lecture on the Hawaiian permit process. They were looking into developing an underwater archaeology program for the future; and I was now the world's foremost expert on how to get permits - however reluctant!

Piliialoha

Once all the paperwork was completed, several more important details remained to be addressed: finding a research vessel, accommodations in Hanalei Bay for myself and my colleagues, a reliable air supply for our SCUBA tank refills, and other essential supplies for the survey, now rescheduled for July 1995.

Most of the items on my laundry list were taken care of thanks to connections I made through the lectures I presented at the University of Hawaii and elsewhere in the state (not paid for by taxpayers, incidentally!). And as for finding a boat, Captain Richard Rogers of Haleiwa, Hawaii, an avid wreckdiver, avocational historian/archaeologist and aspiring writer of a book on Hawaiian shipwrecks, volunteered his converted 40-foot surplus Navy utility boat Piliialoha (Circle of Friends) and a loyal

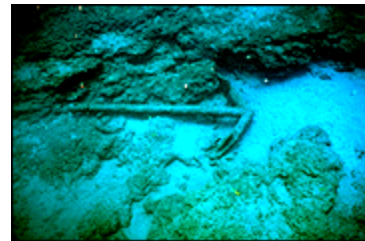
After she was blessed by a local kahuna, Pili set out for Hanalei Bay across the biggest stretch of open water in the Hawaiian islands.

crew of friends and relatives for the duration of the project.

We boarded Piliialoha 12 hours after my arrival on Oahu on 1 July 1995 for the 12-hour voyage to Kauai. After she was blessed by a local kahuna, Pili set out for Hanalei Bay across the biggest stretch of open water in the Hawaiian islands. The open passage was characterized by fair winds and following seas. We set out fishing lines along the way but arrived at dusk without fresh fish for dinner. The following morning, already hungry, we offloaded Piliialoha and set her up for the survey by wiring in the electronic gear needed for the electronic remote sensing equipment. Along with all our fancy equipment, we had a pretty reliable historical source to help guide us in our search for whatever might remain of the shipwreck: Missionary Hiram Bingham's eyewitness account of Ha 'aheo's 1824 unsuccessful salvage clearly stated that the yacht had struck a reef and sunk off the mouth of the Waioli River, right near the beach in Hanalei Bay. And as I mentioned earlier, Native Hawaiian A.S. Nuuanu had recovered two cannon and an unidentified metal-and-wooden object from the wreck in the mid 1850s.

"Mag Wizardry"

Small targets or "hits" began to emerge almost immediately - clustered precisely at the spot referenced by Bingham.



An anchor of uncertain origins that we left behind

In most cases, the signal source was visible, usually turning out to be modern debris such as a reef anchor, piece of tin roofing, steel sign post or the like, probably left behind by the 1992 hurricane Iniki.

Presuming the presence of considerable ferrous metal aboard the ship and having been assured by a local marine scientist (who will remain unnamed) that Hanalei Bay's subfloor was not magnetic, I had selected a proton precession magnetometer as the black box of choice, since it measures fluctuations in the earth's magnetic field (such as those caused by magnetic metal).

The morning after Independence Day, after setting up the mag, we began towing its underwater sensor back and forth across the bay at 50-foot intervals. Mag wizard Steve James, whom I had imported from Memphis, Tennessee to conduct the remote sensing, noted that his instrument went haywire as soon as it received power. After deducting Steve's jet lag from the equation, checking the instrumental calibration, scratching our heads and muttering numerous multi-national phrases of considerable color, we diagnosed the malfunction as having been caused by the indicated presence of background metal in the bay.

A few subsequent phone calls confirmed that the entire island of Kauai was formed of magnetic basalt, with a strong concentration around the north end of the island at Hanalei Bay! This new (and unsettling) information, combined with relief that his expensive instrument was not malfunctioning, permitted Steve to filter out the background noise sufficiently enough to read minute magnetic fluctuations. Small targets or "hits" began to emerge almost immediately - clustered precisely at the

spot referenced by Bingham. Coincidentally, one of our telephone contacts, marine biologist Tom Reed of Honolulu, had just bought an underwater metal detector and was looking for a test site.

Full of zeal for his new toy, he flew with it and another operator out to Kauai and set it up to work in parallel with our magnetometer. Sure enough, in a blind test his instrument indicated targets at precisely the same spots as the magnetometer. We began to reel in his sensor, 50 feet away at the end of its tether to the boxed instrument on Piliialoha. Just as the sensor was approaching the boat, a wave pushed it against the stern, churning the tether's slack into the propeller. Before we could cut engine power, the prop sliced through the line and lost the business end of Tom's shiny new toy in 45 feet of water! Luckily, we heaved a buoy overboard to mark the spot and found the unit just as the light was fading later that same afternoon.

Once found and confirmed, targets were further isolated by manually swimming the mag sensor around each hit. We dropped a buoy where signals were strongest. Each target was then logged into a GPS system and groundtruthed, or visually inspected, to see if any portion of the metal creating the signal was visible. In addition, the surrounding reef was visually inspected by the dive team.

In most cases, the signal source was visible, usually turning out to be modern debris such as a reef anchor, piece of tin roofing, steel sign post or the like, probably left behind by the 1992 hurricane Iniki. If nothing was visible on the sandy bottom, then Piliialoha was

anchored directly overhead on a four-point mooring, and the propeller-wash deflector was lowered into place over the target. At this point, the boat engine was turned on at low RPM, and the sand covering the target below was gently scoured off under diver supervision.

The Booty



Surf's Up!

If a waterlogged artifact is simply allowed to dry out without any treatment, the salt in the seawater will crystallize and break apart the object.

We had permission from the state to recover diagnostic artifacts, defined as items that will verify that we were on the particular wreck we were seeking. Right from the start of the first test trench, cultural material began to emerge. As expected, however, much of it was modern. The prevailing winds in Hanalei Bay are easterly, and we were working in shallow water near the sandy beach at the western corner of the bay, in a little notch in the coral reef. This meant that nearly everything dropped in the bay would eventually work its way over to our area.

In addition, we were working at the mouth of the Waioli River, so anything dropped in the river upstream also would find its way down to our survey area. The combination of environmental factors presented us with plenty of booty through which to sift but also with an archaeological challenge.

Both organic and inorganic artifacts from the past two centuries were recovered at the wreck site. Among the organics were bone, rope and wood, as well as two soft concretions (lumps

formed through contact with rusting iron objects). Inorganics comprised ceramics, iron-content concretions; copper fasteners; glass; copper hull sheathing; lead patching and ballast.

All the artifacts were shipped back to Washington, DC for photography, preliminary conservation, and desalination (removal of salts from the bay water in which they had rested for over 170 years) prior to their return to Hawaii. If a waterlogged artifact is simply allowed to dry out without any treatment, the salt in the seawater will crystallize and break apart the object.

Concretions with unknown contents were all x-rayed to see what was inside, and others were subjected to batteries of scientific tests to ascertain their content and structure. The more complex concretions containing multiple artifacts were sent to the Underwater Conservation Laboratory at Texas A&M University for further treatment. After research and conservation are completed, all artifacts will be returned to Hawaii for curation and display at a suitable repository chosen by the State Historic Preservation Division.

Organics



Mandible of a pig

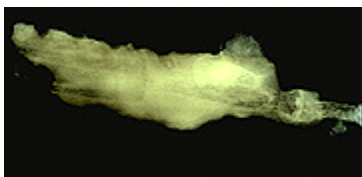
Six pieces of bone were recovered, including an intact button and the lower mandible of a pig (*sus scrofa*) more than three years old (i.e. too old for eating); the others are cow (*Bos taurus*) and domestic dog (*Canis familiaris*) bones. Contemporary sources relate that dog and pig were common dietary elements of the Hawaiians, and that pigs also were popular pets. Two short segments of three-strand rope (hemp?) were found in

a disassociated context; another short strand was found wrapped around a thimble-like iron concretion, warranting further study. Unfortunately, there is too little cellular structure preserved to determine their physical makeup.

Contemporary sources relate that dog and pig were common dietary elements of the Hawaiians, and that pigs also were popular pets.

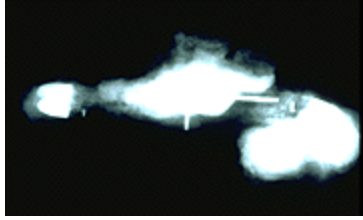
Seven small pieces of wood also were recovered, the largest of which is only 12 in long. All are tropical hardwoods, but they do not appear in any of the wood source databases. Since Kauai is the oldest of the Hawaiian islands and thus has the most indigenous species, it is currently assumed that these wood pieces are local and unassociated with the wreck. Perhaps they floated down the river and into the site. No part of the hull structure, aside from tiny fragments associated with iron fastener concretions, was located during the survey. The two soft concretions were analyzed respectively as (1) hydrocarbon, and (2) hydrocarbons, fats and resin - "an organic garden" - bonded with wood fiber, triglycerides and diterpine resin. The first originally may have been fuel or waterproofing material, now degraded; the natural resin of the second is consistent with a conifer source, suggesting pine tar. It may have been waterproofing compound, a torch, or even a traditional folk remedy.

Inorganics



X-ray through concretion surrounding two-tined fork

Of the pottery recovered, only one sherd is clearly contemporary with the wreck. Five Chinese brown stoneware sherds (from at least three containers) may be from the wreck, although such wares were made well into the 20th century. Similarly, sherds of stoneware, redware and a porcelain teacup were only partly diagnostic, since these ceramics also



X-ray through concretion surrounding folding pen knife

underwent long production runs. A partial brick may have served as ballast or part of the cookstove.

The presence of Chinese wares is curious and warrants further research, for we expected to find primarily Euro-American pottery due to the prevalence of these traders in the Hawaiian islands during the period under investigation. Of the glass fragments, only one - a dark green body sherd with air bubbles possibly from a Dutch case or gin bottle - may date to the wreck; the remainder appear intrusive, a fancy way of saying irrelevant. The 68 concretions revealed a variety of objects through x-ray and mechanical reduction; nearly half turned out to be modern barbed wire, sections of pipe, chicken wire or other grating/fencing material. Among the more significant concreted finds are a folding (pen) knife, rigging elements and a two-tined fork. Several concretions preserved the forms of various sorts and sizes of ship hull fasteners, ranging from square iron spikes to round metal nails and wooden treenails of various dimensions.

Coincidentally, one concretion contained a thin lens of zinc carbonate (hydrozincite), mixed with smithsonite - the mineral named after James Smithson, founder of the Smithsonian Institution. Hydrozincite is the whitish main ingredient of calamine lotion, used to treat poison ivy. However, there is no poison ivy in the Hawaiian islands; so it is not yet clear what sort of artifact this material represents. Three pieces of folded flat sheets of lead patching were recovered during the survey, ostensibly unused due to the absence of fastener holes or wear marks. They will undergo isotopic analysis within the next few

months to determine their precise contents and source.

Approximately 67 stones ostensibly foreign to the Hawaiian islands were recovered from the test trenches, ranging in size from 0.7 to 15 oz. Included are granite, tonatite gneiss, quartzite, quartz-bearing breccia, gabbro, limestone, mafic gneiss, granite gneiss, mylonite gneiss, blue schist, tolonite and basalt. With the possible exception of the last two, all are non-Hawaiian, according to preliminary analysis by the Geology Department at the University of Hawaii, indicating that they were ballast from the wreck site. The blue schist is of particular interest; it is known to originate from only a few places globally, one of which is in the area of Rio de Janeiro. Since the Barge made a coffee voyage to Rio before its days as Ha 'aheo o Hawaii, it is possible that this stone is a souvenir of that voyage.

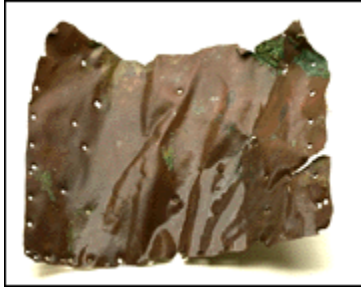
"The Deep Significance of Little Holes"



Copper hull fasteners

These twisted pieces of copper sheet are the central evidence for what happened to the ship after she wrecked - the site's "post-depositional history," in archaeological jargon.

Two copper hull fasteners recovered were from the wreck site. One is a bent drift pin and the other is a long, barbed, chisel-pointed spike for hull sheathing. Both are almost pure copper. Perhaps more telling, though, are the ten pieces of copper hull sheathing recovered in various degrees of preservation, ranging from intact to tiny fragments. This material was used on ship bottoms from the late 18th century to prevent fouling and penetration by shipworms. In all but a few of our samples, both interior and exterior surfaces were uncorroded. Another's original 14-in width is also intact; in its lower right corner of the external surface is preserved the two-line stamp: "W&G/G 24."



Copper hull sheathing

This 24-gauge copper is of British sizing; before and after the War of 1812, most of America's copper sheet, including Paul Revere's, was purchased from the English either in Bristol or Liverpool. Preliminary research indicates that the source of our stamped piece is the Liverpool copper merchants Williams & Grenfell & Co., and that it came from the midship section of the royal yacht. Elemental analysis (x-ray fluorescence and scanning electronic microscopy) of seven of the sheathing samples by the Smithsonian's Conservation Analytical Laboratory (CAL) indicate two different sources or batches for the sheathing, which were almost pure copper (± 97.5 and ± 98.5 percent).



Detail of Williams & Grenfell & Co. stamp on copper sheathing

These twisted pieces of copper sheet are the central evidence for what happened to the ship after she wrecked - the site's "post-depositional history," in archaeological jargon.

Virtually all of their edges are punctured with nail holes, through which copper fasteners were driven to attach the sheets to the wooden hull. Significantly, these holes are all intact, indicating that they were not torn off the wood but instead fell off it before being battered and twisted against the surrounding reef. This could only have happened in one way - if shipworms (*teredo navalis*) had consumed the hull planking first. Otherwise, the nail holes would display evidence of tearing, as they would have if Hanalei's villagers had salvaged the wood and stripped off the copper for reuse, or if powerful wave action had torn it off.

The inferred sequence of events also explains why no hull was found, since

the teredo weakens wood so dramatically that even the slightest movement of shipworm-consumed wood (as in a storm) would have splintered the weakened wood fibers almost immediately. The accounts of such explorers as Columbus and Magellan are packed with descriptions of the damage caused to their ships by the voracious worm. Columbus lost all four of the ships in his fourth and final voyage to the Western Hemisphere because of the teredo.

If you are still reading, bear with me a little longer, for these little nail holes in the copper sheathing tell us even more. They tell us why we are finding so little of the most famous yacht in history, and they also offer the most compelling reason for why we are returning to the site this month to complete our investigation.

Commonly, the hull of a wreck is preserved at least to the waterline, even in ambient conditions such as those in Hanalei Bay. This degree of preservation holds the artifact assemblage in a discrete spot, generally relatively intact. However, without the protection of her hull, Ha 'aheo's contents dispersed against the surrounding reef, where they are mixing with modern cultural material. Now all the mixed-up pieces of the puzzle are being ground into pepper. This is why all remnants of the ship must be recovered as soon as possible, before they are totally destroyed.

Coming Up for Air



Cleopatra's Barge above water

...we are forced to deduce her layout from contemporary images (paintings and drawings) of her and similar vessels, seasoned with educated guesses based on the few contemporary written descriptions

As I mentioned earlier, the real work begins after the diving ends. Aside from the artifact treatments described above, further research will reveal whether the artifacts which we believed were diagnostic in the field (during the dive), actually were so. This involved dozens of letters and phone calls to specialists in various fields ranging from chemists to bone, pottery, lithics (stone) and ceramics specialists. Many of these experts are employed right here at the Smithsonian, but others were far afield.

Historical research is ongoing on several fronts. For example, we are trying to develop a set of design drawings for the Barge and her interior arrangements, which the written sources clearly state were unique. However, since no contemporary plans for the vessel exist, we are forced to deduce her layout from contemporary images (paintings and drawings) of her and similar vessels, seasoned with educated guesses based on the few contemporary written descriptions of her deck and interior arrangements. However, these accounts were written by tourists and not ship experts, so reconciling their descriptions is challenging and difficult.

In addition, we are reviewing the 19th century Bryant & Sturgis records at Harvard University to see if the craft's 1820 owners may have altered the ship in any way prior to sending her out to Hawaii for sale to the king. The early

missionary and mercantile accounts of Hawaii also contain widely scattered references to Ha 'aheo's port calls and voyages. These are essential in developing an adequate chronology of her life in the Sandwich islands.

Diving Deeper



Scouring sand from the floor of Hanalei Bay

...I believed that there was not enough left of the famous craft to warrant further field investigations.

None of Ha 'aheo's hull has been preserved. This was one of the principal research opportunities we had hoped to pursue, for almost nothing is known of oceangoing ships of the period. The absence of hull remains is extremely disappointing, and when first returning from the survey, I believed that there was not enough left of the famous craft to warrant further field investigations. However, several factors influenced the decision to return to Hanalei Bay again this year.

Foremost among these was the harsh environment in which the wreck lays - right at the shoreline in the heavy surf break. This wave action is particularly strong during the winter months, when the waves build all the way from the Arctic before crashing onto Hanalei's beach. The tsunamis and hurricanes endemic to the region also have exacted their toll, along with the shipworms that consumed the ship's wood. If we did not return to the site, there would be an excellent chance that in a few years, the weather and local wave action would totally destroy anything at all that remained of the yacht. In addition, it is possible that sportdivers, after learning of the vessel's location through our efforts, might attempt to seek souvenirs of the Royal Hawaiian yacht.

As a result of these and other factors, I decided to apply for permits once again to excavate the remains before they were

lost forever. This time around the permit process was not so complicated. Consequently, as you read this I am in Hanalei excavating the remaining portions of the site which were unexplored during our initial survey. Hopefully, excavation will reveal the remainder of the artifact assemblage and provide material answers to any remaining questions the ship can offer. I'll let you know.

This article originally appeared in *increase & diffusion*, a Smithsonian online publication.