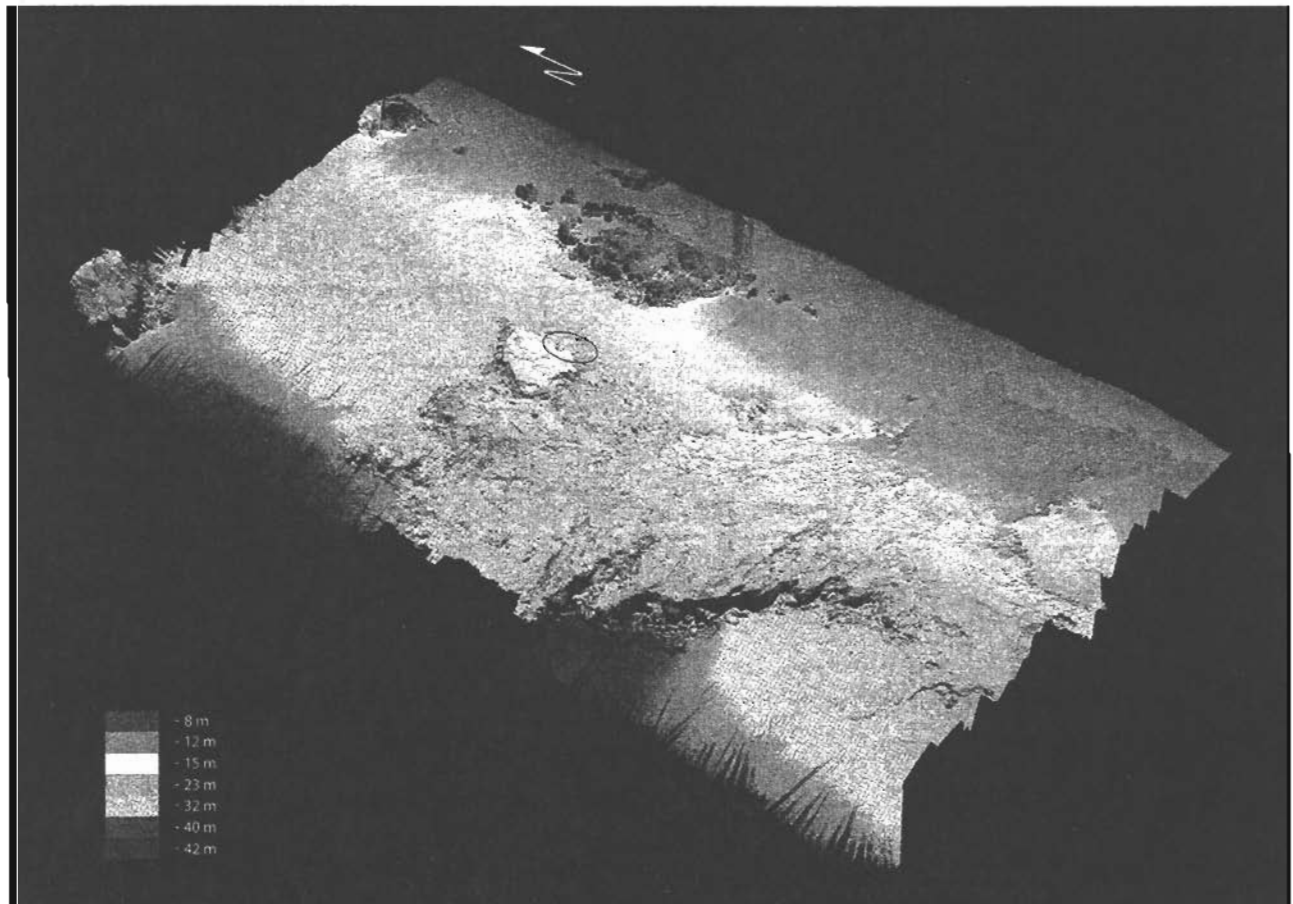


# THE INA QUARTERLY



Winter 2004

Volume 31 • No. 4



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**On the cover:** A perspective view of the Digital Elevation Model (DEM) of the multibeam survey area, facing east. The circled area is the CSP062 site, just above the triangular-shaped flat rock in the center of the image. The DEM covers a 1.0 x 0.5 km area. Image: L. Huff.

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Editor: Christine A. Powell

# Morocco Maritime Survey: 2003 Season

Athena Trakadas

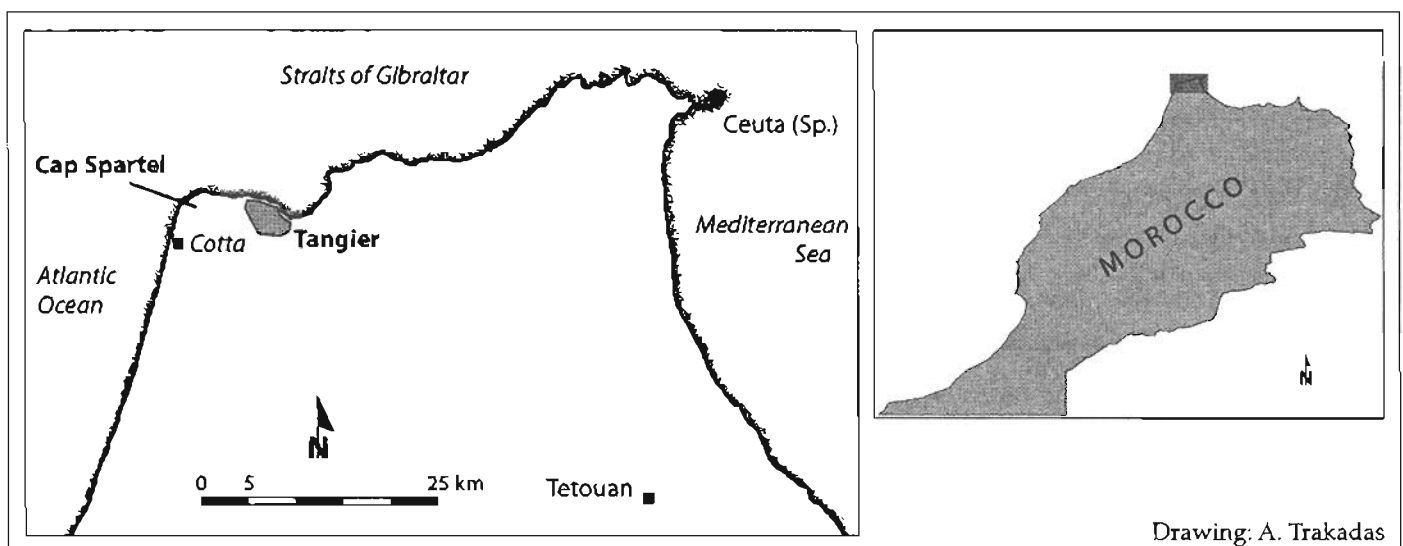
In 2002, the Institute of Nautical Archaeology began a two-year project, the Morocco Maritime Survey (see *INA Quarterly* 30.1:12–21). The underwater reconnaissance project focused on the coasts of Morocco's Tangier Peninsula and the Straits of Gibraltar, in order to identify primarily ancient but also historic shipwrecks and ship-related materials or features. The Morocco Maritime Survey was conducted under the auspices of INA and the Kingdom of Morocco's archaeological department, *Institut National des Sciences d'Archéologie et du Patrimoine* (INSAP; Rabat, Morocco). Athena Trakadas (INA) and Dr. Elarbi Erbaty (INSAP) serve as co-directors of this project.

The purpose of the Morocco Maritime Survey is to investigate further the history and significance of the region of northern Morocco, as reflected through the maritime archaeological record. The Tangier Peninsula lies at the crossroads of east-west and north-south maritime trade routes that have been utilized for millennia (fig. 1). Even though a handful of ancient coastal sites are present, the maritime history of Morocco during this period remains relatively unknown. Our questions for this maritime survey ask: Who was here, and when and where were they present? Are maritime archaeological sites (i.e. shipwrecks, anchorages) related to terrestrial sites, and if so, which ones

and how are they linked? What was the level of maritime trade in the region? In the broader perspective, answers to these questions can help identify historic trends and significant archaeological sites throughout Morocco's maritime history and the region's ties to other Mediterranean cultures and economies.

## 2003 Season: Objectives and Logistics

Building upon the findings of the 2002 season and the overall project goals, four research objectives were established as priorities for the 2003 season. To this end, our first objective of the season was to continue the documentation of a large anchorage site discovered in 2002, located in the western lee of Cap Spartel, the north-western point of the Tangier Peninsula. Our second prioritized objective was to continue to search for shipwrecks in the region of Cap Spartel, and attempt to re-locate a second-century CE wreck discovered in the 1960s. The third priority was to survey offshore of the eastern coast of the Tangier Peninsula, near the modern city of Tetouan, where several ancient coastal settlements have been excavated. The fourth priority objective, if time permitted, was to survey the surrounding waters of the ancient and historically significant Îles Purpuraires at Essaouria, on the Atlantic



Drawing: A. Trakadas

Fig. 1. The survey area of Cap Spartel is located at the north-western corner of the Tangier Peninsula (shaded area) which forms the northern-most part of Morocco.

coast of Morocco. In addition to the above work, ancient lead anchor parts recorded in previous and present survey seasons were to be sampled. By conducting lead isotope analyses on these samples, it is hoped that the artifacts' geographical origins can be determined.

Several factors affected this original, proposed survey plan for 2003. Due to equipment readiness, the anticipated summer survey season was delayed until the fall. However, we could not work during the Muslim holy fasting month of Ramadan (which began this past year on October 24), and some of the loaned project equipment was also required for autumn work in Spain. In addition, it was not possible to obtain permits to survey the Essaouria region. Because of these temporal and logistical constraints, we chose to focus specifically on the Cap Spartel region for the duration of the survey. Here, it would still be possible to achieve a number of the project's primary goals.

The 2003 field season of the Morocco Maritime Survey took place from September 23 – October 19. As in the

previous year, the project was based in the port city of Tangier. However, due to seawall construction throughout the inner harbor of the port, we could not be located again at the Tangier Yacht Club. Fortunately, it was possible to arrange for the survey operations to be relocated to the port's naval zone. Here, our survey vessels could be safely docked and the two containers that served as our project headquarters placed. Equipment for this project was provided by Dr. Lloyd Huff (University of New Hampshire) and RPM Nautical Foundation, Inc. (RPM). Logistical support for the project was generously provided by the Tangier American Legation Museum, the Royal Moroccan Navy, and the Royal Moroccan Gendarmerie.

### Methods

The project's goals for the 2003 season were realized through remote sensing, diver survey and documentation, digital video recording, and artifact sampling. No artifacts were recovered this season, as all were recorded in situ.



Photo: A. Trakadas

Fig. 2 (left). Dr. Lloyd Huff monitors the data collection on-screen during the multibeam survey at Cap Spartel while Dr. David Gregory (foreground) assists.

Fig. 3 (below). This orthorectified, Landsat-5 Thematic Mapper image of Tangier and Cap Spartel shows the sites of the 2002 and 2003 Morocco Maritime Survey as white dots. The white rectangle delineates the multibeam area, with site CSP062 as its the center. The port of Tangier can be seen to the right.

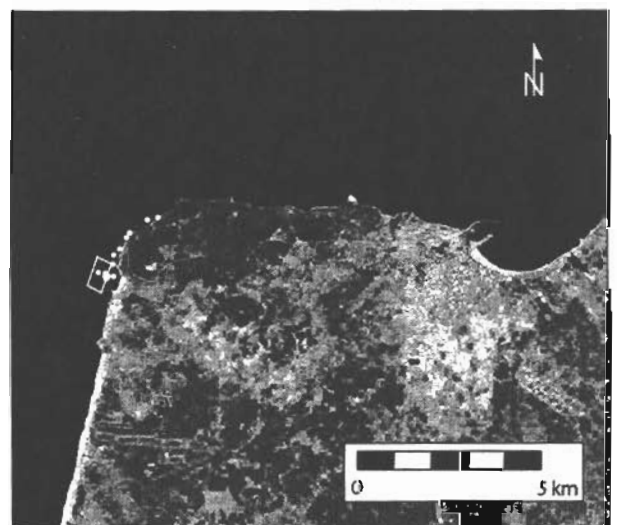


Image: S. Claesson

## Remote-sensing Survey

The remote-sensing survey of the 2003 season focused on the large anchorage site at Cap Spartel (CSP062). The survey was conducted by Dr. Huff, who used a Reson, Inc. Seabat 8125 multibeam sonar deployed from an eight meter-long RPM research vessel (fig. 2). Before the multibeam survey was initiated, a 1.0 x 0.5 km area was delineated parallel to the coast at Cap Spartel, with the anchorage site's coordinates serving as the center of the rectangular box (fig. 3). The multibeam survey of this area took five days at the beginning of the season, and included some digital video footage taken at depth over CSP062. The multibeam mapping process provided a base map of the site, so that the surrounding underwater topography could be understood and the possible extent of the site estimated.

Following the field survey in Morocco, the collected bathymetric data were edited and processed by Dr. Huff using the CARIS Hydrographic Information Processing System (HIPS). The processed data were then used to create a fifty centimeter grid and Digital Elevation Model (DEM), corrected to the predicted tide datum for the Tangier region. The vertical accuracy of the data is approximately twenty-five to thirty-five centimeters relative to the tide datum and the horizontal accuracy is approximately 1.5 m relative to the 1984 World Geodetic System (WGS84).

## Diving Documentation

The diving survey team consisted of three INA and three Moroccan members, the latter kindly provided by the Royal Gendarme in Rabat. From the two project dive platforms provided by RPM, eight meter- and 6.5 meter-long rigid inflatable boats, seventy-eight dives were conducted over thirteen days (a total of forty-four plus hours). All dives were conducted using EAN-Nitrox (thirty-two percent oxygen) and all dive site locations were mapped using a Global Positioning System (GPS) receiver. As there is no feasible base station in the region from which we could utilize Differential GPS (DGPS), a fairly accurate location fix was obtained by taking several GPS readings over a particular site. Continuing the system established in 2002, each new dive site was noted by a unique site identification code (e.g., CSP059), and its latitude, longitude, depth, and general seafloor characteristics were also recorded. All artifacts were marked in the field with a temporary identification code (e.g. artifact AK), mapped, recorded *in situ*, and documented by scaled digital video. Each artifact was subsequently labeled with a dive site identification code as well as an artifact number (e.g., CSP059-105). All artifact documentation was entered into a Microsoft Excel database catalogue with links to the captured digital images.

## Lead Ingot Shipwreck (CSP053)

The first dive survey of the season was conducted at the purported location of a second-century CE shipwreck carrying a cargo of lead ingots. Discovered by recreational divers supervised by archaeologists in the 1960s, the wreck site is described in published reports as lying offshore of the lighthouse at Cap Spartel, in the transitional area where the Straits of Gibraltar and the Atlantic Ocean meet. The truncated "X,Y" coordinates given for the wreck at the time of its discovery were converted into latitude and longitude for our survey.

Offshore of Cap Spartel is an extremely active hydrographic zone, and the purported wreck site, CSP053, lies here in an area affected by several converging currents. The seafloor consists of an extensive, sloping sand field dotted with numerous rock outcrops, some of which are exposed at low tide. The visual dive survey conducted in this area during the 2003 season, however, yielded no evidence of the ancient wreck site.

## Cap Spartel Anchorage Site (CSP062)

After the initial search for CSP053, and the multibeam survey of the anchorage site was completed, the remainder of the season's dives focused upon CSP062. This site is a large area of numerous anchor elements that was utilized repeatedly in antiquity and into the modern period, and it was established during the 2002 survey that the anchorage extended considerably beyond the area documented at the time. The underwater topography at the anchorage site is mainly flat, eroded hardpan rock ledges with several rock outcrops that protrude a few meters above the seafloor. A large sand field delineates the northeastern edge of the site, while the hardpan rock continues to the west and south. The site varies in depth from sixteen to nineteen meters.

The DEM derived by the processed multibeam data reveals that the anchorage site CSP062 lies on the northeastern edge of a larger zone of hardpan rock (see cover). The bathymetry shows that the site comprises the northern-most, protected area for vessels to anchor near Cap Spartel. North of this hardpan rock is a vast sand field and a plinth-like rock that is exposed at low tide lies further north, at the edge of the multibeam survey area. From diver surveys conducted in 2002 at this rock and to the north of it, it is known that many pinnacles are present underwater. Our experience surveying in this northerly area reveals that a vessel is more exposed to winds and currents emerging from the Straits of Gibraltar than at CSP062.

## Anchor Finds

Working north from the 50 m<sup>2</sup> area recorded in 2002 (where twenty-three artifacts were located), an additional seventy square meter area was surveyed by divers. In this

adjacent area, which is slightly deeper than the area investigated previously, twenty-five new anchor parts were identified, recorded and mapped. The new group of arti-

facts consists of seventeen examples of Kapitän III-type lead anchor stocks of varying size, six rather large iron anchors, one lead sleeve, and one lead anchor collar (fig. 4).

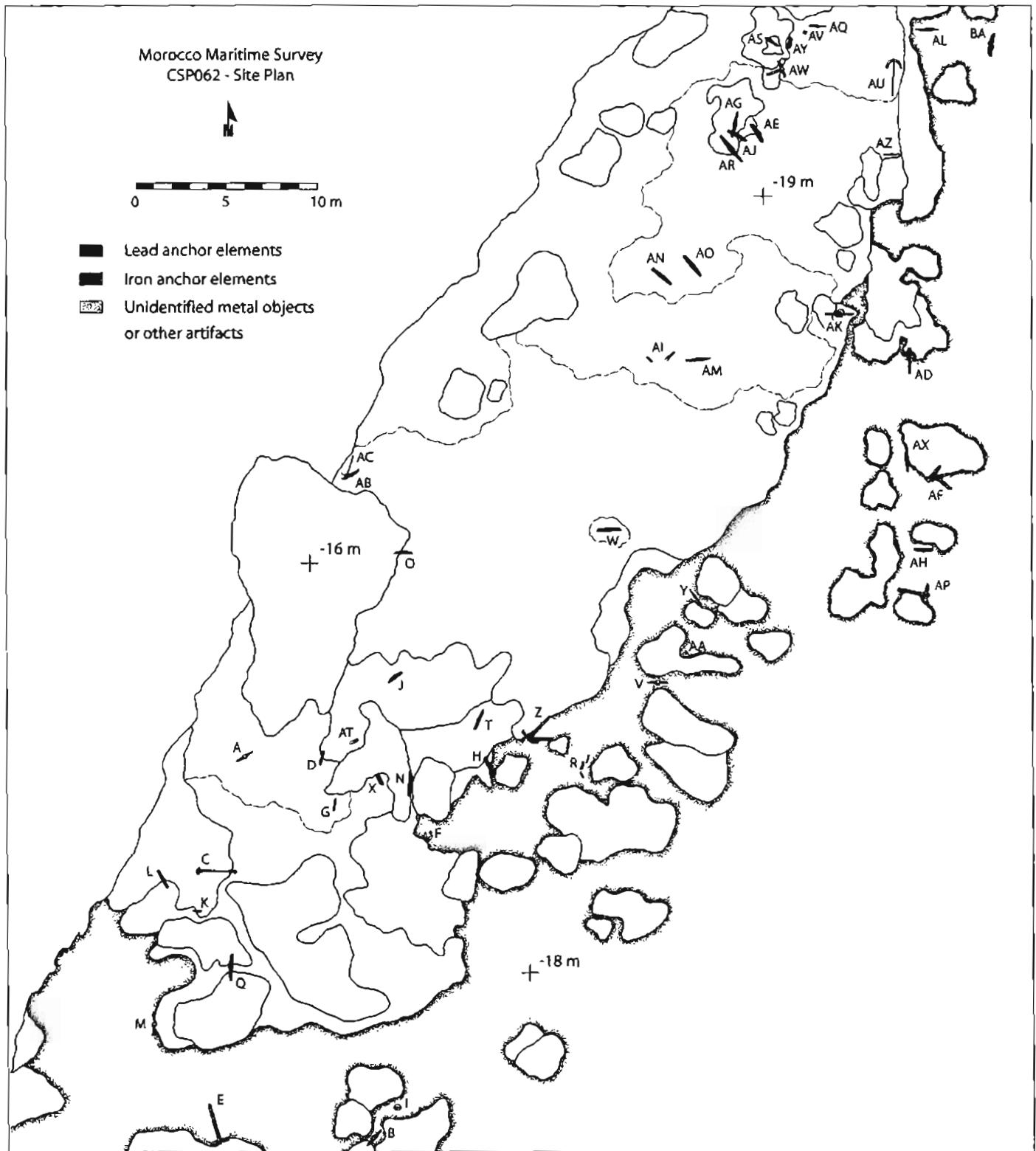


Fig. 4. Site plan of CSP062, including all finds from 2002 and 2003.

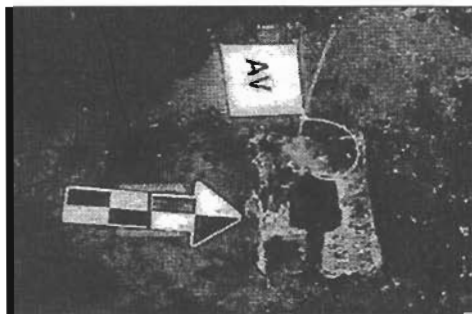
Drawing: A. Trakadas

Of the seventeen lead anchor stocks documented at the site, four are Kapitän III d stocks (previously, only Kapitän III b- and III c-types had been identified). One of these is the largest stock so far recorded during both survey seasons: 1.97 meters in length (artifact AR). Following Kapitän's typology, this stock does not have a lead cross-bar central to the rectangular shaft box as the Kapitän III c-type does (indicating that the lead was poured directly on the wooden anchor shaft). Instead, the Kapitän III d-type has holes in each side of the shaft box, centrally located in the arms' profile. These holes received a wooden cross-bar or peg which extended through a hole in the shaft and into both sides of the lead stock for a short distance. It was difficult to distinguish the depth of the holes in the stocks at Cap Spartel due to the artifacts' concreted states; it is also unknown whether these holes still contain any wood. However, the openings of the holes from all the four finds are still clearly rectangular. In addition, three of the Kapitän III d anchor stocks from Cap Spartel have circular holes through the tips of their arms. In anchor reconstructions, these holes have been thought to hold lines that tie off to the top of the anchor stock (for additional support or strength), or that serve as crown lines (to assist in recovering the anchor). The Kapitän III stocks are assigned a date of use from the second century BCE to first century CE.

One three-holed lead anchor collar was also located during the survey, as was a lead sleeve. Two collars had been located during the previous season at the an-

chorage, but this is the first example of a sleeve documented in Moroccan waters. Other examples have been recovered offshore of Sicily and Sardinia and nearby at Ceuta (in Spanish waters). The rectangular-shaped sleeve would have fit around a wooden anchor shaft, resting just above a lead stock (fig. 5). This piece could have been a repair to hold fissured wood together and reinforce the hole in the shaft that held the anchor line loop. Both the collar and sleeve were found at Cap Spartel within a meter of each other and two Kapitän III b anchor stocks. It is not known, however, if some of these pieces belonged to the same anchor unit in antiquity.

Six iron anchors were also identified during the survey, all of which are considerably corroded. Three of the anchors represent types used in the Mediterranean from the Late Roman to Byzantine periods, with removable iron stocks, and are generally dated ca. fourth – tenth centuries CE. These examples from Cap Spartel are extremely corroded, but it is clear that they are T- or cruciform-shaped, with the shaft perpendicular to the arms. Artifact AW, with its up-turned arm tips, is one of the better-preserved examples; this form is very similar to that of the anchors from the seventh-century Yassiada shipwreck site (fig. 6). The identification of a large lunate-shaped iron anchor (artifact AU) from Cap Spartel is very tenuous: it might represent an Early Roman Imperial type of the first century CE that consisted of an iron core fully sheathed in wood, found at Lake Nemü and



Photos: A. Trakadas

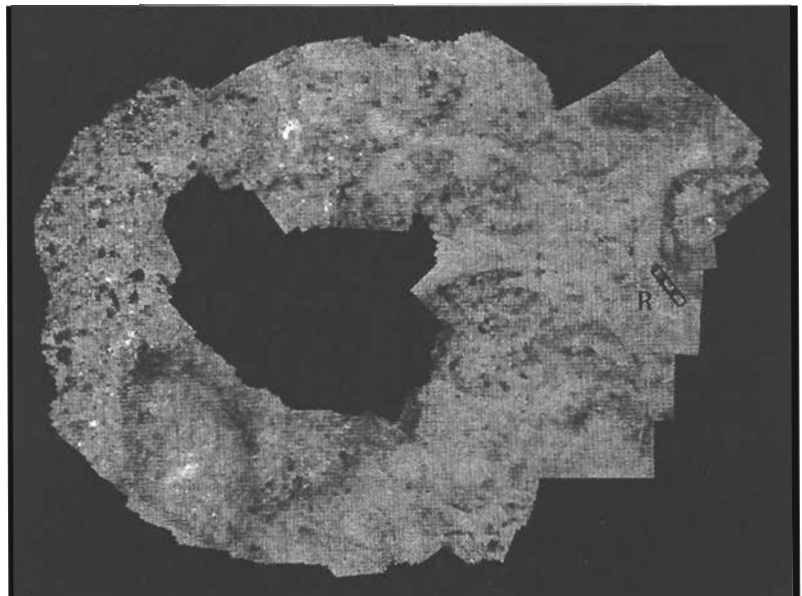


Image: Y. Rzhanov/L. Huff

Fig. 5 (top, left). The lead anchor stock sleeve identified at CSP062.

Fig. 6 (bottom, left). A close-up of the arms of the iron cruciform-shaped anchor from CSP062.

Fig. 7 (right). A detailed section of the digital video mosaic from the center portion of the site. Artifact R is outlined at the right. The top of the image is north.



Pompeii. However, this anchor might also indicate an eighteenth-century French type or a nineteenth-century “fisherman’s anchor” missing its flukes. Artifact AD, a large V-shaped iron anchor with a bulbous, concreted knob below the shaft end is possibly indicative of eighteenth-century British types.

One grapnel anchor was also identified during the 2003 season (artifact AC), and is the only such type to be located during the three years of INA surveys in Morocco. It has four arms with triangular-shaped flukes, and the complete length of the shaft with circular eye is preserved. The chronology of use of the anchorage site at Cap Spartel is aptly demonstrated by the orientation of this artifact and artifact AB (a Kapitän IIIc stock): the grapnel was lost on the site because it had hooked on the ancient lead stock (see *INA Quarterly* 30.1: 12, fig. 1).

### Documentation and Sampling

At the end of the season, a digital video survey of a large portion of the anchorage site was conducted. Tying a line to a centrally-located artifact (artifact Z, an Admiralty anchor; see Fig. 4), divers swam wider and wider counterclockwise spirals, holding the camera perpendicular to the seafloor. This survey continued for an entire dive, and almost forty minutes of footage of the main part of the site was obtained. In the spring of 2004, the video was processed to create mosaics of features on the seafloor. Using algorithms from every third frame from the video, tie points were identified in each image, and a mosaic of the central portion of CSP062 was created (fig. 3). The mosaic was then geo-referenced to the site plan and the DEM data in ESRI ArcGIS 9.0 software. Several large, detailed maps of the site were created to reveal clearly artifact location and orientation, as well as the site’s seafloor characteristics. This mapping process was experimental, however, and a considerable amount of time was spent processing the data and editing the mosaic.

Due to the poor weather conditions that arose towards the end of October in the field, we were unable to return to CSP062 to recover samples from the lead artifacts for isotope analyses. Instead, six lead anchor pieces recovered by INA surveys in 1999 and 2002, now stored at the Musée de la Kasbah in Tangier, were sampled. These samples have been prepared for testing.

### Summary

The 2003 season of the Morocco Maritime Survey focused upon further identification of anchor parts, the geographical origins of lead anchor elements, and the mapping of the large anchorage site CSP062. The findings from this season, combined with those from the 2002 season, assisted in answering preliminarily the questions posed for this maritime survey.

As a cumulative result of the past two survey seasons, and including the eight lead anchor elements found nearby during the 1999 INA survey (see *INA Quarterly* 28.3: 14), 66 anchors and anchor parts have been discovered thus far along the Atlantic face of Cap Spartel (see Fig. 3). The densest concentration of these anchors is the site designated CSP062, where 46 anchor elements have been identified in a 120 m<sup>2</sup> area. The number and distribution of anchors so far located at Cap Spartel indicate that this area, and particularly the site CSP062, served as an anchorage. Here, in the western lee of the mountainous promontory, ships could wait for favorable winds and a change in the unusual (and strong) north-south tidal currents, in order to enter the Straits of Gibraltar or to voyage further south along the Atlantic coast. The types of anchors present at Cap Spartel can also identify the general chronology and cultural identity of vessels that lost them while stopping here.

The artifact distribution of the surveyed portions of Cap Spartel is comprised of 56 lead anchor elements, nine iron anchors, and one stone anchor. This distribution also reflects a broad chronology of use of the larger area as an anchorage. The single-hole stone anchor found at CSP046 in 2002 might be the earliest example of an anchor type in the region; its identification as such, however, is tenuous, as fishermen in Morocco still use similar stone anchors today. Therefore, the earliest definite examples of anchors used at Cap Spartel are the Kapitän IIa lead stock cores. These types were found at several sites in the area: CSP034 (two pairs), CSP045 (one core), CSP046 (two associated cores), and CSP062 (five cores, four of which comprise two sets). This type of anchor part is traditionally accepted as being used in the Mediterranean from the fifth to mid-second centuries BCE. Another date range for these artifacts was provided by the wood of the anchor stock found attached to one core of a pair found at CSP046 in 2002. This wood, *Quercus ilex*, was radiometrically dated to 2460 BP (+/- 50 years; calibrated to 785-400 BCE) (see *INA Quarterly* 30.1: 18). Cautiously then, this wood could assign a set of the cores from Cap Spartel to the earlier part of the chronological range established by Kapitän.

The lead stocks found at Cap Spartel, including all of the Kapitän III types (b, c, and d), represent the next stage of anchors used in antiquity, and comprise a majority of the artifacts found during the 2002 and 2003 survey seasons. These include stocks found at: CSP034 (five stocks), CSP045 (two stocks), CSP052 (six stocks), CSP046 (one stock), and CSP062 (30 stocks). Kapitän III anchors are usually assigned a date of use in the Mediterranean from the second century BCE to first century CE. In addition, the lead anchor collars from CSP034 (one collar), and CSP062 (three collars), and the one anchor sleeve (from CSP062), can be assigned broadly to the fifth century CE



to the first century CE, as these pieces were used with varying types of stock configurations.

The transition in anchor material from lead to iron is also demonstrated by the finds from CSO062. As the five cruciform iron anchors date from the fourth to tenth centuries CE, they also indicate the next period of use of the anchorage. The latest example of an anchor found so far at Cap Spartel is the eighteenth- or nineteenth-century Admiralty anchor (artifact Z), located in the present center of the plan of CSP062.

The anchorage area at Cap Spartel likely served vessels transiting the Straits of Gibraltar and following routes north to the Iberian Peninsula and south along the coast of Morocco. It is very possible, however, that in antiquity, the anchorage was also used by vessels visiting the contemporary settlements near Cap Spartel. The lead anchor elements' location and chronology also suggest a connection to the coastal Phoenician and Punico-Mauretanian sites south of Cap Spartel; these are the earliest "colonial" settlements in Morocco, and date to the seventh to third centuries BCE. This same region was also occupied during the period of increasing Roman influence in the peninsula (second-first centuries BCE), and finally Roman annexation of northern Morocco as the province of *Mauretania Tingitana* (in the early first century CE). These sites include the large *garum* and fish-salting production site of Cotta (established at the end of the first century BCE), just south of Ras Achakar on the southern coast (see Fig. 1), and *villae rusticae* slightly inland. In the case of Cotta, the off- and on-loading of fresh fish and processed fish products to vessels by lighters would have occurred here, in protected waters near sandy beaches.

After the collapse of the Roman administration in the region in the third century CE, vessels continued to use the Cap Spartel anchorage, as the iron anchors attest;

however, as there are no known contemporary coastal settlements nearby, the area probably served as a stopping point on the way to other ports along the Atlantic coast of Morocco and through the Straits. The continued, strategic importance of Cap Spartel as a sheltered area at the entrance to the Mediterranean and on the way to emerging West African ports is revealed by the site's indication as an anchorage on Dutch, French and British charts dating from the seventeenth and eighteenth centuries.

The sixty-six anchors and anchor elements found at Cap Spartel are certainly only a sample of what is present in the region. A limited area has been documented thus far, and as diver survey and video documentation have revealed, more anchors are present, extending the anchorage area to the west and south of the zone surveyed. Additionally, the DEM produced from data collected in 2003 shows that the region where hardpan rock is exposed on the seafloor extends considerably to the west and south (see cover). As the rock is exposed, this area would have served as a good location for vessels to anchor. The limited examination of the area, however, has answered some of the posed research questions for the survey and introduced further lines of inquiry, such as following established anchor chronologies, anchor technology, and possible changes in anchorage use over time. Isotope analyses are currently underway for the lead anchor elements recovered in 1999 and 2002; hopefully, the identification of the geographical origins of the lead will broaden our understanding of trade in the region, as well as contribute to historical information about lead mining and the exploitation of the resource. By indicating the origins of these anchors, it might be possible to indicate where the vessels that lost them were from; in the broader perspective this information could reveal more details regarding the interrelations of the region in antiquity.

*Acknowledgements:* I would like to extend thanks to my co-director, Dr. Elarbi Erbati, and to all the participants of the 2003 Morocco Maritime Survey, both in and out of the field: Ellen Berkland, Dr. Julie Bryce, Stefan Claesson, Bruce Darby, Dr. David Gregory, Layne Hedrick, Dr. Lloyd Huff, Craig Jones, Brian Jordan, Hadi Kouari, Rachid Lamghafri, M'barek Oukhouya, Dr. Yuri Rzhakov, and John Wray. I would also like to extend my gratitude to Lt. Col. Youssef Tber, Cdr. Khalid Loudiyi, Dr. Abdelatif Elboujaday, and Thor Kuniholm for their generous assistance with the project's undertaking in Morocco. I am grateful to Dr. Donny Hamilton for his support during the survey and his assistance with artifact conservation. ✍

### Suggested Reading

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# The 2004 Ancient Shipwreck Survey in Turkey

Faith D. Hentschel

Early in the morning of June 29, I watched the mechanical jaws of a homemade remotely-operated vehicle (ROV) clamp onto a large stone that would give it added weight to speed its descent to the sea floor (fig. 1). I held my breath as Mehmet and Ismail manhandled the ROV over the stern of Captain Merih's small fishing boat, *Demet*, and let it slip below the surface. The suspense must have been similar to what Sir Charles Fellows felt over a century earlier when he described the experience of watching free-diving sponge-fishermen prepare for their descent. Even the stone paralleled the large flat rocks used by these men to plane to the sea floor in order to collect sponges. Indeed, Merih's ROV regularly collected sponges to test them for disease, but today we had hired him to check the deep-water sonar targets we had located during the previous three weeks.

This was the last day of the first segment of our survey program, as the Turkish military required that we move to another search area the next day. Our primary goal during this segment had been to search the area of the Turkish coast near Arap Adası where, in 1953, Bodrum sponge-dragger, Mehmet Erbil, had found a bronze bust

of Demeter (fig.2). This Demeter is an icon of underwater archaeology. In 1959, Peter Throckmorton, a New York photojournalist, traveled to Bodrum because he had heard about the bronze Demeter. Throckmorton interviewed Captain Mehmet and tried, without success, to locate the wreck that had yielded the statue. During the 1960s George Bass also searched unsuccessfully for the Demeter wreck. Since that time, the wreck has remained as elusive as it is alluring.

My proposal for the 2004 survey, therefore, called for a return to the area that had yielded the Demeter statue, with search methodology that included INA's submersible, *Carolyn*, and state-of-the-art side-scan sonar instrumentation provided by Jeremy Green of the Western Australian Maritime Museum. Sonar targets within the sixty-meter search capability of both *Carolyn* and INA divers had already been investigated, but unfortunately, turned out to be rock outcrops or underwater reefs. Today we had hired Merih and *Demet* to check the sonar targets that lay in depths that surpassed the range of our submersible and diving operations.

Fig. 1 (below). Merih's homemade ROV.

Fig. 2 (right). The bust of "Demeter."

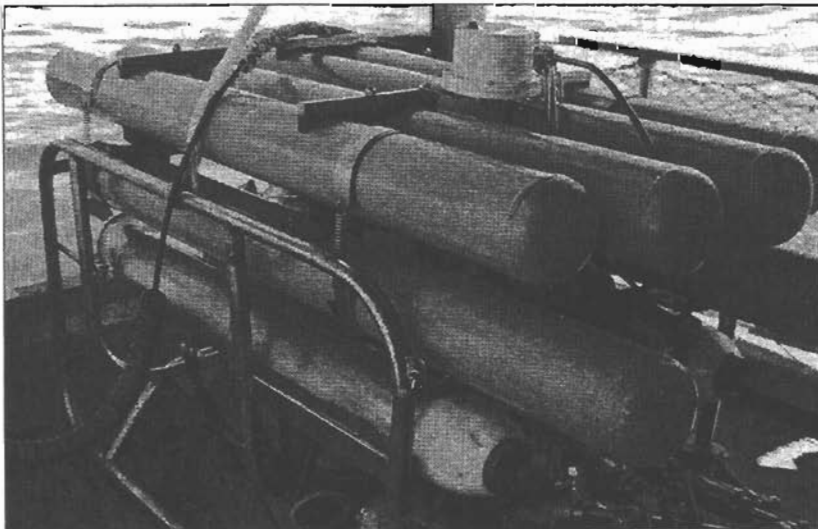


Photo: F. Hentschel



INA archives

Accompanied by five members of Prospero Productions, an Australian film team, Jeremy and I watched while Merih manned the helm and the ROV controls and Mehmet and Ismail handled the cable. Jeremy had navigated Merih directly over his first target, and three minutes after the ROV was deployed it was filming the bottom at a depth of seventy meters. Five minutes later, a large rock outcrop that certainly matched Jeremy's target appeared on the monitor. The target was not a shipwreck, but we were delighted that the ROV had located it so quickly. During the remainder of the day, we explored several additional deep-water targets. Although none of the targets proved to be a shipwreck, the success of the ROV in investigating sonar targets suggests that a future survey would benefit from a combined sonar and ROV operation.

In 1959, Mehmet Erbil told Throckmorton the water averaged thirty fathoms [fifty-four meters] in the place where he found the statue, but six years after the discovery his memory may have been flawed. Sponge-draggers tended to operate in depths of up to eighty meters, but our survey was restricted by the limitations of *Carolyn* and SCUBA diving to depths of less than sixty meters. Although we did survey with sonar in deeper water, we only had one day with Merih's ROV to explore the deep water targets. Thus it is possible that the find spot of the Demeter is outside our search area. Consequently, we would like to return in 2005 with sonar and ROV. We know the statue came from somewhere near Arap Adasi, and the discovery of the wreck that yielded it would be legendary.

One of our primary goals during the second three weeks of our survey program was to reinvestigate several known shipwrecks, discovered on previous INA surveys and assess their potential for future excavation. We began with a fifth-century BCE Classical Greek shipwreck at Aslan Burnu, just south of Knidos. Aslan Burnu, Turkish for Lion Point, is named for the colossal lion, now in the British Museum, recovered in the late nineteenth century by Sir Charles Newton from a tomb built high on the headland overlooking the sea. A shipwreck beneath the point was originally discovered by INA in 1981 and revisited on INA's submersible survey in 2001 and on my 2003 survey. In 2003, we had been able to record all artifacts visible on the surface of the seabed; an impressive assemblage of Classical pottery from Greece's Golden Age, including amphoras from Chios and Mende and the spectacular intact Attic red-figure krater found in 2001 (*INA Quarterly* 29.2, 10–11). In 2004, our goal was to determine if there was material buried beneath the sand at the base of the rock cliff. This we did by combining traditional probing methods with state-of-the-art magnetometry, also provided by Jeremy Green. Although there were some small magnetic anomalies on the site, there was little to suggest a large concentration of ceramic or metal. It appears unlikely that there is a substantial cargo buried beneath the sand,

and therefore the Aslan Burnu shipwreck is not a likely candidate for excavation.

After completing the magnetometer survey at Aslan Burnu, we decided it would be beneficial to reinvestigate four known shipwrecks, just north of Knidos, at Iskandil Burnu, Turkish for Sounding Lead Point. These wrecks were discovered by INA divers in 1981 and revisited on subsequent surveys, including INA's 2001 submersible survey. Our goal in 2004 was to record all visible artifacts and raise some sample artifacts for further analysis and dating. Knidos was one of the most fabled and prosperous cities in antiquity because of its strategic location astride one of the main shipping lanes of the Mediterranean. The Knidians moved their city to the tip of wind-lashed Cape Krio, taking advantage (by collecting revenue) of ships forced to take refuge in their harbor to escape the weather. Given the menacing local winds, it is not surprising that there are so many shipwrecks from all periods of antiquity in the surrounding area.

The first and perhaps most promising of the Iskandil Burnu wrecks contains a number of different types and sizes of ceramic kraters (mixing bowls for wine and water) and a large assembly of ceramic roof tiles interspersed with amphoras. We raised two kraters, which are presently awaiting further analysis, and one amphora, which has parallels in the fifth-century BCE Erythraean amphoras from the Tektaş Burnu shipwreck excavated by INA from 1999 through 2001.

The raising of a large bell-shaped krater was an adventure in itself. An unexpected current came up on the surface while Prospero Production's underwater cameraman, Malcolm Ludgate, and producer, Ed Punchard, were filming my dive buddies, Mark Polzer and Murat Tilev, and me putting the krater into the lifting sling on the bottom. To our surprise, when we started our ascent we unable to make headway against the current. I popped to the surface to call for an outboard with a tow rope. Once the rope was hooked onto the krater sling, it also towed Mark and Murat while Malcolm, holding on to Mark's fin, continued filming. Ed had grabbed the dinghy's bow line, but I was falling farther and farther behind. Finally, Ed recognized my difficulty and brought me a second tow line. It was not until I was safely under tow that I remembered I was carrying the camera and snapped the photo (fig. 3).

The second of the Iskandil Burnu wrecks, visible from the Krater wreck, is Byzantine and dates to the sixth or seventh century CE. It comprises a visually fantastic mound of over two hundred globular amphoras interspersed with cigar shaped jars. The mound retains the shape of the ship and almost certainly covers substantial hull remains (fig. 4).

The third wreck at Iskandil Burnu is a collection of roof tiles of the same type as those seen on the Krater wreck. One amphora visible in the assemblage has not yet been identified but should aid in determining whether or not



Photo: F. Hentschel

Fig. 3. Raising the krater at Iskandil Burnu.

the tiles belong to a distinct wreck or are part of the cargo spilled from the Krater wreck.

The fourth wreck comprises a wide distribution of a variety of broken amphoras (different types possibly from the same period) along a relatively shallow reef (fig. 5). In the sand below this deposit are a number of "conical cups," three of which we raised (fig. 6). These cups are typical of the late Roman period, and parallels for the site's most common type of amphora are seen in the Athenian Agora and date from the second to the fourth century CE.

During the last two weeks of the survey, we moved to Antalya Province with our research vessel *Virazon*, in order to reinvestigate another known shipwreck discovered by INA off the coast of Kekova Adası in 1983. The Kekova

wreck dates to the Archaic period (seventh century BCE), and our intention was again to evaluate this wreck as a possible candidate for excavation. The wreck lies scattered over a large area on a reef just inside the entrance of the harbor at Kekova Oludeniz. The scatter, ranging from fifteen to thirty meters deep, is comprised of Cypriot basket-handled amphoras, along with others from Samos and Corinth. All the visible artifacts are broken and most are heavily concreted to the reef (fig. 7). We made a photo mosaic of the site, recorded all visible artifacts and probed for material beneath the sand. Although there is a considerable amount of ballast, suggesting the original position of the ship on the seabed, there is no clear evidence of hull remains. Nevertheless, the date and provenience of the Kekova wreck give it tre-



Photo: F. Hentschel

Fig. 4. The Byzantine wreck at Iskandil Burnu.

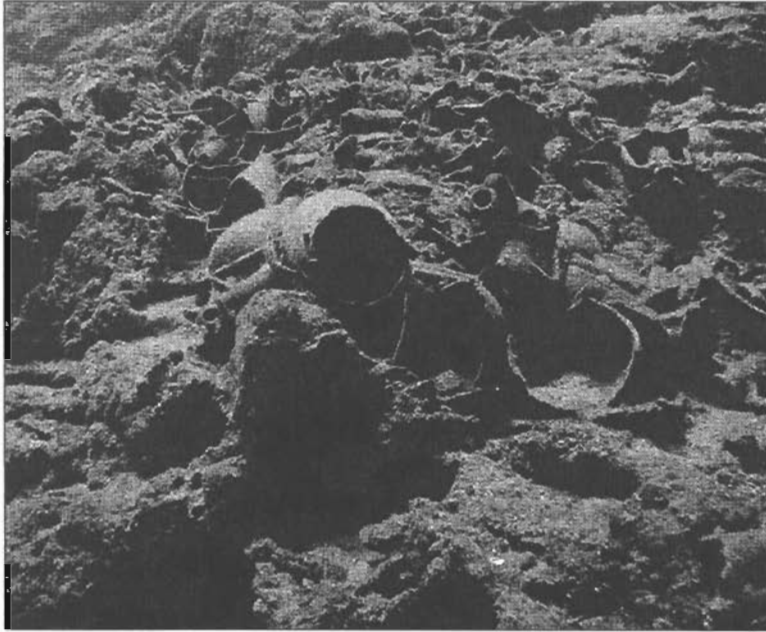


Photo: O. Koyagasioglu

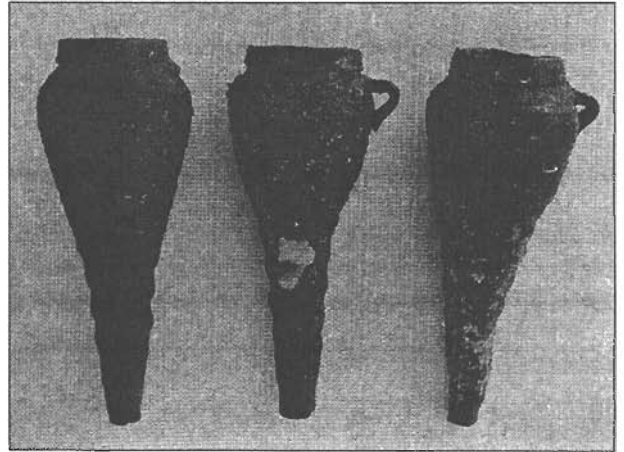


Photo: M. Polzer

Fig. 5 (left). *The Roman scatter wreck at Iskandil Burnu.*

Fig. 6 (above). *Conical cups.*

mendous potential for future excavation.

*Acknowledgements:* I would like to thank my team members, Mark Polzer, Sheila Matthews, Feyyaz Subay, Murat Tilev, Zafer Gul, Bayram Kosar, Ali Temel, Huseyin Vural, and Bodrum administrator Tufan Turanlı, all of whom contributed to the success of the survey. Deborah Carlson, Elizabeth Greene and Mark Polzer provided invaluable editorial assistance with the survey proposals and reports. Also supporting this project was Prospero Productions, which made a documentary film of our work. It was a privilege to work with producer Ed Punchard, director Rhian Skirving, cameramen Phillip Bull and Malcolm Ludgate and soundman Laurie Chalanda. It was the greatest privilege to work with Jeremy Green, and I would like to express my gratitude to the Western Australian Maritime Museum for granting him leave time to work on this project. I am, however, most grateful to the National Geographic Expeditions Council and Frederick and Jan Mayer and Ron Vandehey whose generous support made this project possible. ☞



Photo: S. Matthews

Fig. 7. *The Archaic wreck at Kekova Adasi*



# George Bass Dives for His Own Past

John R. Eastlund

What does the retired “Father of Nautical Archaeology” do now that he’s no longer excavating ancient shipwrecks in Turkey? He dons his wetsuit and scuba gear, joins his son for their first dive ever together, and goes to look at the remains of a wreck in Long Island Sound (fig. 1).

The Sound has been full of wrecks since pre-revolutionary days, but George Bass is interested in a particular wreck—the steamer *Atlantic*, which sank in a terrible November storm in 1846. The 1,112-ton ship was on its way from its homeport of New London, Connecticut, to New York City, where it had been built only four months earlier (fig. 2). Minutes out of New London, the side-wheeler suffered a boiler casualty. The ship’s crew cast out anchors, but all day the anchors dragged as the worst storm in local memory raged unabated. No other steamer could approach through the high waves close enough to render assistance.

“I would give a thousand dollars for another anchor today,” Captain Isaac Dustan was heard to exclaim.

About four o’clock the next morning, *Atlantic* was driven onto the rocky shore of Fisher’s Island. Within minutes the most luxurious of Long Island Sound steamships, the first to be lit by gas lamps, was little more than kindling. Forty-two of the seventy-eight souls aboard perished, including Captain Dustan.

The tragedy of *Atlantic* has faded from New York’s memory over time, but it was originally front-page news here and overseas. Back then, maritime commerce was an important part of everyday New York life, not something that New Yorkers only read about in history books as they

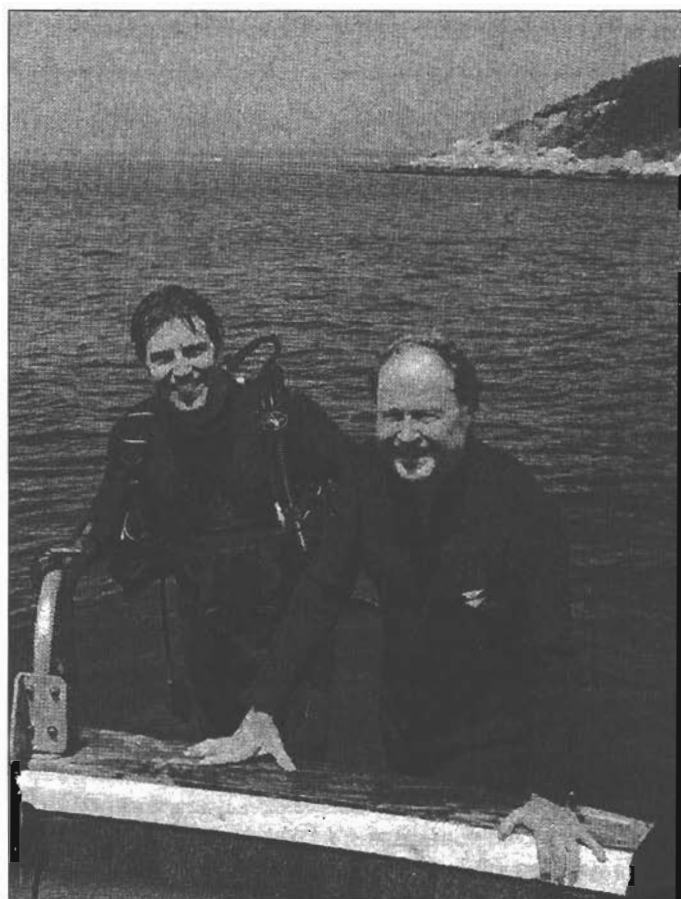


Fig. 1. George Bass and his son Gordon diving in Long Island Sound near Fisher’s Island in 2004. Courtesy of G. Bass.

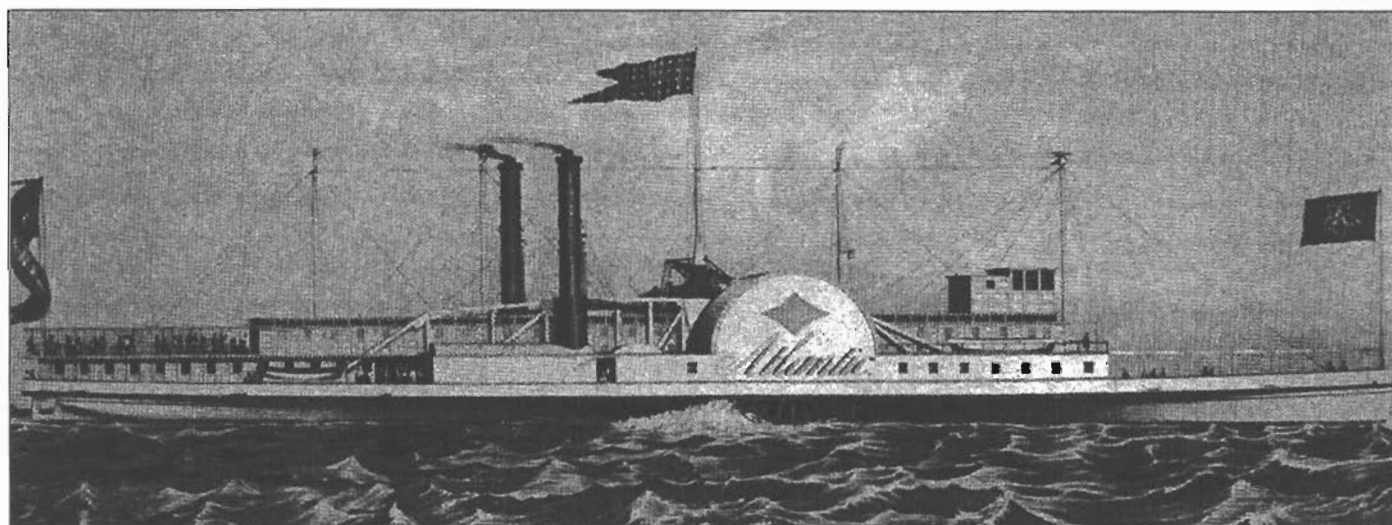


Fig. 2. A contemporary lithograph of the steamer *Atlantic*, by G. & W. Endicott, NYC. Courtesy of the Connecticut Historical Society Museum, Hartford, CT.

do now. Freight wasn't hidden from view in truck-sized shipping containers stacked in a Newark parking lot. Until the Brooklyn Bridge opened in 1883, the only way to get to Manhattan was to take a boat (or cross a few bridges over the Harlem River). While you were doing that, you would see ships disgorging immigrants at Battery Park and pass shipyards launching the latest high-tech steamships. Sailing ships still had their prows draped over South Street, and the Erie Canal barges that carried the products of the North American heartland were loading their cargoes into freighters going to all ports of the world. Ferries scurried from Brooklyn, Staten Island, and New Jersey. People knew the schedules of packets and liners, so if a ship was overdue there was widespread concern, particularly since some of the people on board invariably were from local communities.

The smells and sounds of maritime commerce are now disappearing from New York. Where great battleships once fitted out is now land coveted by condo builders. The Fulton Fish Market is moving to the Bronx. The only ships on Manhattan shores are museum relics and the occasional cruise liner. The big vessels have been replaced by a few harbor tour boats, commuter ferries, and privately owned mega-yachts. Repair facilities for these boats are disappearing. The great piers have been converted to impound lots, golf driving ranges, and heliports. Office workers commuting by subway to their skyscrapers rarely consider or care that this was once a great seaport.

George Bass has devoted his life to teaching the world not to forget the importance that seafaring had on world history. It was not always easy. When he was a University of Pennsylvania graduate student, few people thought it was possible to conduct a proper archaeological excavation underwater. In 1960, he went to Cape Gelidonya, Turkey, and showed them how to do it. This Bronze Age shipwreck became the first ancient site ever excavated in its entirety on the seabed. For the next dozen years, George Bass developed many of the standard techniques of shipwreck excavation, first as a student and later on the faculty, before he left the University of Pennsylvania to found the Institute of Nautical Archaeology (INA). It later affiliated with Texas A&M University, where Dr. Bass is now a Distinguished Professor Emeritus.

George Bass and his colleagues have shown the wealth of information that can be gleaned from ancient shipwrecks, in effect "time capsules" of what everyday life was like in the years that they sank. They have tried to show treasure hunters, looters, and antiquities collectors that knowledge is more valuable than a few trinkets collected in a haphazard manner for personal profit. His research has shown how commodities trading has united ancient civilizations all over the Mediterranean and adjacent seas. He has trained countless students, now diving archaeologists who are continuing his work all over the

world. His contributions have not gone without recognition. Among other awards, he has received the Archaeological Institute of America's Gold Medal for Distinguished Archaeological Achievement and the Lowell Thomas Award from the Explorers Club. He is also a recipient of the La Gorce Gold Medal, and one of the fifteen Centennial Awards, from the National Geographic Society; the J.C. Harrington Medal from The Society for Historical Archaeology; and the NOGI Award from The Academy of Underwater Arts and Sciences. In 2002, President George W. Bush presented him with the National Medal of Science.

All this is now ancient history to George Bass. Although he stopped diving when he turned seventy a couple of years ago, in the summer of 2004 he decided to make one last dive as part of a quest involving his own past, a genealogy project that's more of a hobby or a busman's holiday than it is archaeology. His great-great-grandfather, the Rev. Dr. William Jessup Armstrong (fig. 3), died when the *Ladies' Saloon*, in which he was leading a prayer meeting, collapsed as *Atlantic* struck Fisher's Island. When his body was recovered, it showed a severe blow to his head.

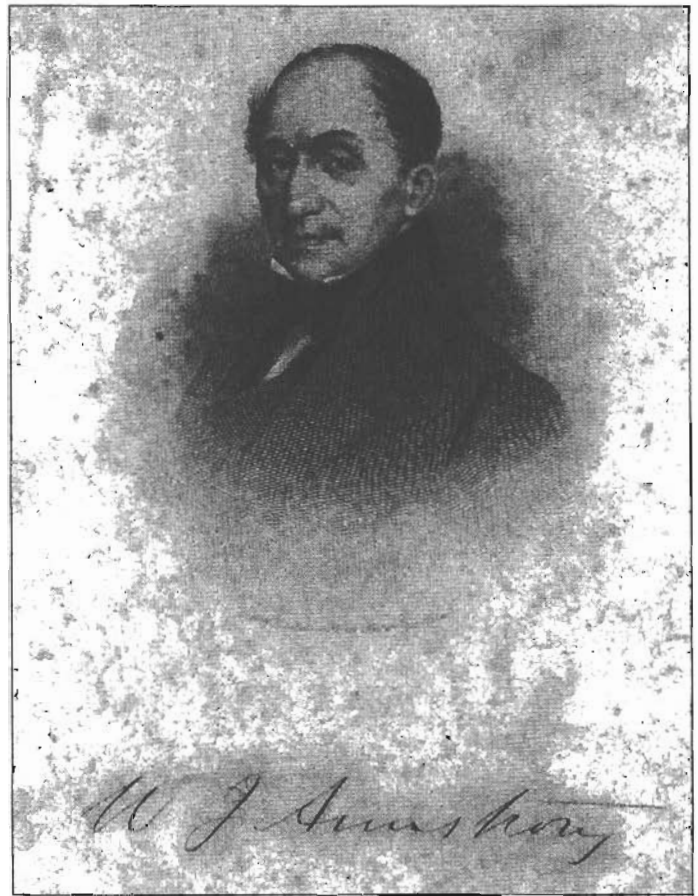


Fig. 3. George Bass' great great grandfather, the Rev. Dr. William Jessup Armstrong. Courtesy of the George Armstrong Wauchope Papers, South Caroliniana Library, University of South Carolina.



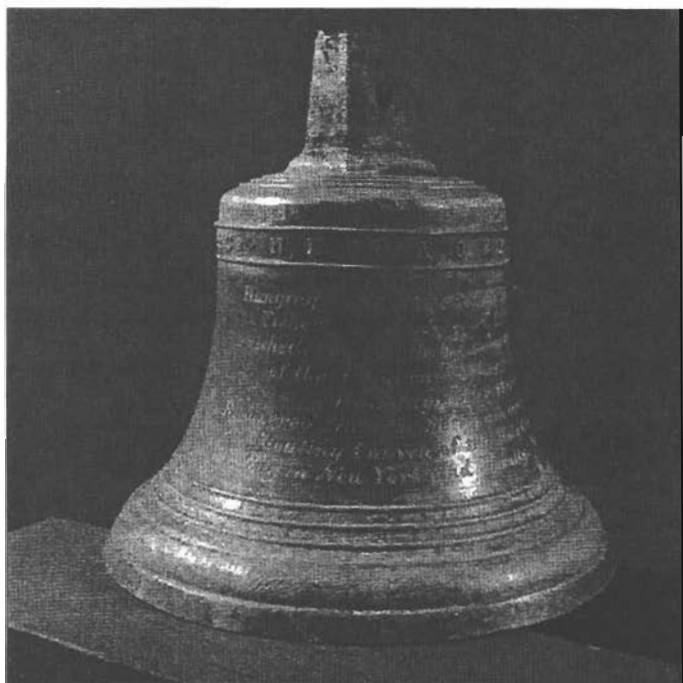


Fig. 4. The inscription on the bell from SS Atlantic reads: "New York 1846 T.F. Secor & Co. Hanging on the wreck of the steamboat Atlantic, on Fisher's Island, Nov. 28, 1846, when 42 persons perished, I was made by unearthly hands the surges of the deep, hours before, to toll their knell, and days after, their requiem. Recovered from the sea, I am consecrated to the use of the Floating Church of the Holy Comforter, by ladies residing in New York and vicinity. New York, Feb. 11, 1847." Photo courtesy of Seamen's Church Institute of New York & New Jersey



Photo: J. Eastlund

Fig. 5. The bell from Atlantic, an enduring symbol of the mission of the Seamen's Church Institute of New York and New Jersey, now hangs six stories above New York City.

None of the ten women on board survived, presumably because they were all in the collapsing saloon.

According to the Norwich, Connecticut, *Courier* of December 5, 1846, "the funeral of the late Dr. Armstrong, was attended on Sabbath last by one of the largest assemblies ever witnessed in New York on any similar occasion." He had concluded his business in Boston a day early in order to rush home to New York to have Thanksgiving dinner with his wife and five children.

*Atlantic's* bell hung from the wreckage tolling for its victims until it was retrieved and given to the Floating Church of the Holy Comforter in New York City (fig. 4). The Floating Church later became the Seaman's Church Institute, a spiritual haven for any seamen who pass through New York. Although the Institute has moved several times, the bell has followed and is now hanging sev-

eral stories above the street around the corner from South Street Seaport, where I tracked it down in 2002 (fig. 5).

The ship's engine was salvaged shortly after the disaster and sent to California where it was mounted in a Pacific steamer named *Brother Jonathan*, which, ironically, sank in July 1865. A chest containing trade goods of axe handles, meat grinders, pulleys, scythes, locks and keys was recovered from the recent salvage of *Brother Jonathan*. Carrie Sowden, working at the Conservation Research Laboratory of Texas A&M University (directed by INA President Donny Hamilton), is using the chest and its contents as the basis for her Master's thesis

Dr. Bass did not really expect to see much during his dive. *Atlantic* was wrecked in only fifteen to twenty feet of water (fig. 6), so a century and a half of waves have scattered and churned things up and exposed anything

left to the corrosive effects of seawater and the visibility off the island is poor. Nevertheless, on August 10, 2004, George Bass sailed from New London to Fisher's Island on the chartered dive boat *Atlantis* captained by Gary Chellis. With him and his son Gordon was Tom Jackson, a *Wooden Boat* editor who has written extensively about INA and

had just been certified as an open-water diver in order to make this trip. On his return to College Station, I asked Dr. Bass, "Did you see anything?"

"Nah. But I wouldn't have missed it for the world."

For a man who has spent over forty years in the serious study of shipwrecks, he was at last just having fun.

*Acknowledgements:* Thanks to Debra Wagner, Director of Communications at the Seamen's Church Institute of New York & New Jersey, for providing the photo of the bell and allowing me to get a close look at it; Norman Brouwer, longtime historian at the South Street Seaport Museum Library (a position since eliminated along with the archaeologist because of budget cuts at South Street), for allowing me access to his extensive collection of New York maritime history; and Kevin Crisman for notifying Dr. Bass of the sale of the Currier print of *Atlantis*. Finally, of course, thanks to Dr. George Bass, whose telling of his family genealogy research project got me interested in finding the bell during a vacation trip home to New York, and who filled in the details of his research, provided artwork, and allowed me to write this. ✍

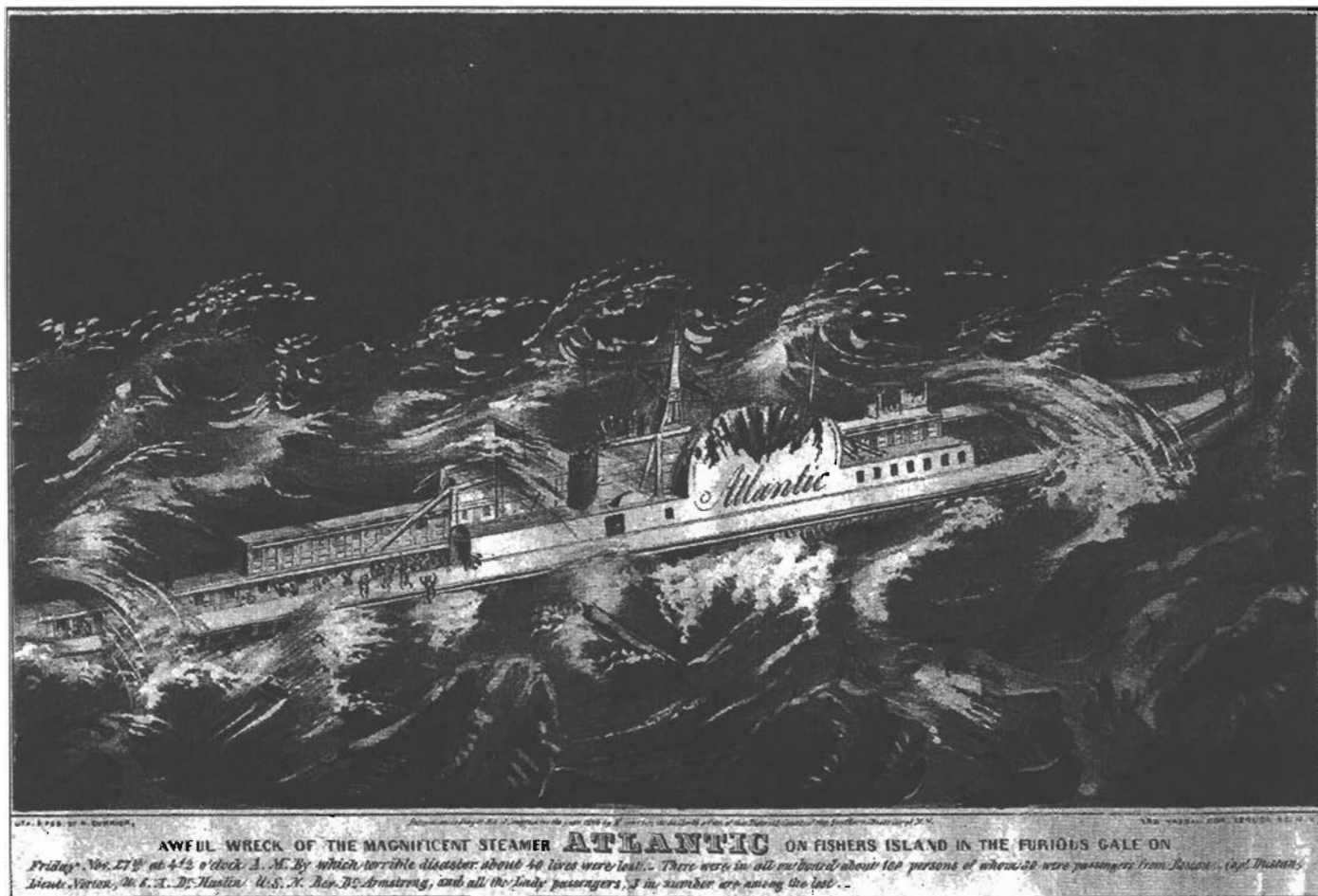


Fig. 6. An 1846 Currier print of the shipwreck. Courtesy of G. Bass.

# Celebrating J. Richard Steffy

Cheryl Ward

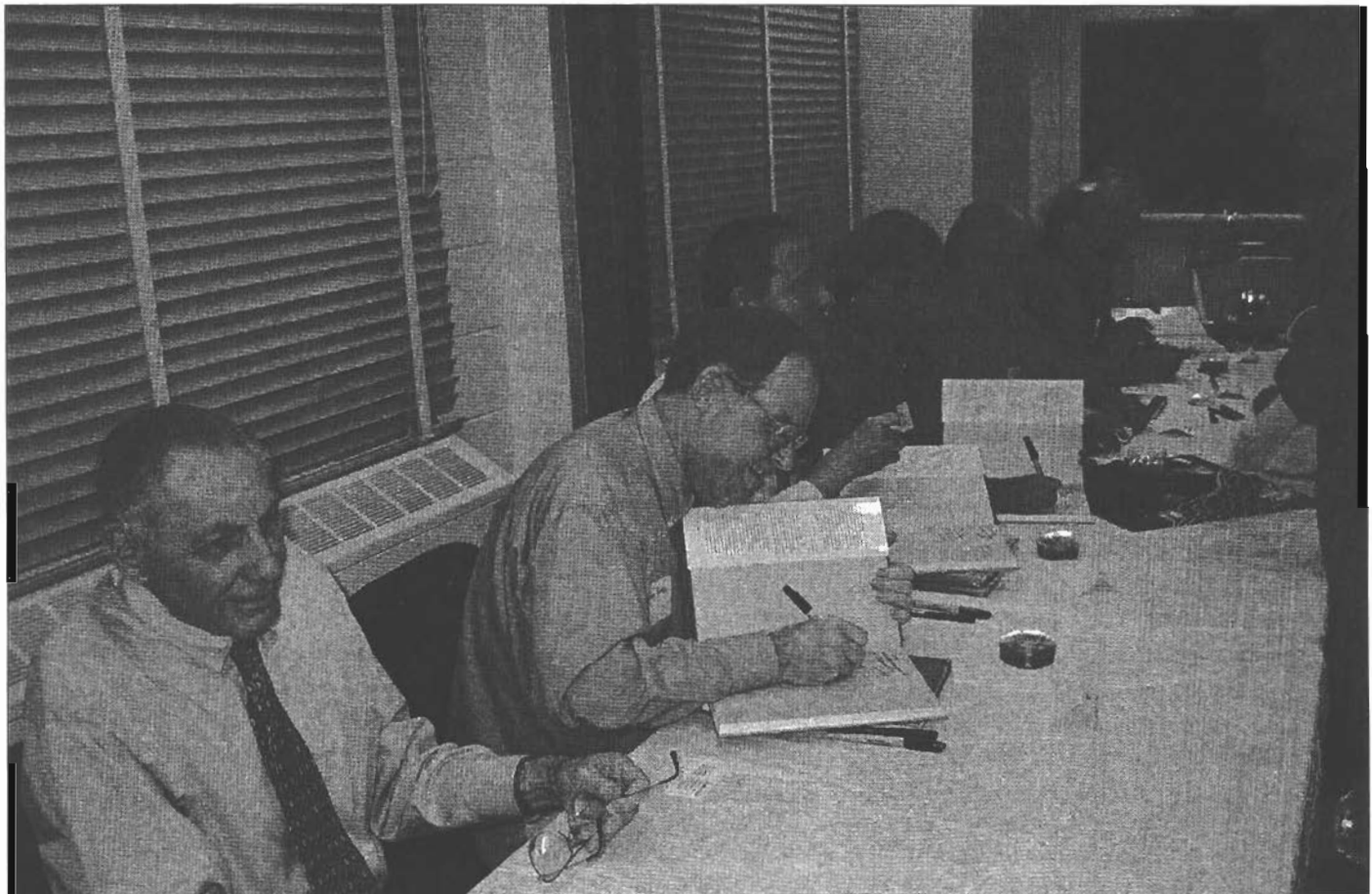
A happy crowd of nearly a hundred people joined INA archaeologists, students, faculty and staff, friends and long-time colleagues on September 17, 2004, in congratulating Emeritus Professor J. Richard Steffy on the publication of *The Philosophy of Shipbuilding: Theoretical Approaches to the Construction of Wooden Ships*. For decades, Professor Steffy has inspired his students, friends and colleagues to consider not just the ships of the ancient world, but the people who built those ships as the true subject of research related to the technology of ancient shipbuilding. Dedicated to Dick by the contributing authors and editors, the book reflects the inspiration he is for all those who love the sea and ships.

Donny L. Hamilton, president of INA, opened the formal presentation of the book and book signing at the Nautical Archaeology Program on Texas A&M's campus with a recognition of Dick's impact on the field of nautical archaeology. Book editors Fred Hocker and Cheryl Ward made brief comments and read messages of congratula-

tions and appreciation to Mr. Steffy from other authors. The deep respect and long friendship evident in communications from Patrice Pomey, Ole Crumlin-Pedersen, Lucien Basch, and Lionel Casson were echoed in comments from a special surprise guest at the signing.

Elisha Linder, founder of a research institute in Israel based at the University of Haifa, told the group how he came to invite Mr. Steffy to Israel more than twenty years ago. He subsequently worked with Dick both on the project to examine the remains of bow timbers preserved in the Athlit ram and on the recording and recovery of the Kinneret boat from the Sea of Galilee.

INA Founder George Bass, who wrote the book's forward, talked for a few minutes about the moment that Dick announced he was changing his life's direction. "We had been out to Atlantic City, looking at a few timbers and some nails sticking out of the beach sand, and Dick instantly identified it as a Maine Downeaster from the nineteenth century (he was later proven right, of course)."

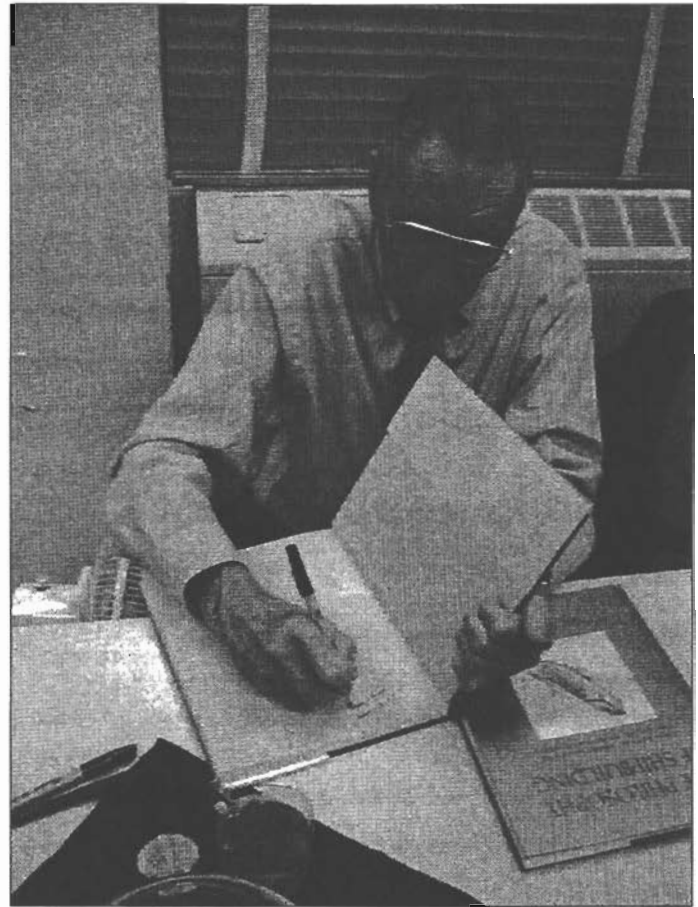


Book signing (left to right) Dick Steffy, George Bass, Fred Hocker, Cheryl Ward, Yaakov Dahanov, Tom Oertling and Kevin Crisman.

"On the way back to Philadelphia, Ann and I were following Dick and his wife Lucille, and after a few miles, I saw him standing on the side of the road, waving me over. He told me he had come to a decision, and that he was going to sell his business and try to make a living as a reconstructor of ancient ships. I was astounded, and asked him if he was out of his mind, since he had a wife and children to care for. Little did I know that less than a month later I would be typing my own letter of resignation to the University Museum and having people ask me the same question."

After these introductory remarks, representatives of Texas A&M Press made the book available to guests, and the book signing began in earnest. In addition to the editors, Mr. Steffy, and George Bass, authors Kevin Crisman of Texas A&M University, Yaakov Kahanov of the University of Haifa, and Tom Oertling of Texas A&M University at Galveston were present.

*The Philosophy of Shipbuilding* includes ten chapters that provide an overview of current research in the field. After a synthetic review of the principles of shipbuilding as expressed in the remains of ships, the volume presents chapters on shipbuilding in ancient Egypt and the Mediterranean, detailed studies of Egyptian papyri and some very early Greek boat models, the evolution of frame-first construction, the technology of Atlantic ships, and a gripping story of shipwreck and discovery in Lake Champlain. *Philosophy* was published in the Texas A&M Press Ed Rachal Foundation Series in Nautical Archaeology and is available through most major booksellers and through Texas A&M Press. INA members receive the volume at the discount price of \$65.00 volume. ✍



Dick Steffy signs a personal dedication in a volume of *The Philosophy of Shipbuilding*.

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## News & Notes

### *Nautical Archeology Program Graduates Become Editors*

Three graduates of the Nautical Archaeology Program at Texas A&M University have recently taken up important editorial positions or received awards as editors. Michael A. Fitzgerald is the Monographs Editor for the American School of Classical Studies at Athens. The Association of American Publishers recently presented the American School with an award for Outstanding Achievement in Professional and Scholarly Publishing. The prize, for the best book published in the fields of Classics and Archaeology in 2004, honors the publication of *The Propylaia to the Athenian Akropolis II: The Classical Building* by William B. Dinsmoor and William B. Dinsmoor Jr. Kristin Romey is the Managing Editor of *Archeology Magazine*, and Madeleine Donachie has been named Managing Editor of *The American Journal of Archeology*. Closer to home, *INA Quarterly*

ly Editor Christine Powell is returning to work on her dissertation and will be succeeded by Kirsten Jerch.

### *The Wine-dark Sea*

Many INA projects relate in one way or another to amphoras or other aspects of the international wine trade from the Bronze Age down to modern times. Some other INA members may be interested in wine from a consumer's point of view. So, we note with interest the release of *Greek Salad: a Dionysian Travelogue* (Wine Appreciation Guild, 2004) by Miles Lambert, who assisted INA with information on Greek wines in 1983. This is a collection of twenty-six stories from all over the Greek islands and mainland, always with an eye toward local wine. For the benefit of our archaeologists, there are numerous amusing references to little known passages in classical literature about wine, the wine-god, and related topics.

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# Just Released

*Serçe Limanı: An Eleventh-Century Shipwreck, Vol. I: The Ship and Its Anchorage, Crew, and Passengers* by George F. Bass, Sheila D. Matthews, J. Richard Steffy, and Frederick H. van Doorninck, Jr.

College Station: Texas A&M Press, 2004.

0-89096-947-7, 592 pp, 121 b&w photos, 129 line drawings, 3 maps, 45 tables Index. \$125.00 cloth.

The time was the Middle Ages; the scene was a small bay known in present-day Turkey as Serçe Limanı, "Sparrow Harbor," on the mainland peninsula just opposite Rhodes. INA Cofounder George F. Bass describes what happened there:

In A.D. 1025 or shortly thereafter, a modest merchant ship sailed into this seemingly safe haven, perhaps seeking shelter. Her voyage had probably taken her from the vicinity of Constantinople, perhaps from a Byzantino-Slavic community, to the eastern shore of the Mediterranean. There her merchants, most likely including Hellenized Bulgarians, took on as cargo 3 metric tons of cullet [glass fragments intended for recycling] (including a ton of broken Islamic vessels), some eighty pieces of intact glassware, nearly four dozen red-ware cooking vessels, half a dozen copper cauldrons and buckets, and sumac and raisins from a port within the Fatimid caliphate. Now, at an anchorage used for centuries, her crew cast the starboard bower anchor. Its iron shank snapped, perhaps from a sudden gust of the wind that is still funneled unexpectedly, but with gale force, down through the surrounding valleys. Suddenly adrift, the ship crashed onto the nearby rocky shore and sank. Those of the crew who could swim should have had no trouble reaching shore, especially if they made the beach not far distant inside the harbor. It seems, however, that they had no chance to save many, if any, of their personal possessions.

The wreck was soon forgotten, and it lay virtually unnoticed thirty-three meters beneath the surface of the harbor for almost a millennium.

Modern sponge divers were aware of the site and its burden of broken glass, but it was not until the first INA Turkish Survey in 1973 that this was determined to be a potentially well-preserved shipwreck from the eleventh century. Excavation began in 1977, sponsored by INA, the National Geographic Society, Texas A&M University, and the Corning Glass Works Foundation, and continued for three seasons. Detailed study of the data and artifacts gathered during the excavation has occupied many scholars—including the four editors, twenty-one other authors, three illustrators, and photographer who contributed to this volume—for much of the quarter-century since. The Bodrum Museum of Underwater Archaeology opened a splendid gallery devoted to the Serçe Limanı "Glass Wreck" in June 1990; the Museum's director, Oğuz Alpözen, had been the onsite representative of the Turkish Ministry of Culture during the excavation. However, the final publication, which begins with this volume, will be the most important memorial to the sailors whose voyage ended badly so long ago.

The book begins with a physical description of the harbor at Serçe Limanı and its wrecks. This is followed by three chapters (out of twenty-four) devoted to regional history and archaeology: Robert S. Carter on the area in Classical times, Élisabeth Malamut on Byzantine times, and Dorothy Slane on the archeological history of the anchorage. One of the things that makes the Serçe Limanı site so important, paradoxically, is that it was nowhere special. This part of the Carian coast was quite typical of littoral settlement patterns throughout the Byzantine cultural sphere. The ship was not transporting elite passengers or goods into an exotic port in luxurious style. This was an ordinary commercial vessel stopping, and sinking, at a very ordinary anchorage. The shipwreck thus presumably provides a representative cross-section of the grassroots economy of the Byzantine Empire, including particularly trade with its Muslim neighbors.

INA picked this site for excavation in part because the eleventh century was an important period in the evolution of hull construction. Like most modern ships, but unlike typical ancient and early medieval vessels, much of the framing of the Serçe Limanı "Glass Wreck" was assembled before any planking was added. Almost half of this volume is devoted to the ship's hull, rigging, anchors, ballast, and querns. J. Richard Steffy provides an invaluable introduction to ship studies, while Sheila Matthews describes how the INA excavation team recorded the hull. The two then collaborate on a description of the hull remains. The exhibit in the Bodrum Museum required reconstruction, reassembly, and display of the hull, and the team that put the exhibit together (Dick Steffy, Sheila Matthews, Frederick M. Hocker, and Robin C.M. Piercy) describes this process. Dick Steffy provides a detailed guide to the original construction of the "little merchant vessel that was full and flat and simply built." Since the Serçe Limanı vessel was probably launched a decade or two before its sinking, it required significant repairs during its working life, which are also described.



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The boxy hull would have been efficient in carrying cargo, with a capacity of thirty-five tons within a fifty-foot length, but the ship would have been rather clumsy and uncomfortable to sail. However, Ms. Matthews suggests that the inherent stability provided great resistance to heeling, making it easier to carry fore-and-aft sails, probably a two-masted lanteen rig that allowed closer sailing to the wind (and thus easier travel upwind) than square sails would. The Serçe Limanı wreck is the earliest with this rig that has provided enough information to allow profitable study. Frederick H. van Doorninck, Jr. discusses design, making, and temporary repairs of the anchors and careful ballasting of the ship; Tamara Stech and R. Maddin the anchor iron, and Curtis Runnels millstones used as ballast and anchor-pile supports. Because the remains illustrate so many details from a key period in the evolution of watercraft, this section of the book alone would make it a mandatory acquisition for any serious library collection on ship design and construction.

However, there is more to this shipwreck than the ship itself. The sinking and subsequent burial under sediment created a "time capsule" of a critical point in Eastern Mediterranean history. The death of Emperor Basil II in 1025 marked the end of the long Byzantine recovery from the Persian and Arab invasions in the seventh century, and the beginning of its long decline towards final collapse in the fifteenth. Despite its importance, this is a period that has provided remarkably little evidence about daily life in Islamic society and even less from the Byzantine domains. The Serçe Limanı finds constitute one of the largest surviving assemblages of everyday objects of the period, illuminating both the Byzantine and Islamic cultures, and their cross-cultural contact. Ten of the twenty-four chapters in this first volume are devoted to items that probably constituted the personal possessions of the crew and passengers. These included jewelry, tools, gaming pieces, metal vessels, weapons, fishing gear, padlocks, grooming equipment, and other personal effects. The most complete set of Byzantine tools in existence, the earliest firmly dated chess set, the largest collection of Byzantine weapons from any site are described! The book describes the most complete set of Byzantine tools in existence, the earliest firmly dated chess set, and the largest collection of Byzantine weapons from any site. Two additional chapters discuss the faunal and plant remains that probably represent the ship's victuals. This section of the book (which contains contributions by George Bass, Fred van Doorninck, Robert H. Brill, Fred Hocker, Kenneth Cassavoy, James W. Allan, Joseph K. Schwarzer II, G. Venetia Piercy, M. L. Rider, Cemal Pulak, Sophie Stos-Gale, Philip L. Armitage, and Cheryl Ward) will also make it a mandatory purchase for any scholar of the cultural history of the period or area.

Future volumes of this series will discuss the ceramic wares and commercial equipment (such as coins, weighing equipment, and seals) found on the eleventh-century Serçe Limanı shipwreck, as well as the cargo of Islamic glazed bowls, plain wares, the largest collection of medieval Islamic glass vessels from a single site, raw glass and broken glassware cullet, and Islamic wine in Byzantine amphoras. The INA excavation recovered roughly a million pieces of broken glassware, constituting perhaps the world's most challenging jigsaw puzzle, which has occupied a sizable team of conservators for over two decades. When all the data has been published, the editors will present conclusions about the crew, passengers, economics, and route that led to Serçe Limanı on that last voyage. This initial volume thus represents only the first-fruits of a truly massive undertaking.

The Texas A&M Press has generously offered a discount to INA members of 30%. Please contact them directly on (979) 845-1436, (979) 847-8752 fax, or by e-mail at [upress@tamu.edu](mailto:upress@tamu.edu). ✍

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## Profile

### Faith Hentschel

*Since this is to be my last issue as Editor of the INA Quarterly, I hope I can be excused a personal note. I first met INA Associate Director Faith Hentschel as I walked out of the camp gates very early on my first day on the Bozburun excavation in Turkey. She offered me a ride in her car up to the conservation house, which was situated up on the hill overlooking Selimiye's picturesque bay. I have since enjoyed many rides with Faith, as she has become a good friend. I dearly needed such a friend in those early days of my career. I am not alone. Faith has befriended, mentored, and helped many of us through her years with INA.*

In a sense, Dr. Faith Hentschel has been involved with the Institute of Nautical Archaeology since before it even existed. Let her tell the story: "George Bass has always said you can teach an archaeologist to dive, but you cannot necessarily teach a diver to become an archaeologist. Nevertheless, I started the wrong way around. I dis-

covered a new passion when I took my first diving course in 1972, right after the birth of my second child, when George was still at the University of Pennsylvania, and neither INA nor the Program had been conceived. I was interested in nautical archaeology, so I interviewed with George in Philadelphia. He said that if I wanted to work

with him, I would need a Ph.D. in Classical Archaeology. Since I knew from my travels that I was fascinated with the Classical World, that sounded reasonable.

"He asked me if I had ever had any Greek or Latin. Well, I had Latin in seventh and eighth grade (with the same teacher as Crawford Greenwalt, director of the Sardis excavation) but did not continue in high school. Clearly, I had a lot of work to do, especially since I had two small children. Nevertheless, when I was accepted into Yale's Classical Archaeology program for the fall of 1974, George agreed to take me as a field school student at Yassiada that summer. Although we only had eighteen days of field training before the Cyprus war ended the season, it was enough to convince me that I had found my calling."

Faith now has three advanced degrees in Classical Archaeology from Yale, in addition to her undergraduate degree in Art History from Mount Holyoke College. "Both my undergraduate degree and my doctorate have served me well, because I have been teaching Art History and Archaeology at Central Connecticut State University in New Britain, Connecticut, since 1983. I begin every course with a presentation on my underwater excavation and survey work in order to engage my students in the excitement of art and history." One of her classes was the impetus that brought former INA President Fred Hocker into the discipline, and several of her undergraduate students have travelled to Bodrum as museum interns.

Faith has also taught at Yale, Wellesley, and the University of California at San Diego, as well as serving as an enrichment lecturer on Sea Cloud cruises in the Aegean, the Adriatic, and along the Turkish coast. Over the past thirty years, she has given many public lectures about the Institute and its work. Faith enjoys time with her son Michael Hentschel, her daughter and son-in-law Samantha and Scott Pinckney, and her grandchildren Abby and Jake Pinckney, all of whom live near her home in Stony Creek, Connecticut.

Despite her active life outside INA, Faith has made an impressive contribution to the work of the Institute since that first short season in 1974. Since she was taking classes at Yale in the Fall semester of 1976, she missed working at Şeytan Derişi. However, that is the only flaw on her almost perfect record of participation in every INA excavation in Turkey

since the American Institute of Nautical Archaeology began in 1973. In 1993, Faith purchased a second home in a village near Bodrum, which she uses as her Turkish base of operations. During her career as a nautical archaeologist, she has worked on the fourth-century CE Roman and sixteenth-century Ottoman shipwrecks at Yassiada, *Defense* in Penobscot Bay, Maine, the Cornwallis ship at Yorktown, a third-century BCE Hellenistic shipwreck at Lipari, Italy, the eleventh-century CE "Glass Wreck" at Serçe Limanı, the ninth-century CE Byzantine shipwreck at Bozburun, the fifth-century BCE shipwreck at Tektaş Burnu, and the sixth-century BCE shipwreck at Pabuç Burnu. She also worked on the mapping of Early Bronze Age tombs at Mochlos, Crete. However, Faith ranks the summers she spent from 1984 to 1994 working on the Bronze Age shipwreck at Uluburun—one of the greatest archaeological discoveries of the twentieth century—as her most significant project.

In addition to her work on excavation, Faith has contributed to INA's Turkish surveys that locate possible excavation sites and gather other information on the nautical archaeology of the area. "Certainly, the most challenging experiences I have had were preparing for the two submersible surveys I directed during the summers of 2003 and 2004 (see *INA Quarterly* 31.2, 10–16, and 31.4, 10–13). I found myself in the new position of having to decide what to do, how to do it and how to raise the money for it. The learning curve was amazing.

"Each project has been more rewarding than the last," Faith adds, "not only because of the light it has shed on the

history of ancient civilizations but also because of the joy of working with the extraordinary group of people INA has drawn together from all parts of the globe. I have watched the organization grow from the foundation of the American Institute of Nautical Archeology, through the creation of INA and its affiliation with Texas A&M University in 1976, to its position today. I am proud to contribute as an Associate Director. As INA President Donny Hamilton says, this is 'the best nautical archaeology academic and research program in the world.' I have had so many amazing experiences over the past three decades that it is impossible to single out any one for description. Suffice it to say that INA has allowed me to pursue my passion, and I simply want to thank George for admitting me as a field school student in 1974." ❧





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