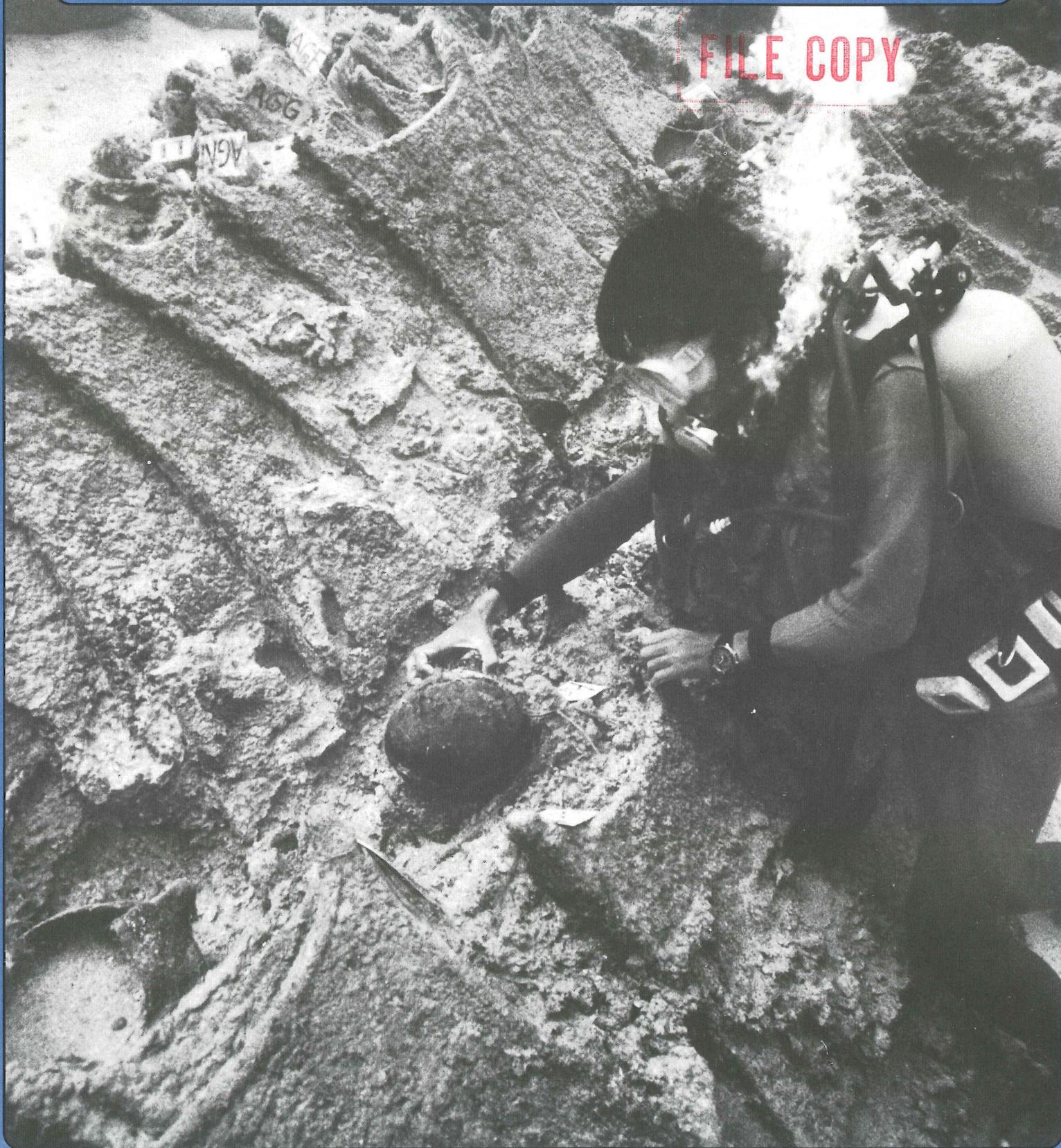


IN A NEWSLETTER



Vol. 15 No. 4 December 1988

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INA NEWSLETTER



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1988: A Year in Review

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Member Contributions Welcome!

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

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

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

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Written submissions should be limited to 1,000 words and are subject to approval and editing. **Please clearly mark everything with your name and address** so we can return it to you. We can not be responsible for items lost by the postal system, so please do not send original illustrations or photographs. Detailed format information available upon request.

Cover: Takahiko Inoue examines a pilgrim flask concreted to copper ox-hide ingots at Ulu Burun. Photo: Don Frey

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Editor: Diana Thornton



Search for the *Gallega*

by Don Keith

Rio Belen, Panama

Thanks to generous grants from the Meadows Foundation and INA Director Harlan Crow, INA's Ships of Exploration and Discovery Research Team was able to conclude a ten-week field survey designed to locate the archaeological remains of the caravel *Gallega*, abandoned in Rio Belen, Panama, in 1503 by Christopher Columbus (see "Can We Find *Gallega*?", *INA Newsletter* 15/1).

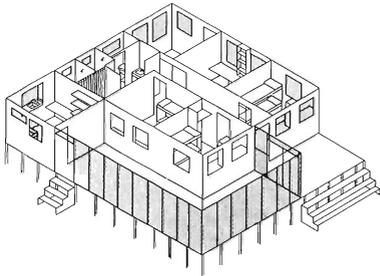
Our initial experiences at Rio Belen in 1987 convinced us that if our search for *Gallega* is to succeed, the first step was to build a field house large enough to accommodate ten archaeologists and all their equipment for months at a time over the seven-year period of our search and excavation agreement with the Panamanian Department of Culture. During the spring and summer of 1988 a team of villagers lead by Alberto "Beto" Navarro built the house according to plans furnished by INA Field Projects Manager Ric Hajovsky. Ric and volunteer John Groppel flew down during the first week in August to unload the container we had shipped ahead to Colon and to complete installation of plumbing and electrical wiring. For the duration of the season, the smooth operation of the INA field house was capab-

ly managed by Marie-France Lemire, in addition to her other duties as diver and surveyor.

Knowledge of what the river mouth looked like when Columbus was there could help us narrow down the search area considerably, and so we contacted Professor Antonio Tourina of the University of Panama for help. Professor Tourina and three of his students joined us for five days, during which time they conducted a geomorphological study of the river mouth to determine how much change had taken place in the last 500 years. The core and soil samples they took have not yet been analyzed, but Prof. Tourina believes that the majority of the evidence indicates that the mouth of the Rio Belen is "captured" in a geologic fault, and consequently—with the exception of the sand spit at the entrance—its bed and configuration are stable. We were puzzled by claims of some of the older residents of the village that the river bed and the two bays have, in human memory, gradually begun to fill with sediments. Could this be the result of recent man-induced changes upstream, or climatic change, or merely a stage in an ages-old natural erosion-accretion cycle? In any case, as a result of the survey we now know that *Gallega* can not lie on the west side of the river or under the modern west bank. The

Aerial Photo: Instituto Nacional de Geographia Tommy Guardia

The research team needed a permanent structure to house a crew of 10 plus equipment during the field seasons in the next seven years. Photo: Bob Adams. Drawing: Ric Hovjosky.



possibility of the river having had a different mouth in 1503 when Columbus was there also was eliminated.

Having thus narrowed down the search area by approximately 33%, we were ready to begin looking in earnest. We know that there were two aspects of the remains of *Gallega* that we could key our surveys to look for. The first is disturbances in the earth's natural magnetic field caused by the presence of iron objects. These anomalous disturbances, measured in units called "nano-Teslas," can be detected by a magnetometer, and surveys of this type have been so successful in the past that the magnetometer has become the nautical archaeologist's favorite survey tool. The second aspect we can detect remotely is the presence of the ship's ballast mound. This could be accomplished by probing directly through the mud and sand with a hollow pipe through which high-pressure water is forced, or indirectly by using low-frequency sound.

The magnetometer search of the underwater portion of the survey area was headed up by our old friend and colleague Gordon Watts, Professor of Maritime History at East Carolina University and widely-recognized expert in magnetometer surveying. As Joe Simmons plotted the magnetic contours produced by the survey onto a 1:1,000 scale map of Rio Belen, we came up against some formidable obstacles. Vast thunderstorms every afternoon limited surveying almost exclusively to mornings. Strong magnetic gradients from east to west across the width of the river seemed to confirm Professor Tourina's surmise that the river course followed a geologic fault. A similar, but more pronounced, gradient was detected from north to south up the river channel. At the mouth of the river, in the vicinity of a high hill on the west bank, the magnetic background "noise" became very complex. Later, tests conducted on rock samples from the hill indicated that at least some of them had weak magnetic properties. But the worst news of all was the analysis we received from the Panamanian Department of Mineral Resources. A sample of "black sand" from the spit at the river mouth was 75% magnetite!

Despite these complications, six of the magnetic anomalies we detected had signatures similar to those typically produced by wooden-hulled shipwrecks and by large, isolated iron objects such as cannons and anchors. We unlimbered our diving equip-

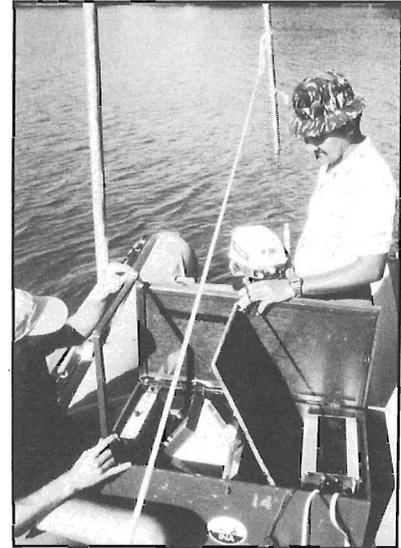
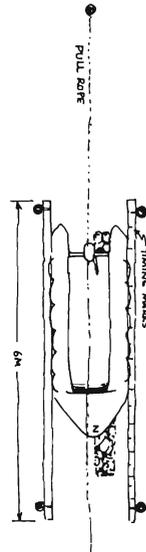
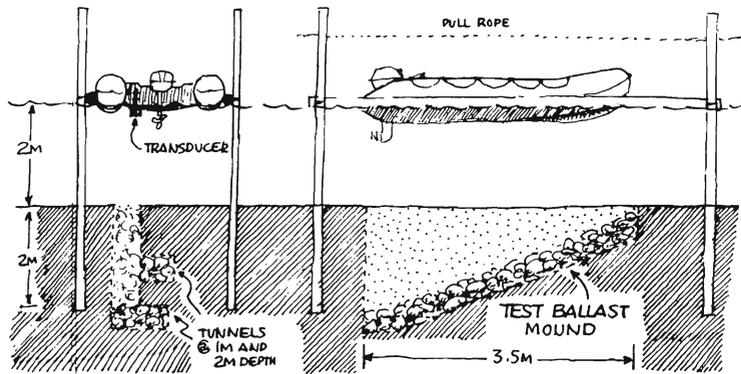
ment and began excavating the largest target, a 200+ nano-Tesla anomaly located just inside the sand spit.

Diving in Rio Belen is one of the oddest experiences any of us has ever had. Visibility is highly variable, ranging from several meters to zero. The murky, cool river water flows across the top of an arm of sea water which invades more than a kilometer up the river channel, producing a variety of peculiar effects. About two meters below the water surface divers encountered a narrow zone where sea and river water merge. Here the water breaks into cells of different densities, the most disquieting characteristic of which was to distort vision, producing the effect of peering through a face mask lens smeared with vaseline. The divers' descent slowed and stopped as they entered the denser seawater layer underlying the river water. Below the contact zone the seawater is more than ten degrees Fahrenheit warmer than the river water. Fresh water fishes cruise through the layer of river water while salt-water organisms crawl across the bottom.

Ultimately, the sand spit anomaly eluded us. Although we excavated an enormous funnel-shaped "doodle-bug" crater in the river bed, our air lift was not able to keep up with the rate at which sand re-filled the crater. The experience was repeated on another target, leading us to the conclusion that our excavation equipment, which in the past proved to be ideal for excavations in shallow sand pockets around shipwreck sites on coral reefs, was not powerful enough to deal effectively with the deep, loose sediments covering the bottom of Rio Belen.

The sonar search for *Gallega's* ballast mound utilized an experimental tool, the Acoustic Subsurface Probe (ASP), developed by Marty Wilcox, President of Applied Sonics, Inc., specifically for the requirements in our search for *Gallega*. Because the ASP was a prototype which had never been used in the field, our first task was to design a test that would accurately determine the depth of penetration of its signal.

Bob Adams, the ASP's operator, built a "phantom ballast mound"—an inclined ramp of stones buried in a carefully excavated trench angling from the surface of the river bed down to a depth of 2 meters. Over this he constructed an aluminum pipe frame which guided the zodiac carrying the ASP along the length of the phantom mound. In order to test the ASP in all possible



In the search for the *Gallega*, an experimental survey instrument was tested in the field. The Acoustic Subsurface Probe (ASP), developed by Marty Wilcox specifically for the *Gallega* project, enables the archaeologists to "see" two or more meters below the surface of the river bed.

In order to test the ASP, under controlled conditions, a "phantom ballast mound" was constructed. After over 500 test runs, the team not only proved that the ASP worked, but that it also provided a comparison "signature" similar to what the *Gallega's* ballast mound, if located, might produce. Illustrations: Don Keith

combinations of its various settings for signal strength and processing, it was necessary to make more than 500 runs across the mound. After we had demonstrated that the ASP could in fact detect stones at least as deep as two meters below the bottom we conducted a partial survey of the north bay. Our survey detected an anomaly more than 60 cm below the mud that produced a signature almost exactly like that of the "phantom ballast mound." But time was running out and we were not able to excavate this sonar anomaly before the season was over.

We did not ignore the terrestrial component of the Columbus occupation. U.S. Park Service archaeologist Toni Carrell took annual leave from her job with the Submerged Cultural Resources Unit to lead the terrestrial survey for the site of Santa Maria de Belen, Columbus's failed outpost established somewhere on the west bank of the river. Toni focused terrestrial excavations on El Pozo Viejo, the "Old Well," where the modern villagers used to get their drinking water before the aqueduct was constructed seven years ago. Among the artifacts recovered were numerous coarse earthenware sherds which may have been fragments of Spanish olive jars, and a single sherd of glazed melado ware, a type which has been found on other early sixteenth-century Spanish sites in the New World, including the Highborn Cay and Molasses Reef Wreck sites.

When the season was over we took stock of what we had learned. Most importantly, we learned that we could rely on our Panamanian colleagues at INAC (Instituto Nacional de Cultura) and PROESA (Proyectos Especiales del Atlantico), the government agency that is overseeing the modernization of the Atlantic coast of Panama, to assist us with the Project. INAC supplied the expedition with two of its staff members, Jacinto Almendras and Erik Garcia, whose expertise and enthusiasm were indispen-

sable. When he was not wrestling with the vibrocore machine or digging test pits, Oscar Ortiz, the representative assigned to us by PROESA, shuttled back and forth between Panama City and Belen, guiding newly-arrived expedition personnel to the camp, getting equipment out of customs, and performing a myriad of other diverse tasks.

The INA field house is superbly well-designed and constructed and it will serve as the Project's headquarters for years to come. By inference, *Gallega* probably lies buried in the river bed sediments of the north or south bay. Although the Rio Belen area has an extremely complex magnetic background, we discovered that with care, we were able to distinguish very small individual magnetic anomalies. The experimental subsurface penetrating sonar proved its potential and should be a powerful tool with which to locate *Gallega's* ballast mound. Various aspects of the Project were captured on 16 mm film by Gerald Cain, President of the Dallas-based company TeleVisions, as the first step in producing a documentary movie of the search for *Gallega*.

No, we haven't found *Gallega*—yet. But then, we didn't expect to. If there's one thing we have learned over the last six years in our search for ships of exploration and discovery, it's that archaeology teaches patience.

The expedition would like to thank Prof. Hugo Gireaud, Director of PROESA, without whose personal interest there may have been no Search for *Gallega* Project. Dr. Ernest Estes of Texas A&M University is recognized for his advice and guidance and the loan of his amazing vibrocore machine. Lawrence Electronics provided us with a recording depth sounding sonar at no cost which enabled us to conduct a very accurate bathymetric survey of the river bed. Miller Blueprint of Austin, Texas, leased us surveying equipment at an extremely reasonable rate.

Port Royal 1988 : More than a Catch-Up Season

by D.L. Hamilton

The summer of 1988 was to be a nothing more than a "catch-up season." Because such a great number of artifacts were recovered in 1987, many encrusted and requiring extensive conservation, the decision was made not to excavate in 1988 in order to avoid unmanageable backlog. Furthermore, it would give us an opportunity to work on many aspects of the research that we had not had time to do.

My main objectives for our shortened field season were to:

- Reanalyze and categorize all of the material excavated in the 1981-1984 seasons.
- Put all of the 1981-1985 artifact data into computer data bases.
- Photograph and draw more artifacts.
- Conduct research in the archives and public records office in Spanish Town and microfilm what we could.
- Give students the opportunity to gather data on thesis topics.

With this in mind I went to Jamaica with a crew of eight, including three students who were gathering data for thesis topics dealing with Jamaica.

The Texas A&M students who participated in the 1988 research were Helen Dewolf, Diana Thornton, Becky Milford, Glenn Darrington, and Lisa Garigen. Helen Dewolf, a veteran of four seasons at Port Royal (1985-87) did her usual excellent job as the artifact artist, as she did in 1986 and 1987. In addition, she researched the Chinese porcelain collections from all of the Port Royal excavations, including those done by Marx, Priddy, and Link, and put the information into a data base in anticipation of using the analysis for her thesis. In the June *INA Newsletter* (15/2), Miss Dewolf wrote about the porcelain Dogs of Fo found in 1987 at Port Royal.

Diana Thornton, who also happens to be the editor of the *INA Newsletter* and another veteran of the 1986 Port Royal field season, was responsible for gathering the data from the Archives in Spanish Town. She reports on this in another article in this issue (see "Jamaica Archives," p. 10).

Becky Milford comes to the Port Royal Project from the Anthropology Program. She, too, participated in the 1986 Port Royal field school. For her research on clay tobacco pipes, she worked closely with Mr. Richard McClure—the indispensable Artifacts Officer in charge of the entire Port Royal artifact collection for the Jamaica National Heritage Trust. All told, several thousand clay smoking pipe stems and bowls were sorted and drawn and then recorded in her own special pipe data base. This will be the topic of her Master's thesis in Anthropology.

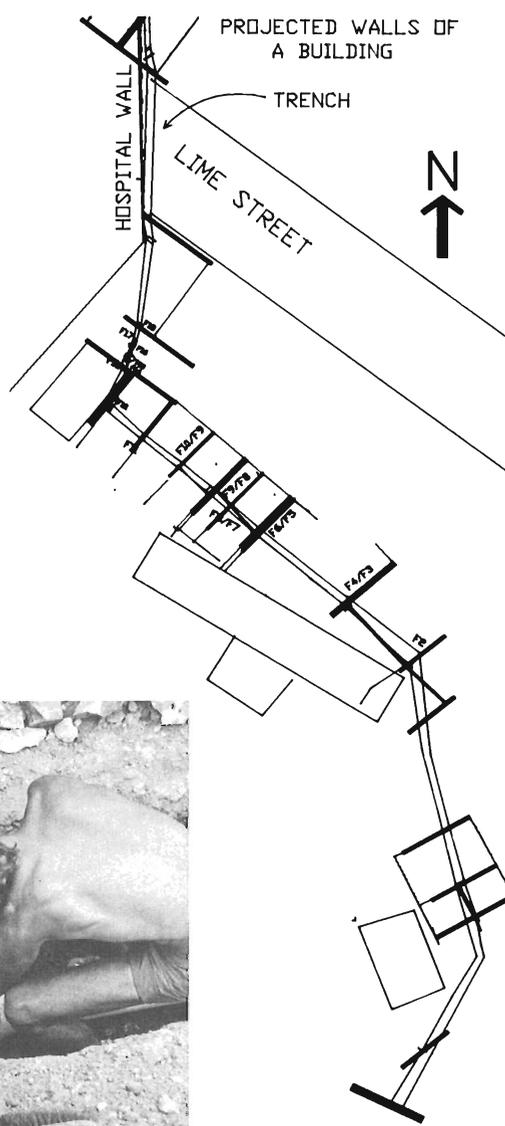
All of the field objectives were accomplished thanks to the diligent efforts of these and the other students. The accumulated

and recorded data are now being used in other aspects of the Port Royal Research. The Port Royal Project, as with most INA projects, is an integral part of the Nautical Archaeology Program. The students enrolled in Historical Archaeology this fall semester are working with the microfilms taken last summer of the probate inventories and the land plats as a source for their term papers dealing with 17th- and 18th-century English archaeology. Students enrolled in the advanced conservation class in the spring semester will be conserving many of the artifacts from Port Royal as term conservation projects. Consequently, all benefit: the students get training, valuable hands-on experience, and academic credit. In return, the project gets essential research and conservation accomplished at little or no cost. In essence, the Texas A&M academic program in nautical archaeology and the INA projects enjoy a mutually beneficial relationship.

Besides completing the planned research, we were able to assist the Jamaica National Heritage Trust in recording vital archaeological data that was in the process of being destroyed. The Water Development Board of Jamaica was installing a six-inch water line to the Coast Guard Station at the far end of town. The trench was being hand dug with picks and shovels along the edge of the town's soccer field, and unfortunately happened to cut through the middle of the 17th-19th-century building block between Fishers Row and Lime Street. The trench was then cut across Lime Street over to the area of New Street. There was considerable destruction of brick floors and walls. This in itself was regrettable, but even more regrettable was the fact that the walls and floors that were being destroyed were not being recorded. We could not stop the digging of the trench but we were able to record the architectural features, the stratigraphy, and the artifacts that were being exposed.

I quickly got to know the men digging the trench and developed a friendly relationship with them. They were eager to work with us. Each time they encountered a wall or floor, they came and told us. They exposed them as well as they could and left them intact until we had a chance to record, photograph, and even video tape the features. Fortunately, we not only had computers with us in Port Royal, but also the software programs that we normally work with when we excavate. All the mapping data was entered into AutoCad, a computer-assisted drafting program that the Port Royal Project has been using for the past four years. With AutoCad we generated maps on the computer of the features, and then projected the lines of the exposed walls in the narrow trench to form probable building extents.

For four weeks several students and I monitored and recorded the trench. This critical information will be invaluable for anyone who conducts future archaeological work in that area. We were able to locate the edges of Lime Street and isolate



Top left: As the Jamaican workers exposed walls and floors, we followed with trowels, tape measures and cameras to record each feature.

Bottom left: A student excavates around the water pipe already installed.

Plan: From numerous triangulations taken at each exposed wall, we plotted and extended the features to show wall projections.

Top right: Henri Migala carefully maps two walls and a floor of a complex feature. It was often necessary to excavate beyond the sides of the trench to understand the relationship between two walls.

Bottom right: The entire length of the trench was often filled with water and mud. Note the progression of walls spanning the trench. This segment cut across Lime Street where the wall pattern showed a clear break at the edges of the street.

numerous buildings facing both Fishers Row and Lime Street. This information is vitally important for establishing the sequence of property owners from the southeast end of Lime Street, now under present-day Port Royal, out to the underwater end of Lime Street where INA has been working.

It is impossible to fully understand Port Royal entirely from underwater, just as it is impossible to fully understand the history and archaeology of Port Royal from land archaeology alone. The two are dependent upon each other. Accordingly, the information derived from monitoring the water line trench of 1988 helps me to better understand the opposite end of Lime Street.

The tricentennial of the destruction of Port Royal is fast approaching and we plan to assist the Jamaica National Heritage Trust with the commemoration ceremonies being planned. INA's research on the port city will be used in a historic district being developed and in the creation of new displays in the museum. All of this will assist in developing tourism and increasing awareness of the archaeological importance of the site. Only two more excavation seasons are planned—one in the summer of 1989 and a final season in 1990. The final report on the site is planned for the first part of 1992.

Hurricane Gilbert and the Port Royal Project

by Jim Parrent

Over the years, many articles about Jamaica have appeared in the *INA Newsletter*. Archaeological research at Port Royal, St. Ann's Bay, and Pedro Bank have been featured and all have been of interest to supporters of INA. This story on Jamaica is different. It is about a tragedy that befell a country which has

Half the country's homes were either destroyed or severely damaged.

graciously hosted INA personnel and Texas A&M students for over eight years.

Hurricane Gilbert, the strongest North American storm this century, hit Jamaica with devastating force on September 12, 1988. Gilbert struck Jamaica from the east and traveled the length of the island, damaging crops, homes, businesses and churches. All Jamaicans suffered losses.

Prime Minister Edward Seaga has stated that Gilbert caused from \$800 million to \$1 billion dollars in damage. The latest government report said the storm killed 45 people, caused \$200 million dollars damage to crops, and that half of the country's homes were either destroyed or severely damaged.

About two weeks after the storm I was sent by INA to Jamaica to assess the storm damage and investigate the ways INA and Texas A&M University might be able to assist in the rebuilding efforts at the facilities used by the INA Port Royal Project.

Everywhere I turned there was damage. In October it rains almost every day, and since many homes are without roofs, water damage is compounding the problems caused by Gilbert.

The natural healing of tropical areas is truly amazing. Trees, which only three weeks before were stripped of their leaves, now have full coverings of beautiful young leaves that hide broken and mangled limbs, and lime trees are budding out with fragrant blossoms. But underneath this deceptive growth was devastation. Small homes lay crumpled; many trees were down, as well as many power and telephone poles. On the mountain I could see bare patches of earth where the winds had stripped away the dense tropical rain forest. Small farmers' crops of bananas, beans, and squash were destroyed. Fruit trees were stripped of their fruit, and mud slides had destroyed small farm patches.

Water damage is compounding the problems caused by hurricane Gilbert.

Despite the darkness of the situation, I saw an abundance of smiling faces and busy people. Jamaicans, like the vegetation, seem to have an enduring and resilient spirit that overcomes such hardships, and they were busy getting on with their lives with an attitude of "no problem man."

How can we help?

All sectors need assistance. Churches, businesses, public facilities, government buildings and private homes have been damaged and much work needs to be done before Jamaica can reach some degree of normalcy. Various governments, including that of the United States, are aiding in rebuilding damaged utilities. Red Cross, Salvation Army, numerous church groups, and many private in-

dividuals are providing clothes, shelter, and food. These groups can be aided by cash donations.

In regard to INA, perhaps where we can best help is within our own expertise of protection of cultural resources, specifically those that the Port Royal Project uses and occupies. Many of the historic buildings of Jamaica were damaged and, while the Jamaican government is concerned about these structures, they are understandably of a very low priority. INA uses several of these historic buildings in various aspects of the Port Royal Project. Admiralty House, where students and staff live during the summer season, lost shingles, flashing, and windows. The small pier near Admiralty House where the diving barge was secured at night was heavily damaged. Two historic buildings on the Old Naval Hospital grounds used by INA need new roofs, and severe damage was done to the roof of the Old Naval Hospital itself. Approximately 70 percent of the roof shingles were blown off and a large hole was ripped open over the work room and artifact storage area that INA uses, causing further water damage. The Coast Guard Base, situated

Funds for repair are virtually non-existent. Supplies of building material and laborers are in very short supply.

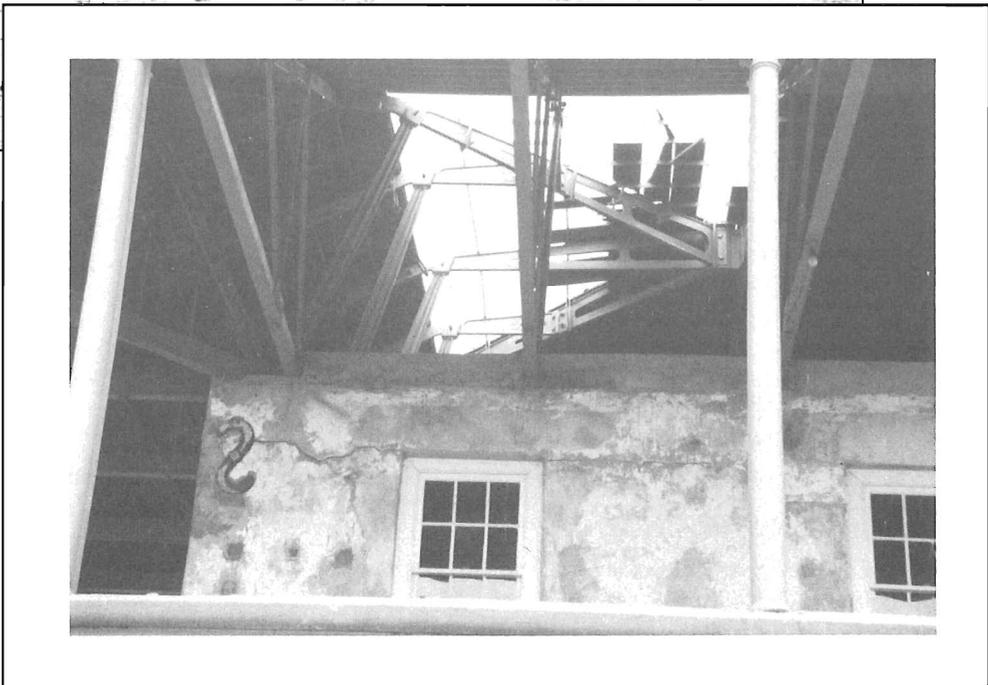
at the point of the palisados and only 100 meters away from the Old Naval Hospital, was the worst hit. It had all of its wharves and half of its facility destroyed.

The Jamaican government is allocating funds only for crucial human needs at this time, so funds for repair are virtually non-



Above: The Old Naval Hospital, pictured here before Gilbert, was built in 1817 of prefabricated steel girders. INA uses the second-floor room on the far right, dubbed "Room 6," as its work room and storage area for the Port Royal Project.

Right: Hurricane Gilbert ripped a huge hole in the roof structure, 10 feet by 20 feet, directly above Room 6. Not only were shingles and roofing blown off, but also a piece of the steel rafters. Photo: James Parrent



existent. Supplies of building material and laborers are in very short supply. Funds are needed to repair these historic buildings before more damage occurs. This may seem like a low priority when compared to the immediate needs of people without roofs, but we must look at the consequences of not dealing with the damage promptly. Without repairs it will

be difficult for the Port Royal project to carry out its objectives, and over time the damage will become irreversible, causing loss of important artifacts and possibly loss of some historic buildings. It would be a shame to allow neglect to do what Gilbert could not.

At present the people of Jamaica are working diligently to recover from the ef-

fects of Hurricane Gilbert and I am confident that they will overcome this tragedy. Supporting the rebuilding efforts will make their task easier, and is a way to begin to say thank you to Jamaica for its hospitality.

If you would like to help, donations may be sent directly to INA marked "For Port Royal Fund."

The Jamaica Archives

by Diana Thornton

Physical remains alone cannot provide a complete picture of life in any period, including seventeenth-century Port Royal. As an historical site, Port Royal has the advantage of the existence of contemporary documents to which we can compare the archaeological data. Historical documents such as probate inventories, wills, and deeds fill in some of the gaps caused by lack of preservation.

By merging the accumulated archaeological data with the inventories we can develop a more rounded view of the material culture and social history of Port Royal. In this way we can pick up on intangible items and those articles that may not survive the archeological record. For example, the inventories list various textiles, such as silk, linen and Damask, but these rarely survive the centuries.

On the other hand, some common items were considered insignificant by the 17th-century inventory takers and were ignored. Port Royal Project has catalogued thousands of pipes from the site, but they were seldom included in probate.

The historical records for Jamaica are distributed between several offices in Spanish Town, located about two hours from Port Royal. For our purposes, we were mainly interested in the probate inventories, the plats and patents, and the deeds and wills. Most of the documents in existence are copies made during the 19th century (unfortunately the originals have not survived) and were painstakingly indexed at that time, so finding specific records is quite easy.

The Archives

Jamaica has a well-organized, air-conditioned archives open to the public. The volumes are well cared for, many are microfilmed, and the facilities are comfortable and quiet. Some of the documents are in excellent condition; some have been repaired; others are so fragile that they won't be available for examination until they are reconditioned. We were able to microfilm all but three of the surviving Probate Inventories, Volumes 1-10, plus the original Port Royal Plat book.

Although we have only begun to read through a fraction of the inventories, we have found references to Turkish tapestry chairs and carpets, hammocks, iron jews-harps, weapons such as crossbows, pistols and swords; all types of foodstuffs, wine and ale; silk nightgowns and inlaid writing desks. One inventory lists books entitled *The Lovers Watch* and *Rochester's Poems*.

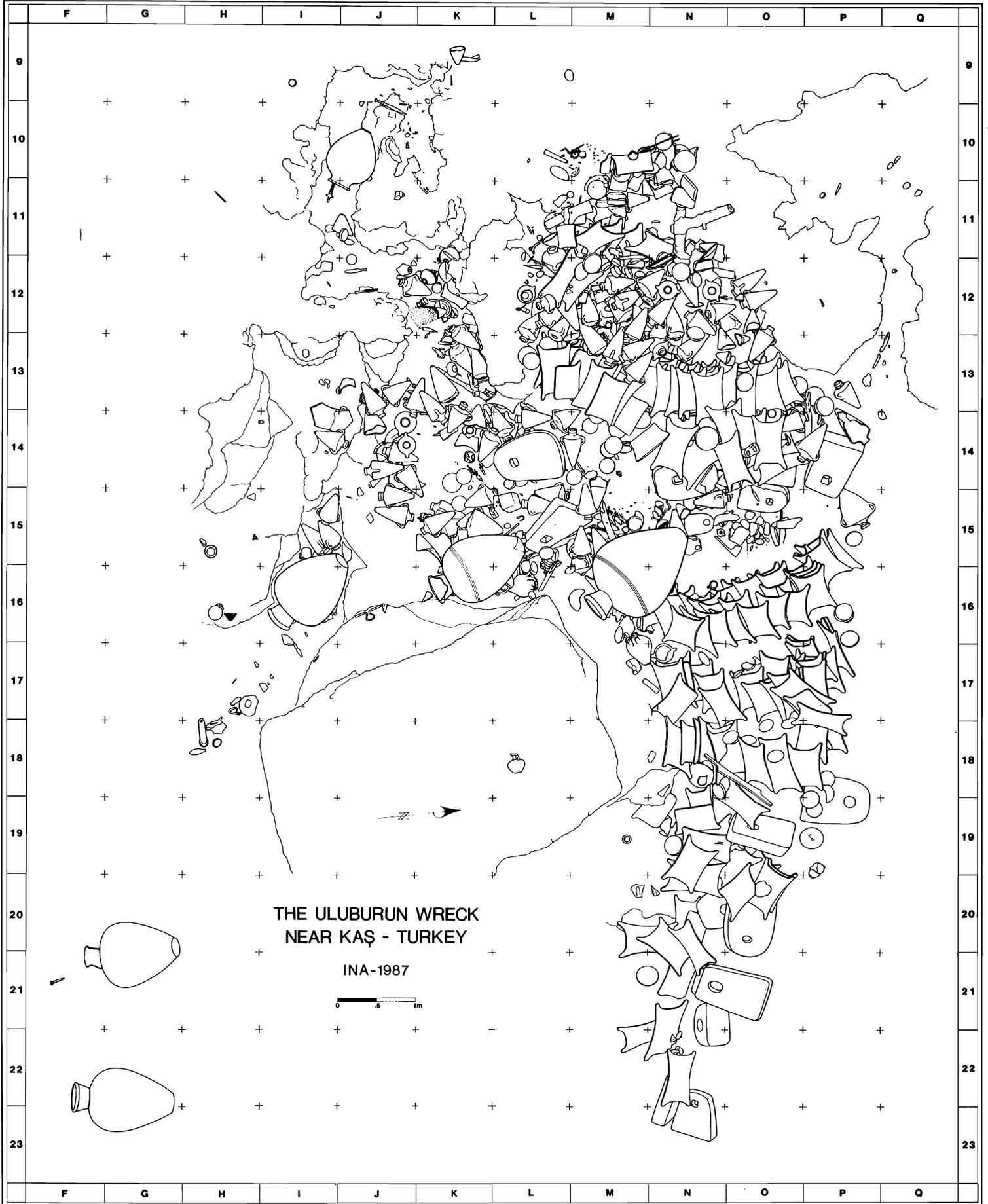
Volume 3 of the Probate Inventories contains Sir Henry Morgan's inventory. Over five pages long, it showed his estate to be valued at over 5263 £, and its contents did not disappoint us. The following is a portion of his inventory:

Excerpts from Sir Henry Morgan's Inventory *Port Royal, February 19, 1689*

One silver watch
Two Gold rings wth Ord^d stones
Two plaine gold Rings
A sett of Gold buckells and buttons sett wth stones
Some Emerauld dropps
Nine Small Cokernutts Trippet with silver
A parcell of China Tea Cupps and Earthen ware
A parcell of agatt hafted and other old knives
Two brass horozontal Dyall and small compass
One silke Mohaire suite of curtains lined with Persian
Four feather bedds with bolsters
fourteen Hamacoes
A Musketo Nett
five looking Glasses
Two Inlaid Scriptoros [writing desks]
one plaine scriptore
One Cedar Chest Drawers
One hundred twenty three bound books
old Charts Mapps &c
Two Silk night Gowns
A Barber's & tweezer Cases & Instrum^{ts}
twenty seaven Gunns and 19 Cartoush Boxes
three p^r pistols and three Swords
five powder horns
a Clock
four Sconces
A p^r of old Tables wth a Box of Troy weights

The Island Record Office (IRO)

Deeds, wills, marriage licenses and other vital statistics are processed and stored in the Island Record Office (IRO). With bustling hallways, busy clerks, and no air conditioning, it is in sharp contrast to the silent Archives across the courtyard. After several unsuccessful attempts by the clerk to locate specific volumes of wills for me, I was ushered into the vault to talk directly with the supervisor. Inside I found a great, air-conditioned room packed to the ceiling with tomes. I was politely assisted, but unfortunately some of the volumes I had requested from the Old Series were missing. When I asked what happened to the missing volumes they told me the story of when Admiral



Excavations in Turkey: 1988 Campaign

by Cemal Pulak

Detour to Cape Gelidonya

Before we began our 1988 excavation of the Bronze Age shipwreck at Ulu Burun, Turkey, we returned again to the site of another Bronze Age wreck, only 30 miles away at Cape Gelidonya. This is where, 28 years earlier, George Bass had become the first archaeologist to actually dive on and direct the excavation of an ancient shipwreck.

We had dived for a day at Gelidonya in 1987 (see *INA Newsletter* 15/2, pp. 1-5), when George wanted to return to the scene of his first project. But what was done mainly for nostalgia produced such an unexpected wealth of new information in just one day, that the team on the *Virazon* decided unanimously to return for a full week in 1988.

Archaeological results in 1988 were so spectacular that one week was extended to two. Using underwater electric scooters to search the area around the site for the ship's still-missing anchors, and to see if any light cargo had been swept to the east by the strong current, Donald Frey and Murat Tilev found two large stirrup jars of the Mycenaean IIIB period (13th century B.C.) about 70 meters southeast of the main site. These actually provide better evidence for dating the wreck than anything found during three months of dives in 1960 and are important because the date of the wreck has been debated by scholars ever since the first excavation.

A large boulder, weighing tons, lies on one side of the Gelidonya site, and the original excavators had found small objects under its edges. In 1960, and again in 1987, there was controversy over whether the boulder had fallen to the seabed before or after the time of the wreck. If it had fallen after the wreck took place, it might lie on part of the wreck, making its removal mandatory. The controversy was settled when I spotted on *top* of the boulder, embedded in a small crevice, a bronze object which proved to be a well-preserved sword—the first true weapon to have come from this small merchantman. That same crevice also yielded a nearly intact bronze pick, fragments of other tools, bits of copper ingots, and several ballast stones, proving that the boulder fell before the ship sank. The ship must have landed partly on the boulder, spilling these objects before settling to the ocean floor.

Meanwhile, Tufan Turanli spotted several dozen targets with a metal detector. Some proved to be only tools and equipment left behind from the 1960 excavation; others included fragments of the copper ingots and scrap bronze that comprised most of the original cargo. The prize find was an intact hoe similar to several recovered in 1960.

On to Ulu Burun

Because the Ulu Burun excavation was waiting, we decided to continue at Gelidonya in 1989, and sailed to meet our colleagues who had been putting the finishing touches on the camp. Built on the rock ledges of Ulu Burun (Grand Promontory), our camp was even more comfortable than in previous years. The *Virazon* was rejuvenated for the demanding summer by our staff and again moored over the site.

Our first objective for the 1988 campaign was to completely map the visible extent of the wreck (see plan, fig. 1), which we were able to fulfill. Our second objective was to complete excavations in the area directly upslope of the large rock outcrop. Extensive encrustation of artifacts and deep pockets in bedrock which produced numerous small finds kept us from completing this area. One such pocket (in grid square L12), which had yielded hundreds of small green glass beads in 1987, produced even more glass beads. Other small finds in this area include a bronze sickle, bronze arrowheads, pins, beads of various materials, and raw glass lumps.

Just downslope of this region (M12-13, N12-13), beneath copper ingots cleared in 1987, we found a hard, concreted mass of ballast stones, pot sherds, lead fish-net weights, and several small bronze objects. Efforts to undermine this mass were somewhat successful when large pieces of concretion—artifacts and all—were raised. This method minimizes damage to objects embedded in the concretions, for they can now be extracted under controlled conditions in our conservation laboratory.

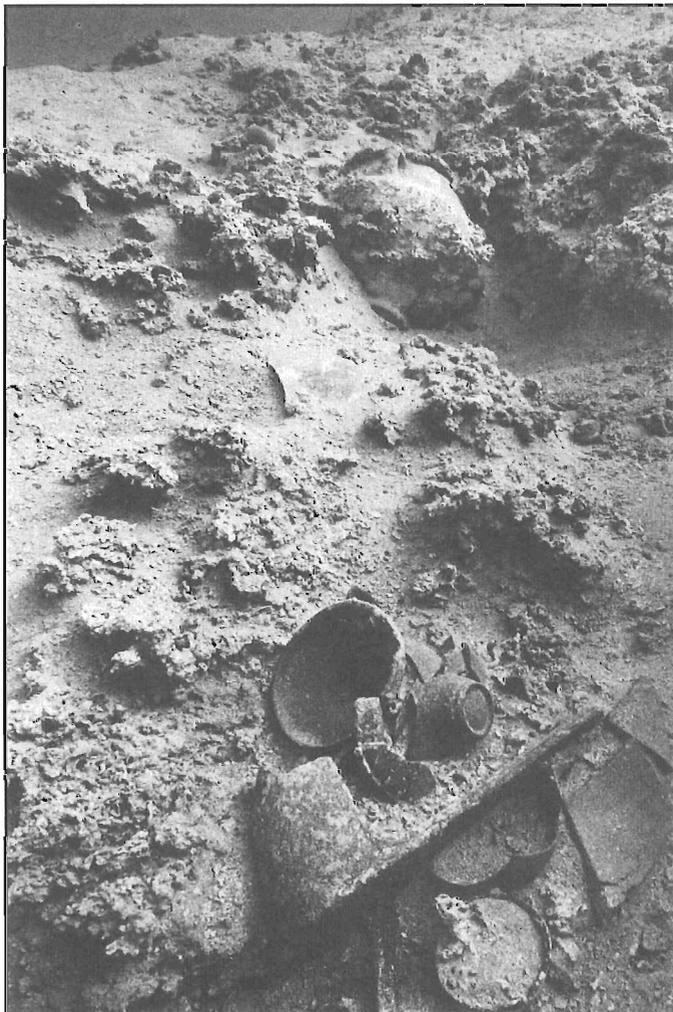
We also concentrated on the central part of the wreck, which, in 1987, had yielded large, heavy objects such as copper ingots and stone weight anchors alongside fragile artifacts such as an ostrich eggshell (see *INA Newsletter*



Figure 2. Scarab KW 1652 depicts the Horus falcon and ntr sign enclosed in a cartouche and surrounded by various good-luck and prophylactic signs. Scale 3:1. Photo: Lillian Ray

Figure 3. This spill of Cypriot pottery bowls is evidence of a second pithos loaded with Cypriot export wares. Another bowl exposed slightly downslope may have originally been part of the same spill.

Note in the upper center the krater, the second largest ceramic vessel type found on the wreck. Similar kraters found in the Near East often have painted decoration. Photo: Lillian Ray



15/1, p. 3, fig.1). This season, work between and beneath the edges of the northernmost anchors (N-O14) revealed fragments of several unique pottery types, numerous lead fish-net weights, a complete glass ingot, an astragal (knucklebone), a lead balance-pan weight and another small anchor similar in size to the one found about a meter downslope in 1984. The scope of the work here, however, was limited by the presence of hull wood just below the surface in many places. In 1984 we found keel and hull planking downslope of the anchor row (N-O15), but continuing excavations showed that this planking does not extend to the west (upslope area) of the anchors. Deeper excavation to expose the full extent of wood preservation has been postponed for safety reasons until after the ship's heavy cargo is completely removed.

The catchment area to the south of the anchors and just west of the rock outcrop (I-M16) revealed a wealth of artifacts. Among them were many lead fish-net weights of smaller size; coarse and fine pottery of Near Eastern, Cypriot, and Mycenaean types; bone implements; assorted balance-pan weights; two scarabs (fig. 2); numerous agate beads; various fluted faience beads; an amber bead; rings made of top shells (*Monodonta* sp.); several fossil seashells, a small gold alloy bar, a bronze spear head, and poorly preserved logs of Egyptian ebony (*Dalbergia melanoxydon*). The agate beads and seashell rings were found scattered throughout the area, suggesting spill from a container made of a perishable material such as leather, originally located farther up the slope.

In general, the anchors and the large rock outcrop in this central area acted as catchments for ballast and artifacts which also may have come from farther upslope. The distribution of finds here conforms to that on the rest of the wreck, indicating a northwesterly to southeasterly spillage. Evidence of this is shown by "trails" of pot sherds, agate beads, seashell rings, lead fish-net weights and ballast stones which were found in heavy concentrations around the upslope edges of the anchors and at the western skirt of the large rock outcrop.

In the sandy gully south of the rock outcrop (H17-18), a pottery spill consisted of at least five or six Cypriot bowls of Base-ring II type (fig. 3). The bowls still retained, to a certain degree, their original nested stacking. The presence of two heavier sherds in the deposit appears to confirm that this assemblage is evidence of another pithos (large storage jar) loaded with Cypriot export wares like pithos KW 251 excavated in 1984. Other pottery in the assemblage - a saucer-shaped oil lamp, a White Slip II milk-bowl, a wall bracket, and a Mycenaean dipper - is closely associated with this deposit. Fragments of White Shaved juglets in this area indicate that these juglets must originally have been packed in this pithos also. The source of resin and a piece of scrap gold pendant also found here is more ambiguous, but they may have slid down along the slope at a later time. It is likely that a wall bracket and two White

Shaved juglets along with sherds of other Cypriot pottery recovered just downslope of this deposit last year represent contents of this same pithos.

The largest gold medallion (fig. 4, KW 1672) to have come from the wreck was found in this same region. Decorated in repoussé by a four-pointed star with curved rays between straight rays, it is of the type commonly depicted by Egyptian artists on the necks of Syrians. This star motif, the same theme of a smaller gold medallion found during an earlier campaign (KW 756), is a common motif seen in various materials from Syro-Palestinian sites. The medallion probably tumbled from an area farther up the slope, perhaps even from the localized deposit that yielded many gold Canaanite pendants as well as medallion KW 756.

Not far from the gold medallion was a krater (large mixing bowl), KW 1992 (fig. 3; see also fig. 5), the largest ceramic vessel found on the wreck besides the pithoi. The extensive encrustation on its exterior surface may conceal painted decoration.

Still deeper down the slope, in the area around and under pithos KW 255 (F20-21, G20-21, H20-21), more Cypriot pottery, some wedged and crushed by the pithos, a large balance-pan weight, and the upper half of a large coarse-ware stirrup jar, yet of a different type than those already recovered from the wreck, were raised. Also scattered in this area were more agate beads and seashell rings, attesting to the spill which must have originated somewhere above the large rock outcrop. Several large but poorly preserved ebony logs uncovered here hint at the large quantity of the exotic wood that must have been aboard the ship.

Clearing the sand overburden in area K-L19 directly downslope of the rock outcrop revealed several large amphora sherds and some lead fish-net weights. The sherds belong to two or possibly three amphoras, all presumably having originated from the "amphora storage area" upslope of the rock outcrop in the area of grid squares L-O12. Near the amphoras were two saucer-shaped oil lamps, a White Shaved juglet (fig. 6), a lead-filled bronze zoomorphic balance-pan weight in the form of a recumbent bull, a sphendonoidal balance-pan weight with a loop, a hippopotamus canine, and poorly preserved ebony log fragments. It is possible that the Cypriot pottery here may have spilled from one of the pithoi above the rock outcrop, or even from a still undiscovered jar which may have rolled down into deeper water.

Work on the north side of the rock outcrop mainly involved measuring every visible ingot in order to complete our site plan to show the distribution of all exposed artifacts along the steep slope. During this exercise three new stone weight anchors were uncovered and mapped, bringing the total to 20!

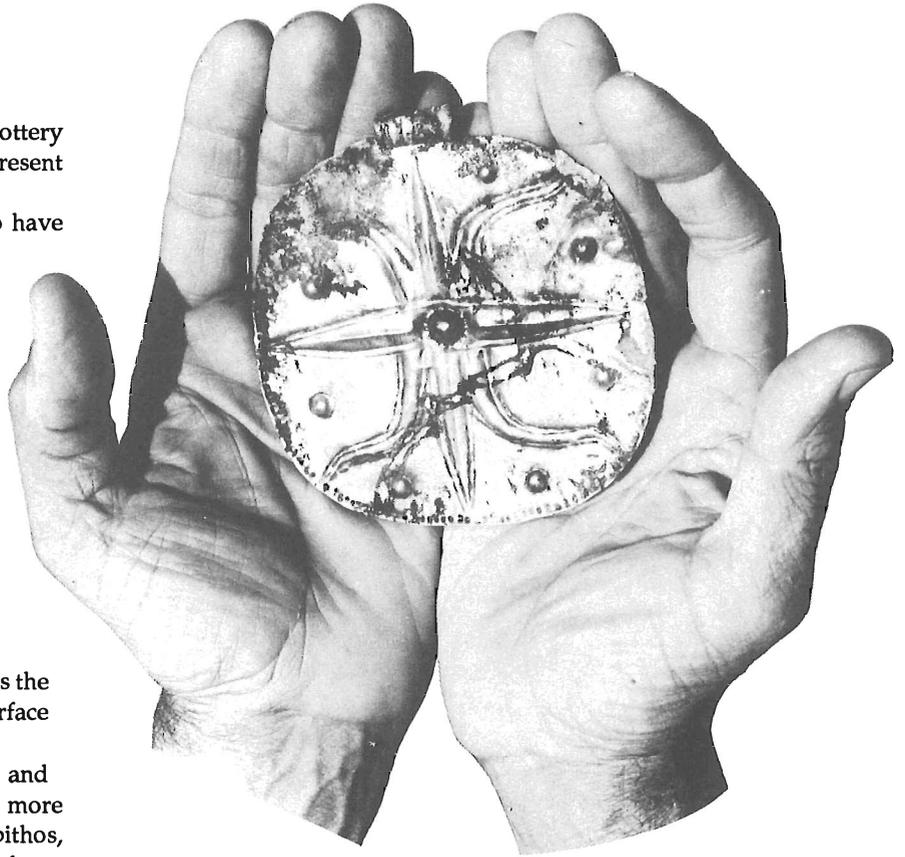


Figure 4. One of four gold medallions found on the wreck so far, KW1672 is decorated with the same star motif as a smaller medallion found previously. These medallions are depicted by Egyptian artists on the necks of Syrians. Diameter 11cm. Photo: Lillian Ray

Figure 5. Krater KW 1992 is the second largest ceramic vessel type found on the wreck. Maximum diameter ca 48 cm. Photo: Lillian Ray





Figure 6. This White-Shaved juglet (KW1933), shown here life size, was so called because its surface was finished by paring or "shaving" it with a sharp tool such as a knife. This is typical of Cypriot export pottery of the period. The White-Shaved juglet is one of the few Bronze-Age Cypriot types found as far west as the Greek Isles and Crete. Photo: Lillian Ray

Excavation in and around the area of the deep anchors (N-P21) revealed both intact and fragmentary amphoras and more ebony logs. This entire area was covered with several layers of densely packed ballast stones of which over 225 were mapped and raised.

Another ingot type which can now be added to our growing list of metal ingots from Ulu Burun is copper ingot KW 1983 (fig. 7). This unique ingot appears to be a smaller version of the copper ox-hide ingots on the wreck. It is different in shape, however, from the small ox-hide examples, called "pillow-shaped," found during earlier campaigns. The composition of the ingot has yet to be determined but it appears to be of blister copper.

Perhaps the most exciting discovery of the season was also made in this area: a complete tin ingot (fig. 8) in the same four-handled "ox-hide" shape as the copper ingots! We had hoped to find at least one complete tin ingot of this type ever since our first campaign in 1984 revealed fragments of such ingots cut into smaller sections in antiquity. Removal of the ingot revealed a second tin ox-hide ingot wedged between and partially beneath two large stone anchors. The latter ingot had suffered some damage and one ear was missing. Since it can not be raised before removing the two stone anchors resting on it, most of the ingot's exposed surface was coated with a thick layer of plaster to prevent further deterioration. During the 1987 excavation campaign, workers attempting to raise copper ox-hide ingots encountered great difficulties. The ingots seemed well preserved when mapped, but their lower halves were so badly corroded that they disintegrated when moved. This year we initiated our copper ingot recovery project designed to consolidate crumbling ingots so that they could be chiselled free and raised without subsequent loss of material. An underwater-setting epoxy was used to fill several gaps in corners and edges of ingots (fig. 9). In the case of one large gap, the epoxy had to be applied in successive layers during several dives until it could be built up to the desired thickness and strength. It was hoped that this ingot could be raised and monitored in Bodrum over the winter, but this proved impossible due to lack of time. If the epoxy patches prove satisfactory after prolonged immersion over winter, then the epoxy compound will be used again in 1989 to aid in the safe recovery of damaged ingots.

Plans for 1989 include completing excavation of the wreck—except for the hull remains—in areas upslope or west of the rock outcrop, continuing excavation of copper ingots after consolidating them with epoxy, and exposure of the entire site, especially areas downslope of the rock outcrop, for mapping purposes. Exploratory dives to deeper areas, beyond 170 feet, are also planned to examine possible spillage of artifacts to those depths. One such investigation in 1987 revealed yet another pithos about 190 feet deep.

Artifact conservation continues at the Bodrum Museum of Underwater Archaeology laboratories. Amphoras and ceramics are being cleaned, conserved and mended. All tin

and copper ingots raised have now undergone mechanical cleaning and await chemical stabilization.

If the copper ox-hide ingots do not present additional complications during their recovery, and no other major deposits are discovered, we foresee a minimum of three more years to completely excavate the site. The last campaign in 1991 should primarily involve the recovery of hull remains.

More than twenty team members dived more than 1600 times between June 20 and August 31, continuing their search for secrets concealed 150 to 170 feet beneath the Mediterranean. Excavators comprised INA staff Cemal Pulak, Donald Frey, Robin Piercy, Murat Tilev, and Tufan Turanli; archaeologists Faith Hentschel, Michael Halpern, Lisa Shuey, and Sheila Matthews; Texas A&M graduate students Jerome Hall, Nicole Hirschfeld, Takahiko Inoue, Jerry Lyon, John Neville, Robert Neyland, Claire Peachy, Ralph Pedersen, Lillian Ray, and Paul Willoughby; archaeology students Birgit Klier and Harun Ozdas; and physicians Caroline Fife, Sezgin Gokmen, and Yancey Mebane. Bahadır Berkaya represented the Turkish General Directorate of Antiquities and Museums. Gunes Ozbay, Erika Topolewska, and conservation students Jane Allison and Hande Kokten assisted Jane Pannell at the Bodrum Museum of Underwater Archaeology laboratories.

INA was assisted in the excavation by grants from the Institute for Aegean Prehistory, the National Endowment for the Humanities, and the National Geographic Society.

Figure 9. Claire Peachy (bottom left) applies the epoxy specially developed for consolidating ingots underwater. Jerome Hall (center) takes measurements for a profile view of the site. Photo: Robin Piercy

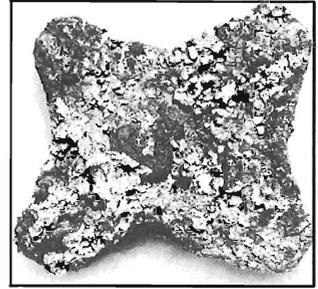
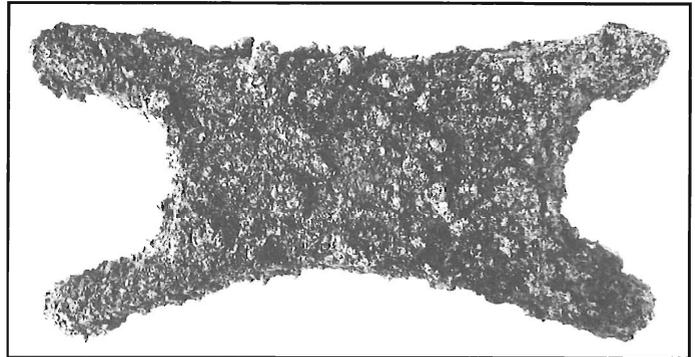


Figure 8. Ulu Burun has revealed ingots of various sizes, shapes and composition. Copper ingot KW1983 is yet another size and shape. 28 cm long, 24 cm wide, ca 6 cm thick. Photo: Lillian Ray

Figure 7. Past seasons have uncovered quarters and halves of ox-hide ingots indicating that tin was shipped in the same form as copper. KW1932 is the first of two complete ox-hide tin ingots found. 62.5 cm long, 31 cm wide, 4.5 cm thick. Photo: Lillian Ray



PROFILE

Robert K. Vincent, Jr.

INA's New President

by Diana Thornton

INA has been steadily increasing the scale and complexity of its activities since its founding. As a logical evolution of this growth, it has become necessary to appoint a full-time administrator based in College Station devoted to the business management and development of the Institute. Don Frey's project activities require his full attention in Turkey. Accordingly, Robert Vincent was hired to fill the position at the INA headquarters in College Station. Additionally, Michael Katzev resigned his position of Vice President, held since the founding of INA, in order to devote more time to his publication work. Therefore, the INA Board of Directors, in its meeting on December 9, 1988, designated Robert Vincent as President and Donald Frey as Vice President, Administration/Mediterranean, and accepted Michael Katzev's resignation with regret and appreciation.

Robert (Chip) Vincent is really not a newcomer to INA. In fact, his association with nautical archaeology started even before INA existed.

In 1967, Chip Vincent was beginning a three-year program for a law degree at the University of Pennsylvania Law School. After his first year he realized that if he wanted to do something outside of law, perhaps for the last time in his life, he had to do it then. As an undergraduate at Yale University he had started the SCUBA club there, had always been interested in archaeology, and knew that nautical archaeology was an emerging part of archaeology. It occurred to him that he might be able to offer his skills to this new field.

It happened that the University of Pennsylvania housed the only underwater archeology program in America at that time.

"I recall walking into the museum in the basement, and there, sitting in the corner at a wooden table, I found a young man who told me that he had just come back from a survey off the island of Cyprus, where his team had found a potential shipwreck site. He was Michael Katzev."

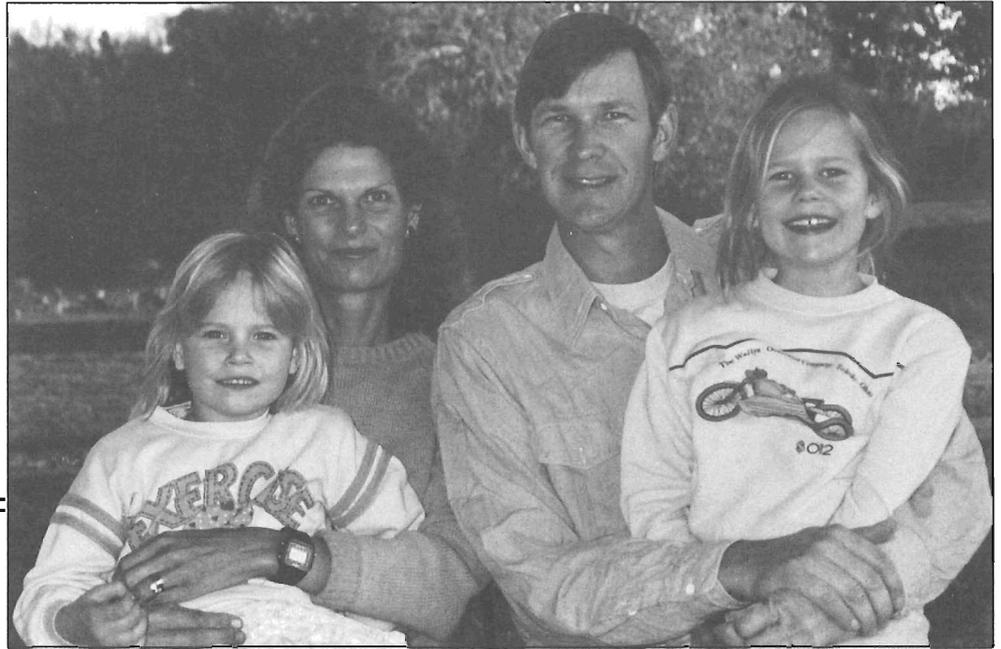
Katzev said they were intending to go back and excavate, and were taking applications for volunteers. So Chip joined such INA-associated personnel as Michael and Susan Katzev, Robin Piercy, David Owen and Jeremy Green that summer, 1968, on the Kyrenia shipwreck excavation.

Chip began having second thoughts about law as a profession. "I did not want to confine myself to the restrictions of an office and paper." So he decided not to clerk at a law firm for the summer, and instead returned to the Kyrenia site for the 1969 season. In 1970 he finished his law degree and, soon after graduation, passed the Massachusetts Bar Exam. But even before he knew the results of his Bar, he was off to Greece to participate in a summer school and then back to Cyprus.

During the next eleven years, using "luck and pluck," he went from one major archaeological field project to the next throughout the Middle and Near East, including ones in Afghanistan, Crete, Iraq, Kenya, Pakistan, Syria and Turkey. Two of the most important projects were his work for the Smithsonian Institute in Afghanistan, where he worked for seven consecutive fall seasons doing survey and excavation in the deserts of Baluchistan, and the Kyrenia ship project. When he was asked to rejoin the Kyrenia project in 1973, he spent the next four years involved in the conservation, reconstruction, and display of the ship and artifacts in the castle museum.

That was when he first joined other members of the team that soon would form the Institute of Nautical Archaeology, including Dick Steffy, Netia Piercy and John Gifford. He also met George Bass, who had come to Cyprus to establish the Institute of Nautical Archaeology. He met Don Frey and Don Keith at a survey project at Gythion, Greece, in 1972.

After eleven years of going from project to project year round, Chip and his British/Kenya-born wife Fran, whom he had met and married in Cyprus, were literally worn thin. So Chip accepted a two-year appointment at the Agora excavations spon-



From left to right: Sarah, Fran, Chip, and Susannah.

sored by the American School of Classical Studies in Athens. They wanted to stay in one spot, to slow down, to think about raising a family, and to consider what their next step should be. Chip felt that he had reached a plateau in his career as a field archaeologist, and realized that he was not going any further unless he returned to school for a doctorate, which he was not prepared to do. During this same period, Chip joined the INA Mombasa project for two seasons as assistant director with Robin Piercy.

Over the years Chip and George Bass had kept in touch since their meeting in Cyprus in 1973. They had discussed the possibility of his joining the Institute in an administrative capacity. Before any action could be taken, however, in 1981 Chip was offered an opportunity in the Sultanate of Oman on the southern coast of the Arabian Peninsula to work for an American consulting company that was advising the Sultan on oil, water, and rural development. His work there provided a perfect dovetailing of his legal background and his field project experience. "Problem solving and resolution of issues were skills from my legal training, while operating in a field project stemmed from my archaeological career. Everything was just on a larger scale - with 650 staff and \$200 million over 5 years."

Chip's association with INA didn't stop, however. In 1985, he and his family, now grown to two daughters, took a summer leave from Oman to spend 2 weeks in Turkey, and while there they visited the Ulu Burun site. They saw the whole crew again in 1987 at Bodrum and Kas.

By the spring of 1988, the Oman program had ended. George and Chip made contact again and, following a visit to College Station and meetings with members of the INA executive committee, Chip became INA's new Executive Director on August 24, 1988.

"I think it was better for the Institute and myself that I went to Oman because Oman offered me the chance to grow professionally and to gain considerable administrative, executive and managerial experience that I can bring to INA. I feel that I have more to give to the Institute now than if I had come in 1981.

"I do have certain priorities in my life now that I didn't have when I was doing a lot of field work. Initially I said I didn't want to pursue law because of the paper and the office, yet what am I doing now? Well, I have done extensive field work, enjoyed it, and have a very full understanding of it. But I now have different requirements in my life, and one of them is my family. It would be unfair to them to have continued with field work. But don't think I don't miss it!"

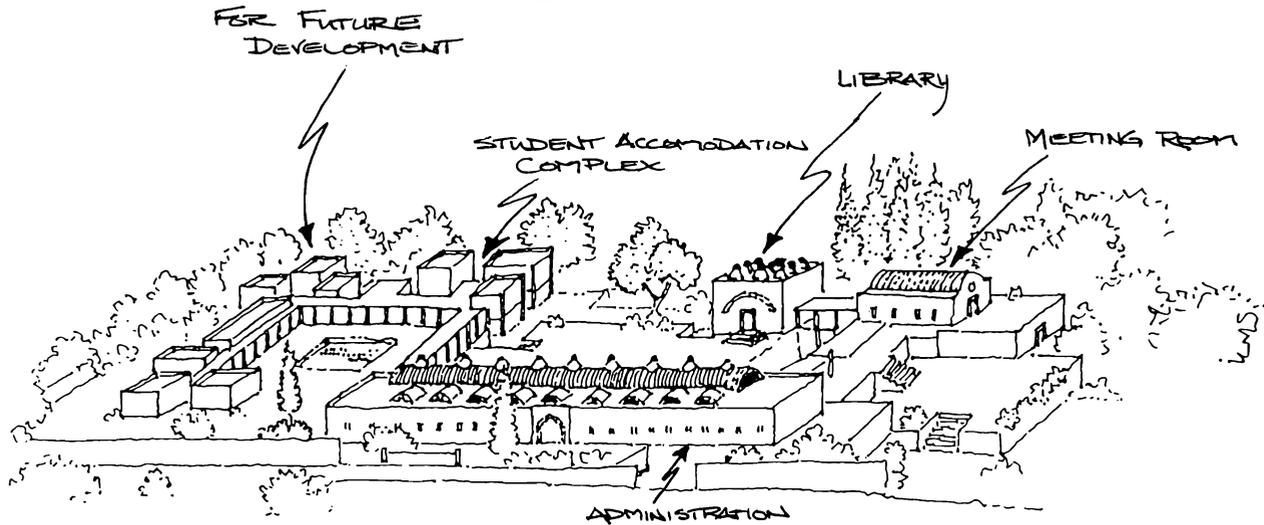
Since its birth 15 years ago, INA has grown and evolved to the point where a full-time manager is required in College Station. This calls for a reorganization that best distributes Institute responsibilities between George Bass, Don Frey in Turkey and Chip Vincent here in College Station.

Don't expect sweeping changes, but Chip does have plans. He wants to establish new policies and priorities and to modify some of the existing ones. He plans to provide guidelines to make people aware of how INA operates and what is expected of them. "I want people to be strong and independent. I don't want to curtail anyone's positive efforts. I want to coordinate their efforts."

Chip will strive to raise endowment funds for reasonable and secure salaries, allowing INA to use grants to provide the funds for its research projects. Chip also foresees INA expanding to areas where there are gaps in knowledge, such as the Far East.

The addition of Chip Vincent to INA marks a new era of growth and change for our Institute. We welcome him and his family with warmth and high expectations!

UPDATE



INA Headquarters in Turkey

With the growth of INA's operations in Turkey comes the need for a larger facility. Phase I is scheduled for completion in the fall of 1989. The project is designed in phases, as pictured above in architect Turgut Cansever's development sketch, according to INA's requirements and available funds. Initially, Phase I will provide offices, accommodations, a kitchen and dining facility, and workshop areas.

The administration building will contain office space for at least six people, a

drafting room, a dark room and a workshop. The dormitory building will house three stories of living quarters for students and staff. Currently, 12 beds are planned, but this can be increased if the need arises. The kitchen and dining facility, with an outside terrace, will be conveniently located on the ground floor of the dormitory building.

This new facility will be a welcomed and needed change from INA's present situation. For the last decade, students and staff have been living and working

out of a two-story apartment and a garage. Because of the limited space, most staff members have been forced to make their offices in their homes.

Phase I - the administration and student buildings - is to be financed by pledges by INA board members John Baird, Gregory Cook, Claude Dutuit, Nixon Griffis, Harry Kahn, Jack Kelley, and Ray Seigfried.

Joel Shiner 1919-1988

On November 16, while vacationing in Australia, Dr. Joel Shiner died in a diving accident at an isolated location on the Great Barrier Reef. Well known in archaeological and diving circles, Shiner's work on the submerged Paleolithic site at Aquarena Springs, San Marcos, Texas, and his underwater archaeological instruction of hundreds of Texas sport divers were only the most recent achievements of a rewarding career and fulfilling life.

A Professor Emeritus of Anthropology at Southern Methodist University, Shiner's professional experience was tremendously varied. After serving as a pilot in the US Army Air Corps during World War II, he graduated from UCLA in 1948 and received his Ph.D. from the University of Arizona in 1955. He directed or assisted in terrestrial archaeological investigations of prehistoric and historic sites in the Southwest, Southeast, and Pacific Northwest regions of the United States, and prehistoric sites in northern Mexico and Egypt.

Shiner's underwater archaeological accomplishments included the instruction of formal courses in the discipline at SMU beginning in 1973, and direction of a submerged cultural resource survey of a portion of Louisiana's Red River. Perhaps his most important contribution to underwater archaeology will prove to be his work at Aquarena Springs from 1979 until 1988. This impressive deposition has yielded a large collection of Paleolithic points and faunal remains with intriguing contextual associations. Shiner's activities at this site have been chronicled in numerous presentations, publications, and an award-winning documentary film. A generous posthumous grant will insure that the data are completely interpreted and the final results published.

As an educator and scholar, Joel Shiner touched the lives of many students, colleagues, and friends. His professional dedication, friendship, and rich sense of humor will be sorely missed.

Joe J. Simmons, III

INA Review

FILM

Voyage from Antiquity

Reviewed by Peter S. Allen

Voyage from Antiquity. 1987. Produced by Jack Kelley and directed by Robert Dalva for the Institute of Nautical Archaeology. Color, 60 minutes.

A founder of the Institute of Nautical Archaeology, distinguished professor of nautical archaeology at Texas A&M University, and inventor of much of the equipment now part of every underwater expedition, George Bass is clearly the dean of underwater archaeologists. As an excavator of sunken ships, Bass has had one success after another. And now, after more than 25 years of submarine archaeology, Bass says he is ready to step aside and make room for younger blood. If *Voyage from Antiquity* is indeed his swan song, he could hardly have picked a better note on which to exit, for the project chronicled here is perhaps the most exciting and significant of his distinguished career.

The site studied in this film lies underwater just off Cape Ulu Burun near Kas, on the southern coast of Turkey. Discovered in 1982 by local sponge divers, an ancient wrecked ship and its contents lie here in waters ranging from 130 to 175 feet - very close to the limits for divers. It is the oldest intact shipwreck ever excavated, dating to some time in the Late Bronze Age around 1350 B.C. - about the time Tutankhamen assumed the throne in Egypt and 100 to 150 years before the most likely date of the Trojan War. The Ulu Burun wreck is incredibly rich in a wide variety of artifacts.

The film opens at Texas A&M with Bass receiving a report about the Ulu Burun wreck and quickly moves to the site itself, first chronicling the construction of a base camp and examining everyday aspects of dig life. Soon we are following the divers to the floor of the sea, where they painstakingly uncover and remove the myriad items comprising the ship's ancient cargo. The underwater photography is excellent, and makes for fascinating and exciting viewing. During the rest of the film the scene shifts back and forth between the excavation site and the peregrinations of Bass as he visits museums, libraries and laboratories in his quest for information about the artifacts recovered at Ulu Burun. We see him comparing pictures of pottery, weapons and other artifacts from the wreck with items at museums in New York, London, Jerusalem, Nicosia (Cyprus) and Bodrum (Turkey). At one point, Bass is shown giving a lecture on the wreck excavation to an audience in Jerusalem. And there is an inside look into various activities of the archaeological laboratory—conservation, restoration, reconstruction, and analyses of many kinds.

Bass and his colleagues frequently talk on-camera, and much of the footage is "narrated" in this way, but these are no talking heads. Bass illustrates his remarks with artifacts and pictures and is seldom filmed standing still. His associates are rarely shown in formal settings; more often than not they are dressed in diving gear and have just emerged from the sea to report on artifacts discovered just moments before.

The real strength of this film is its emphasis on good archaeology and safe diving practices. Bass and his colleagues constantly remind the viewer that they are not on a treasure hunt, and they continually stress proper archaeological practice. Very little is overlooked. Not only do they offer clear explanations of how and why certain things are done, but they decry treasure hunting and the destruction of sites. Bass makes it clear in his own commentary how important it is to know the literature and to be familiar with artifacts in museums and other collections in order to interpret and understand the objects recovered. Even the stricken ship is itself not neglected. Enough of its timbers were preserved for the excavators to get a good idea of the techniques used in its construction.

More than anything, *Voyage from Antiquity* is a tribute to Bass, his colleagues and their work. No one has contributed so much to underwater archaeology and no one is more deserving of recognition. More important, however, is the fact that this film is not merely a celebration or glorification of Bass. Rather, it is a powerful statement about how archaeology should be done.

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Book Orders

Book orders for *Ships and Shipwrecks of the Americas* will be accepted through INA while supplies last. Because we are offering this publication at a special price to INA members, we have a limited number of copies available. Order yours now:

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Conference News

Joint Archaeological Congress will include many INA papers

The First Joint Archaeological Congress will be held in Baltimore, Maryland, January 5-9, 1989, co-sponsored by the Archaeological Institute of America, the Society for Historical Archaeology, American Philological Association and American Schools of Oriental Research. It will be a monumental occasion, as it is the first time these four organizations have jointly sponsored an event like this. Over 750 papers are scheduled, including 24 papers to be given by INA and INA-associated speakers listed below.

- **George F. Bass**, *The Bronze Age Shipwreck at Ulu Burun: The 1988 Campaign*. Jan. 6, Session III-B.
- **Donald Geddes III (Tryall Associates, Ltd.)**, *Archival Research Concerning the Spanish Galleon Nuestra Senora del Carmen, a.k.a. Genovesa, Lost on the Pedro Bank, Jamaica in 1730*. Jan. 8, Session V-A.
- **Ric Hajovsky**, *Phase II of the Search for Columbus's Caravel Gallega*. Jan. 9, Session VIII-K
- **Cheryl Haldane (to be read by Faith Hentschel)** *Archaeobotany and shipwrecks*, Jan. 8, Session V-N.
- **D.L. Hamilton**, *Written Documentation and Archaeological Excavations at Port Royal, Jamaica*. Jan. 5, Session II-Y.
- **Faith Hentschel (Central Connecticut State University)**, *The Late Bronze Age Shipwreck at Ulu Burun, Turkey*. Jan. 6, Session III-B.
- **Donald Keith**, *The Mysterious Caravel*. Jan. 8, Session VI-G.
- **Denise Lakey**, *The Historical Archaeology of Ships of Discovery*. Jan. 8, Session VI-G.
- **William Lamb**, *The Provenance of the Stone Ballast from the Molasses Reef Wreck*. Jan. 8, Session V-A.
- **Mark D. Myers**, *The Future of Ships of Discovery Research*. Jan. 8, Session VI-G.
- **Thomas Oertling**, *The Few Remaining Clues (about 16th century ship construction)*. Jan. 7, Session IV-Y.
- **Thomas J. Oertling**, *Reconstructing the Ships of Discovery*. Jan. 8, Session VI-G.
- **James M. Parrent**, *Artifacts from a 1691 Spanish Merchant Ship Archaeological Site*. Jan. 9, Session VIII-K
- **James M. Parrent**, *A Five Year Reevaluation of Waterlogged Wooden Artifacts Conserved with Sucrose*. Jan. 9, Session VIII-L.
- **Joe Simmons III**, *The Historical Geography of Ships of Discovery*. Jan. 8, Session VI-G.
- **J. Richard Steffy**, *The Economics of Ancient Shipbuilding*. Jan. 7, Session III-V.
- **J. Richard Steffy**, *Publishing Watercraft for Interdisciplinary Studies*. Jan. 8, Session VI-I
- **Aleydis Van de Moortel**, *Analysis of a Cog-Like Hull*. Jan. 5, Session II-M
- **Cathryn and Steven Hoyt (Bermuda Maritime Museum)**, *Bermuda in the Age of Exploration (1492-1609)*. Jan. 8, Session V-A.
- **Manuela Lloyd (University of Chicago)**, *The Provisioning of Medieval Ships in the Mediterranean: A.D. 300-1500*. Jan. 9, Session VIII-F.
- **Carol Olsen (Boat Decorations, Ltd.)**, *Voices of Shipcarvers*. Jan. 8, Session V-A.
- **K.C. Smith (Museum of Florida History)**, *Wind in the Sails: Progressive Efforts to Educate Florida's Public about Underwater Archaeology*. Jan. 5, Session II-G
- **Roger C. Smith (Florida Bureau of Archaeological Research)**, *New Directions in Florida Underwater Archaeology*. Jan. 5, Session II-G

Conference Proceedings Available

The most recent in a series of publications on underwater archaeology is now available: *The Proceedings of the 18th Conference on Underwater Archaeology, Savannah, Georgia, 1987*. This publication includes the results of research conducted in the United States, Canada, and Europe on sites from the third millennium B.C. to as recently as World War II.

The Underwater Archaeology Proceedings from the Society for Historical Archaeology Conference, Reno, Nevada, 1988 is also available. These proceedings may be purchased from the Society for Historical Archaeology, P.O. Box 231033, Pleasant Hill, CA 94523-1033.

Back issues for the 10th-14th CUA Proceedings are available from Fathom Eight, P.O. Box 80505, San Marino, CA 91108; and the 9th CUA Proceedings are available from the Texas Antiquities Committee, P.O. Box 12276, Capitol Station, Austin, TX 78711.

Donations

We would like to take the opportunity to thank Mr. Kevin Konieczny and Mr. John Gray of Dow Chemical U.S.A. for their donation of 500 lbs. of sodium hydroxide, which will be used to conserve iron artifacts from the Port Royal Project.

Also, many thanks go to Mr. Steve Ellis of the Dexter Corporation for the donation of 10 gallons of Hysol epoxy, used in casting artifacts. Their generosity is appreciated.

Acknowledgement

In the November 1, 1988 issue of *Sea History*, Peter Stanford, President of the National Maritime Historical Society, has provided solid commentary on the article in the *New Yorker* about the commercial salvage of *De Braak* as well as a nice note commending INA. *Sea History* is recommended to all those interested in maritime history.

For more information write to: National Maritime Historical Society, 132 Maple Street, Croton-on-Hudson, New York 10520.

News & Notes

Archaeological Field Opportunities Bulletin

The Archaeological Institute of America announces the January 1989 publication, *Archaeological Fieldwork Opportunities Bulletin*, which lists current and ongoing archaeological programs (including fieldwork, field schools, and special programs). Program directors are seeking individuals who are interested in archaeology and want hands-on experience. In most cases archaeological experience is not necessary.

Included in the Bulletin are entries from well over a hundred sites

throughout the world. Each entry give information about the site, the period of occupation, purpose of the program, age limits, eligibility, and costs. A selected bibliography, a list of State Archaeologists, State Historic Preservation Officers, and affiliated organizations are also included.

To obtain a copy of the *Bulletin*, a pre-paid order (in U.S. dollars on a U.S. bank) should be sent to the Archaeological Institute of America, 675 Commonwealth Avenue, Boston, MA 02215. The charge

is \$8.00, \$6.00 for members of the Archaeological Institute of America. Please add \$2.50 for First Class delivery.

The Archaeological Institute of America does not sponsor or endorse any of the programs which are listed, but merely compiles the publication from those submitting the information. Many enthusiastic responses have been received in the past, both from the participants and program directors.

Faculty Activities

Frederick van Doorninck, Jr. presented a paper entitled "The Serçe Limani Shipwreck: An 11th-Century Cargo of Fatimid Glassware Cullet for Byzantine Glassmakers" at the 1st International Symposium on Anatolian Glassmaking, Istanbul, Turkey April 26-27, 1988.

Mr. J. Richard Steffy addressed audiences at Wagner College (Staten Island), Cornell University, and the University of Pittsburgh October 16, 17, and 18 respectively on reconstructing the Kyrenia ship. His lectures on Ancient Shipbuilding and Ship Reconstruction

were part of the Archaeological Institute of America (AIA) Lecture Series.

Mr. Steffy also presented a paper entitled "The Mediterranean Shell to Skeletal Transition," at the International Symposium on Boat and Ship Archaeology in Amsterdam, Holland, Sept. 14.

Glass Wreck Issue Addendum

In the last issue of the *INA Newsletter* (15/3), devoted to the Glass Wreck at Serçe Liman, it was theorized that of two rotary querns found on the wreck, the larger quern, which showed signs of wear, might have been used to grind grain on the ship, while the smaller quern, which showed no signs of use, might have been a spare. However, a detailed study of the ship's ballast, begun only this past summer, now reveals that certainly one, and probably both of the stones belonging to the larger quern were a part of two tons of boulder-sized ballast stones covering the bottom of the hull just aft of midships in a single, tightly-packed layer. Whether or not the small quern was also a part of this ballast remains unclear.

In the section devoted to the amphoras on the ship, it was stated that one of the amphoras had received a new coat of wash after being in use for a long period of time. This past summer, the "new

wash" was examined more closely and proved to be nothing more than a deposit of marine salts of abnormal thickness and color that had migrated from the fabric to the surface after the amphora's recovery from the sea.

Frederick van Doorninck, Jr.

SHARPS Note

We regret we neglected to acknowledge John Gifford's contribution in the early stages of the SHARPS discussed in "INA Enters the SHARPS Era" (*INA Newsletter*, 15/2). John, a former INA staff member, originally conceived such a measuring system after having seen the need for a more efficient mapping system at the Yassi Ada excavation in 1970. In 1980 he worked on a prototype, and shared his ideas and experiences with Marty Wilcox, the inventor/designer of the SHARPS.

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