MARITIME ARCHAEOLOGICAL AND HISTORICAL SOCIETY



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Despite the modern

unattractive at the time. In his book *Chesapeake Bay Sailing Craft*, one-time curator of the Chesapeake Bay Mariners' Museum, Robert H. Burgess, described the *Levin J*. *Marvel* "as homely a vessel as ever cleaved the waters

view of most sailing vessels being beautiful and

graceful, rams were considered rather

of the Bay. Her cumbersome hull

resembled a canal barge. The characteristics of these craft were wall sides, bluff bows, flat bottoms, little

sheer and no topmasts"

(Burgess 1975:173). They

A Marvel-ous Opportunity

By Susan Langley

In 1891, the wooden hull of a 183-ton ram schooner slid into the waters of Broad Creek, a tributary of the Nanticoke River, in Bethel, Delaware. The vessel was christened *Levin J. Marvel* after an undertaker in the nearby town of Laurel, Delaware. The *Levin J. Marvel* measured 125.5 feet long, with a beam of 23.5 feet and a draft of 7.5 feet (Marvil 1974:67). Only the third such vessel to be built, it was constructed to a design first laid out by J. M. C. Moore in 1889 (Marvil 1974:14).

were usually gaff-rigged and sported three pole masts. Although this lead to them sometimes being referred to as "jackass schooners" or "bald-headed schooners." The term "bald-headed" was also applied to any vessel underway without headsails set. The advantage of the bald-headed rig is that fewer crew are required to operate the vessels.

Ram schooners were flat-bottomed, slab-sided and shallow-draft centerboard schooners, distinguished by a



The Levin J. Marvel carrying lumber in 1938. Photograph by Frank A. Moorshead, Jr. (Brewington 1956:152).

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FALL 2012

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Notes from the Prez – Steven Anthony

MAHS has been actively involved in underwater archaeology projects since its inception in 1988. Although poor weather is a prominent concern with all of our projects, never have our programs been so affected by the weather as they were during the 2012 diving season.

We conducted our June Field School in Underwater Archaeology again this year on Pickles Reef, near Tavernier, Florida. This is the site of a multiyear project in cooperation with Florida Keys National Marine Sanctuary. Our inspection and documentation of cultural remains on the seabed includes an array of concreted barrels and the framing of a metal schooner. We picked up where we left off last season and continued the development of the site map. We also collected extensive video documentation of the site with the assistance of Will Blodget. However, tropical storm Debby wouldn't let us complete the job. The storm brought torrential rain and tornados to the Florida coast and halted our diving activities on the second day of the field school. Instead, students participated in historical research with local historian Jerry Wilkinson, who graciously opened his home and his archives to the MAHS team.

Later in the summer, Brenda Altmeier, Coordinator with the Florida Keys National Marine Sanctuary, introduced us to NOAA archaeologist Matt Lawrence. We asked Matt to examine the Pickles Reef site and provide us with a professional interpretation of the metal remains on the bottom. He visited the site and advised that the structure was indeed a shipwreck and identified a keelson and two mast steps among the debris. This confirmation was very helpful and will enable MAHS to re-orient our future study and documentation of the site. See the following article for more on this story.

The summer picnic was another notable weather event for MAHS. We normally kick off the summer diving season with the annual MAHS picnic at Seneca State Park. Members look forward to this event every year as it provides an opportunity for MAHS folks to kick back and share stories about our adventures. The picnic is also an excellent opportunity for new members to learn about our activities and how to get involved. However, Mother Nature again decided not to cooperate. The picnic was plagued by unseasonably cold temperatures and an August rainstorm that chased us under the picnic shelter for most of the day. Despite the cold weather though, beer and watermelon remained popular items on the menu.

MAHS is also involved in several multiyear

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length at least four times their breadth. It is alleged that their dimensions were to ensure that they could fit through the Chesapeake and Delaware Canal locks, which were 24 feet wide. The origin of the term "ram" is credited by Burgess to the owner of a chandlery in Chesapeake City, Bill Borthwick, who he claims remarked upon viewing the ram schooner J. Dallas Marvil making its way through the C&D canal, "Look at that d—thing butting her way through the other schooners; she's acting just like a ram" (Burgess 1975:173). There is a reference in court documents from the trial of the Levin J. Marvel's captain that states, "These boats had heavy bowsprits, which might be used to 'ram' (hence the name) sails on a competitor, so as to win the race," referring to the fact that the fastest vessel to a port with a commodity commanded the highest price (USA v. JH Meckling 1956:9).

The design of ram schooners made them profitable bulk cargo carriers even though they were expensive to build. Construction of the first ram schooner. J. Dallas Marvil, built by J.M.C. Moore in 1889, cost \$7638 at a time when ship carpenters made \$2 a day (Burgess 1963:113; Marvil 1974:52). Their cargoes varied, but the main item was lumber. A large ram schooner could carry 200,000 board feet of lumber. On the way down the Bay they would carry coal, fertilizer, empty cans for canning factories, or supplies for merchants in Virginia and the Carolinas. On their return they would load lumber or grain for transport back to Baltimore or Philadelphia. By the 1930s and '40s, fertilizer became a major item, with phosphate brought from Florida to Baltimore then returning south as fertilizer, replacing perhaps a grain cargo brought up the Bay (Snediker and Jensen 1992:82).

When Delaware physician and part-time historian James Marvil wrote the first edition of his book, Sailing Rams: A History of Sailing Ships Built in and near Sussex County, Delaware, in 1961, he had interviewed as many people associated with the construction and sailing of ram schooners as he could find. Much of his information about the Levin J. Marvel came from Orlando Moore, who was the First Mate and Cook on the vessel's first voyage. Moore commented that the Levin J. Marvel had been built in 90 days (Marvil 1972:67). This was very fast considering materials had to be brought in by mule and sawed by hand (Burgess 1963:113). Like other rams, the schooner hauled coal, fertilizer and lumber until 1945, when it was bought by Captain H.E. Knust, who also owned the ram schooner Edwin and Maude. Both were converted for use for summer passenger cruises at a cost of \$18,000 each (Marvil 1972:68). Most trips lasted a week, beginning in their home port of Annapolis and including stops in places such as Georgetown, Oxford, and St. Michaels among others. The Edwin and Maude continues to sail

out of Rockland, Maine, under the name *Victory Chimes* and is the last ram schooner afloat.

Although both vessels were usually moored in the Wicomico River at Salisbury during the winter, in 1946 the *Levin J. Marvel* undertook a voyage to Florida (Marvil 1972:68). Scheduled to take two weeks, the trip ended up lasting 33 days, and the ship grounded no fewer than 15 times and clipped a piling passing through a bascule bridge in Florida under sail, as it had no motor (Marvil 1972:68); Life 1946:107). Many of the guests had to depart early to return to jobs but some stuck out the entire trip. Under the circumstances, an article in *Life Magazine* covering the voyage did not provide the boost to business that was anticipated, describing the vessel as "clumsy" and "continually in trouble" (Life 1946:107)."

In June 1954, the Levin J. Marvel was sold to Captain John H. Meckling, who continued to operate the Marvel for week-long cruises around the Bay. On the Wicomico River, en route to Annapolis, the wake from a passing boat caused the yawl pushing the ram schooner to, in the words of James Marvil, "stave a hole in the transom, causing her to ship water and almost sink" (Marvil 1972:68). The Salisbury fire Department responded to pump out the hull and enable it to be refloated from where it had grounded. It was taken to Baltimore where repairs were made by the Booz Shipyard. The yard's records of these repairs became significant during the inquiry after the loss of the ship, since they reported that they considered the repairs temporary and sufficient only for "minimal operational requirements" to finish the 1954 summer season, and that the vessel "required extensive caulking and other repairs due to age, inherent hull weakness and a recent grounding." The Coast Guard later noted an "excessive amount of rot in the structural members of the vessel" (USCG 1955:8). After its loss in 1955, it came to light that a year before, Coast Guard Captain Alfred W. Kabernagel had sent Meckling a letter ordering him 'to discontinue operation of the vessel...until it was submitted for inspection,' but that Meckling appealed and apparently succeeded in not having to comply (Bauer 1993).

The loss of the Levin J. Marvel

The *Marvel*'s final voyage began in Annapolis. On the last leg of the trip the vessel departed Cambridge on 11 August 1955 to return to Annapolis. But Hurricane Connie claimed the vessel the next day in Herring Bay, where it had sought shelter. The loss of the *Levin J*. *Marvel* in 1955 is best described in the following excerpts from the Coast Guard's *Commandant's Action* document:

3. At 1100 Monday, 8 August 1955, small craft warnings were hoisted for the Chesapeake Bay

area which at 1400 next day were changed to northeast storm warnings. This storm warning continued until the morning of 13 August, the day after the foundering of the MARVEL. A hurricane alert was issued at 1400 9 August which terminated at 1400 11 August.

- 4. At about 1400 on Monday, 8 August, while small craft warnings were displayed, the LEVIN J. MARVEL departed from Annapolis with 23 passengers and 4 crew members on board for a six-day voyage on Chesapeake Bay to end at Annapolis on the following Saturday. The voyage proceeded partly under sail when conditions permitted and partly under tow of the accompanying motorboat, and the vessel arrived at Cambridge, Maryland, at 2000 Wednesday, 10 August. At 1400 11 August, although the hurricane alert was terminated, the northeast storm warnings (wind velocity 35 to 73 mph) were flying and in effect, weather advisories were issued of northeast winds 25 to 35 mph increasing to gale force on the lower Bay on the following day, Friday, and because of the uncertainty of the course that the hurricane would take in its movement northward. extreme caution was indicated in the interests of safety to life and property.
- 5. In the face of these warnings, although the then present weather was favorable, the LEVIN J. MARVEL departed from Cambridge at 1400, 11 August, to arrive at Annapolis on the scheduled date, Saturday. The weather continued favorable until about 0300 the following morning, 12 August, when it began to threaten and by 0630 the wind was northeasterly, 25 to 40 mph, with gusts of higher velocity. By 0700 when about two and one-half miles off Bloody Point Light, due to worsening weather conditions the sail vessel could no longer proceed in a northerly direction and was forced to change course to a southerly direction, but being unable to maintain steerageway, course was again changed to west-southwest running before the wind toward Herring Bay, anchoring at 0930 one and one-half miles to the eastward of Fairhaven. Due to the inability to close defective shipside airports and probable leakage because of the deteriorated state of the hull, the vessel began making water which, as the morning progressed and the weather worsened, got beyond the control of the pumps on board. By 1200 one power bilge pump had failed and the other was ineffective. The radio

transmitter on board was inoperative and although efforts were made, signals of distress could not be put on the air and the plight of the LEVIN J. MARVEL was unknown to anyone except those on board. By 1400 the wind was north-northeast, force 7 to 8, squally, overcast, with very rough sea. The uncontrolled ingress of water caused the bow of the vessel to lose buoyancy and become awash, and the persons on board gathered aft in preparation to abandon ship. At 1430 the vessel rolled heavily, lay over on her beam, and foundered. There being no lifesaving equipment on board and the accompanying motorboat having been previously lost, the passengers and crew were forced to enter the water with jacket-type life preservers and the floating wreckage as their only means of survival. Fourteen passengers perished and nine passengers and all four crew members survived (USCG 1956:1-2). (United States Coast Guard, Commandant's Action. MVI, 24 Jan 1956. Photocopy on file, Maryland Historical Trust).

This summary of the loss does not reflect directly nine damning conclusions of the Marine Board. The ninth point listed five federal statutes violated by the



Captain Orlando Moore. Undated photograph by James E. Marvil (Marvil 1972:115).

Marvel's owner. These included false advertising regarding its safety standards and crew; deliberate efforts by the owner to retain the vessel in a category of registration for which inspections were not required; no lookout posted, as was mandated by law; neither the captain nor crew possessed any license or validated Merchant Mariner's Certificate of Number issued by the Coast Guard, either for the vessel or for the motorboat used to convey passengers to the vessel; known unseaworthiness of the vessel; and poor judgment in the face of known weather conditions (USCG 1955:9-10). Of the four crew, one was a steward and one was the cook, so there were in fact only the captain and the 17year-old mate to handle the vessel. The captain claimed he heard one of his "May-day" calls picked up by a radio operator in North Beach, but no such operator could be located. When the FCC was approached, it said no radio operator was registered there; it was then learned the boat's radio was inoperative. There was substantial conflict in the testimony regarding the functionality of the radio, and the judge concluded that he believed the radio was capable of sending out a weak signal (USA v. JH Meckling 1956:7).

Of the 14 passengers lost, the coroner determined all had drowned, including a 13-year-old boy and three members of his family. Of those who survived, some made it to the beach, but most managed only to reach a duck blind. Local residents aided the survivors while another man and a volunteer firefighter from North Beach used a small boat to retrieve those on the blind. The surviving passengers were largely supportive of the captain, who could not swim, saying he had done well by them. The Coast Guard was less sympathetic. The Board recommended that its findings be transmitted to the U.S. Attorney General and that Meckling be prosecuted, that the men effecting the rescue from the duck blind be formally recognized by the Commandant of the Coast Guard, and that legislation be promulgated requiring federal inspection of all boats and vessels of "any type, size or means of propulsion which carry one or more passengers for hire" (USCG 1955:11). The Commandant approved the Board's recommendations and cited four specific statutes for which there was "evidence of probable violation" (USCG 1956:2). He added, with regard to the recommendation for inspections, "there are now before Congress two bills, H.R. 7952 and H.R. 8267, which provide for the inspection and certification of such vessels when carrying more than six passengers" (USCG 1956:2). After two years of study and hearings, the Federal Boating Act of 1958 was passed (P.L. 85-911). The original document, which was amended and revised to form the final Act, was known as the Bonner Bill for its sponsor Congressman Herbert C. Bonner of North Carolina who is credited as the father of the final

Meckling tried to have his trial moved out of Maryland, arguing that adverse publicity would prejudice him receiving a fair trial. He conceded to a non-jury trial and faced two charges: "misconduct, negligence and inattention to the duties causing loss of life;" and "operation of a vessel in a reckless or negligent manner so as to endanger life" (USA v. JH Meckling 1956:1). The trial began April 18, 1956, (Rasmussen 2004) and lasted 13 days exclusive of arguments (USA v. JH Meckling 1956:9). Ultimately, Judge Dorsey Watkins found Meckling not guilty of the first charge and guilty of the second, sentencing him to a vear's suspended sentence and a year's probation with no fine involved (Rasmussen 2004). The reason for the leniency given by the judge was, "A person would have to be devoid of normal feelings and sensibilities not to have suffered. I think he has really suffered" (Rasmussen 2004).

The location of the Levin J. Marvel

Although some reports and divers have commented that the exact location of the *Levin J. Marvel* was difficult to pinpoint, this seems to reflect a failure on the part of the individuals since its location has been plotted on nautical charts since 1956 and geographic coordinates describing its location were available soon after its loss. As early as 1955, the Marine Board gave its location as 38°45'20" N, 76°31'20" W. The wreck lay in 22 feet of water and was marked with a lighted buoy. According to contemporary court records:

Three days after the wreck, two Navy divers located the hull in 22 feet of water and they found it sitting on an even keel on hard bottom. Most of the deck had washed away and there was primarily left 'a gutted out hull'. The stern had broken up and was torn away from the hull. A visual examination was made of most of the hull and no breaks in it were observed although no effort was made to probe the individual planks (USA v. JH Meckling 1956: 7).

The wreck again was inspected in 1956 by the Corps of Engineers (AWOIS No. 4694). Their work revealed 16 feet of water over the wreck and that it had broken up and was not considered an "'unreasonable' menace to general navigation" (AWOIS No. 4694). The lighted buoy subsequently was discontinued. Even though local divers failed to relocate the wreck in 1986, a 1987 site inspection was successfully conducted by NOAA divers, and further information about the wreck was reported including its location referenced to the North American



Deck Plan of Levin J. Marvel. Note the placement of sinks against the outer hull, beside each bunk (Courtesy John Ward).

Datum of 1983: 038°45'23.276 N, 076°31' 26.248 W (AWOIS No. 4694). The difference between the original and updated geographic coordinates is negligible. Divers described the site as:

The scattered remains of a large wooden vessel...in the latter stages of decomposition but, hull ribbing and planking could be distinguished on several large pieces of the vessel. Several porcelain sinks with brass plumbing were also found. The least depth was taken on the remains of an interior bulkhead protruding approximately 6 to 8 feet above the bottom" (NOAA 1988:50).

Their report recommended that the symbol on nautical charts be updated from a wreck symbol annotated *16 ft rep* to a 16-foot danger curve simply annotated *WK* (wreck) (NOAA 1988:50). Implementation of this recommendation began as early as 1990 (NOAA 1990). Subsequent side scan sonar and echo sounder surveys conducted during the late 1990s resulted in the recording



NOAA divers' sketch of the exposed remains of Levin J. Marvel. Note the porcelain sinks and compare them to the Deck Plan at the top of the page.

of 17 feet of water over the wreck and nautical charts were updated accordingly by 1999 (NOAA 1999).

Recent Discovery in Herring Bay

In February 2012, Rhonda Greene contacted the Maryland Historical Trust (MHT) on behalf of her sons, Wyatt and Cole, both 11 at the time. During a visit to Herring Bay, Cole and Wyatt were taking advantage of a blowout to explore the bay bottom. They returned with news of a shipwreck and borrowed their father's iPhone to capture video and a tape measure to record their find. They determined that the vessel measured 129 feet by 25 feet wide and that there was a small boat measuring about 20 feet long that had broken in half nearby. The Greenes recorded the site with the Maryland Historical Trust as the Wyatt & Cole Greene Site (18AN1509). They undertook substantial research about reported shipwrecks in the area and believe that their finds might represent a portion of the Levin J. Marvel and a life boat. Upon viewing the video clips, which appeared to show the remains of a large vessel, and hearing the dimensions and their description of the find, we at MHT felt that it

was possible that they had found a portion of the *Levin J. Marvel*.

At this time they met with John Ward of the Deale Area Historical Society. Mr. Ward is the consummate authority on the *Levin J. Marvel*, having researched the vessel for decades and lectured extensively about it. On viewing their videos he concurred that it looked like a shipwreck but disagreed that it could be the *Levin J. Marvel*, as the location is almost in Rose Haven and far from the reported location of the wreck.

Had a piece of the *Marvel* worked its way south over the years? Or was the Greene find something else, part of a jetty that appears as "PA"—position approximate—on nautical charts, or part of a different shipwreck? A local resident commented that a ferry once operated in the area but did not recall it being lost. The size of the Greene Site would eliminate all but the most substantial vessels. The Maryland Maritime Archaeology Program (MMAP) spent three days in June collecting side scan sonar data







Side scan sonar image of the Wyatt & Cole Greene site (18AN1509).



Cole (l) and Wyatt (r) Greene holding the sonar tow fish, left; and monitoring the topside computer for the site. Sonar images and photos by the author.

in Herring Bay where the Levin J. Marvel is reported to be located, as well at other charted wreck sites and loci in the area that are marked as obstructions. The sonar unit used was a StarFish 450F Seabed Imaging System, which was rented due to the failure of MMAP's side scan sonar system in 2011. The StarFish system was deployed from MMAP's 18-foot Carolina Skiff. Unfortunately, it could not record images of sufficient quality to ascertain the identities of the various sonar contacts recorded. However, a target was located at the coordinates for the Levin J. Marvel that seems to concur roughly with the 1987 findings. Finally, the author invited the Greenes to join her to collect sonar data over the site they had discovered. A combination of shallow waters and wood and metal standing proud of the bottom made capturing sonar images of the Greene site a tricky process. Work was undertaken gingerly and produced a clear image of the site. While it appears unlikely that the Greene Site could be part of the Levin J. Marvel, it merits additional study to try to identify what it may be.



The nature and placement of the sinks within each cabin of the Levin J. Marvel (Courtesy John Ward).

Future plans include diver inspections of the remains of both the *Levin J. Marvel* in Herring Bay and the Greene site. The remains of the *Levin J. Marvel* should be inspected and compared to the previous documentation of that site. The *Victory Chimes* (ex. *Edwin and Maude*), although slightly larger, is of a comparable size and might prove useful in studying the remains of the *Marvel*.

The Wyatt & Cole Greene Site (18AN1509) needs to be examined closely in an effort to indentify its nature. While it may not prove to have a connection with the *Levin J. Marvel*, the prompt and appropriate action taken by Cole and Wyatt Greene to record and report a submerged cultural resource is highly commendable and has earned the Greenes the Maryland Maritime Archaeology Program's Volunteer of the Year Award for 2012, to be presented in Spring 2013.

Acknowledgements

The Maryland Historical Trust wishes to express its appreciation to the Greene family for their civicmindedness, especially Wyatt and Cole, but also Rhonda and Duncan for their time as well as their interest in history that leads them to encourage their sons' curiosity and enthusiasm. The Trust is also very grateful to Herrington Harbor Marina for providing dock space at no charge, for permitting staff to lend a hand when possible and for promoting the exploration of the area to its members. Thanks also are due to Honey's Harvest for twice providing space for a public display and for a public presentation by Mr. John Ward. Mr. Ward, as the acknowledged authority on the Levin J. Marvel, has been very generous with his knowledge, materials, and time. The Trust is extremely grateful for his participation.

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Investigation of Shipwreck Debris on Pickles Reef: MAHS Project Update, 2012

by Tom Berkey and Dennis Knepper

n June of 2012, MAHS volunteers returned to the Florida Keys to continue investigating shipwreck debris located on Pickles Reef in the Florida Keys National Marine Sanctuary (FKNMS).

The Florida Master Site Files indicate that three archaeological sites have been recorded on Pickles Reef, with the formal site numbers 18MO1315, 18MO1316, and 18MO1333. Little has been recorded about the sites other than their general locations. In 2010, Roger Smith, Florida State Underwater Archaeologist, asked MAHS to investigate Pickles Reef and determine the relationship between the sites recorded in the State's files and wreckage known to local dive operators on the reef. Smith described three areas of interest: 1) metal wreckage known as the Gear Wreck or Barrel Wreck; 2) a nearby scatter of solidified cement barrels; and 3) a ballast pile lying some distance from the other two sites.

June 2012 was MAHS' third season at Pickles Reef. During two previous seasons MAHS volunteers located all three of the areas mentioned by Smith and generated a site map that included the metal wreckage and cement barrels. The two main goals of the current project were 1) to refine the site map by filling in detail and tying outlying features to the main site datum, and 2) to relocate and map the ballast pile.

MAHS worked under a Sanctuary permit (FKNMS-2009-054-A2) that authorized our research within the marine sanctuary and clearly defined the work activities allowable. Diving services for the project were contracted through Conch Republic Divers and accommodations through Ocean Pointe Suites, both in Tavernier.



M. Briscoe and J. Gorman practice trilateration under the supervision of W. Blodgett and T. Berkey. Unless noted, all photos by W. Blodgett.



Tropical Storm Debby. Image from NASA.gov.

As has been the case in past seasons at the site, the project combined survey work with the MAHS Field School in Underwater Archaeology, which is held at least once a year for graduates of the live underwater archaeology course or the video course, *Diving into History*. This year's small but intrepid class included students Jim Gorman and Mel Briscoe, and was headed up by MAHS Education Director, Tom Berkey, assisted by trainer Jim Smailes.

June can be an unsettled month in south Florida, and this year proved to be frustratingly typical. Tropical Strom Debby began forming in the Gulf of Mexico in the days leading up to the project, and the storm soon headed straight for the coastline.

Skies were ominous as we conducted our dry-land trilateration exercise for the field school on the beach at the hotel. The weather deteriorated on the 45-minute trip out to the site, with the rain coming down so hard that it was difficult to make out the horizon. Moored at the site, the rain lessened, but winds were up causing a



S. Anthony and J. Smailes reset the baseline.

high chop. As might be expected in such conditions, several divers soon began to feel more than a little green around the gills. The only real cure for seasickness is to eliminate the rocking motion that causes the sensation. Conventional wisdom has it that if you feel seasick on a dive trip you should get underwater, out of the waves where things are calmer. Unfortunately that didn't help much this time. The wreck site is in shallow water, much of it only 12-15 feet deep. In fact, the shallow depth is one reason that there are wrecks on the reef, as ships were blown onto it during storms. But at that depth wave action at the surface can result in a pretty substantial surge on the bottom. So there was little relief for those in misery. But everyone persevered, allowing us to complete two long dives the first day.

The field school participants were able to practice trilateration, if in somewhat trying conditions, while the rest of the survey team collected useful information. Time was spent resetting the site datum points, which had been removed sometime during the year since our last visit. Major outlying features were then mapped relative to the baselines connected to the site datum. And lastly, the scatter of ballast stones was relocated and its position was also measured relative to the site datum.

Although it was still unclear at the time what some of the debris represented, detailed measurements were made of several of the larger metal features. In addition, Will Blodgett conducted a video survey of the site, from which most of the underwater images in this article were captured and edited. Blodgett also ran a series of overhead passes which we later used to begin constructing a photomosaic of the site. Work will continue on the mosaic this winter.

B y the second day, weather conditions had worsened and the boat captain cancelled diving activities—the seas were too rough for safety. As a backup, we reviewed historical documents graciously



Photomosaic of one of the large structural features consisting of iron framing and riveted plate metal.



Recording features: left S. Anthony and J. Smailes; right D. Knepper and K. Peterson.

loaned to us by Jerry Wilkinson, a local historian in Tavernier who has an extensive collection of newspaper clippings, photographs and other historical documents related to the history of the Keys in general and the Upper Keys in particular. Wilkinson has written widely on the history of the Keys, and some of his work can be found on his web site, www.keyhistory.org. Among the documents were diaries and formal construction records for portions of the Henry Flagler's Florida East Coast Railway (FEC), to which we think the wreckage on Pickles Reef might be related.

Additional research was conducted as part of the project. Jim Smailes met with Susan Swiatosz, the archivist at the Flagler Museum, in Palm Beach. The museum is housed in Flagler's winter home, and Jim stopped there on the way down to the Keys. Swiatosz noted that a search of the museum's archives discovered little information about barges or ships lost in the Keys. A single document, dated October 26, 1906, listed equipment that was lost in a hurricane that month. Swiatosz said that the closest area to Key Largo from

which equipment— a pile driver and two barges carrying boards and piles-was reported lost in the storm was Upper Matecumbe, south of Pickles Reef.



Later Smailes visited Tom Hamwright, Monroe County Historian at the Monroe County Library in Key West. The library holds the largest known collection of photographs and blue prints detailing the FEC bridge construction, many of which are on the library website: www.keyslibraries.org. Regarding Wrecking Court records, salvage claims, and court activities, Hamwright felt that because of its size and logistical capabilities, Flagler's operation would have salvaged its own barges

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or other vessels, so it is unlikely we would find any of Flagler's vessels in the wreck records.

AHS volunteers were able to document the debris at the site through maps, drawings and photographs. But interpretations were tentative and varied. Some of us concluded that the debris looked more like a barge than a ship, others that it was machinery for use in constructing the railway or highway. Still others considered that it may have been prefabricated sections of highway bridges that had been jettisoned in a storm.

One result of the various interpretations was a recommendation to FKNMS that an experienced underwater archaeologist be invited to visit the site and make an assessment of the features. Brenda Altmeier, the Sanctuary's Maritime Heritage Coordinator for the region, responded quickly to the recommendation by arranging for Matthew Lawrence, an archaeologist affiliated with the Stellwagen Bank NMS, to examine the site. Lawrence was in the Keys in September 2012 working on a project with Altmeier on Elbow Reef and made a brief survey of the Pickles Reef site.



Mast step. Photo by M.Lawrence.

Lawrence concluded that the site was indeed a shipwreck, noting in an e-mail report that the debris included "... the lower hull remains of an iron or steel sailing vessel." He said further that the keelson was still visible, oriented roughly northeast. Lawrence located and photographed two mast steps, and noted that several of the features previously documented by MAHS were sections of the vessel's hull. He concluded by suggesting several features that should be documented more fully next season.

Two of the last three years weather conditions have been less than optimal at Pickles Reef, but MAHS volunteers have continued to collect useful data. Hopefully, next time will be calmer and with focused goals, MAHS will finish documenting the site. ±

Antikythera Shipwreck

by Paul F. Johnston

A ntikythera is a Greek shipwreck of the early 1st century BC, best known for its bronze sculptures and a unique clockwork mechanism with technology otherwise unrepresented in the ancient world. Discovered by sponge divers at a depth of 180 feet in 1900 with a report first published in 1901, the Antikythera shipwreck was the first ancient shipwreck ever discovered and studied. It was named after the Greek island beside which it was found, midway between Crete and the Greek mainland. A half-century after its discovery, the clockwork mechanism was restudied and published, prompting scholars in other disciplines to re-examine their areas of expertise from among what remained of the wreck in the National Archaeological Museum in Athens.

Only a few pieces of the hull were preserved, but enough to indicate mortise-and-tenon carvel construction, copper-fastened elm strakes with oak tenons, and lead hull sheathing. Commercial amphorae found aboard were variously sourced from the Greek islands of Rhodes and Kos, along with a single Roman example. Hellenistic household pottery probably used by the crew included a bowl, jugs and pitchers of various sizes, mugs and cups and a lamp; Roman wares included 11 coarse pottery plates. Eleven high-quality glass bowls and cups also were recovered; their quality and condition indicated that they were cargo rather than objects used by the ship's crew. The most spectacular



Third century BC bronze head, thought to be a Cynic philosopher. One of the many sculptures from the rich cargo of the Antikythera wreck. National Archaeological Museum of Athens. All images are from the public domain.



The Antikythera Mechanism, Fragment A. National Archaeological Museum, Athens.

artworks were large, fine bronze statues of the 4th and 3rd centuries BC, including a nude hero or god, a "philosopher's" head, two male statuettes and a fragmentary male group with six figures. Among the 36 marble statues, all poorly preserved, were seated and standing male and female figures, as well as four horses. These marbles are considered 1st-century Roman copies of earlier Greek masterpieces. A gold earring, a bronze bed, metal ingots, lead weights and anchors also were raised. The curious clockwork mechanism was briefly inspected, labeled an ancient astrolabe, and largely forgotten.

In the 1950s the mechanism was resurrected and investigated, revealing a remarkably complex instrument. It was a wooden-cased bronze calculator containing 31 bronze gears arranged around a differential turntable that marked lunar, solar and constellation movements on a four-year cycle. It was inscribed on both front and back, and 793 letters have been deciphered from the fragments. A driveshaft out of the bottom was probably driven by a water clock, and the device seems to have been mounted upon a display pedestal or possibly set in the hand of one of the statues, for a truly remarkable effect. Made ca. 87 BC by an artisan probably associated with the school of Posidonios of Rhodes, it shows evidence of several repairs. By an enormous factor, it is the single most complex technology preserved from the ancient world and is particularly provocative in that it may have served no purpose other than entertainment. However, its



X-ray image of the Antikythera mechanism. Antikythera Mechanism Research Project.

existence in the ancient world implies an astonishingly sophisticated grasp of science and technology that is otherwise undocumented

Scholars have concluded from various studies of the overall contents of the Antikythera wreck that it was a Roman ship sailing around 80–70 BC from the Aegean with a cargo of artworks for Rome when it sank.

Editors' note: This article originally appeared in the British Museum Encyclopedia of Underwater and Maritime Archaeology in 1997 under the title Antikythera. Since that time, additional research has been conducted to analyze the workings of the mechanism. In addition, the National Archaeological Museum of Athens recently opened a new exhibit devoted to the Antikythera Wreck to mark the 110th anniversary of its discovery. The exhibit, "The Antikythera Shipwreck: The Ship, The Treasures, The Mechanism," runs through April 2013.

Several models of the mechanism have been constructed in recent years as research continues into how the device may have operated. In 1974, after years of careful study, British science historian Derek de Solla Price described what has become the basic model of the mechanism, based on images of the inner structure revealed in gamma and x-ray analysis. In 2006, Allan Bromley, an Australian computer scientist, along with Michael Wright, former Curator of Mechanical Engineering at the London Science Museum, introduced another model based on improved X-ray images. They considered the mechanism to have been an orrery, a mechanical model of the solar system that displays the



A recent model of the Antikythera mechanism by astronomer Massimo Mogi Vicentini.

diurnal motions of the sun, moon, and the five known planets.

During the same period the Antikythera Mechanism Research Project (AMRP), a collaboration between several universities and private corporations, was established. Papers published in the journal Nature in 2006 and 2008 have detailed some of their findings.

Most researchers now agree that the mechanism was a form of analog computer designed to calculate astronomical positions developed from Greek theories of astronomy and mathematics. Some have suggested that the device may have been designed by the astronomer Hipparchus, since it appears to employ his theory for the motion of the Moon.

A separate study published in Nature in 2010 suggested that the mechanism may actually have been based on computational methods used in Babylonian astronomy. The most recent study, published by the Institute for the Study of the Ancient World, at New York University, suggests that the mechanism may also have predicted solar anomalies as well as planetary locations.

Paul F. Johnston, PhD, is Curator of Maritime History at the Smithsonian Institution's National Museum of American History, and a Member of the MAHS Board of Advisors. **‡**

Old Schooner Discovered with Old Bones Onboard

by James Smailes and Steven Anthony

n a brisk and slightly overcast day in late December 2011, MAHS members Steve Anthony, Tom Berkey, Dave Shaw, and Jim Smailes teamed up with local divers Abe Roth and his friend George Burlock to examine a shipwreck site they had discovered. The wreck included the remains of a leather shoe and bones that Abe and George believed to be human. After discussing the matter with Dr. Susan Langley, Maryland's Underwater Archaeologist, appropriate contact was made with state authorities and the way was cleared for MAHS to assist Abe and George with their further investigation of the site.

Also, Jeff Morris agreed to join us with his Geomar crew. Geomar LLC is a professional archaeology consulting firm and Jeff agreed to serve as Principal Investigator for the project. After boarding Jeff's research vessel *Big Blue*, we departed about 10:00 am and followed Abe's boat to the site. The site is located only a short distance up the shoreline from Bodkin Creek so we arrived within minutes. From Abe's description we believed the wreck to be Site #208 as reported in the MAHS Bodkin Creek Project Report dated April 2010. Jeff first located the site with GPS and confirmed that it was in fact Site #208. This location is also referred to as Maryland site number 18AN1443. Site forms were previously submitted with the Bodkin Project report.

Jeff was testing the latest Humminbird and Lowrance sidescan sonar systems for the Navy. So, after arriving at the wreck site, Jeff and his crew began to "mow the lawn" by methodically passing over the site in a series of lanes to test the two sonar devices and



Hummibird sonar image of the Roth 208 wreck. Image by Geomar, LLC.

compare their accuracy and ease of use. The Humminbird (about \$2,500) is a great fish finder, and the Lowrance (about \$3,100) is more user-friendly and can be tied into a boat's overall navigation system. Some high end boats now have the Lowrance systems, and apparently there is a cottage industry developing with navigation specialists installing this equipment into yachts for wealthy boaters. Jeff found that both systems produced excellent images of the wreck. He explained that the X and Y scales of the display were not proportional, and as a result the image of the ship appeared to be splayed out. He also explained that

> imaging that occurs when the boat is turning looks very different from when imaging that occurs when the boat is going straight. So it takes quite a bit of experience to understand the display and interpret the images that appear on the screen.

Next, Jeff deployed his remotely operated vehicle or ROV. The ROV is an Oceanscan SeaBotix LBV -150 mini ROV with remote sonar and video displays that Jeff had positioned on the deck of *Big Blue*. Visibility underwater was excellent and Jeff was able to get good video coverage of the wreck with the help of the ROV's powerful lights. The wreck is very intact with a prominent stern post. Each frame of the wreck was shown clearly emerging from the sand.



Pre-dive briefing aboard the survey boat, Big Blue in December, 2011. Photo by D. Shaw.

The wreck is longitudinally planked and appears to be a schooner about 60 feet in length (LOA). A large, unidentified flat frame structure lies on the starboard side.

After recovering the ROV, we deployed five divers including Jeff. The water was 44 degrees so those diving in wetsuits quickly became very cold and had to keep moving to avoid hypothermia. Jim and Abe dove together, with Abe showing Jim a large jug or long bottle. This long bottle was about 12 inches in diameter and about two feet long, and lay just outside the hull.



Suiting up for cold water in December, 2011. Photo by D. Shaw.

On his previous dive on the site in the spring, Abe had buried the skeletal remains inside the wreck along the outer frames. However, he was unable to relocate the bones on this dive. In addition to the long bottle, we did observe two leather shoe soles, a broken bottle, and an intact beverage bottle in the silt aboard the vessel. The date 1889 was embossed on the bottom of the intact bottle. Considering that the bottle was in excellent condition and temporally diagnostic, Jeff concluded that it might be at risk of collection so he made the decision to retrieve the bottle. Short-term conservation procedures were employed on the boat, and once we returned to the dock the bottle was sent to the Jefferson-Patterson conservation facility for long-term conservation.

Photographs of the bottle were taken onboard Jeff's boat. Also, we obtained photographs of one of the bones retrieved by Abe in his previous visit to the site. Jeff reviewed the photographs and, considering all the factors in hand, determined that they might be human remains and that we needed to continue our survey work. He also felt it would be worth excavating the hull to study

its construction details, and that it appeared that the wreck was a schooner design.

During his dive, Jeff deployed the Shark Marine handheld sonar unit, which yielded outstanding images. After post processing the data, details will be included in the MAHS report to the State. At the conclusion of efforts for the day Jeff recommended that we return to the site and continue the search for the skeletal remains and create a site plan and a photo mosaic of the wreck for inclusion in our report. Revised site forms will also be submitted. A field drawing was created with the location of various features noted. After a long, cold but fruitful day on the water, our teams returned to the dock around 4:30 pm.

> The intact bottle found in the wreck was a small blob top soda bottle, the term blob top referring to the lip or finish. It probably had a cork stopper held down with wire that ran around the base of the finish. The bottle form dates to the late-19th century. It had the numbers "1889" embossed on the bottom, evidently the year the bottle was made.



Photos by D. Shaw

Embossed lettering on the side identified the bottler as C.L. May, listed in the Baltimore City Directory for 1889 as a bottler located at 703 W. Durham, Baltimore. The bottle probably contained mineral water or ginger ale. The photographic and sonar images collected during this trip to the site were used in a presentation to attendees at the Maryland Historical Trust's (MHT) annual Archaeology Workshop in March 2012 with a focus on the advanced remote sensing techniques deployed during our survey.



A series of images of the wreck from the Shark Marine handheld sonar unit. Images by Geomar, LLC.

In July 2012, we returned to the site, and Dr. Susan Langley joined us to examine the bones. This was a smaller effort with only Abe's boat being available. The weather was much warmer on this trip than compared to our first visit in December. Steve, Jim and Rob Minford joined Dr. Langley and Abe Roth's son, Abe the third. Young Abe proved to be a very capable diver and quickly recovered the bones from the wreck. Several pictures were taken aboard the boat, and more pictures were taken once we were ashore. Abe (the third) also found two shoes and part of a leather hose or bushing and brought them up for examination. Steve was able to explore around the wreck and discovered a large debris field with more bones. The bones brought up initially appeared to Susan to be either cow or pig bones. There was general relief that they were not human bones. It was speculated that both animals are represented in the debris. If the bones were determined to be animal and not human then perhaps what we found was a dumping ground for the waste of butchered animals. All of the artifacts were placed in water-filled containers and taken to the MHT facility in Crownsville.

During the month of August 2012, Steve and Jim visited the Crownsville facility to photograph the artifacts in more controlled conditions. Jim used both a digital and a film camera, and experimented with the different background materials and lighting available at the photo table in the MHT work room. The photographs were excellent quality and will be an important addition to our final report.



Shoe recovered from the wreck showing evidence of repairs to the sole. Photo by J. Smailes

While Jim was working on the photographs, Steve introduced the bone collection to Dr. James Gibb of Gibb Consulting. Dr. Gibb has substantial experience in examining skeletal remains associated with archaeological sites. After inspecting the collection, Dr. Gibb agreed with Susan Langley's initial assessment that the bones appeared to be bovine not human. He further speculated that the ship may have contained a shipment of bones headed to Baltimore for processing. Dr. Gibb's assessment was very helpful and added an important consideration for future research efforts for our project.

MAHS will be visiting the site again in the future to complete the site map and collect any further documentation required for our final report. \ddagger

The Sea Was Always There, by Joseph Callo

(Fireship Press, 2012)

reviewed by Dennis Knepper

Not of us who read a publication like *MAHSNEWS*, whether we're historians, divers, sailors, archaeologists or something in between, have an interest in stories of the sea. The sea is a part of us all. Joe Callo's autobiography, *The Sea Was Always There*, is a story of the sea, the engaging tale of a man who found value, courage and integrity in a life focused on the sea.

A graduate of the Yale NROTC program in 1952, Joseph Callo served 2 years on USS *Sarasota* qualifying as a surface warfare officer in the Atlantic Amphibious Force. He went on to serve more than 30 years in the Naval Reserve, where he commanded three reserve public affairs units and worked in a variety of U.S. Navy commands, eventually retiring as

Rear Admiral. He later combined a successful career as a senior advertising executive and television producer with writing projects that have included magazine and newspaper articles on naval affairs, and biographical works with subjects including two of the most notable figures from naval history, Horatio Nelson and John Paul Jones. As a freelance producer for NBC and PBS, Callo garnered honors including the George Foster Peabody Broadcasting Award and the New York-based Telly Award. He has also taught advertising and writing at St. John's University.

Following a brief forward by John Lehman, Secretary of the Navy during the Reagan administration, Callo's story begins with a section devoted to his early years. From there the narrative is divided into segments couched as lessons learned from the sea. Although roughly chronological, the story line takes some geographical turns as Callo describes often adventurous voyages sailing on the seas and oceans of the world.

Introduced to the sea by books and stories as a young child, Callo learned to sail at age 13. Over the years he captained boats ranging from a sailing dinghy in the lower Hudson River's Haverstraw Bay, to a daysailer in the Indian Ocean off Fremantle, to fifty-foot boats in the Caribbean. In 1998 he found himself among the crew of a square-rigged replica of Captain Cook's *Endeavour*, gaining a first-hand appreciation of the life of the common sailor in the Age of Sail.

A Naval History Magazine Author of the Year,



Callo's major published works include Who's Who in Naval History—from 1550 to the Present. with more than 200 short biographical sketches of important US naval figures. His works on Nelson highlight the legendary figure's ability to inspire and motivate, lessons that Callo has carried through life. Legacy of *Leadership* focuses on Nelson's major battles from Cape St. Vincent to Trafalgar, emphasizing his tactics in the context of a strategic doctrine of leading and winning. Nelson Speaks—Admiral Lord Nelson in this Own Words, is based on Nelson's letters and dispatches. A study of Nelson's early

development as a leader is found in *Nelson in the Caribbean—The Hero Emerges, 1784-1787.* Callo also contributed a new introduction to a facsimile reproduction of the 1899 edition of A.T. Mahan's classic biography of Nelson. Callo's recent book, *John Paul Jones: America's First Sea Warrior*, won the Samuel Eliot Morison Award for excellence in naval literature. Callo has also been a frequent contributor to *MAHSNEWS.*

Leadership is an underlying theme in all of Callo's writing. His life story is an exploration of the sources and principles of leadership, whether he examines the celebrated qualities of the renowned heroes of whom he wrote or tells of witnessing first-hand subtler forms of leadership such as the calm confidence of the otherwise unlikable commanding officer of his naval ship in a violent Atlantic storm. "Lesson one," Callo writes, "is that leadership is more an art than a science." It involves consistency and firm resolve, transparency and fairness, loyalty to those both senior and junior, knowing how and when to criticize and to praise, and above all, it is based in honesty and character.

What strikes me about Callo's approach to both his military and civilian careers, as well as to his writing, is a clear and simple style. A mark of a good autobiography is sincerity, and sincerity is something that is plain in every tale Callo tells. A successful autobiography is interesting because of the fame or notoriety of the author, because of insights into the times in which the individual lived, or because of the tenor of anecdotes chosen to tell the tale. Callo's work is appealing because of the candid stories he tells, from his early days on the beaches of Provincetown or Long Island to riding out storms on small sailing yachts in the Caribbean, from his own naval career to the careers of

$continued \ from \ page \ 8$

Rasmussen, Frederick N.

- 2004 "Ship Was A Tragedy Waiting to Happen." *Baltimore Sun*, April 24, 2004.
- Snediker, Quentin, and Ann Jensen
- 1992 *Chesapeake Bay Schooners*. Tidewater Publishers, Centreville, Maryland.
- USA v. JH Meckling
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the great leaders he has studied.

His story ends with summaries of the lives and careers of the most prominent of those leaders, Nelson and Jones—who they were and what they have to teach us today. These briefs will inspire the reader to seek out Callo's other writings and delight in them as they will in his own life's story. \ddagger

United States Coast Guard (USCG)

- 1955 Report of the Marine Board of Investigation Convened at Baltimore, Maryland by Order of The Commandant, United States Coast Guard. Photocopy on file, Maryland Historical Trust, Crownsville.
- 1956 *Commandant's Action*. MVI, 24 Jan 1956. Photocopy on file, Maryland Historical Trust.

Dr. Susan Langley is Maryland State Underwater Archaeologist and a Member of the MAHS Board of Advisors.

$continued \ from \ page \ 2$

projects in the Chesapeake Bay. In October, we scheduled our second Field School in Underwater Archaeology on the Bodkin Point site. This project has been the subject of several MAHS presentations and *MAHSNEWS* articles in prior years. Based on research provided by Dave Shaw, MAHS has concluded that this site is likely the remains of the *Harriet P. Ely*, which sunk in a storm in 1933.

Tom Berkey planned to conduct our second field school on this site with the objective of completing our survey of the vessel remains. We teamed with Susan Langley, State Underwater Archaeologist for Maryland, who offered to provide a total station to enable a more precise survey. However, once again weather intervened. On October 26 Hurricane Sandy, which had previously pounded the Caribbean Islands, washed through the Chesapeake Bay prompting Governor O'Malley to declare a state of emergency. Although Tom led the intrepid MAHS team to the site, the conditions were too dangerous to continue with the project and it was cancelled. The cancellation of both of our field schools this year was a substantial disappointment to the MAHS team and our students. It will also prevent MAHS from presenting project reports at the various archaeology conferences conducted during the winter season. Nevertheless we plan to return to these sites in 2013 to complete the work that we originally set out to do.

Someone mentioned that MAHS may not have made a suitable sacrifice to the weather gods during the year. I guess we need to be more diligent about this next year. Since we will be playing a little catch-up on our project work there will be plenty to do for the MAHS volunteers in 2013.

See you on the water,

Steven Anthony President



Be sure to keep your MAHS Membership current. Renew now. If you aren't a member, become one and join us in supporting maritime historic preservation.

MARITIME ARCHAEOLOGICAL AND HISTORICAL SOCIETY

Statement of Ethics

The Maritime Archaeological and Historical Society is organized for the purpose of enhancing public awareness and appreciation of the significance of submerged cultural resources and the science of maritime archaeology. In pursuit of this mandate, members may come into contact with unique information and cultural material associated with terrestrial and underwater sites containing evidence of the history of humankind. To protect these sites from destruction by commercial salvors and amateur souvenir hunters, the Society seeks to encourage its members to abide by the highest ethical standards. Therefore, as a condition of membership and pursuant to Article 2, Section 1 (A) of the bylaws, the undersigned executes this statement of ethics acknowledging adherence to the standards and policies of the Society, and further agrees as follows:

- 1. To regard all archaeological sites, artifacts and related information as potentially significant resources in accordance with federal, state, and international law and the principles and standards of contemporary archaeological science.
- 2. To maintain the confidentiality of the location of archaeological sites.

To excavate or otherwise disturb an archaeological site solely for the purpose of scientific research conducted under the supervision of a qualified archaeologist operating in accordance with the rules and regulations of federal or foreign governments. Artifacts shall not be removed until their context and provenience have been recorded and only when the artifact and related data have been designated for research, public display or otherwise for the common good.

- 4. To conduct oneself in a manner that protects the ethical integrity of the member, the archaeological site and the Society and prevents involvement in criminal violations of applicable vandalism statutes.
- 5. To observe these standards and aid in securing observance of these standards by fellow members and non-members.
- 6. To recognize that any member who violates the standards and policies of the Society shall be subject to sanctions and possible expulsion in accordance with Article 2, Section 4 of the bylaws.

Signature Date

MARITIME ARCHAEOLOGICAL AND HISTORICAL SOCIETY PO Box 44382, L'Enfant Plaza, Washington, D.C. 20026 Application for Membership

Membership in the Maritime Archaeological and Historical Society is open to all persons interested in maritime history or archaeology whether or not they are divers. Members of MAHS have first preference for enrollment in all courses and other activities and projects of the Society. To join MAHS, please sign the Standards of Ethics above and send it to MAHS along with your check and this application form.

Name (print)			
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Phone (H)	(O) (FAX)		50 Sponsor \$100 Patron
E-mail			

Skills (circle): research / dive / video / communications / writing / first aid / other:

Please mail this form along with your check to: MAHS at PO Box 44382, L'Enfant Plaza, Washington, D.C., 22026

General membership meetings of the Maritime Archaeological and Historical Society are held on a bi-monthly basis, the second Tuesday of the month. Meetings are held at 7:30 p.m. at McLean High School, in McLean, Virginia, except in August and December. Meetings in August and December are held at other locations for special events and holiday parties.

Please join us and bring a friend. The school is located on Davidson Road, just inside the Capital Beltway (I-495) – use Exit 45, coming from Maryland, or Exit 46, coming from Virginia.

Check the website <u>www.MAHSNet.org</u> for e-mail advisories about any schedule changes.

Renew Now!

It's time to renew your membership in MAHS. It's easy. Just complete the application form on the inside back cover and sign the Ethics Statement, enclose a check for your dues, and mail!





MARITIME ARCHAELOGICAL AND HISTORICAL SOCIETY

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