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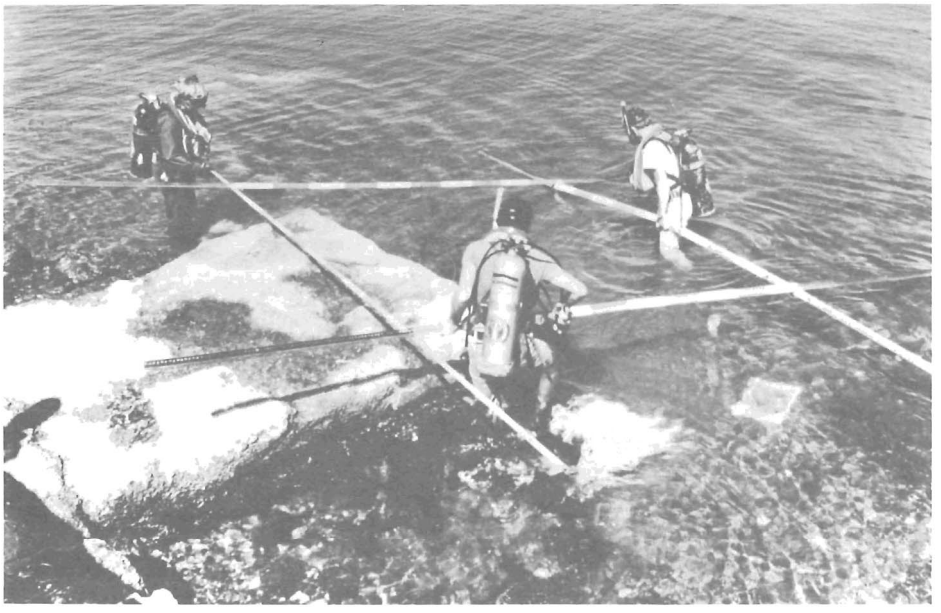
INA NEWSLETTER

Fall 1981

PORT ROYAL 1981



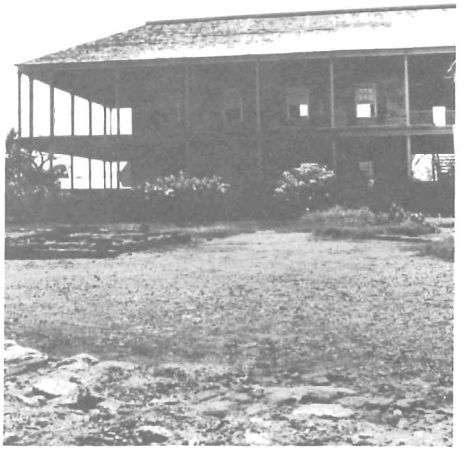
Steve Hoyt, Roger Smith, and the author carry excavation grid frame from modern Port Royal to the submerged area of the city. Photos by INA Port Royal team.

During negotiations for the Genovesa *project (see INA Newsletter Vol. 8, No. 2) the Jamaican Government expressed a desire for the Institute of Nautical Archaeology to assist in the excavation of other significant archaeological sites. In response to the Government's request, the Institute dispatched a team of archaeologists under the general direction of Dr. Don Hamilton, Assistant Professor of Anthropology at Texas A&M University and INA Adjunct Professor, on a reconnaissance to determine if INA would be interested in initiating research projects at any of the proposed sites. This article, authored by Dr. Hamilton, reports on test excavations conducted by the Institute's team in the sunken city of Port Royal. Subsequent issues of this newsletter will contain reports of INA's other Jamaican surveys of 1981.*

Archaeologists often encounter a problem of public recognition when they excavate sites and attempt to elicit support for their work. This is not the case with Port Royal, Jamaica, the mention of which conjures up popular visions of buccaneers, pirate ships, romance, and adventure. Jamaica, which was discovered by Columbus on his second voyage in 1494, was a relatively unimportant Spanish possession with a small population through the first half of the seventeenth century. This situation changed as a result of Oliver Cromwell's dream of expanding Britain's presence in the Caribbean. In 1655 Cromwell set about to secure a British power base in the Spanish New World territories by sending out a force, under the leadership of Admiral Penn and Robert Venables, to carry out his "Western Design." The British were unsuccessful in their attempt to capture Hispaniola, so, in a last-ditch effort to salvage the undertaking, they sailed to Jamaica and gained control of the island's south coast. Subsequent expeditions met with success, and the last Spanish resistance on the island was eliminated by 1660. Port Royal, originally called Cagway or the Point, was established soon after the British took the south coast. It was to serve as a defensive fortification on the tip of a long sandy spit guarding the entrance to Kingston Harbor, but it soon achieved much greater significance.

Between 1655 and 1692 Port Royal evolved into the most economically important English site in the New World. The period between 1660 and 1671 was the age of the officially sanctioned buccaneers for which the city is so notorious. Jamaica was at this time dependant on the buccaneers for protection from the Spanish due to the absence of a suitable British naval presence in the Caribbean. It also received great wealth in plunder from Spanish colonies and ships attacked by the buccaneers and freelance pirates of the day. The buccaneer era was a short-lived but very colorful period which was not effectively controlled until Henry Morgan, formerly one of the most active and notorious pirates working out of Port Royal, returned in 1675 as the Lieutenant Governor of Jamaica. Privateering was suppressed in the Caribbean by 1680.

After 1670, Port Royal's and Jamaica's importance to Britain was increasingly in



Project headquarters, Port Royal's Old Naval Hospital.

the realm of trade in sugar and raw materials. Port Royal became the trade center of the Caribbean, and at its height had an estimated population of 6500, and as many as 2000 buildings. Many of the buildings were constructed of brick, and some were four stories tall. This prosperity was to come to a sudden and frightful end. On June 7, 1692, at approximately 11:40 a.m., a severe earthquake shook the city; 60 percent of it sank into the harbor. An estimated 2000 persons were killed immediately by the earthquake and a subsequent tidal wave, with an additional 2000 to 3000 citizens dying of disease in the days following the disaster. Salvage and outright looting began almost immediately in the city, continuing off and on for years.

As if the 1692 earthquake were not enough, Port Royal was destroyed by a fire and earthquake in 1703, and badly damaged by hurricanes in 1712 and 1722. With each disaster, fewer people chose to remain in or return to the city. Port Royal remains today a somewhat isolated town at the end of the long sandy spit. It has a population of roughly 1800 which views itself as unique — Port Royalist — rather than simply Jamaican. The city has survived the turmoil and ravages of time, but its primary significance to archaeology is that in its submerged and buried depths lies one of the world's largest collections of undisturbed seventeenth-century British artifactual material. Only a small portion of the available area has been archaeologically investigated, and much research remains to be done.

Steve Hoyt and Bruce Thompson unreel measuring tape used in establishing grid locations.

Little of the fieldwork done at Port Royal has been conducted by professional archaeologists with the controls and documentation demanded by modern archaeology. Most of the excavations have concentrated on the submerged portion of the city. Edwin Link, for example, excavated in the area of the King's Warehouse and Fort James in 1956 and 1959. In 1960 Norman Scott worked around Fort Carlisle, and from December of 1965 to March of 1968 Robert Marx directed a very extensive excavation in the southwestern

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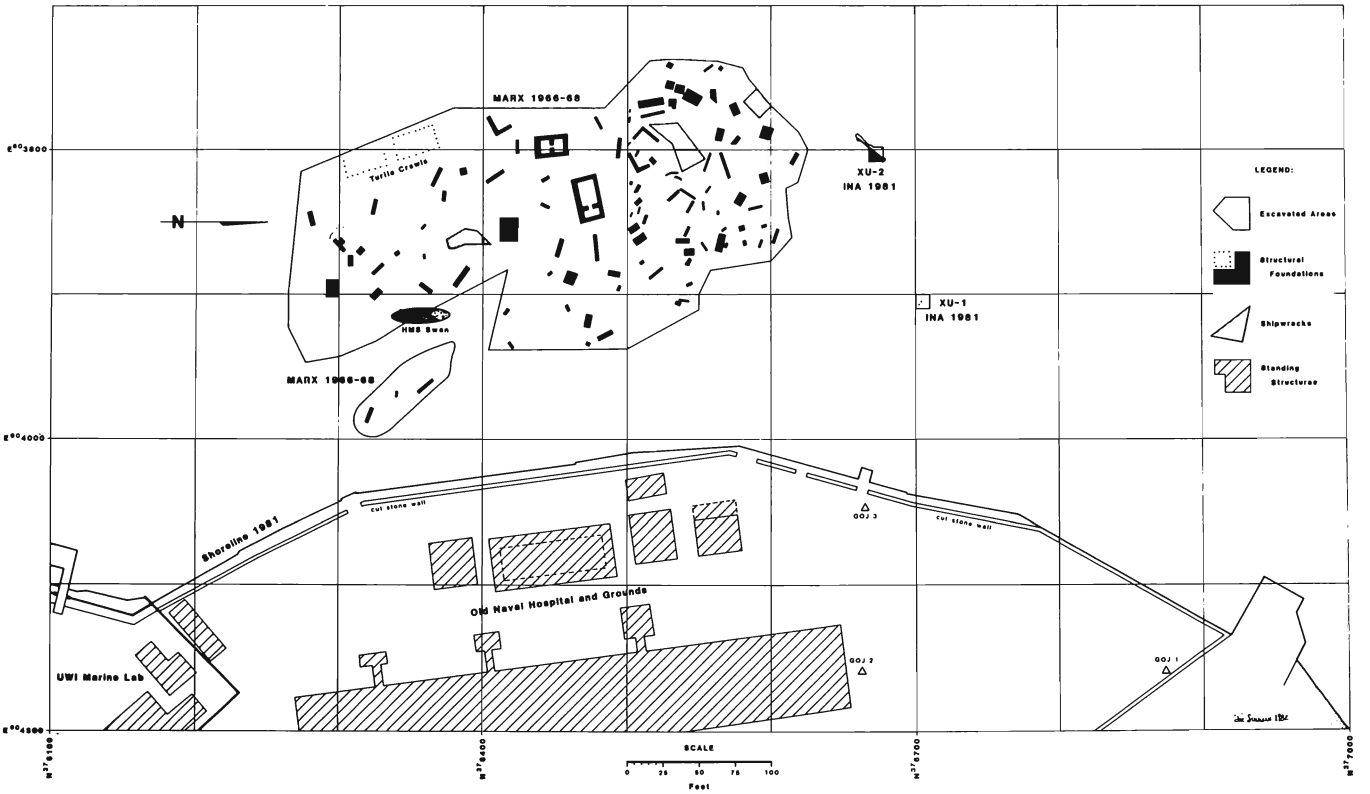


Site plan, depicting submerged areas excavated by Robert Marx in the 1960s and INA in 1981. Drawing: J. J. Simmons.

WILLIAM AVERY BAKER

William A. Baker, INA member and eminent maritime historian, died on September 8, 1981 at the age of 69. A 1934 graduate of MIT, he was first employed for 30 years by the Shipbuilding Division of Bethlehem Steel Company. It was shortly after World War II that he initially attracted the attention of maritime historians with his restoration plans of Amundsen's arctic exploration vessel *Gjøa*, for which he received the St. Olaf's medal. His famous replica designs appeared regularly after that: *Adventure, Beaver, Dove* — there were more than two dozen of them. They stand as floating monuments to his research and design expertise. He was probably best known as the designer of *Mayflower II*, which was built in England, sailed across the Atlantic, and is still a very popular tourist attraction in Plymouth, Massachusetts.

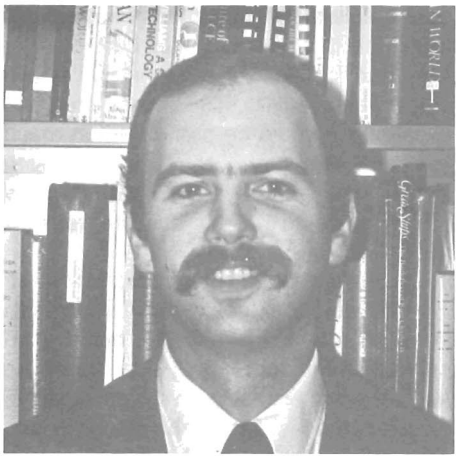
For the past two decades Bill was curator of the Hart Nautical Museum at MIT, where he and his wife, Ruth, did an outstanding job of cataloging the various collections. He wrote numerous books and articles on maritime history and ship construction; *Colonial Vessels* and *Sloops and Shallops* are prime references for those of us involved in hull studies. He was in constant demand as a consultant on historical vessels.

Bill was a quiet, unassuming man who immediately impressed those whom he met with his profound knowledge and comfortable command of his subject. He freely gave advice and information to INA staffers and student associates. He and Ruth visited the *Defence* project on several occasions, where he lectured field school students and assisted with timber identification.

Bill was a good and valuable friend, and his passing leaves a vacuum in our field that will be hard to fill. We extend our deepest sympathy to Ruth.

J. Richard Steffy

PROFILE



William A. Bayreuther, III. Photo: K. J. Crisman.

A 1976 field school excavation of a prehistoric site overlooking Lake Champlain gave Bill Bayreuther, then a University of Vermont undergraduate English major, his first taste of archaeological fieldwork. He soon became active in the Vermont Archaeological Society, participating as a volunteer in weekend excavations and laboratory sessions. His part-time avocation evolved into an addiction, and he modified his course of study to reflect this interest, receiving a B.A. in Anthropology and English in 1977.

During three subsequent years of primarily prehistoric research with the Vermont Division for Historic Preservation and the University of Vermont Department of Anthropology, Bill spent summers conducting fieldwork across the state, and winters on analysis and report preparation. He increased his Vermont Archaeological Society involvement during this period, and was elected to the organization's board of trustees. He also served a term as the society's president and edited its newsletter for two years.

Bill's interest in the potential value of archaeological research on local underwater sites prompted him to enroll in a scuba diving course in 1978. Documentation and analysis of shipwreck sites, however, is altogether different from the study of riverside Indian camps, and he was fortunate to meet INA Adjunct Professor David Switzer in 1979 at a lecture by the latter on the excavation of the *Defence* (see INA Newsletter Vol. 6, No. 3). Dr. Switzer suggested that he apply to Texas A&M University's specialized graduate program in nautical archaeology.

September of 1980 found Bill enrolling in the Texas A&M program. INA Newsletter editor Ken Cassavoy had recently departed College Station for Canada, so George Bass was faced with the necessity of recruiting a replacement from among his graduate students. Bill's Vermont editorship was noted during a review of student files, and he was accordingly employed to edit the newsletter and maintain the institute's membership correspondence.

Early American hull design and construction are Bill's primary academic interests. His master's thesis research is focused on the construction, in Skenesborough, New York, of the small American fleet commanded by Benedict Arnold on Lake Champlain in 1776. Several of Arnold's vessels have been raised in the past half century; by studying their remains Bill hopes to supplement the available historical documentation on the Skenesborough shipyard with archaeological evidence.

Bill returned to New England this past summer, beginning the season as an archaeological consultant on a preliminary survey of a nineteenth-century Lake Champlain canal schooner wreck site, in collaboration with fellow Texas A&M student Kevin Crisman and diving instructor and INA member Arthur Cohn. This survey was a joint venture of the Vermont Division for Historic Preservation and the Champlain Maritime Society; it demonstrated a growing concern for the study and protection of Lake Champlain's nautical heritage.

In June Bill drove to Castine, Maine, where he spent the remainder of the summer as a team leader on the *Defence* excavation. He and a group of EARTHWATCH Research Expedition volunteers completed the excavation of the Revolutionary War privateer's midship area. Bill's involvement with the *Defence* project continues, and he has begun research on the ship's staved containers, including provision casks, mess kids, and a recently discovered tub containing over 1400 grapeshot. His base of operations in Maine will be his family's cabin on appropriately named Pleasant Pond, a short drive from the Maine State Museum and the conserved wooden container fragments. It's a safe bet that any spare time he gets will be spent canoeing and flyfishing for trout on seldom visited water.

Continued from page 2

part of the sunken city, in the area of the fish and meat markets between Lime Street and the former harbor. With the exception of Marx's work, little is known about the excavations or the recovered material.

Prior to INA's involvement in Port Royal, there had been no excavations in the sunken city since Marx's work, but there had been a few on land. Philip Mayes was hired through the Jamaica National Trust Commission to excavate in 1969 and 1970 in an area of the Naval Yard threatened by imminent development. He discovered and excavated a portion of what is believed to be St. Paul's Church, destroyed by the earthquake of 1692. Several additional small salvage excavations have been conducted on land since 1970 by the Port Royal Project, but to date none of these has been published.

Yale University student Doug Ball excavates with trowel, feeding silt and coral fragments into mouth of water dredge.

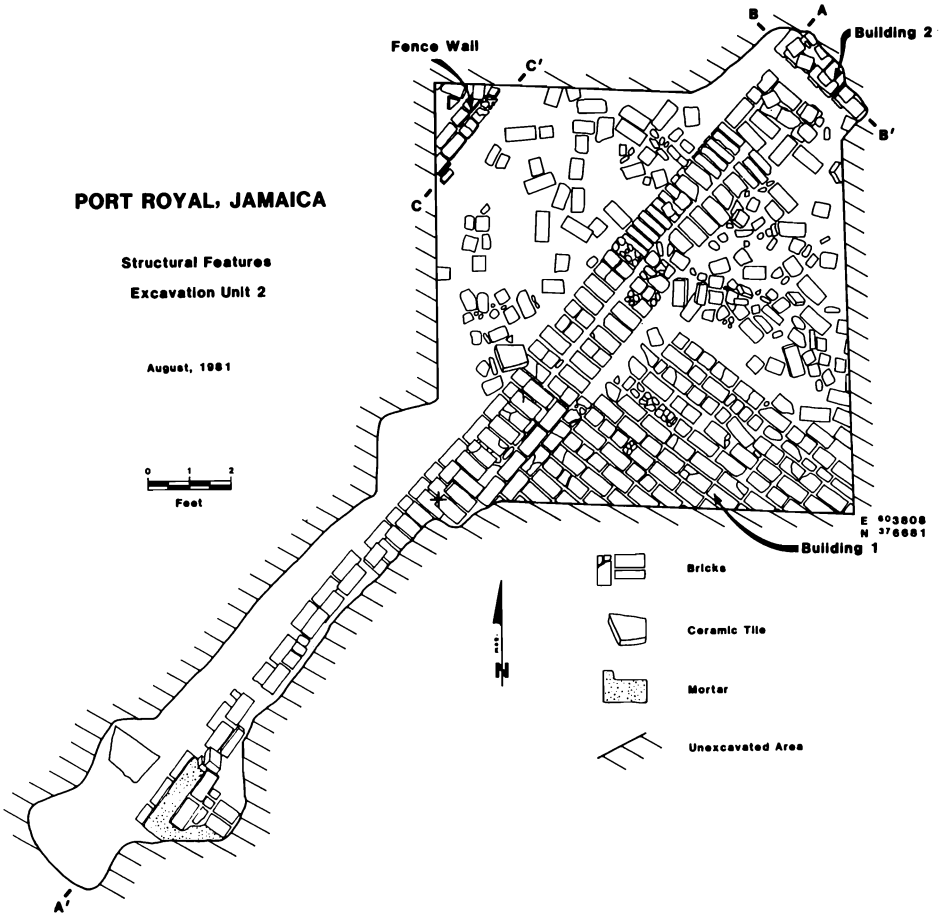
Regardless of who else excavates on land or in the sea at Port Royal, and regardless of any criticisms one might have of the excavation procedures of Link and Marx, a debt will be owed these men. Link gathered together all the Port Royal real estate records and, along with Captain Weems, compiled a reasonably accurate map of the city at the time of the earthquake. This map, despite its inaccuracies, provides a starting point for reseach at Port Royal. Marx excavated the largest area in the sunken city, and recovered more artifactual material, with at least some degree of provenience control, than any other person. Consideration of this material and his map of the excavated area is a necessary step in any Port Royal research.

The INA archaeological team arrived at Port Royal with limited objectives, for we were pretty much in the dark as to what we might expect to encounter. Our primary goal was to determine whether or not controlled excavations could be carried out in the sunken city. All of us had read that stratigraphic control could not be maintained, visibility was very bad, excavations had to be carried to depths of nine to 15 feet, excavation walls continually caved in, the danger of sharks was great, and sea urchins literally paved the area. Frankly, some of us, myself included, were apprehensive, but all the stories proved false, at least for the areas in which we worked and during the time we were there. No sharks were seen, and sea urchins were very numerous but presented no great problem. Visibility was normally four to ten feet, enabling us to take underwater photographs, plot the locations of artifacts within our 10-foot-square metal grid frame, maintain good stratigraphic control, and prepare detailed drawings of all features. We found that the 1692 city was buried under less than four feet of sediment in the two areas we tested. All things considered, the excavations could be carried out in much the same way as on any land site, using similar techniques and tools, with the only difference being that this land site was now under water.

Lisa Shuey and Tom Oertling prepare for a dive with hookah apparatus. The gasoline-powered compressor supplying their breathing air rides on float at upper left.

Since we were working in depths of less than 20 feet, all our excavation diving was done on hookah, with scuba being used only on the wider-ranging surveys of the harbor. A water dredge was employed to excavate the test areas, and standard land archaeology tools such as mason's trowels, line levels, and measuring tapes were used to maintain stratigraphic control. A large support boat was not needed; the divers swam out from the sea wall to the excavation areas where a small boat was anchored and tended by a crew member. The boat tender kept watch over two or three divers, the water pump stationed in the boat for the dredge, and the floating compressor that supplied air to the divers.

In order to get a feel for the site and do as little damage as possible to any undisturbed areas of the town, we started by placing a test trench in the area excavated by Marx between 1965 and 1968. This vicinity revealed nothing new of interest, although we did relocate a ship identified by Marx as a 1772 French prize to the north of the trench. The problem of accurately mapping the submerged area was considered while the test trench was being excavated, for we found that no one prior



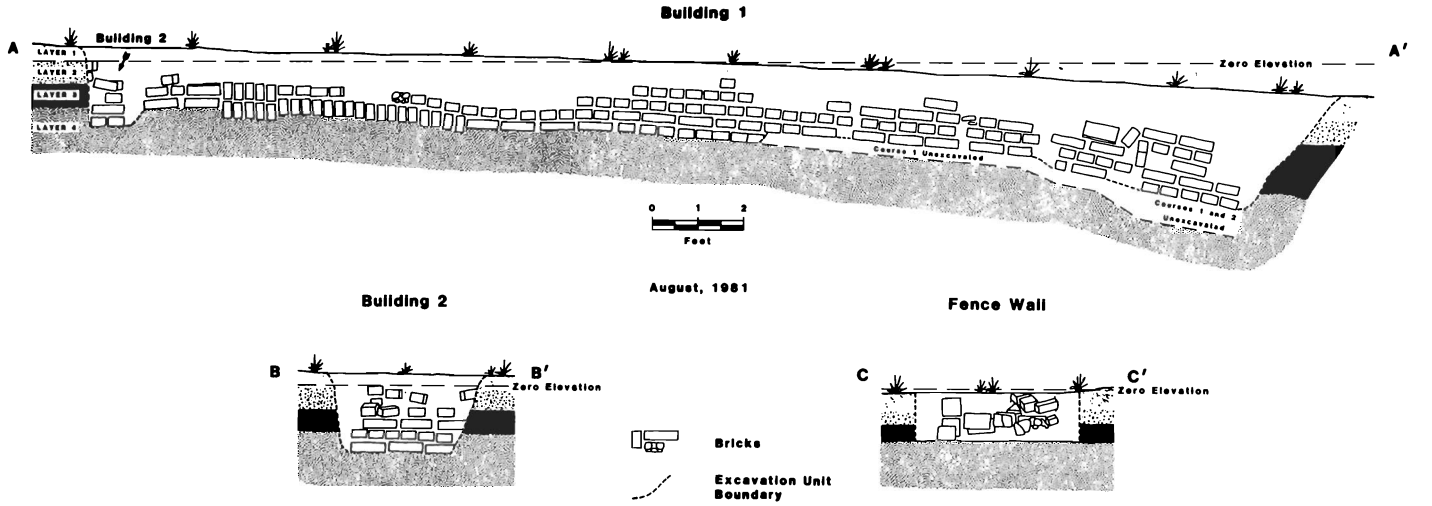
Plan view of XU2, illustrating distribution of structural material. Letters adjacent to excavation boundary identify locations of profiles seen below. Drawing: C. M. Pulak and J. J. Simmons.

to us had established permanent datum points with known coordinates which we could locate. Without these reference points it would be impossible to precisely relocate any previously excavated area. We initially placed a primary datum point on the sea wall, but later had the Jamaican Survey Department set three permanent survey markers on the grounds of the Old Naval Hospital, situated so most areas of the harbor could be mapped from them. All of the INA excavation units were tied into these survey markers, and their exact coordinates were recorded. All bearings were established with a theodolite possessing one-second accuracy. Any of the areas excavated by the Institute can be relocated by future researchers.

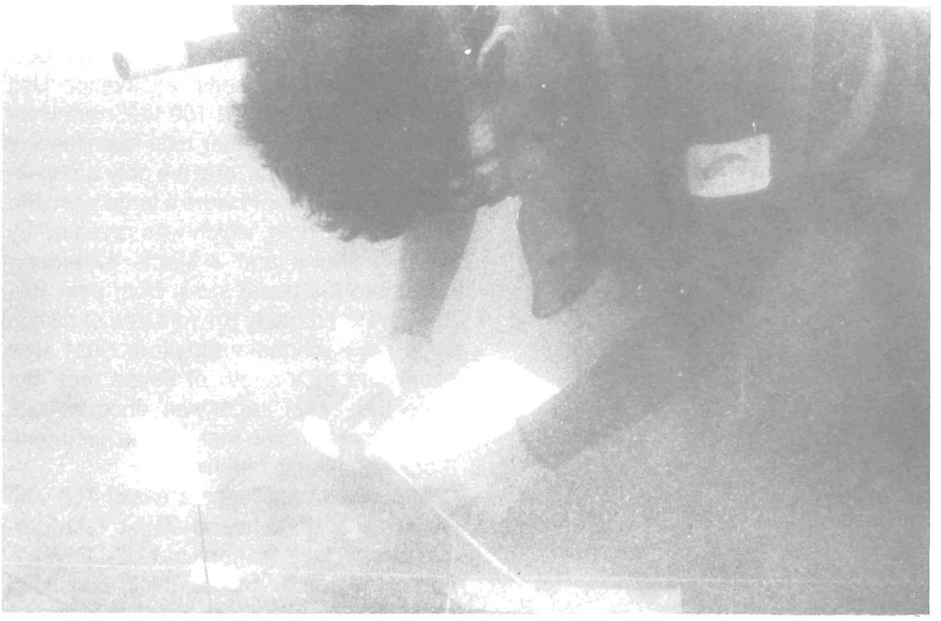
After completing the test trench we moved north of Marx's excavations to undisturbed areas of the submerged city. Locations were chosen for two 10-foot-square excavation units. Excavation Unit #1 (XU1) was located 152 feet northwest of the sea wall in water nine feet deep. It yielded few artifacts, and the only architectural features of note were a large post and another post hole, which was revealed by organic stains and artifacts extending down into the basal sand. Both post features were probably the remains of pilings for a pre-earthquake structure. XU1 was excavated to a depth of seven feet, but once the basal sand was encountered, approximately three feet into the sediment, it proved culturally sterile.

The stratigraphy in the areas of XU1 and XU2 was analogous and simple (see profiles of structural features in XU2). Layer 1, approximately six inches thick, consisted of loose silt, turtle grass, and roots. Large quantities of recent trash and nineteenth-century ceramics were present in this stratum. Layer 2 comprised a band of interdigitated fragments of finger and elkhorn coral, with a thickness of roughly one foot in XU1 and six to eight inches in XU2. This layer contained few artifacts; in most areas the coral effectively sealed off Layers 1 and 3. We are attempting to determine the date at which the coral was deposited — it would serve as a *terminus ante quem* for the artifacts found below it in Layer 3. This third layer was composed of dark, hard-packed mud with very little coral. It was 18 inches thick in XU1, but had a thickness of only six to eight inches over most of XU2.

Most of the artifactual material we recovered was found in Layer 3. Except for a few intrusions from the uppermost layer, it dated to the late seventeenth century. Layer 4 was the basal sand on which Port Royal was constructed; only its few upper-



Profiles of structural features encountered in XU2. Drawing: C. M. Pulak and J. J. Simmons.



Locations of artifacts exposed in situ *were marked with flags. Cemal Pulak here records artifact provenience.*

most inches contained cultural material. Unlike Marx, we found no need to dig nine to 15 feet deep, for the sterile sand and gravel were encountered at depths of two to three feet into the harbor sediment.

XU2 was placed farther out into the harbor than XU1, in water 12 feet deep, 248 feet west of the sea wall. We were extremely lucky in our placement of this unit, for we found *in situ* bricks here only inches below the harbor bottom. Excavation revealed a brick wall with as many as five courses, and a brick floor; the wall trended northeast by southwest. The test unit was extended to both the southwest and northeast to expose corners of the building. Time did not permit the complete excavation of the structure, which was designated Building 1, and only the northwest wall and a portion of the brick floor were cleared. The corner of a second structure (Building 2) was found approximately six inches from the northeast corner of the first, and a poorly laid course of bricks at the northwest corner of the excavation unit is believed to have been some sort of fence wall. As fate would have it, the northeast corner of Building 1, the southwest corner of Building 2, and the possible fence wall were found on the project's very last day of diving.

Nineteenth-century artifactual material, including ceramic sherds, pipe fragments, glass, buttons, bone, and turtle shell, was found on the brick floor of Building 1. The vast majority of the excavated material, however, pipe stems and bowls, bone, leather fragments, ceramic and glass sherds, a clay marble, a straight pin, two key fragments, a brass clasp, a lock plate, and numerous encrusted tacks and nails, was recovered from the four-foot-wide "alley" or pathway between the outer wall of the structure and the wall in the northwestern corner of the unit. It is obvious that trash was being discarded along this outside wall, and the concentration of material in this area suggests that a door or window was located in the northwestern wall of Building 1.

What can we presently say about Building 1, based on the limited area exposed and assuming that all the loose architectural material in the immediate area relates to the same structure? We have a brick structure with one wall 24 feet long. This wall was built on top of a two-brick-thick footing placed directly on the sand. The building was probably only one story tall, and at least a portion, and possibly all, of its floor was brick. The presence of white plaster fragments with brick impressions on their back surfaces indicates that the interior walls were plastered. Bricks whitewashed on only one surface show that some walls were merely painted. Plaster which we found to have stick and grass impressions on its back side is indicative of plastered ceilings. A large wooden beam with an L-shaped iron hinge was discovered near the southwest corner of the building, suggesting the presence of a door in that area. A large U-shaped tile also found near the southwest corner was placed in such a manner that it might have been used as a drain gutter to catch rain runoff and prevent the wall from being undercut.

Considering the northeast-southwest orientation of the building and its distance out into the harbor, the structure may have been located on a lot owned by a Roger Hill before the 1692 earthquake. We know from the "Taylor manuscript" of 1688 that the fish and meat markets and turtle crawls were situated in this area of the town. Pig, cow, chicken, turtle, manatee, and goat or sheep bones were found in XU2, but they were not especially numerous. Small irregular wedges, slivers, and fragments of leather were also recovered from throughout the area.

We were not able to completely excavate Building 1, so we cannot make any definitive statements about the structure's function, although logical possibilities include use as a meat market, leather shop, or just a residence. We have more questions than answers at this point, but we do have some specific research objectives. The opportunity to answer particular ques-

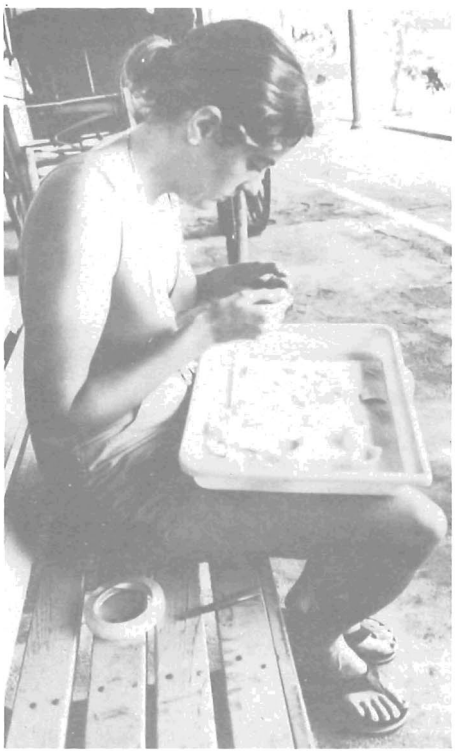
Portion of northwest wall of Building 1 following excavation with water dredge.

tions will come with the excavation of the remainder of this structure and Building 2. Recognition of the spatial relationships of these two buildings to each other and streets will enable us to begin the long, arduous task of relating the submerged features of Port Royal to Link's map or other old maps of the city. An intensive archival search should be conducted prior to further excavation, if possible, to determine the occupations of owners of particular lots, such as Roger Hill, in an attempt to learn the functions of individual structures.

An interesting point for speculation at present is why the 1692 occupation levels lay at such shallow depths in the two areas we tested. Marx had to excavate much deeper only 50 feet south of XU2 to reach the city's submerged level. It is probably significant that the northwest wall of Building 1 sloped noticeably toward the southwest and was faulted in at least four places. This may indicate that the southwest portion of the harbor side of Port Royal slumped and faulted much more than other areas of the city, and therefore lies much deeper in the sediments. This is admittedly speculation, but it can be easily confirmed or denied through further field research.

A detailed report on the 1981 INA Port Royal test excavations is being prepared for publication. Meanwhile, plans are being made to conduct additional field research in this small area of what was often referred to as "the wickedest city in the New World" at the time of its destruction in 1692.

It is always gratifying to acknowledge the support of the many people who are instrumental in making a project successful. The National Geographic Society and Mr. and Mrs. J. E. Jonsson provided funding which greatly assisted this project. Our sincere gratitude is extended to Prime Minister the Rt. Hon. Edward Seaga, who was responsible for the invitation to work in Jamaica and for support while we were there. Our thanks are also offered to Permanent Secretary St. Clair Risden, of the Ministry of Mining and Energy, who came to our aid on numerous occasions. Acknowledgment is further made of the efforts of Mr. G. A. Aarons, the Director and Archaeologist of the Port Royal Project, his staff, the Jamaican Coast Guard, Commander Peter Brady, Mr. Guy Harvey, and, of course, the many other Jamaicans who made us feel welcome and rendered our work so rewarding and enjoyable. Last, but by no means least, my personal thanks go to all the Texas A&M University students and other individuals who were ultimately the ones who did the work and made Port Royal 1981 as successful as it was.



Conservator Robyn Woodward reconstructs Oriental porcelain cup on porch of Old Naval Hospital.

PROCEEDINGS OF TWELFTH CUA PUBLISHED

The Proceedings of the Twelfth Annual Conference on Underwater Archaeology (New Orleans, Louisiana, January 5-7, 1981) have recently been published by Fathom Eight. Entitled *Underwater Archaeology: The Challenge before Us,* after a closing remark in "Is Money the Root of All Evil?", INA President George F. Bass's provocative keynote address, the volume has been edited by Program Chairman Gordon P. Watts, Jr. It includes, in addition to Dr. Bass's address, 44 papers and abstracts of several others.

The papers in these Proceedings are arranged by subject into sections on shipwreck archaeology, method and technique, inundated terrestrial sites, and underwater cultural resource management. Significant contributions from INA and the Texas A&M University nautical archaeology program include papers on the Revolutionary War vessels *Defence* and *Charon*, the Serçe Liman Glass Wreck, and topics of Texas A&M thesis and dissertation research.

Underwater Archaeology: The Challenge before Us is available in soft-cover for $16., postage paid in the United States, from Fathom Eight, P. O. Box 8505, San Marino, California 91108.

INA WELL REPRESENTED AT THIRTEENTH CUA

The 1982 Conference on Underwater Archaeology was held January 7-9 at the Hilton Hotel of Philadelphia, Pennsylvania, concurrent with the Fifteenth Annual Meeting of the Society for Historical Archaeology. INA Research Associate Donald H. Keith, a member of the sponsoring Advisory Council on Underwater Archaeology, chaired the conference, assisted in program organization by the staff of the Institute and students in the Texas A&M University nautical archaeology master's degree program.

Nearly a quarter of the 83 papers presented at the conference were submitted by individuals directly related to the Institute, primarily INA professors and Texas A&M students and graduates. Topics of these presentations were quite varied, running from the reconstruction of the Serçe Liman Glass Wreck's hull to East African sewn boats, a warship's bronze ram found off Israel, ships' figureheads and pumps, the Roman helmet recovered at Yassi Ada, and the excavation of the Revolutionary War privateer brig *Defence.*

The Fourteenth Annual CUA will be held at the Denver, Colorado Marriot Hotel, January 6-8, 1983. Persons desiring to present papers at the conference will be required to join the Society for Historical Archaeology, which will again hold its annual meeting concurrent with the CUA. Further information on the 1983 CUA may be obtained from Program Chairman Calvin R. Cummings, National Park Service, Denver Service Center, Midwest-Rocky Mountain Team, 655 Parfet Street, P. O. Box 25287, Denver, Colorado 80225. All interested individuals, both amateur and professional, are welcome to attend or participate.

The Institute of Nautical Archaeology is a nonprofit scientific/educational organization whose purpose is to gather knowledge of man's past as left in the physical remains of his maritime activities and to disseminate this knowledge through scientific and popular publications, seminars, and lectures. The INA Newsletter is published periodically by INA and is distributed to its members and Supporting Institutions to inform them of INA's activities. INA is an equal opportunity organization.

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