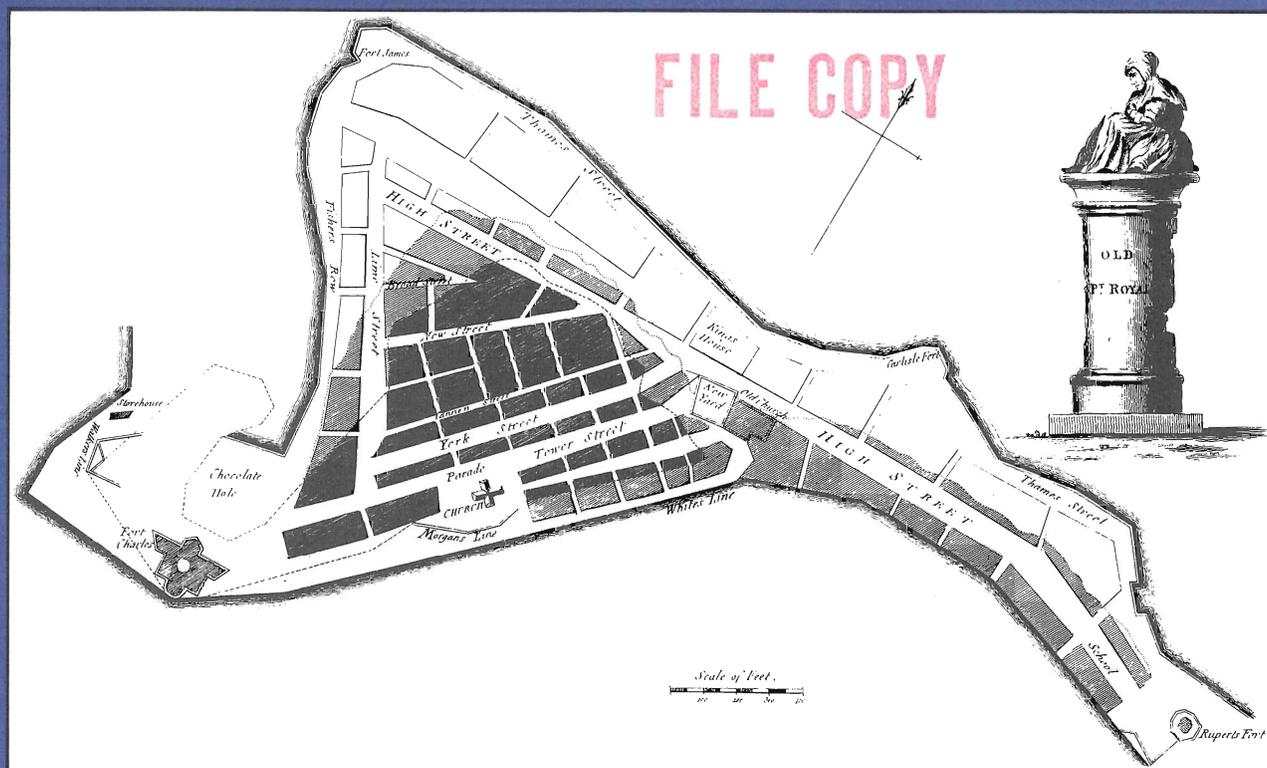




PORT ROYAL PROJECT

Excavating A Sunken City



18th-century map of Port Royal showing coastlines before and after the earthquake of 1692

HISTORIC PORT ROYAL:

A glorious rise and a tragic fall for the wickedest city on earth

By Jim Jobling

In 1494, during his second voyage of exploration, Christopher Columbus discovered Jamaica, which he described as “the fairest island that eyes have beheld.” However, lacking precious mineral resources, the island was a relatively unimportant, sparsely populated possession in the Spanish colonial empire of the 16th and 17th centuries. During this period, only two settlements of note developed on the south side of the island: Villa de la Vega, the Spanish capital from 1534 and now known as Spanish Town; and Caguaya, now Fort Passage at the mouth of the Rio Cobre. Cayo de Carena, situated at the western end of a long, thin, sandy spit called the Palisadoes, was merely a sheltered cay used by the Spaniards to careen their ships. In time, however, it would assume great importance as the town of Port Royal.

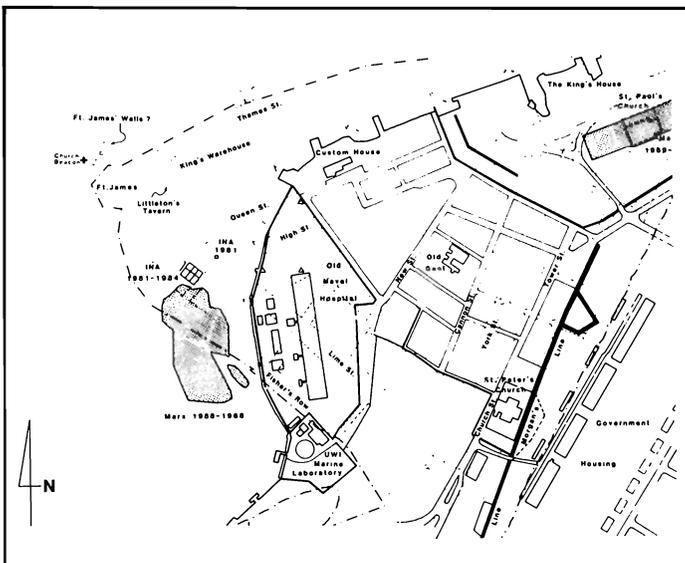
On May 10, 1655, an English fleet under Admiral William Penn, carrying aboard a 2,500-man army under General Robert Venables, sailed past Cayo de Carena into what is now Kingston Harbour. They were part of Oliver Cromwell’s “Western Design” to expand the English Commonwealth and to secure territories in the Caribbean. Having been repulsed with great humiliation at Santo Domingo, Hispaniola, the expedition had sailed westward in a last-ditch effort to salvage the undertaking by seizing Jamaica. The invad-

ing force greatly outnumbered the Spanish defences and met little resistance. The capture of Jamaica was accomplished, although the English had to fight for another five years to subdue guerrilla forces under the leadership of Don Cristóval Arnaldo de Ysasi.

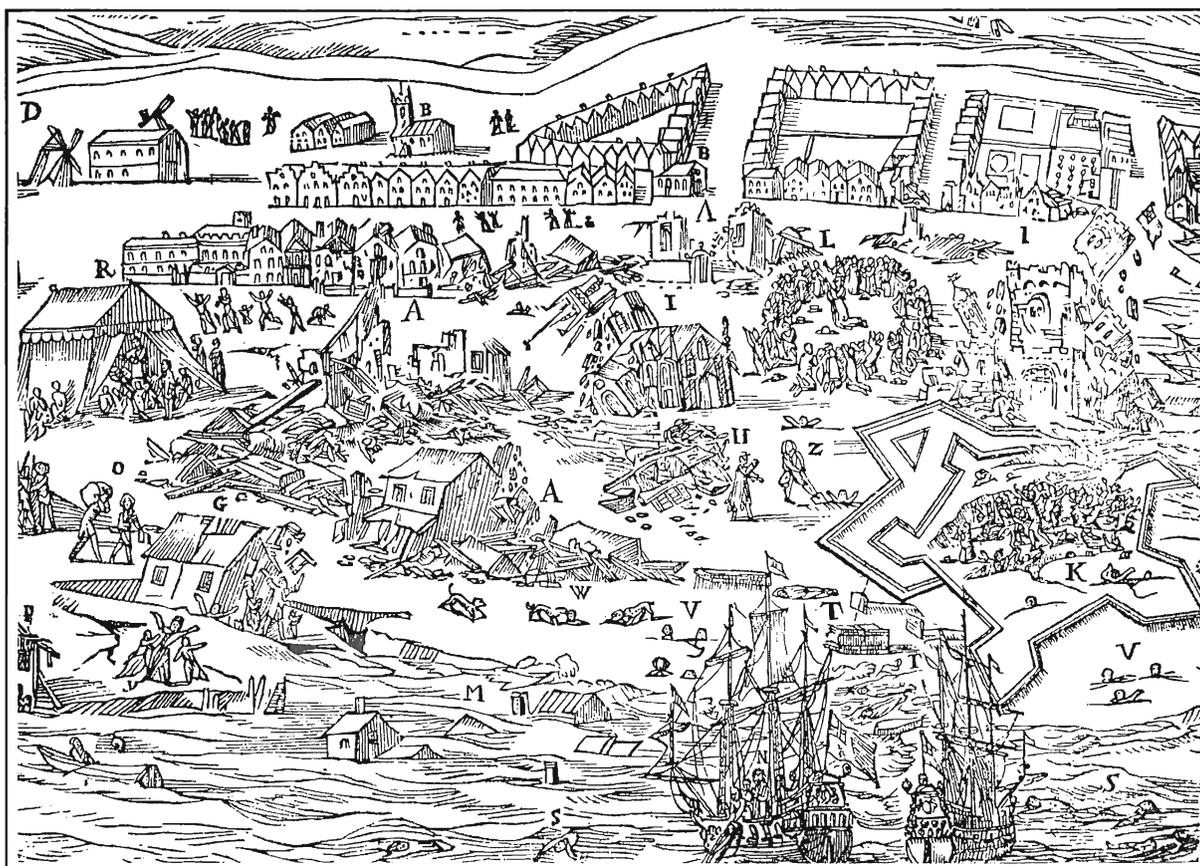
The strategic importance of Cayo de Carena was recognized immediately, and fortifications were begun. The site mistakenly was named Point Cagway, taking the old name of Fort Passage (Caguaya) to be that of the cay. Fort Cromwell was completed in 1657, and by the end of 1658, there existed three rows of houses, a market and a church, the commander-in-chief’s home, and a state forge and storehouse. By 1659, it was no longer possible to easily obtain land adjacent to the harbor. Building continued at such a rate that local brick production was unable to meet demands, and accordingly, ships destined for Jamaica were ordered to be ballasted with bricks. After the restoration of Charles II to the throne in 1660, Fort Cromwell was renamed Fort Charles, and the townsite became known as Port Royal.

The long spit on which the settlement was situated separated the harbor from the Caribbean Sea. The harbor was ideal, with deep water adjacent to a well-protected shoreline, enabling large ships to be laden and serviced easily. The original intention was for the settlement to serve as a fortification guarding the harbor entrance, although development of the town eventually assumed a far greater importance. Nonetheless, for thirty years a constant effort was made to improve the defences along the point, with the urban expansion being determined by the lines of the fortifications. During the 1660s, Fort Charles was enlarged and strengthened extensively, and a long masonry palisade, replacing a wooden line, was completed at the eastern end of Port Royal. During the 1670s, Fort James was constructed at Bonham’s Point, and a fortification that later became Fort Rupert was begun at Prison Point at the southern end of the Palisadoes. Fort Carlisle was built at the northern end of the Palisadoes, and Morgan’s Line, named for Sir Henry Morgan, was completed between Forts Rupert and Charles.

Concurrently, from 1660 to 1671 when privateering was sanctioned officially, Port Royal earned its reputation as the “wickedest city on earth,” owing to the activities of buccaneers, and to the loose ways of the citizenry in general. England was at war with Spain, but she lacked a substantial naval force in the Caribbean. To survive a possible Spanish attack, Jamaica—located in the heart of the Spanish Main—was forced to invite buccaneers formerly organized as the Confederacy of the Brethren of the Coast on the island of Tortuga off modern-day Haiti, to make Port Royal their base of operation. In exchange, the privateers protected the city from foreign assaults, for which they were awarded “Letters of Marque” by the



The Port Royal harbor area, with modern features outlined by solid lines, and former features outlined by dashed lines.



A contemporary print showing the destruction caused by the earthquake of June 7, 1692.

Crown, legalizing their activities.

However, the buccaneers did not confine themselves solely to capturing Spanish ships on the high seas. Under the leadership of Captain Edward Mansfield and, later, Henry Morgan, they attacked and sacked cities throughout the Caribbean. When the second Treaty of Madrid ended the war in 1670, England promised to cease her sanction of privateering, and Spain tacitly accepted England's claim to Jamaica.

Because of his flagrant activities, Henry Morgan was recalled to England and placed under house arrest, but he later was released, knighted and appointed Lieutenant-Governor of Jamaica. He returned to Port Royal in 1675 and immediately began a vigorous suppression of his erstwhile piratical colleagues, although piracy was not effectively brought under control until after 1680, when it no longer was openly tolerated in Port Royal.

After 1670, Jamaica's importance to England was increasingly in the realm of trade in slaves, sugar, dyewood, Spanish indigo, rum, cotton, hides, tallow and cocoa. Port Royal became the mercantile capital of the Caribbean, trading with Europe and the New England colonies. From tax and real estate records, it is known that a multitude of craftsmen and tradesmen lived in the city—from architects and blacksmiths to poulterers and schoolmasters. There also were three good doctors and a pharmacist, and by 1688, the town had become fairly healthy, although it still was hampered by the presence of a "parcell of pittyful Quaks, Empericks, and illiterat pretenders, which have formerly destroyed many a stout man."

By 1692, the city covered approximately fifty-one acres of land, had a rather well-to-do population of about 8,000 people, and

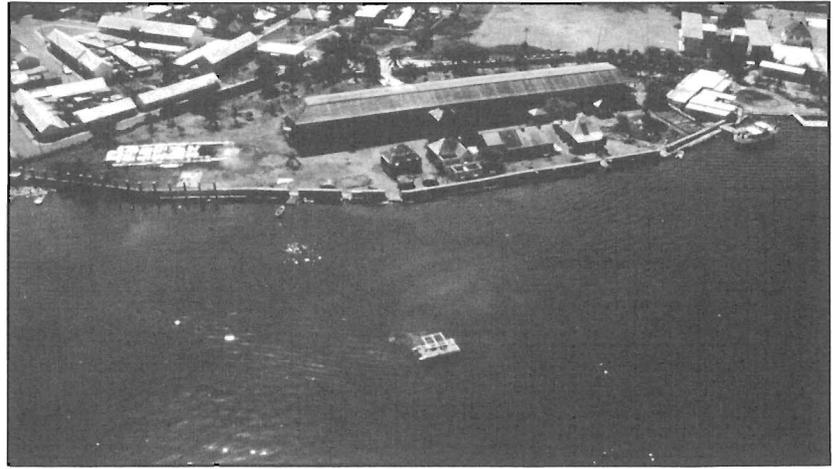
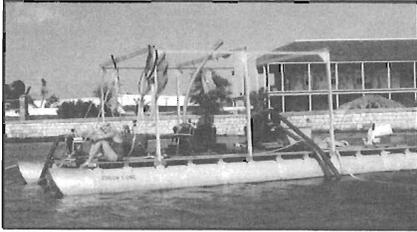
included more than 2,000 buildings, many of which were substantial brick structures standing four stories high. Citizens sought entertainment at taverns, gambling houses, billiard rooms, brothels, target shoots and cock fights.

This era of prosperity came to a sudden and frightful end. On June 7, 1692, slightly before noon, a severe earthquake shook Port Royal, sinking thirty-three acres—more than half of the city—into the harbor. An estimated 2,000 people were killed immediately by the tremor and the resulting seiche sea wave. As many as 3,000 additional souls died of injuries and disease in the following weeks. This disaster did little to slow some people down, however, for salvage and outright looting began almost immediately. An official report from the time relates that "the very same Night they were at their Old Trade of Drinking, Swearing, and Whoring; breaking up Warehouses; Pillaging and Stealing from their Neighbors, even while the Earthquake lasted, and several of them were destroyed in the very Act." It concludes with the condemnation that "indeed this Place has been one of the Ludest in the Christian World, a Sink of all filthiness, and a mere Sodom."

Port Royal began to rebuild. Repair of Fort Charles and Morgan's Line was completed in 1700, and in 1701, Fort William was built to replace Fort Rupert. Reconstruction of the city was halted abruptly by a disastrous fire in 1703, which left the entire civilian settlement in ruins; and indeed, every succeeding effort to reestablish Port Royal as a commercial center was greeted by yet another disaster—including ten hurricanes, two fires, and two earthquakes between 1712 and 1812. Since then, six earthquakes and six

Continued on page 14

By Dr. D. L. Hamilton



THE PORT ROYAL PROJECT

A 17th-century learning laboratory for future underwater archaeologists

Port Royal, Jamaica—the “wickedest city on earth” in the 17th century. In 1987, what role does it play in the overall scheme of INA’s widespread operations?

The Port Royal Project is decidedly different from other current INA research programs in several ways. First and foremost, Port Royal is a sunken city; therefore, this project is the only Institute investigation not concerned with the excavation or discovery of a shipwreck, although there are numerous known wrecksites in the vicinity. At the time of its sinking into Kingston Harbour in a devastating earthquake in 1692, the townsite was said to be the largest and most important English settlement in the New World.

Second, and perhaps more important, the Port Royal Project is conducted as a Texas A&M University field school, designed to train students from the United States and other countries in the techniques of underwater archaeology. Our 1987 season marked the seventh consecutive summer of field research. More than one hundred students, including many from the Texas A&M nautical archaeology program, have worked at Port Royal. It is safe to say that many of this discipline’s future scientists will have received their first underwater training on this site.

Support and logistics

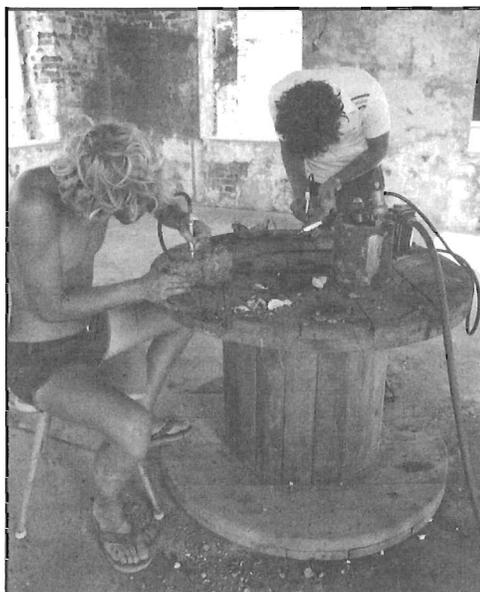
The project has grown in its operations because it has been a cooperative venture, in the truest sense of the words, between INA, Texas A&M, and the Jamaica National Heritage Trust. In addition, it has received support from several farsighted international firms, such as the Dow Chemical Corporation, which provided plastic bags for artifact storage; and the Best Food Corporation, which donated several cases of Skippy peanut butter—a gift not to be taken lightly when one considers the possible hunger level of a team of hard-

working divers.

The logistics of organizing and running a field school for a group of at least sixteen students and several assistants can be mind-boggling. In addition to the teaching obligations, there are matters which need counseling, listening, and reasoning; personality conflicts which must be settled among skilled and novice students trying to establish a working team; home-sickness and summer romance which require patience; calls from distraught mothers, girlfriends and boyfriends; and, of course, there are one’s own, rare instances of hair-pulling and yelling. Yet, these dilemmas are all part of being the professor and project director, and most of the problems seem to work themselves out.

Crucial to a successful field operation, however, is good housing and food, and the Port Royal Project has been more than fortunate in both regards. The National Trust completely renovated one of the bachelor officers’ quarters constructed in 1898 at the far end of the former British Naval Base. When we moved into the house for the first time in summer 1983, many problems that had cropped up in previous years were solved.

This handsome, two-story brick building has six bedrooms, two of which are large enough to serve as the men’s and the women’s dormitories; five bathrooms; a large dining room and a separate kitchen. In exchange for the use of this facility, the Port Royal Project equips the building with all necessary appliances, including a stove, refrigerators and a washing machine. The house also has its own private dock where the work barge, appropriately named “Soon Come” after a common Jamaican expression, is anchored each night. The housing and facilities are ideal for a field school operation. And to our Jamaican cook, Handsome, who has been with us every year, goes all of the credit for keeping some very finicky eaters in “hog heaven.”



Anchored over the excavation, the "Soon Come" provides a work station for divers, who use suction dredges to remove sediments. Students learn to use pneumatic chisels to clean encrustations from iron artifacts. (Photos: Port Royal Project)

Seven tons of gear

If one had to cite a single thing that differentiates underwater archaeology from terrestrial archaeology—aside from the obvious presence of a lot of water—it would be the volume of equipment necessary to conduct the research. Last year, more than seven tons of equipment and supplies were shipped to Jamaica. Needless to say, if INA had to pay normal shipping charges for this gear, it would be difficult to continue to work on the scale that we do in Jamaica. To a large degree, the success of the Port Royal Project, and the other INA-sponsored projects on the island, has been possible because of the generosity of the Kaiser Aluminum and Chemical Corporation. For the past five years, Kaiser Aluminum has shipped all of our equipment and supplies in a transport container on the deck of one of its bauxite ships that sails back and forth between Louisiana and the company facilities at Discovery Bay on the north side of the island. In addition, the firm handles most of the paper work relating to customs. After our equipment has cleared customs, the Jamaica Defence Force transports everything across the island to Port Royal. It is only through the indispensable assistance we receive from such groups as Kaiser Aluminum and the JDF that we are able to continue the project economically.

When both students and supplies have arrived and are settled, the first order of business is to assemble the work barge. The *Soon Come* is a 12x24-foot, aluminum pontoon barge which was authorized by the Alcan International headquarters in Montreal, Canada, but which was designed and constructed by Alcan of Jamaica. It was donated to the project in 1983 and has been indispensable. Powered by a 55 h.p. Johnson outboard engine, the barge supports two diesel engines which power a low-pressure compressor sufficient to supply six divers on a hookah air system, as well as a water pump which operates two suction dredges.

The remains of the sunken city are located just offshore of

the present town of Port Royal, in the shallow waters of Kingston Harbour. They range in depth from approximately one to thirty feet. Visibility generally is adequate, but never great. Normal visibility is about four feet, although sometimes it is as good as ten feet or more—or as poor as one foot or less. To date, all of our excavation units have been seven to twelve feet deep. Because of the shallowness of the water, all diving is done with a hookah rig. For the same reason, water dredges with thirty-foot-long exhaust hoses that hug the bottom are used as the primary excavation tools. We do not use an air lift, which is common on many of INA's deep-water sites in the Mediterranean, not only because the shallow depth renders it ineffective, but also because the discharge exhausted above the divers' heads can severely foul the already poor visibility.

Well-rounded training

A typical day of work involves three teams of four divers, each diving for a three-hour shift; this enables at least a nine-hour work day. The members of a fourth, four-person team take turns throughout the day as barge tenders, looking after the needs and the safety of divers in the water. On the bottom, students work with a dredge, their hands, and trowels in 10x10-foot grid squares that are subdivided into four, 5x5-foot quadrants. While they may not be excavating ships' frames, they are following and exposing floor timbers, brick walls and floors, wall footings and other architectural features. The remains of rooms that sheltered the likes of Sir Henry Morgan, a reformed buccaneer who became lieutenant-governor of Jamaica, and Sir Hans Sloane, a physician whose fifteen-month stay on the island produced a natural history collection that formed the basis of the British Museum, are slowly and meticulously excavated. The positions of all objects, tools and furnishings found in these rooms are documented carefully, and the items are tagged, bagged,



Renovated officers' quarters provide housing for field school students. (Photo: Port Royal Project)

raised and taken to the conservation facilities housed in the Old British Naval Hospital, which serves as the project headquarters.

In a room on the second floor of the hospital, students and assistants who are not diving may be engaged in a number of tasks: recording their notes; drawing, photographing, conserving, sorting, cataloging or analyzing artifacts to enable the information to be put into a data base on the project computer; or they may be working on computer-generated illustrations of the excavation plans and artifact distributions. The volume of artifacts which we recover necessitates the daily use of the computer; in fact, students spend almost as much time inputting information as they do diving.

In summary, students participating in the underwater archaeological field school at Port Royal are exposed to a range of hands-on experience in excavation, recording, conservation and photographic techniques. In addition, they participate in the integration of a computer data base and artifact program, and its interrela-

tionship with a Computer Assisted Drawings (CAD) system, to plot automatically the various artifact distributions onto computer-generated excavation plans. All students are expected to take part in all of the activities of the excavation. Naturally, they do not all become experts in every aspect; however, they do have the opportunity to learn as much as they wish in the areas of special interest to them.

In addition, participation in the Port Royal field school serves as a testing ground to determine which students have what it takes to become an archaeologist. Some decide that it is what they want to do, regardless of the fact that the work is demanding and exacting. Some, however, discover that archaeology is not as romantic and exciting as they thought it would be, and decide to remain with their current academic majors. The field school gives students an opportunity to discover, in a controlled environment, what archaeology is all about and whether they have the mettle and the mindset required of a professional in the discipline.

When the summer is over and the excavation season is finished, our equipment is packed up again to begin the long trip back to Texas via overland transport and bauxite ship. By special agreement with the Jamaica National Heritage Trust, artifacts requiring additional treatment are brought to Texas A&M for conservation, documentation and analysis. While there, the materials are integrated into the teaching of conservation courses as well as a graduate-level seminar in historical archaeology. Each student is asked to write a term paper on some aspect of the material culture or lifeways of 17th-century Port Royal. In this way, the formidable task of analyzing and conserving a large volume of material is assisted. Moreover, by conducting and writing about detailed artifact studies, students learn firsthand the kinds of information and interpretations which can be derived from in-depth archaeological analysis and research.

The following summer, all conserved and analyzed artifacts are returned to Jamaica, along with copies of our excavation notes and written reports. The only thing we keep is information.

The City Has A History Of "Wracking"

By Jim Jobling

Being situated in the middle of 17th-century activity in the Caribbean, Port Royal has attracted "Wrackers," or professional treasure-hunters and looters, from its beginnings. The wrackers who survived the 1692 earthquake were able immediately to begin underwater recovery operations. The techniques they used were varied, and salvage continued for many years.

A more scientifically motivated operation was conducted in 1859 by Jeremiah Murphy, a Royal Navy helmet diver who made an air support dive on the city and identified the remains of Fort James.

In 1954, Mr. and Mrs. Alexi duPont discovered a flight of ten steps leading up to an arched doorway, but they were unable to relocate the feature during a subsequent visit. In addition, they also found quantities of bottles, bricks and other artifacts in the vicinity of Fort James.

Edwin and Marion Link visited the site in 1956 and made a brief exploration. They returned three years later to lead an expedition sponsored jointly by the Smithsonian Institution, the Institute of

Jamaica, and the National Geographic Society. Two areas—Fort James and the King's Warehouse—were excavated over a ten-week period, and a vast quantity of artifactual material was recovered. The team compiled and indexed real estate records from 1661 to 1670, and a fairly accurate map of pre-1692 Port Royal was drawn from the data.

Salvor Norman Scott and six colleagues briefly explored the site of Fort Carlisle in the summer of 1960. Tiles, bottles and clay pipes were recovered, as well as a wooden wheel, thirty inches in diameter, believed to have been part of a gun carriage.

From December 1965 to March 1968, Robert Marx was engaged by the Jamaican government to direct an extensive underwater archaeological excavation on the southwestern part of the sunken city. Marx excavated more than two acres of the submerged city, finding the remains of fish and meat markets, at least two taverns, three ships, numerous dwellings, brick walls and foundations, a cistern, and a wealth of artifacts. Marx's investigations represent the largest area of Port Royal excavated to date, and his extensive collection of artifacts and notes remains in Jamaica. While it has yet to be studied and published in detail, a number of reports on some of the more diagnostic materials have been produced.



Unique Pewter Set Sheds Light On Life And Trade

By Shirley Gotelipe Miller

Pewter artifacts from Port Royal represent the world's largest collection of late 17th-century pewter, the earliest English colonial collection, and the most extensive assemblage recovered from a single archaeological site. Prior to the 1987 excavation, more than 150 pieces bearing at least 50 distinct makers' marks and/or ownership monograms had been retrieved; examples excavated this year, as yet unstudied, have doubled the assemblage. Pewter plates, tankards, baluster measures, kitchen utensils, candle holders, medical syringes, and even a sundial are among the items recovered from the rubble of buildings destroyed in the disastrous earthquake of 1692.

Since pewter survives well in a marine environment, these artifacts suffered little during their three-hundred-year burial in Kingston Harbour. Diagnostic marks commonly applied to 17th-century pewter have been preserved, making the Port Royal collection an important source of information. Through various documented sources, many of these marks have been identified, providing vital clues to the occupants of buildings, the existence of provincial pewterers, and to local and overseas trade. In such ways, the pewter artifact assemblage has added immeasurably to archaeological interpretations of the site.

Makers' marks such as touchmarks and hallmarks have helped to trace the origins of particular pieces by identifying craftsmen and their places of business. Although archaeological evidence suggests the presence of a pewterer in Port Royal, most recovered objects have been of English origin, with a few having come from France, Germany or the Netherlands. Knowledge of the maker and place of origin of an artifact can help to identify channels through which pewter goods arrived at the colony, and perhaps even the merchant(s) who transported them. In addition, pewter artifacts bearing monograms or heraldic devices lend insight to the lifestyles and socioeconomic conditions of Port Royal's population. The presence of a marked object in an excavation unit implies that whoever owned it had some affiliation with the building under study. When coupled with other archaeological evidence, knowledge of such details greatly enhances our understanding of 17th-century Port Royal.

Pewter is a tin alloy containing lead, copper, antimony,

bismuth, zinc, or any combination of these metals. In the late 17th century, pewter production was governed by guild regulations, which determined both quality of alloy and workmanship. Four categories of English pewter, based on the grade of metals, may be cited: "fine" pewter—85 to 98 percent tin, alloyed with copper and no lead—used for most plates and some drinking vessels; "ley" metal, or common pewter—80 to 95 percent tin, alloyed with copper and some lead—used for measures, tankards and kitchen utensils; "trifle" pewter—80 percent tin, alloyed with antimony—used for buttons, spoons and other household items that were not finished on a lathe; and "black" pewter—containing up to 40 percent lead—cast into organ pipes, sundials, bottle caps, and other items where the chief consideration was low cost. Most alloys could readily be cast into hundreds of forms, and when turned and burnished by a skilled hand, the items could imitate the brilliance of silver. Its elegance and affordable nature made pewter popular with the rich and poor alike.

Guilds also classified pewter products by the amount of labor needed to complete a given piece. The term "holloware" included tankards, flagons, measures, and other objects requiring complex moulds with many pieces, such as candlesticks, chalices and salt cellars. Holloware moulds were very expensive, and each object, composed of several castings, required considerable skill to solder and to finish. "Flatware" denoted plates, serving trays, porringers, and other items that could be fabricated with simple moulds, although while easily cast, these objects still required a skilled hand and specialized equipment to complete. Other wares such as spoons, buttons, bottle caps and various household products took so little skill to make that any servant or travelling tinker could perform the task, given an adequate mould and some scrap metal.

The Port Royal collection

The guild classification is very useful in the study of Port Royal's pewter collection. Documentary sources indicate that three pewterers—Simon Benning, John Luke and John Childermas—worked in Port Royal prior to 1692. However, analysis of the makers' marks on recovered artifacts reveals that very few wares actually were

produced by these colonial craftsmen; rather, the vast majority were made in England and shipped to Jamaica in a finished state. Considering the makers' marks together with the types of items produced, it appears that Port Royal's industry was typical of English colonial pewtermaking: limited to mercantile activities and the production of simple wares. While the need for someone to mend damaged objects and to cast new ones must have been great in Port Royal, it is likely that, for financial and logistical reasons, a colonial pewterer would have opened his shop with minimal tools and a few simple flatware moulds.

The Jamaican collection is rich in fine examples of hollow-ware vessels, including a group of English baluster-shaped measures ranging in size from a gallon to a gill (1/4 pint), and a pint-sized measure, probably of French origin. These measures conformed to the Old English Wine Standards and may have been used in a public house or a tavern.

A particularly interesting item is a tankard of late Stewart or Charles II style, with a thumbpiece cast in the bust of a young boy with a flowing head of curls. This unique thumbpiece resembles the cherub's-head foot-supports that adorned contemporary German ecclesiastical pewter, but has no English comparison. Given the standard function of tankards—to hold wine and other spirits—the motif may be a representation of Bacchus, the Greco-Roman god of wine.

Adorning the lower half of a Charles II caudle cup, the swirled design called "gadrooning" is a motif borrowed from silver patterns and does not appear on English pewterware until around 1690. This implies that the colonists of Port Royal had access to the latest English fashion and technology. Caudle cups often were part of a church communion set, and this piece may have had an ecclesiastical function.

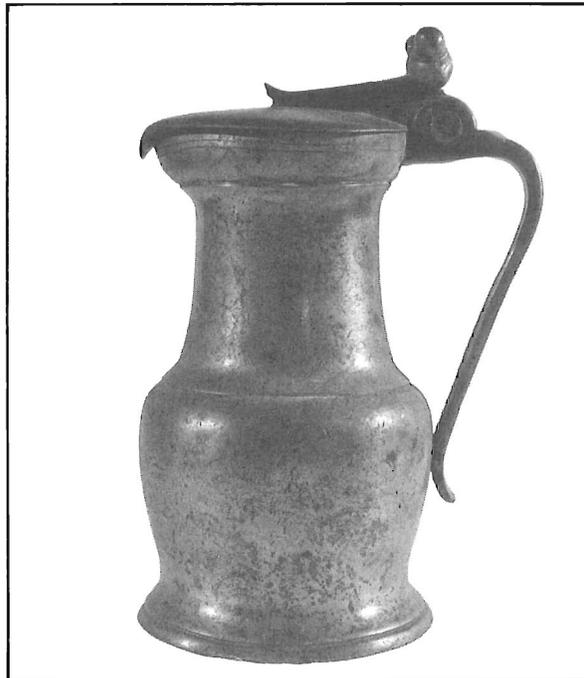
Porringers fall between the categories of holloware and flatware in both function and design. Cast in two separate pieces, they were fairly simple objects to produce, yet all Port Royal examples are of English style and show no evidence of local craftsmanship. Functionally, porringers served the multipurpose needs of any traveller or household, including to contain liquid and solid foods.

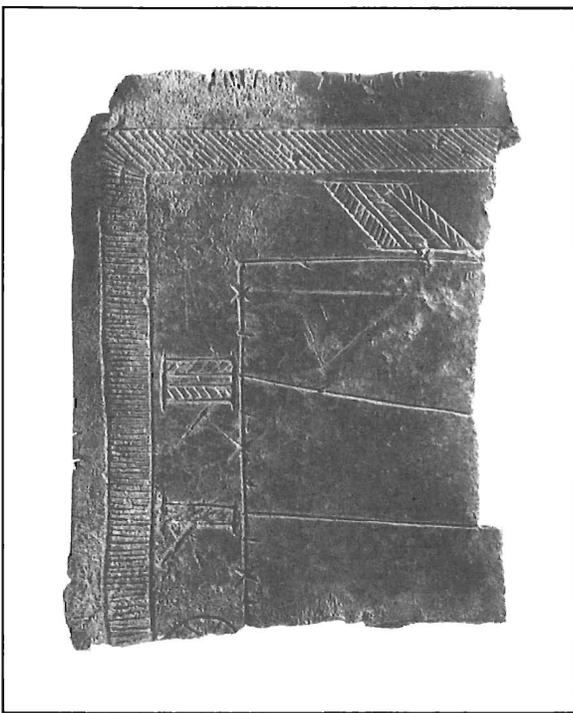
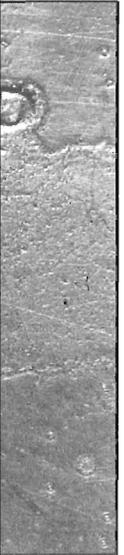
Despite the rich assemblage of holloware vessels, there is no evidence to suggest local production. Pewter marks invariably include the initials of the pewterer; among the few Port Royal holloware items which bear makers' marks, none contains the initials of the three craftsmen recorded as local pewterers.

Who was "TC"?

The extensive collection of flatware excavated from the sunken city is diverse in size and style. Although distinctions among terms in the literature sometimes are confusing, flatware generally can be categorized by size: plates having a diameter of less than 10 inches; dishes generally having a deeper bowl and ranging in diameter from 10 to 15 inches; and chargers being the largest serving wares, reaching as much as 30 inches in diameter. Rim width and design also are important aspects in the analysis of flatware. In the Port Royal collection, rims vary in width from more than 5 inches to less than a half-inch; and in design, from plain to multiple "reeded" or grooved. In addition to plates, three basins, a chamber pot, and possibly a patten also have been recovered, but these have not yet been diagnostic.

Makers' marks abound on the flatware in this collection. Marks functioned both as advertisement for the pewterer and as a means for guilds to regulate the quality of pieces produced. If a marked piece was found to be lacking in quality of workmanship or





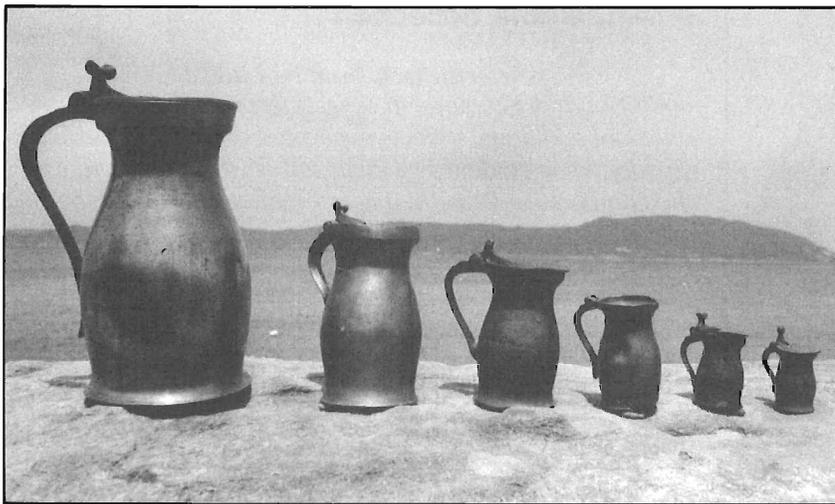
A remarkable collection

The pewter artifacts from Port Royal comprise a collection that is unique in several respects, and an abundance of additional objects excavated during the 1987 field season, when studied and analyzed, further will enhance the comparative value of this assemblage. Many of the special pieces and features are shown in the adjacent photos, described from left to right. 1. Among the most significant aspects of the collection is the diverse array of pewter goods that has been recovered—including plates, tankards, kitchen measures, candlesticks and medical syringes—which collectively provide a view of daily life in Port Royal. 2. A threaded cap used to seal a square case, or spirits, bottle bears the seal of the City of Edinburgh. 3. The unique thumbpiece on the lid of an English tankard may represent a wild-maned, chubby-cheeked boy; or it may represent Bacchus, the god of wine. In either case, one imagines that the visage saw many a drop imbibed. 4. The survivability of pewter in seawater is demonstrated clearly by the remarkable detail preserved on the handle of a spoon bearing the figures of William III and Mary II. This rare artifact is particularly special in the Port Royal collection for, having been issued less than two years prior to the earthquake, it provides testimony that the colonists had ready access to English fashions. 5. A delicate caudle cup from the period of Charles II may have been part of a communion service. 6. A pint-sized measure which survived the earthquake in good condition originally may have come from France. 7. Predominated by the indigenous pineapple, an oval-shaped touchmark also bears the initials "SB", possibly those of Port Royal pewterer Simon Benning. 8. A fragment of a sundial may have been saved as scrap pewter, intended for recasting later. 9. On the preceding page, hallmarks found on a broad-brimmed plate, including a lion, a sun or star, an anchor, and a set of initials—"IL"—probably represented Port Royal pewterer John Luke. (Photos: Shirley G. Miller and Port Royal Project staff)

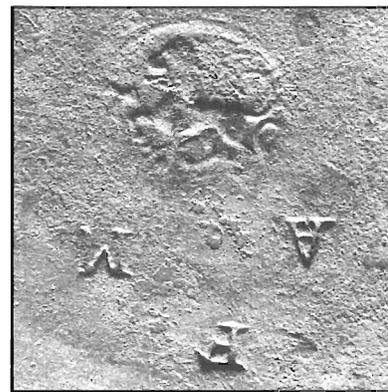
alloy, the pewterer would be fined heavily. Since flatware had to be made only of the finest alloy, guilds strictly enforced that it be labeled with makers' marks.

Among these marks, evidence is found of pewter production in Port Royal. Two narrow-rimmed pieces bear an oval-shaped touch containing the initials "SB" flanking a pineapple. This touch previously had not been recorded and does not correspond to any English pewterer; however, it could belong to Simon Benning of Port Royal. Further evidence supporting this theory is the fact that in 1661, the pineapple, a native fruit of the Caribbean, was incorporated into the Jamaican coat of arms and soon became a universal symbol of the West Indies.

Several broad-rimmed plates bear hallmarks which probably belong to Port Royal pewterer John Luke: a lion passant; a starburst design, which also may be a sun or a lion's head; an anchor;



A set of English baluster measures, ranging in size from a gallon to a gill, may be of French origin.



Flanking the forelimb and tail of the lion in this touchmark are the initials "T" and "C"—possibly those of Thomas Cropp.

and the initials "IL". However, the touchmark appearing on these plates does not belong to the same pewterer, since it contains the initials "TC". While it may seem strange that one pewter item should bear two distinct makers' marks, this occurrence was not uncommon. Sometimes pewterers would specialize in casting a particular type of ware, but would allow another pewter merchant or dealer to sell his products. The merchant was not required to mark the pewter, but had the option of applying hallmarks to advertise his trade. Therefore, John Luke probably was a merchant selling English wares, rather than a pewter craftsman.

So who was the pewterer with the "TC" touchmark? A family of Luke pewterers is known to have worked in Winchester, England, circa 1570-1700. If John Luke of Port Royal was a member of this family, his imported pewter likely came from this part of England. He may have acquired his wares from a craftsman in Winchester named Thomas Cropp, who is cited in guild records as having been fined for making flatware of less than acceptable quality in 1674 and 1689. That the touch is labeled "LONDON" is of no consequence; London was known for its fine products, and provincial craftsmen frequently tried to deceive customers by mislabeling their wares. Moreover, the "TC" mark does not correspond to any London pewterer. Closer examination of the touch reveals a lion standing sideways in front of a tree; this was the heraldic device for the small town of Andover, near Winchester. While other provincial pewterers of the time are recorded as having the initials "TC", Cropp was the only one from the Andover-Winchester area.

Port Royal's flatware therefore confirms and clarifies archival evidence on the activities of two colonists: Simon Benning, who made pewter articles for sale, and John Luke, who imported and sold pewterware.

Other pewter finds

Although a few are marked, none of Port Royal's other pewter artifacts attests to the activities of colonial pewterers; nonetheless, some of the objects are of great interest. Several rare spoons were found with the busts of William III and Mary II, English sovereigns from 1689 to 1694, cast onto the handle. That these coronation pieces dated to within two years of the earthquake once again indicates that the colonists enjoyed the latest in English fashion.

Two medical syringes were excavated, the larger of which likely was used for enemas or to treat venereal disease. A threaded bottle cap with the city seal of Edinburgh, Scotland, stamped onto it also was found. Such bottle caps sealed square case bottles, filled with gin or whisky, during the long journey across the Atlantic. The sundial fragment, made to lie flat or declining toward true north, had been purposefully mutilated; found at the south end of a room which may have served as a tavern, the sundial possibly was being saved as scrap to cast into buttons or buckles, or possibly to repair tavern measures, which no doubt needed patching from time to time.

In summary, we can infer that there were three sources for the pewter artifacts recovered at Port Royal: colonists who brought personal pewter possessions necessary to settle their new homes; merchants who imported pewter from abroad for local sale; and local craftsmen who cast new wares. Comparative data from elsewhere suggest that this pattern was typical for English colonies throughout the 17th and 18th centuries. The local pewter industry in Port Royal seems to have been limited to mercantile activities and to the production of less complex objects.

Why was colonial pewtermaking conducted on such a limited basis? Pewter tools and moulds were expensive; almost no other craft necessitated such a large initial investment. A colonial pewterer had to acquire all of his own moulds, and to import all of his raw materials, while English craftsmen acquired raw materials locally, and either could share moulds with other guild members or specialize in a particular type of ware. Such circumstances made it impossible for the colonial pewterer to compete with cheaply made and imported English items. However, he could create a thriving business by repairing damaged wares and recasting old metal into new pieces.

Many fine examples of antique pewter exist in museums and private collections throughout the world. However, due to the lack of provenience data, valuable historical and cultural details about the people who made, sold, used or owned the objects has been lost. The Port Royal pewter collection provides information essential to our understanding of the 17th-century pewter industry as a whole. More importantly, the collection can provide invaluable evidence in the interpretation of archaeological investigations at 17th-century Port Royal.

Counterfeit Stamp Is A Curious Find

By Diana Thornton

Coins are an integral part of history, reflecting customs and politics and their change through time. In archaeology they have the added value of precise dating, and display external cultural contact and influences. Here, counterfeiting is an added facet in the picture being formed.

By the mid-17th century, dollars from both Spanish and colonial mints were becoming the chief currency in all of the New World settlements; by the 18th century, Mexican and Peruvian dollars were circulating widely in Europe. In Jamaica, Spanish American coins were abundant, the supply coming from other Latin sources, despite the fact that the island was under English rule.

Counterfeiting has been practiced ever since there was anything of value to be falsified for personal gain. The counterfeit is as much a work of skill and art as the genuine article. A bronze- and tin-based alloy often was used to imitate gold. "Free" gold or silver could be obtained easily by filing or clipping the edges of genuine coins. Pots have been discovered full of shavings from coins; and, by a statute of Henry V declaring the clipping of money to be treason punishable by death, it can be seen that this was a major problem. The practices of milling (a coin rim raised in relation to the surface), reeding (vertical lines on the edges), and beading (small indentations at the edges) were instated by the late 18th century to prevent this poaching.

At Port Royal, a wrought-iron coin die was found during the 1985 excavations. The die falls in the category of "cobb" dies, which, though usually round, were the common type of the period. This particular die was well used, as the end opposite of the stamp is splayed and disfigured from heavy hammering.

The coin that this die represents is the well-known gold doubloon (eight escudos), the highest value coin of the currency. Its marks indicate the coin was supposed to be minted in Lima and assayed by "N" in 1744/48. However, there are several discrepancies here that point to this coin die being a counterfeit. Although inconsistencies do occur on genuine coins, there are just too many that must be accounted for in this instance.

First, and most obvious, are the coin's two dates of 1744 and 1748. The date within the columns reads 744. It was the convention for the date of minting to be abbreviated by dropping the first digit—which, of course, was always 1—thereby changing 1744 to 744. The date was often repeated in the legend of the reverse and on the obverse, making a total of three dates on a coin, all supposedly the same.

However, the legend reads: "H[IS]PANPARUM:REX:1748." This is a shortened and altered version of HISPANIARUM ET INDIA-RUM REX, meaning "King of Spain and the Indies," which was common during the reigns of Felipe II through Fernando VI. The demise of Felipe V in 1746 and the accession of Fernando VI thereby places the coin in two reigns. Usually when there is a change of monarchs, there was only a one- or two-year time lag for the new die or design



The counterfeit coin die and its false impression. (Photo: Lillian Ray; Drawing: Helen Dewolf)

to be transported overseas. Although overdates occasionally occur on authentic dies, they normally incorporate only a one-year difference—for example, 1797/8; so a gap of four years is unlikely.

Secondly, the assayer's mark is wrong. An assayer guaranteed the weight and purity of the metal in the coin, and his "signature" was his initial in the die. Through the use of archival records, the assayer's mark actually can serve to date a coin within set years. Upon careful examination, it was determined that the assayer's mark on the Port Royal coin die was an "N". The individual who used this mark assayed at the Lima mint from 1728 to 1740. However, if the die was authentic, the assayer's mark should be a "V", representing the person who assayed at Lima from 1739 to 1752. There probably was no way the counterfeiter could have known that "N" had stopped assaying.

Quite often a counterfeiter would deliberately flaw his work with a nonsensical legend, two mismatched dates, or a portrait facing the wrong way. One reason for this was often so that he could easily recognize a coin if it ever came back to him. In a time when many people could not read well, if at all, it did not matter much if the legend read "HISPANIARUM" or "HPANPARUM". Even on genuine coins, mistakes and abbreviations were allowed to pass.

In addition, the fact that the die was found at Port Royal suggests that something is wrong. Dies were regarded just as we regard our modern plates and dies—they were the money. Used or broken dies, if sent back to Spain, were usually defaced so that if it fell into the wrong hands, it would not be usable.

Finally, because the coin which this die represented was gold, there is added credibility to the claim of counterfeit. High value coins obviously were the preferred subjects of duplicity.



Abundant Pipe Remains Attest To The Popularity Of Smoking

By Karen Gardner

When portions of Port Royal sank on June 7, 1692, the local citizens received a terrible blow: for not only did they lose a part of their city, but they also lost one of their suppliers of a day-to-day necessity—the white clay tobacco pipe.

The habit of smoking tobacco was unknown to Europeans before they encountered the plant and the pastime in the New World. However, once adopted, the use of tobacco smoked in a pipe spread through Europe quickly, with a resulting pipemaking industry developing almost as rapidly. In England, the industry was centered primarily in London, although eventually it spread to Bristol, York and Gateshead. The export of wares to the West Indies, and specifically, to Jamaica and Port Royal, appears to have followed the development of the industry in England, with supplies coming first from London, then later from other cities. Virtually all of the pipes recovered at Port Royal came from England, a result of strict trade controls exercised over the island.

Clay for the pipes was imported into pipemaking centers from areas such as Kent, Dorset and the Isle of Wight. The clay was used to form blanks in a rough pipe shape by hand, after which the bores of the stems were threaded, also by hand. The blanks then were placed in a mould to achieve their final shape, allowing the bowls to be additionally formed by hand tool or machine. The pipes were removed from the moulds, excess clay was trimmed away, and the pipes were burnished. At this point, while the clay was still fairly soft, decorations or adornments were added. The pipes then were fired, usually in a small coal- or wood-fueled kiln, and when this process

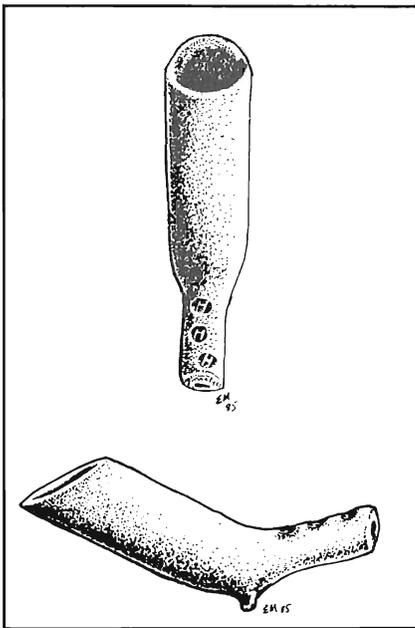
was completed, they were ready for sale and trading ventures.

The white kaolin (clay) pipes recovered at Port Royal—and specifically, those from Room 5 of Building I—number in the thousands, and are typical of examples found in England at the time. While all pipes may be described according to several basic features, a range of variations for each attribute may be found, with differences based primarily on the shape of the bowl and the shape of the base of the bowl—that is, whether it has a flat heel or spur-like base. Of the pipes excavated from Room 5, approximately ten style groupings were identified.

Decoration of pipe bowls and stems was rare in the 17th century, and when it did occur it is usually involved an incised or impressed design. Of the Port Royal pipes with some motif, most have a simple decoration known as milling or rouletting around the rim of the bowl, though rarely encircling it completely. Rouletting was done with a denticulated tool, or with a button-like object, and the resulting patterns, at least on the Port Royal examples, are very inconsistent in terms of depth, length and continuity of impression. These inconsistencies suggest that the decoration was added after the pipe had been moulded, and apparently by someone who was bored with the task.

In addition to the rouletting, some of the pipes also have initials impressed onto them—generally very simple letters, often carelessly applied. Many are off-center or crooked, and many are even upside down. Most of these are found on the back of the bowl—the part that faces the smoker, although a few are located on the side of the bowl or on the heel of the pipe. Thirteen different sets of initials are represented.

Fortunately, trading records for this period are still available, and these have provided evidence about which English makers



An early 17th-century Dutch cartoon was intended to comment on the popularity of smoking. Many of the red clay pipes recovered at Port Royal had markings impressed on the upper side of the stem. Artifacts such as a tankard, stemware, a porringer, and kaolin pipes may have been possessions of necessity or indulgence in Port Royal. (Photo and drawing: Port Royal Project)



were exporting pipes to the West Indies. The majority appear to have been from London and Bristol. In some cases, the records have been sufficient to determine with a fair level confidence the identities of certain pipemakers. Among the initial sets, three are most common: "LE", "LB" and "WE". The only pipemaker with the initials "LE" working at the time was Lluellin Evans of Bristol. The initials "LB" have been attributed to Lawrence Bull, also of Bristol, who is definitely known to have made pipes for Indies export. The initials "WE" almost certainly were those of one or two pipemakers working in Bristol under the name of William Evans. The fact that all of these pipemakers worked in Bristol may suggest that this particular collection came from a shipment received in Port Royal just before the

earthquake. Moreover, because of the quantity, and the fact that only eight of the pipes had been smoked, we can infer that Room 5 probably was some kind of shop where smoking pipes were procured.

Thus, the picture we have of the white clay pipe collection from Port Royal begins with an English maker producing his wares for trade with the West Indies and enduring the haphazard quality of decoration applied by apprentices bored with their work. Nonetheless, the shipment was dispatched to the colonies, where it ended up in Port Royal to be purchased by a shopkeeper to sell to his customers. Unfortunately, his shop sank to the bottom of Kingston Harbour, and there the pipes remained for nearly three centuries.

Crude Red Pipes Reflect Local Traditions

By Kenan Heidtke

In addition to the volume of white clay tobacco pipes which have been recovered, excavations at Port Royal have yielded a significant number of red clay pipes and pipe fragments. Having been fashioned by hand rather than fabricated in a mold, these red pipes are much more crude than their English counterparts. And, unlike the white pipes, which are found on English colonial sites throughout the New World, the red pipes usually are found only in the Caribbean, and almost exclusively on the island of Jamaica.

Stylistically, red clay pipes date from 1645 to 1710. Because of their mode of manufacture, they cannot be dated by the Harrington method, which has established a chronology for mass-produced white clay pipes based on variations in stem bore diameters. The contexts in which red pipes are found support the stylistic dates.

One of the most interesting aspects of the red clay pipes is the large number of distinct markings found impressed into the upper side of the stem where it meets the bowl. More than two hundred

different marks have been found on the pipes recovered at Port Royal. The most likely explanation for these marks is that the pipes were made from a local clay by a large number of individuals, possibly slaves, who then took them to a central kiln to be fired. The use of red clay pipes appears to have died out as manufactured English pipes became more available. At Port Royal, the red pipes are found only in excavation layers pre-dating 1735.

A 17th-century manuscript identifies John Pope as the man responsible for red-pipe production in Port Royal, and also indicates that these pipes were used among lower social classes. Describing the town prostitutes, the author of the document notes that they, "in their smockes ore linnen peticotes, bare-footed without shoes or stockings, with a straw hatt and a red tobacco pipe in their mouths, [will] trampoline about their streets in this their warlike posture, and thus arrayed will booze with a cupp of punch cumly with anyone."

Given the historical sources and the archaeological context in which these red clay pipes are found, it would seem that their main users were the same colorful band of pirates, prostitutes and rogues who helped Port Royal to earn its reputation as the "wickedest city on earth."

Bones Offer Clues To Everyday Habits

By Cristi Hunter

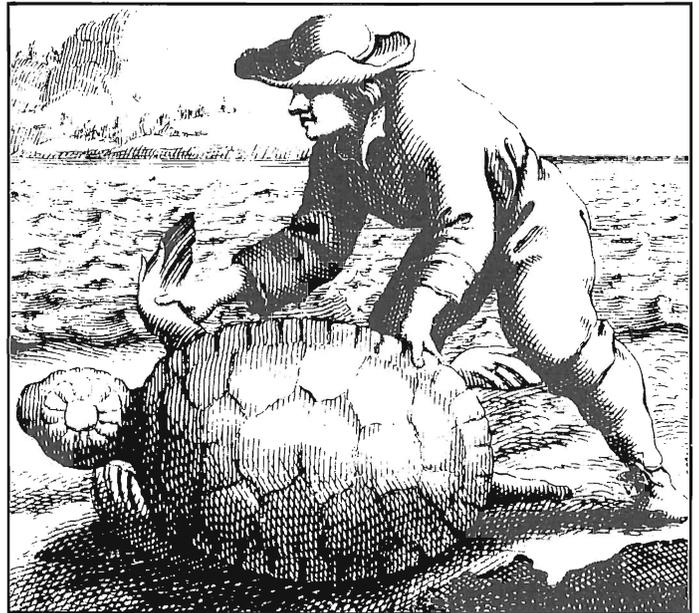
Almost immediately after its discovery, Spaniards stocked the New World with cattle, horses and pigs, all of which increased in population on most islands and the mainland. Many of these animals still were present in Jamaica when the English seized the island from the Spaniards in 1655. After the founding of Port Royal, the city quickly grew in size, such that by the time of the 1692 earthquake, the local population consisted of several thousand residents as well as a fluctuating population of soldiers, sailors, buccaneers and slave-dealers.

Analysis of vertebrate faunal remains excavated at the sunken city, representing roughly a thirty-five-year period between Port Royal's founding and the 1692 earthquake, provides information concerning the economic and behavioral activities of early inhabitants. The recovered remains include sea turtles, cows, pigs, caprines (sheep/goats), chickens, turkeys, cats and rodents. No shell or fish remains were collected because of the possibility of contamination by naturally occurring specimens in a marine environment.

Sea turtle and bovine remains comprise the two most common animal taxa present in the Port Royal vertebrate faunal assemblage. Specimens of both taxa exhibit extensive saw, chop and cut marks caused by butchering. In addition, the skeletal elements of each of these taxa present in the collection indicate that the animals were brought to Port Royal alive and were butchered near to where they presumably were eaten and their remains discarded. The skeletal elements which indicate the activity of localized butchering include bones of the skull, limbs, vertebrae, and feet of a cow, and virtually all of the elements of a sea turtle, including bones of the skull, shell, and flippers.

Both sea turtles and cattle may have served a dual economic purpose at Port Royal. The extensive evidence of butchering on the skeletal elements leaves no doubt that these two animals were important food items for inhabitants; however, each also may have been important for other commercial reasons. The hides of cattle were a primary export item from the Caribbean for both the Spaniards and the English. The commercial value of sea turtles varied by species, with the two most useful species being the green sea turtle, because of its food value, and the hawksbill, because of its "tortoise" shell used in the manufacture of jewelry and ornaments.

The vertebrate faunal remains recovered from the early occupation of Port Royal indicate that a broad variety of meat items was eaten by the inhabitants. An overwhelming majority of recovered remains represent Old World species; however, the sea turtle, indigenous to the Caribbean, also played an important role in the diet of Port Royalists. In addition, sea food from a variety of large marine invertebrates and from fish undoubtedly had a significant place in their diet, although this cannot be documented from the recovered faunal remains.



Colonists in Jamaica so relied on the abundant turtle resources of the Cayman Islands, ninety miles to the west, that they established fishing stations on the closest island and developed a regular pattern of exploitation and trade.

History ...

Continued from page 3

hurricanes have struck the ill-fated city, the devastating storm of 1951 leaving only four structures standing.

The 18th and 19th centuries saw a steady decline in the town's importance and prosperity, although it was enhanced to some extent by the presence of the British West India Naval Squadron. The spit was refortified, and a large naval dockyard with greatly expanded facilities—including a coaling station, hospital complex, and administrative center—was built when the town became the headquarters of the Caribbean Fleet. However, in 1905, the Royal Navy fleet system was reorganized, and the Port Royal base was closed.

Port Royal today remains a small, isolated town at the end of the Palisadoes sand spit. However, by virtue of their heritage, the 1,800 inhabitants view themselves uniquely, as "Port Royalists," rather than simply as Jamaicans.

RESEARCH NEWS

Spring Graduates

Spring 1987 graduates from the Texas A&M University nautical archaeology program, and the titles of their master's theses, included: Denise C. Lakey, "Shipwrecks in the Gulf of Cadiz: A Catalog of Historically Documented Wrecks from the Fifteenth through the Nineteenth Centuries"; Mark D. Myers, "The Evolution of Hull Design in Sixteenth Century English Ships-of-War"; and Cemal M. Pulak, "A Late Bronze Age Shipwreck at Ulu Burun: Preliminary Analysis (1984-1985 Excavation Campaigns)".

Correction

In the last issue of the INA Newsletter, a headline on page two stated, "Research by staff and students spans/31 millennia of maritime enterprise." While the Institute presently is excavating the oldest shipwreck yet found under water, the site is not 31,000 years old. The headline should have read, "31 centuries." The editor apologizes for this error, and thanks INA member N.C. Fleming for noting it.

From The Editor

With this issue, I will end my role as editor of the INA Newsletter. I cannot do justice to the job living distant from INA headquarters as I now do.

I would like to thank the many people who helped to make this brief job a complete pleasure: Drs. Bass, Frey, Steffy, van Doorninck and Hamilton, and especially Becky Holloway, who were untiringly patient and helpful each time I needed assistance; the staff members, students and colleagues, who contributed articles, illustrations and information; and the membership, who provided positive feedback and useful suggestions. All of you, more than I, should claim credit for any success which the Newsletter has enjoyed during the last three years.

Nautical archaeology students Diana Thornton and Cheryl Haldane will share the responsibility of newsletter production. I hope you will support them enthusiastically.

KC Smith



INA Board Member George O. Yamini (c) and Texas A&M Vice President for Development Dr. Robert Walker (l), talk with Tom Oertling in the Molasses Reef Wreck conservation lab. (Photo: KC Smith)

Yamini Gift Enables Endowed Professorship

An endowed professorship in nautical archaeology has been established at Texas A&M based on the proceeds from a gift of land valued at \$150,000 from INA Board Member George Yamini and his wife, Sara. With a grant from the University matching the value of the Aransas County property, a \$300,000 base has been created to support the prestigious faculty position.

The endowed position, the eighth established within Texas A&M's liberal arts program in two years, will be known as the Sara W. and George O. Yamini Professorship in Nautical Archaeology. The gift was announced last spring by Dr. Robert L. Walker, vice president for development.

A student at the University during the late 1930s, Yamini, now a Dallas-based realtor and investor, previously has donated to a President's Endowed Scholarship for outstanding Texas A&M students. He was a gubernatorial appointment to the University's Real Estate Research Center for seven years, and presently serves as advisory director of the real estate committee for the Texas A&M Development Foundation.

Having long been interested in ships and the sea, he has been a member of the INA Board of Directors since 1983. He reiterated

his interest last spring at the time of the announcement by noting,

"The discovery and exploration of shipwrecks and the retrieval of artifacts are adventurous and even romantic activities. By studying the relics, we acquire new knowledge and in some instances dramatically change our concepts of commerce, transportation and life as they existed in certain eras of history."

According to INA Archaeological Director George F. Bass, the Yamini endowment is the largest gift which nautical archaeology has ever received earmarked specifically for scholarly aspects of research rather than fieldwork.

"Few people outside our field are aware of all of the library and museum research that follows the glamorous diving," Bass noted at the time of the announcement. "We are particularly grateful to Mr. and Mrs. Yamini because of the importance of their gift to our more scholarly pursuits that follow the location and excavation of artifacts."

Bass holds an endowed chair in nautical archaeology established at the University in 1985.

Based on a report by Ed Walraven



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