

PEERING INTO THE ‘COCOON’: ARCHAEOLOGY AS A STRATEGY FOR CONSERVING BERMUDA’S VERNACULAR ARCHITECTURE

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by John R. Triggs
Associate Professor,
Department of Archaeology and Classical Studies,
Wilfrid Laurier University,
75 University Avenue, W.,
Waterloo, Ontario, Canada N2L 3C5

Abstract

For decades it has been widely recognized internationally that, in addition to traditional architectural study and historical research, archaeological research must form an integral part of a built-heritage conservation program. Heritage legislation in Bermuda, however, does not require that archaeology, or archaeological approaches to recording, be conducted on historic houses. These omissions place the cultural integrity of some of the oldest English-tradition historic houses in the western hemisphere in jeopardy. A case study of ‘Cocoon’, a reputed 18th century residential building in Warwick Parish, Bermuda, illustrates how a comprehensive conservation approach may be conducted and the type of information that can be derived from a short-term study.

BUILT HERITAGE CONSERVATION IN BERMUDA

In 1987 the National Parks Act provided for the protection of Bermuda’s 400 year old fortifications heritage. Within this Act the fortifications and landscape together are viewed as archaeological resources to be managed and protected. According to a commissioned report on the status of the fortifications, these historically significant monuments, some of which have received World Heritage status, should be subject to the principles of heritage conservation management (Harris 2003). These principles include curatorial support aimed at obtaining, accessioning, storing and caring for portable artifacts and archival records; conserving the fabrics of the forts and proper treatment of artifacts composed of unstable materials; conducting documentary research designed to place sites in historical context, and the compilation of photographic, documentary and other sources of archival records; and recognition of the fact that fortifications, above and below ground, are archaeological entities which can only be studied and understood by the application of archaeological principles and methods. Despite the uneven application

of the tenets of the National Parks Act since 1987, it is nevertheless well understood that the fortifications of Bermuda are significant cultural monuments deserving of study, ongoing maintenance, protection and conservation.

Legislation for the preservation and conservation of historic buildings, primarily domestic structures, was introduced to Bermuda in 1974. Under current legislation if a structure is listed under Section 30 of the Development and Planning Act, this may require an owner to obtain permission to modify an historic building. In cases where a house is not listed under Section 30, the owner may consult with the Planning Department and its advisory group, the Historic Buildings Advisory Committee, free of charge for advice on how to respect the architectural integrity of a building. The Traditional Building Guide published by the Department of Planning and the Bermuda National Trust in 2002 contains a wealth of information on building materials, the history of domestic architecture and practical steps on how to maintain and upgrade existing homes while not compromising the heritage value of the house. While this type of legislation is laudable in its goal of heritage conservation, existing Planning Act legislation and regulations do not require that archaeological research be conducted on either unlisted or listed homes when change or addition is planned.

It is argued that this omission results in an irretrievable loss of information and an inability to fully understand the structural evolution of a building and the link between the material culture and the historical record. In essence the different approaches used for the conservation of historic homes compared to forts results in a two-tiered conservation program for built heritage whereby the former are seen as historically less significant than their military counterparts. This is despite the fact that the last four decades have witnessed widespread international concern with conservation and preservation programs and legislation for various types of architectural heritage.

Internationally, the formation of ICOMOS (International Council on Monuments and Sites) has been instrumental in implementing a series charters and resolutions for the conservation of architectural heritage, including vernacular architecture, on a global scale. In the Venice Charter of 1964, Article 11 specifies that restoration of any monument must be preceded and followed by an archaeological and historical study. The Appleton Charter is of particular importance in that it recognizes culturally significant

sites as artifacts ‘demanding protection as fragile and complex historical monuments’ (www.international.icomos.org/charters/appleton). One example for which archaeology was recognized as a source of primary information on par with the documentary record is the conservation work conducted at a mid-17th century Jesuit mission headquarters of Sainte Marie among-the-Hurons in Ontario, Canada. The tenets of two ICOMOS charters; i.e., the Appleton Charter and The Charter for the Preservation of Quebec’s Heritage under the Deschambault Declaration, guided archaeological excavation in a two year program aimed at the restoration of the oldest masonry in the province (Triggs 1999).

Unfortunately, for some Nations vernacular architecture that falls outside of an ICOMOS designation does not necessarily receive the archaeological attention it deserves. In the United States, for example, the formation of HABS (Historic American Building Survey) in 1933 represented the nation’s first federal preservation program aimed at documenting architectural heritage. Over the decades HABS has created a standardized documentation procedure for heritage structures, including historic homes, consisting of historical research, measured drawings and photography (Burns 2004)¹. Although each HABS case study results in a detailed report using standardized conventions for each, archaeology is not included as a methodology for sites with standing architecture. This is despite the fact that professional organizations such as the Society for Historical Archaeology and the Society for Industrial Archaeology are devoted to using archaeology as a research methodology on sites that contain above- and below-grade architecture.

The situation is different under English and Canadian law. In England, for example, under the PPG 16 (DoE 1990) evaluation of an archaeological site with buried structures and deposits must occur prior to decisions being made regarding the management of these resources within a planning framework. Under Canadian federal and provincial legislation designated historic homes are subject to archaeological research within the conservation mandate. The Ontario Heritage Act of 1974 also provides for the preservation and conservation of heritage homes through easement

¹ A similar standardized recording methodology was published by the Royal Commission on the Historic Monuments of England in 1991, Recording historic buildings: a descriptive specification, 2nd edition.

agreements with property owners that put certain restrictions on homeowners to ensure that the heritage integrity of a building is retained. Operating within this legislation, the Ontario Heritage Trust, a provincial government organization, integrates historical and archaeological research on several designated heritage properties and museums. Moreover, the provincial Ministry of Culture further ensures that designated sites with standing architecture be subjected to archaeological investigation prior to any planned impact. Parks Canada has within its mandate historic homes, many of which have been subjected to archaeological research under Commemorative Integrity Statements (CIS) whose purpose it is to preserve the archaeological, historical and architectural aspects of nationally significant sites.

A fundamental tenet of conservation, one that recognizes archaeology as an integral part of the process, is that management of a resource cannot be effective without first understanding the building under study (Stocker 1994:3). Until a conservation program that recognizes the value of archaeological research is instituted for historic houses in Bermuda, however, these monuments, witnesses to the English colonization of the New World from the 17th to the 19th centuries, will be subject to half measures that do not offer adequate protection or ensure that all potential information is recorded in the individual building archive. It is only by placing historic houses on the same level of heritage significance as fortifications, whereby modern, comprehensive conservation principles are adopted, that this aspect of Bermuda's history will be protected. If this situation is not addressed soon, and the built component of the domestic landscape continues to be regarded as unworthy of a comprehensive conservation program, one that incorporates historical, architectural and archaeological information and techniques, there is a very real danger that Bermuda's vernacular architectural heritage could be irretrievably lost.

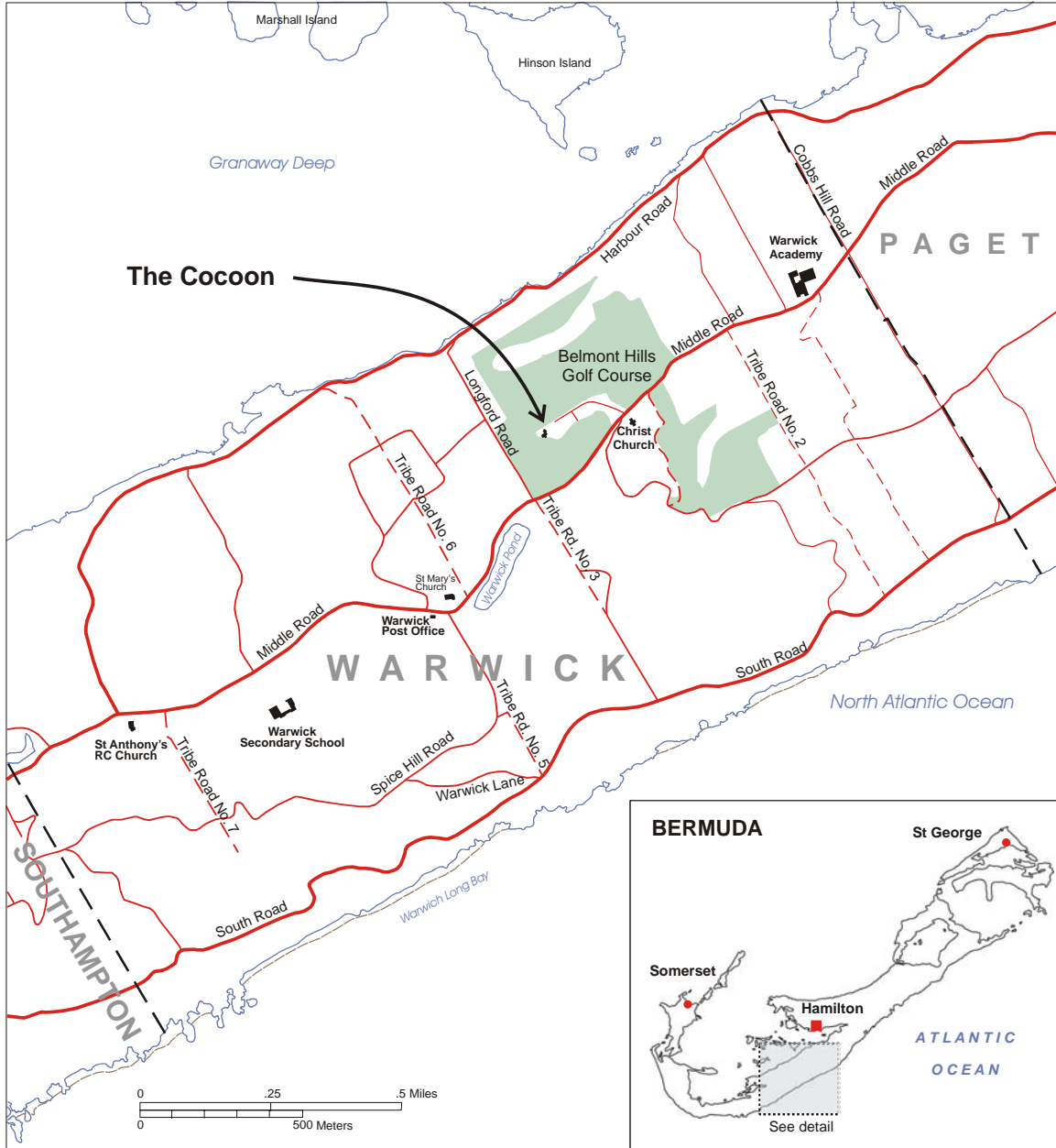


Figure 1 Location map of Cocoon, Warwick Parish, Bermuda.

A COMPREHENSIVE CONSERVATION PROGRAM FOR ‘COCOON’

In spring 2005 a team of archaeologists led by Dr. John Triggs of Wilfrid Laurier University, Waterloo, Ontario, and Dr. Clifford Smith, formerly of the Bermuda Maritime Museum (BMM), conducted an investigation of an historic house known as ‘Cocoon’ located in Warwick Parish (Figure 1), the ruins of which are purported to date



PLATE 14. "The Cocoon," Warwick. South Front.

Figure 2 Plate 14, 'The Cocoon,' Warwick. South Front. In Humphreys, *Bermuda Houses*, 1923, pp. 37.

to the 18th century². Little was known of the house prior to the investigation. Cocoon, thought to have been constructed ca. 1700 on stylistic grounds, is pictured in several photographs in John S. Humphreys' book *Bermuda Houses* published in 1923 where it is shown as a neat, single story residence with what appears to be a full cellar below the main floor (Figure 2). Further documentation of the house in 1996 by the Bermuda National Trust³ included the identification of an outbuilding, presumably a kitchen, now located in a slat house, and also a few 19th century newspaper obituaries connected with people living at what was then called 'Locust Hall'⁴.

² The author wishes to thank Cummings and Kathy Zuill for granting permission to conduct the excavation for eight days in April and May.

³ The Bermuda National Trust Historic Building Data Sheet, file No. Warrick 30, Assessment No. 10084-9016, Feb. 1996.

⁴ Entries on the National Trust file are as follows: Locust Hall - 29.3.1892 Locust Hall, Warwick - Miss Margaret F.T. Adams, aged 80 died on March 24 at . . . ; 16.10.1888 C.J. Lighthouse, 81, widow of J. B. McD(onald?) late, died on . . . ; Locust Cottage - 1.6.1858 - William J. Firth(?), birth at . . . ; 13.4.1825

To supplement this scant documentation, historical research on the house and property was conducted by Clarence Maxwell (former Historian, BMM) and Linda Abend, Registrar, BMM, using materials found in the Bermuda National Archives. Documents usually consulted for this purpose include deeds of sale, inventories, wills and conveyances, parish assessments and family papers (Department of Planning Bermuda National Trust [DPBNT] 2002: 14). However, attempts to trace the history, date of house construction and ownership of the property to determine who resided at the house throughout its history have been thwarted by a seeming dearth of archival records. To date it has not been possible to associate family names with the residence in the 18th century. Until this can be done it is not possible to place the house and property within a larger historical, social, economic and political context using the documentary record and it is for this reason that an archaeological investigation of the property assumes more prominence in a comprehensive heritage study.

In addition to historical research traditionally carried out for heritage structures, a comprehensive study of a heritage site where architecture is present involves total station surveying, an archaeological investigation employing traditional excavation techniques, and specialized documentation of standing architecture using archaeological recording techniques adapted for this purpose (see Appendix). This type of study is particularly important on heritage sites for which there is little information available in the documentary record.

In the present study precise mapping using a surveyor's total station (laser as opposed to analog) proved to be an efficient method of rapid digital data collection that facilitated a map overlay analysis in which various rooms within the house were cross-referenced with extant wall foundation ruins. Had more time been available, continued digital mapping of the standing architecture would have provided a means whereby three-dimensional images could be generated. Archaeological excavation at Cocoon over the relatively brief period resulted in the recovery of thousands of artifacts. Items such as food bone, ceramics, container glass and architectural items such as nails and window glass discussed below provide insight into the lives of the people who once resided here

- Emily Petunia Wingood, 27 . . . David W(ingood?). Died of consumption at . . . Bermuda Index of Obituaries.

and, just as importantly, serve to place Cocoon within a larger social, economic and historical context. Lastly, recording the extant standing architecture involved the production of traditional scale drawings of standing walls, wall foundations and buried walls revealed through excavation. These drawings provide important details of size, location, construction techniques and materials. Moreover, application of another archaeological recording technique, the Harris matrix (Harris 1989), represents a departure from traditional methods of architectural recording. As described in the Appendix, the use of the matrix allows for a sequence of building construction and modification to be constructed in an objective manner which then serves as the basis for describing the evolution of the structure under examination. Each of these phases of archaeological investigation is discussed below.

TOTAL STATION MAPPING

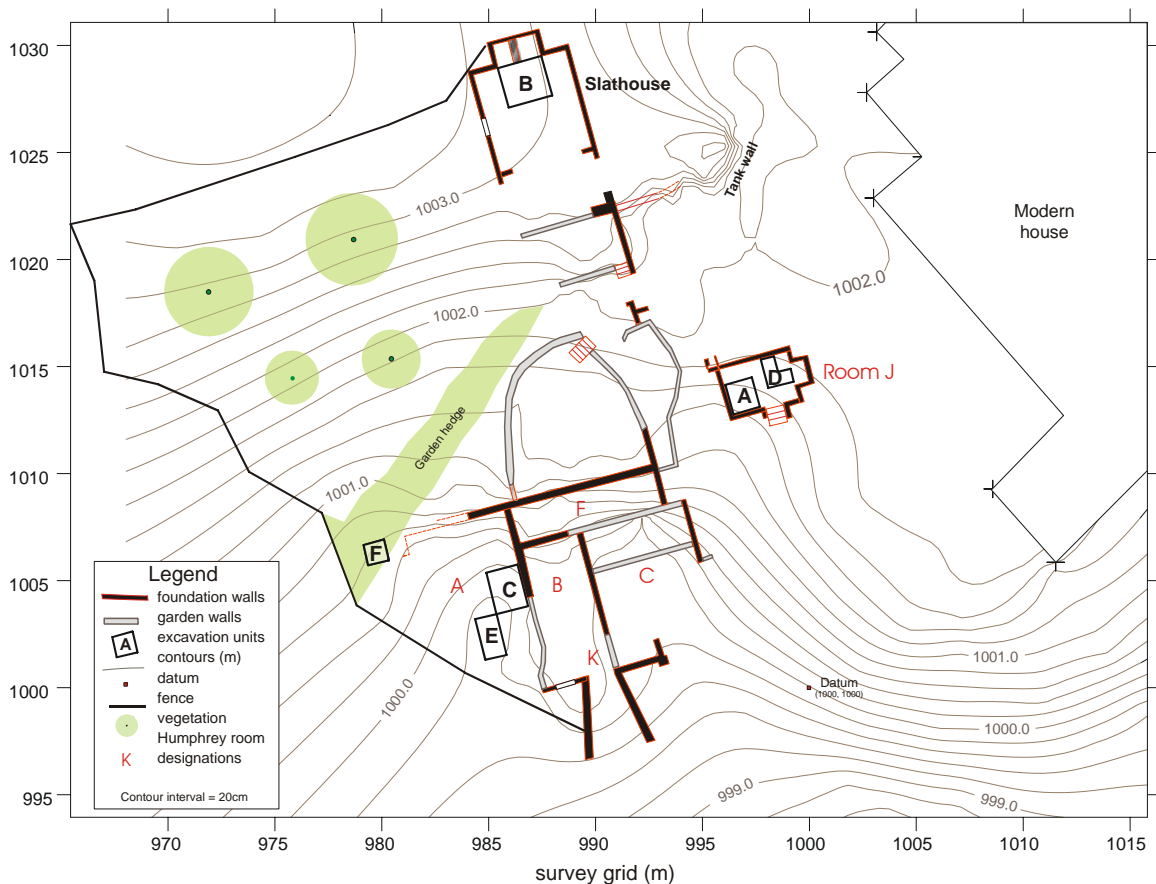


Figure 3 Site contour plan showing structures, excavation units and Room designations after Hunphreys 1923.

All mapping on the site was done using a surveyor's total station. This accurate and efficient mapping instrument resulted in almost 900 data points being collected in the

seven days on site. A contour map, quickly produced and easily manipulated, allows for the archaeological site to be related to its immediate environs. The ruins of Cocoon are

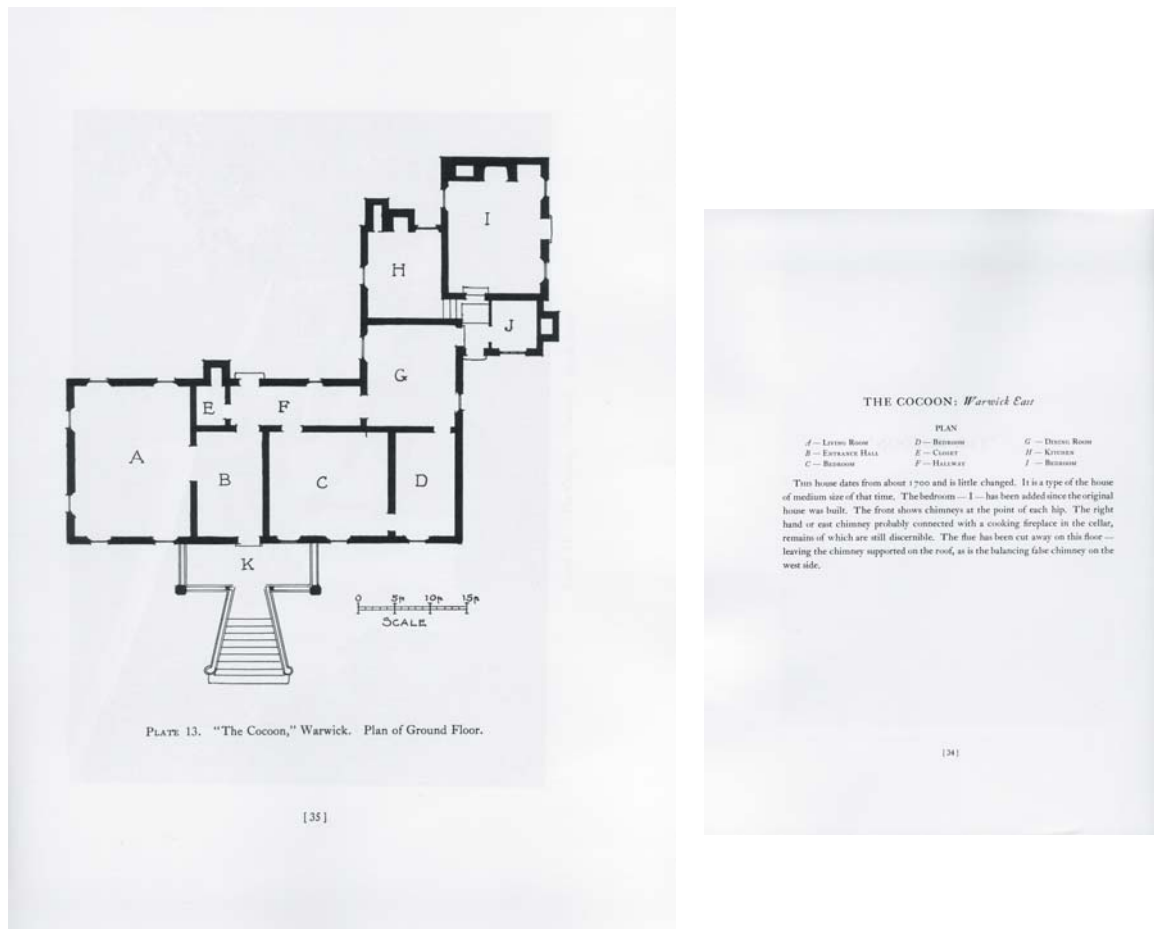


Figure 4 Plate 13. 'The Cocoon,' Warwick. Plan of Ground Floor. In Humphreys, *Bermuda Houses*, 1923, pp. 34,35.

situated on a slope rising to the north over a distance of 30 metres as measured from the staircase at the most southerly point to the building known as the slat house to the north (Figure 3). The difference in elevation outside the house means that the first floor on the front of the house is situated over a cellar that formerly extended along the entire south side of the building below the entranceway landing and staircase as shown on Humphreys' plan made in 1923 (Figure 4). The rear of the house appears to have been built into the natural rise such that there is no cellar below the dining room, kitchen and bedroom (Figure 4). The slat house floor, exposed through excavation, is at the top of the rise some 3.5 metres above the natural ground surface at the front of the house. A gentle slope extends about 175 metres to the south where a laneway once ran from the front

entrance of Cocoon to Middle Road. In previous centuries, when viewed from Middle Road, Cocoon would have appeared as a two-storey house sitting atop a small rise at the

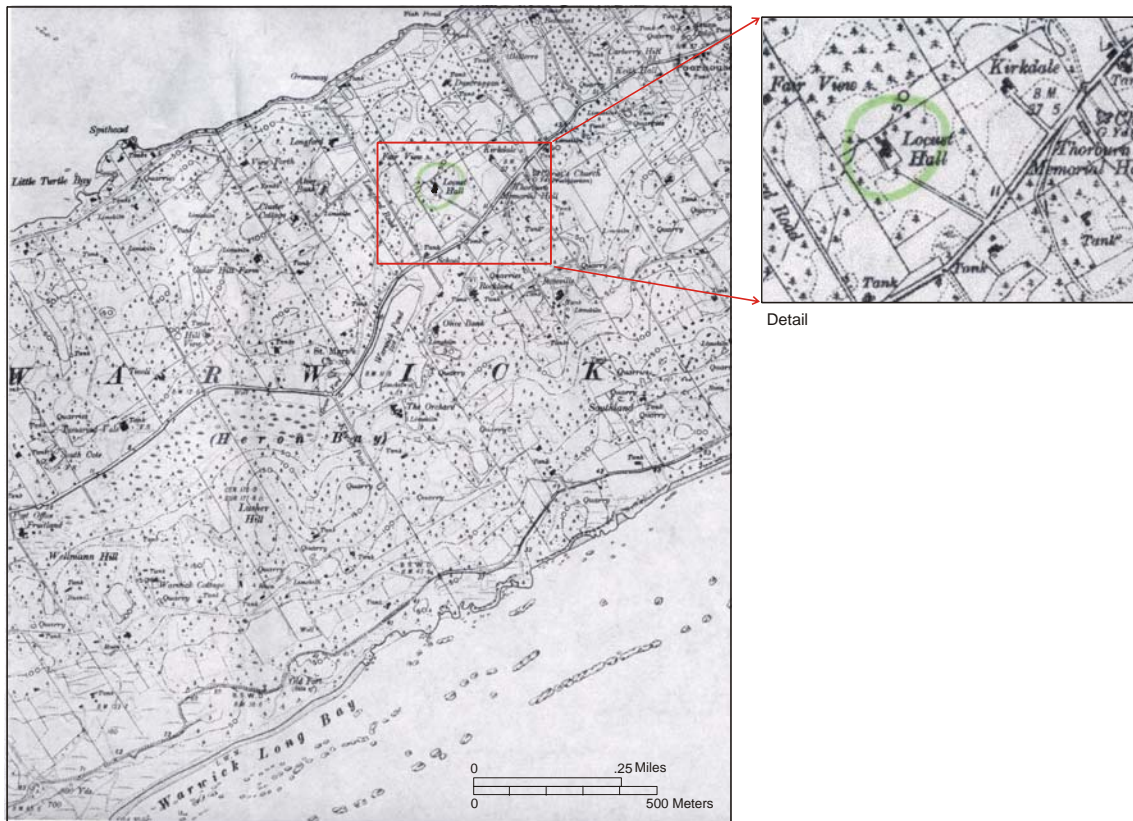


Figure 5 Detail of ‘Locust Hall’ alias Cocoon. In Great Britain. Ordnance Survey Islands of Bermuda surveyed and contoured in 1898-9 by Lieut. A.J. Savage, R.E ; heliozincographed and published at the Ordnance Survey Office Scale: Scale 1:10,560., 6 in. to 1 statute mile, 880 ft. to 1 in Publisher: Southampton : The Ordnance Survey, 1901.



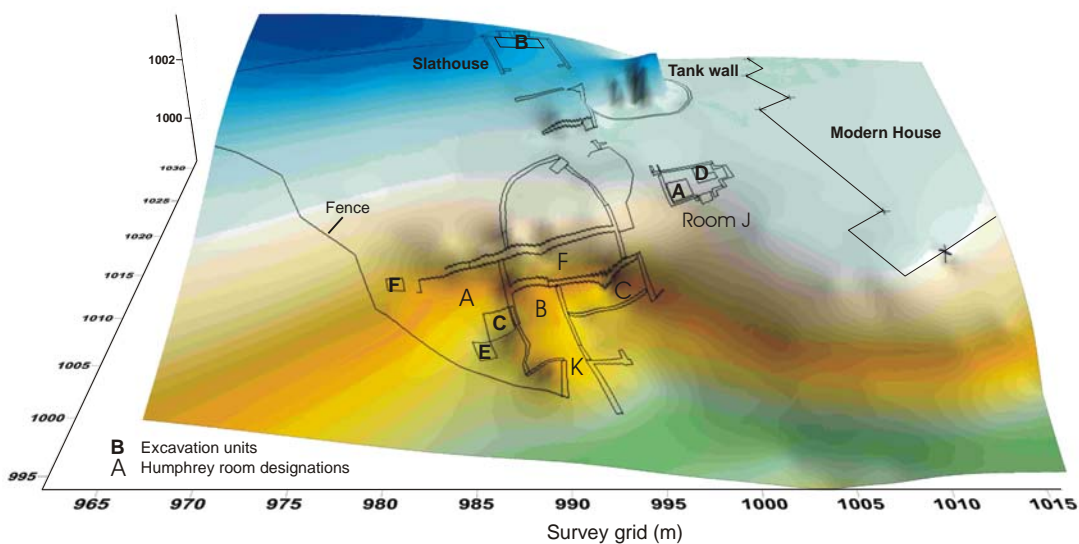
Figure 6 Aerial plan of study area showing Cocoon location and former laneway. Bermuda Government 2005.

end of a long prospect, possibly lined with trees as was common with other 17th/18th century houses in Bermuda (e.g., the ‘Grove’ in Southampton; Vermont). The prospect at Cocoon is shown on the 1899 Ordnance map by Savage⁵ (Figure 5), the ghost line or ‘crop mark’ of which is still visible on a 1996 aerial photograph (Figure 6).

⁵ Cocoon is labeled as Locust Hall on this plan indicating that the change in name occurred sometime in the 20th century.

The three-dimensional orthographic plan made possible by digital data (Figure 7) also helps to understand the site formation processes that may have acted on the building since its collapse and burial. Today exterior surface rubble and sedimentary deposits to

Figure 7 Three-dimensional orthographic plan of site showing structures, rooms and excavation units.



the north of the building slope downward from north to south. If, as is suspected based on excavation discussed below, midden deposits were formed at the rear or north of the house these could be expected to have gravitated downwards through time such that over an extended period there would be an accumulation of material adjacent to the rear wall of the house. Although not yet completed, topographical recording of the surfaces of all layers excavated during the investigation will allow for a three-dimensional orthographic rendering of each stratigraphic unit for later analysis.

Another benefit of digital recording is that it allows for the production of overlay maps useful in the analysis and interpretation of the extant ruins. To this end the modern plan of the wall foundations was digitally overlaid onto Humphreys' 1923 site plan with the result that remaining walls could be associated with specific rooms. This procedure formed the basis for selecting certain rooms within, and areas around, Cocoon for test

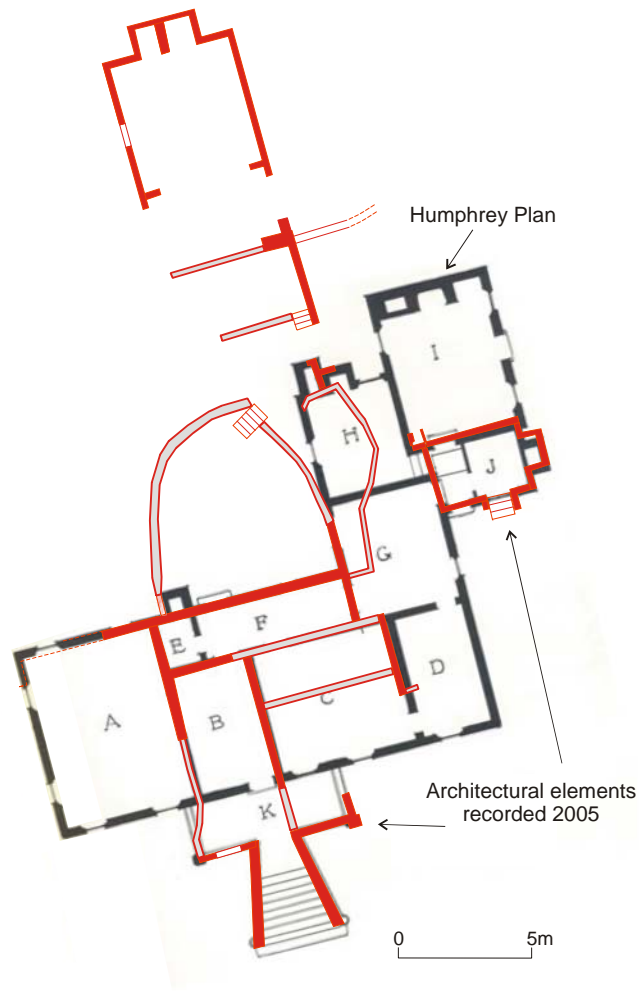


Figure 8 Overlay of existing architectural features on Humphreys' plan, 1923.

excavation; i.e., the room of unidentified function on the northeast corner designated by Humphreys as Room J, the slat house, the cellar below Room A, and the exterior northwest corner of the house (Figure 8).

THE ARCHAEOLOGICAL INVESTIGATION

Archaeological excavation on any domestic site, irrespective of ownership, should be carried out under the supervision of a person trained in modern archaeological methodology. The reason for this is that it is absolutely critical that all stages of the field work –

research design, excavation strategy, recording and artifact recovery - proceed in a systematic manner according to accepted professional standards. Unsupervised digging can lead to loss of information that cannot be recovered after the fact. As any introductory text book will remind the archaeology student, excavation is a destructive process and all archaeological field work must be undertaken with this axiom in mind. For owners of historic houses the Bermuda National Trust has an Archaeology Committee available for consultation, and the Bermuda Maritime Museum has also conducted many excavations at historic sites in Bermuda through partnerships with the Trust and educational institutions in the U.S. and Canada (College of William and Mary; Colonial Williamsburg Foundation; and Wilfrid Laurier University).

A traditional archaeological excavation at any domestic site has the potential to provide information not available in the documentary record. For example, information on dating, duration of occupation, socio-economic status, local and regional economic networks, site function, diet, day-to-day activities occurring within and around the house, and household composition are all questions that can be addressed using archaeological data. Usually these questions are only able to be addressed after months of lab work and analysis of the finds and records made during the excavation. In the present study, the recovery of more than 8000 artifacts at Cocoon during the eight day excavation has provided important insight into these issues. Over this period six excavation units (labeled A-F) were completed in several strategic locations on the property (Figure 3) designed to provide certain types of information in answer to basic questions posed at the outset; i.e., information on room and building function, date of occupation, and details of construction.

One of the first orders of business was to clear away undergrowth and overgrown shrubbery to expose the many visible foundation walls. These were then related to the published plan of the house pictured in Humphreys' book, 'Bermuda Houses', drawn when the house was still in a 'fine state of preservation' (Figure 4). The survival of prominent architectural features such as the 'welcoming arm' staircase⁶ (DPBNT 2002: 49) with arched cellar window openings and 'eyebrow' window heads (DPBNT 2002: 52), the standing chimney in Room J and the hallway (Room F), allowed for an overlay of existing architectural features onto those drawn in 1923. All excavation was then carried out manually using trowels aided by smaller instruments and paintbrushes where necessary. All sediment removed was screened through ¼ inch wire mesh to ensure maximum recovery of objects above this size. Recording was carried out using pro forma note sheets supplemented by digital photography and measured drawings. In all, hundreds of recording sheets were completed, hundreds of digital photographs taken and dozens of scale drawings completed.

⁶ Test excavations in this area revealed that the steps of this feature had been robbed out subsequent to its destruction in the 1930s or 1940s.

'Room' J Outbuilding - Units A and D Prior to excavation this 'room' was thought to have been a separate outbuilding located at the northeast corner of the main building. A standing chimney 4.6 metres (14.75 feet) in height located at the east end of this



Figure 9 Room J' excavation with standing fireplace, looking northeast.

relatively small 'outbuilding' (interior dimensions 5.2 metres [16.5 feet] east-west by 2.3 metres [7.5 feet] north-south) is the most prominent remaining feature at Cocoon (Figure 9). The interior space is defined by a cellar excavated into the natural bedrock about 1.0 - 1.2 metres in depth. At the commencement of excavation the interior floor was sealed by cement patio stones. After overlaying the Humphreys drawing it became clear that this apparent outbuilding was in fact Room J which, in 1923, was connected to the main residence bedroom, kitchen and dining room by three separate doorways.

Oral history recounts that the building served as a former slave quarters, but

this is purely conjectural. The presence of a chimney certainly suggests a cooking function, at least when originally constructed. Humphreys' drawing, however, does not indicate a function for the room despite the fact that all other rooms in Cocoon are labeled as to specific use. Archaeological excavation was designed to provide information on date of occupation and to gain some insight into original function and interior layout of space.

Removal of the patio stones from the west side of the interior space (Unit A - a 1.3 x 1.3 metre area) revealed a layer of building rubble. Pieces of roofing tin and several stone roofing slates indicated that the structure had been collapsed inward, providing



Figure 10 Burnt floorboards in unit A, revealed below rubble in the west section of the building.

artifacts that may have been disposed of at the time of destruction. Below the recent rubble layer however, several burnt floor planks were exposed (Figure 10). These had been truncated at the point where the landing is shown on the Humphreys drawing thereby providing confirmation of the accuracy of Humphreys' recording and the appearance of the structure in 1923.

The discovery of the wooden floor also allowed for a reconstruction of the interior space. This was done by relating the floor level to features visible on the interior wall of the fireplace; i.e., the plastered wall surface, a roof beam support and collar tie (Figure 11). The height from floor to the uppermost plastered surface is 5.0 metres (16 feet). This suggests a garret in the gable-roofed structure (visible on the roof line of the chimney) with a floor to ceiling height of 2.4 metres (7.5 feet) that functioned as living space over what is now thought to have been a kitchen. The floor to ceiling height of the kitchen itself would have been 2.6 metres (8.3 feet). The presence of a collar tie supporting the end pair of rafters is an interesting feature often seen on early Bermuda buildings (DPBNT 2002: 144). The fireplace is also of interest in that it has two, 25 centimetre wide, stone ledges leading down from the hearth to the floor level. This would have had the effect of raising the hearth both to shin and knee height above the wooden floor level for convenience. Single ledges of this type are a common feature of

some reassurance that original floor layers may have survived intact below the rubble. Initially a collection of whole bottles including a champagne bottle with a hand-tooled finish, together with several beer bottles and a cologne bottle with embossed label pointed to a mixture of 20th century material with some apparently late 19th century

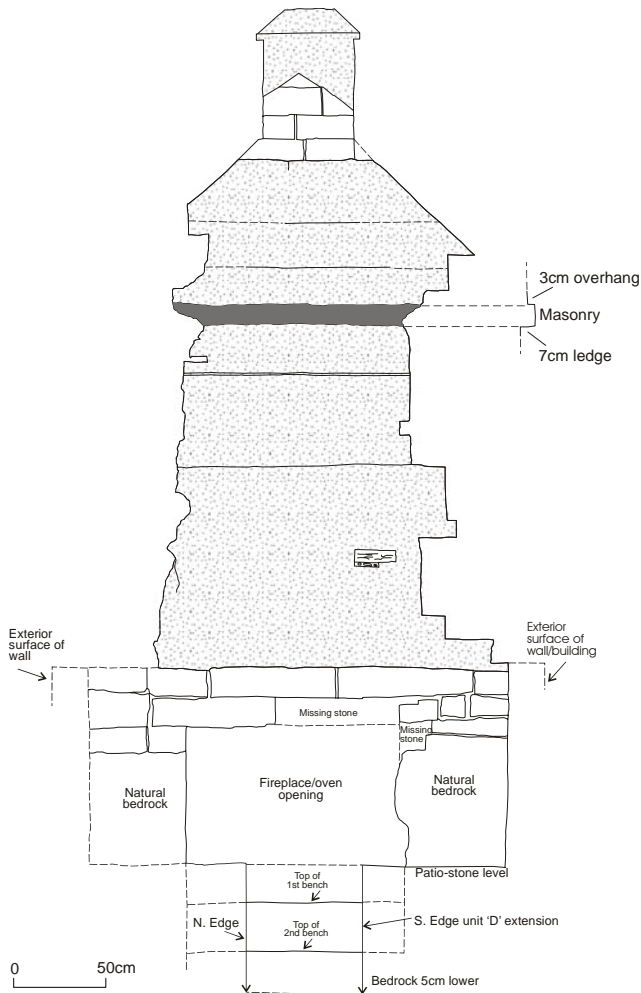


Figure 11 West (interior) elevation of fireplace in Room J.

smaller numbers of mammal and bird bone (Table 1) supports the idea that the room functioned as a kitchen where food was prepared and cooked, although this is not indicated as such on the 1923 Humphreys drawing, the kitchen instead being shown in Room H. Other artifacts of interest are the 84 tableware ceramic sherds. Late 18th century and early 19th century types such as creamware and decorated pearlware are common although these occur together with late 19th and 20th century types as well. Only two sherds that date to the middle decades of the 18th century were recovered: a piece of undecorated tin glazed earthenware and a single sherd of scratch blue stoneware. The presence of 183 container glass fragments, some of which clearly date to the 20th century, point to the mixed nature of the sub-floor fill layer composed of artifacts spanning the

Bermudian cooking fireplaces (DPBNT 2002:47) and a good example can be seen at Verdmont, constructed ca. 1710 in Smith's parish, Bermuda. The double bench seen at Cocoon does, however, appear to be unusual. Only a section of the stone ledges was exposed but it seems likely that the feature spanned the entire width of the hearth serving also as protection against sparks.

Another feature shown on the Humphreys drawing is a dividing wall that formerly separated the room into east and west sections. The recovery of artifacts from sub-floor levels in both areas provides good evidence that each section was used for specific purposes. In the east room adjacent to the fireplace (Unit D) a considerable quantity of fish bone together with

entire range of occupation from the 18th century through to the time the building was razed. A 2” diameter lead pipe found in the upper fill layer indicates that the latest function of the room may have been as a scullery rather than a place where food was prepared and cooked. This appears to have been a grey water plumbing system in which wash water was drained through a 4” diameter floor drain that ran through the south foundation wall.

The west section of the room (Unit A) had half as many artifacts in total (Table 2). The largest Class, faunal bone, comprises less proportionally than in the east section and is also much lower in terms of actual frequency suggesting a difference in function. However, there is evidence to suggest that the room division was not original but was added later.

Artifacts found below the wooden floor in the west section (Table 3) represent the only material recovered from a primary deposit. The high proportion of fish bone (66%), small fragments that could have easily fallen through cracks in the floorboards, is more than that found in the east section (47%) but significantly higher than the west room as a whole (37%). The implication is that the two rooms that appear on the 1923 plan were originally a single room and that differences in proportion of faunal remains reflect this later division of space. Ceramics found in the sub-floor deposit are also similar to those found in the east room and consist of creamware, pearlware, blue transfer printed and one over-glaze painted decoration. The earliest ceramic is represented by a single sherd of tin-glazed earthenware. The latest type from below the floor is flow blue printed refined earthenware suggesting that this primary context could date from the middle decades of the 18th century to the 1850s and probably later. Also of interest were three glass marbles and a piece of jewelry - an oval-shaped, polished shell pendant - pointing to the presence of women and children.

Architectural materials are present in the form of wrought nails (pre-1830s), machine-cut nails (1830-1890s) and modern wire nails (post-1890s). The co-occurrence of all three types provides supporting evidence for the wooden floor having been replaced at least twice over the lifetime of the building. Three post holes in the bedrock and grooves in the bedrock side-walls provide important evidence of sub-floor supports and floor construction. A brass escutcheon plate and a glazed ceramic door knob were also

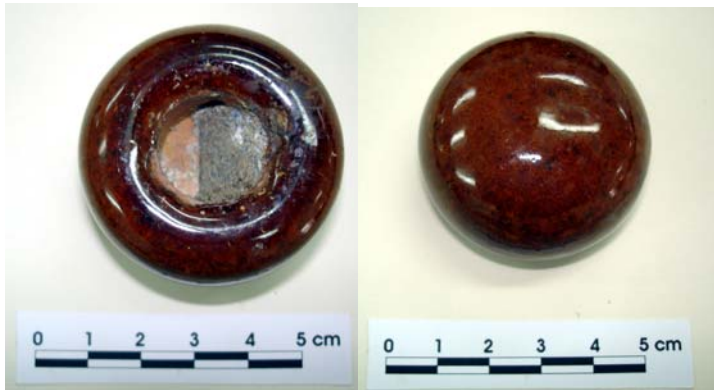


Figure 12 Glazed ceramic doorknob found in units A and C. Identical examples can be seen at Verdmont, Smith's Parish.

recovered. Of particular interest is the doorknob (Figure 12) since it is identical to one found on the west side of the building in unit C, and also at Verdmont on a second floor bedroom door.

Considered in its entirety, the evidence points to an outbuilding constructed

during the middle decades of the 18th century. The differences in floor levels between the main residence and this small, self-contained building suggest that it was later incorporated with Cocoon where it became a separate room in the house where cooking was done and where the garret served as sleeping and living quarters for a family. Given the fact that there is a larger outbuilding with a cooking fireplace (the 'slat house', see below in Unit B discussion) the suggestion is that this space functioned originally as servants' quarters where meals were prepared for the family living there and not the higher status residents of Cocoon. The fact that the fish remains do not include teeth or other skull fragments indicates that the fish were brought to the kitchen in a semi-processed state.⁷

If, as seems is the case, the building were occupied in the middle decades of the 18th century, there is a great likelihood that the small structure was a slave quarters originally. Until such time as comparative archaeological evidence from other Bermudian slave quarters is available however, this remains more of a hypothesis to be tested than a statement of fact. The faunal evidence points to a diet rich in fish compared to domesticated animals such as cattle, pig and sheep, but there is simply not enough comparative 18th century material available to state whether this is typical of an enslaved

⁷ This stands in contrast to the fish remains that have been recovered from the Grove excavations, site of the Tucker family residence from the early 17th century through the 18th century. Generally speaking, 17th century contexts include fish remains where all elements are present, while 18th century contexts are composed of smaller fragments with skull fragments absent. A similar size difference was noted for the King's Castle 17th and 18th century contexts from excavations conducted there by College of William and Mary in the 1990s (pers. comm. Steve Atkinson 2006).

person's diet or whether it is simply a Bermudian pattern irrespective of ethnicity and socio-economic status.

The same may be said of the ceramics found in the structure. Types with printed decoration typically have a high purchase price (Miller 1991) but these occur together with lower-priced wares such as undecorated creamware, banded and edged pearlware. It is not unreasonable to assume that the printed decorative varieties might have been handed down to the house servants when no longer used by the higher status household. Again, more comparative material is necessary to identify any patterns that might be representative of either high or lower status households.

Out-Kitchen - Unit B An outbuilding located to the north or rear of Cocoon, today known as the 'slat house' and used as a potting shed (Figure 3), was excavated for the purpose of determining original building function, date of construction, period of occupation and structural details. An excavation square was placed in front of the most prominent feature in the building - a large cooking fireplace with adjacent bake oven. The position of the building relative to the main structure of Cocoon suggests that this



Figure 13 View of unit B, slat house/out-kitchen, showing sub-floor supports in bedrock.

was the out-kitchen, a prominent feature in many of the larger 18th century houses in Bermuda. Because kitchens were also often located in a room within the house, one of the research questions to be addressed concerned whether this out-kitchen was original to Cocoon or a later addition. Interestingly, the building was disregarded by Humphreys in 1923 for reasons unknown and does not appear on his site plan.

Prior to excavation the floor was covered with cement patio stones, nine of which were lifted to open an area measuring roughly two by two metres. The upper four layers contained large numbers of modern material such as glass beverage bottles and modern

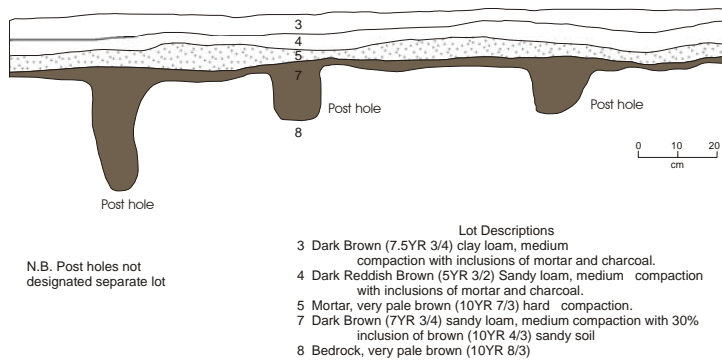


Figure 14 Post hole profiles in bedrock from sub-floor supports in unit B, slathouse out-kitchen.

support posts, similar to those revealed in Unit A in connection with the servants' quarters, are about 15 centimetres in diameter, 25 centimetres deep (Figure 14), and spaced 1.5 metres apart. Where irregular spacing does occur this appears to be due to the floor having been repaired at least once during its lifetime as suggested by two 'double', side-by-side post holes. Overlying the bedrock is a thin layer of fine sediment that is presumably a mixture of natural soil and accumulated sediment that had fallen between wooden floorboards during its period of use. The next occupational event is represented by a layer of broken mortar that covered the entire surface area, and infilling the floor support post-holes. The most likely source for this material is from the stone roofing slates. The evidence indicates that the wooden floor was taken up, and never replaced, after the roof collapse was cleared. A layer of brown leveling fill with a mixture of 19th and 20th century material was found above the mortar layer perhaps serving as an earthen floor until modern times when it was eventually covered over with patio stones.

These events were dated by analyzing the artifacts found in the layers associated with the roof collapse and the earliest sub-floor deposit (Table 4). In contrast to the upper fill layers most of the material found in the earliest deposits dates to the 19th century. The few small sherds of ceramic such as creamware and pearlware point to a late 18th century initial date of occupation, ca. 1760/1780. The latest ceramic types are represented by refined earthenwares with blue, green and purple transfer print and banded decoration. These types are common after 1830 and continue in popularity until the 1860s when they were supplanted by undecorated ironstone. A clay smoking pipe bowl

wire nails and almost 1200 artifacts in total. The lower three layers, however, provided more information pertinent to the questions being asked.

The earliest evidence of construction is in the form of seven post holes excavated into the natural bedrock (Figure 13). These sub-floor

is the only other temporally diagnostic item although this can only be dated to the second half of the 19th century based on style. Based on these items the building appears to have been used between the last decades of the 18th century to the last decades of the 19th century. It seems likely that although Cocoon was described by Humphreys as being in a ‘fine state of repair’ in 1923, this particular outbuilding was in a state of ruin at this time, and consequently ignored in his study. Another important implication of the dating concerns the original functioning of the Cocoon residence. If this reconstruction is correct, and the out-kitchen is not contemporary with the construction of Cocoon in the earlier decades of the 18th century, the original kitchen was most likely located within the main residence, perhaps in Room H (Figure 4).

Other artifacts found in the earliest layer consist of a small number of food bone fragments, fish and mammal, but these do not occur in the quantities seen in the servants’ quarters described above in connection with Room J. A cast iron pot leg found in one of the in-filled post-holes, wine bottle sherds and a one-holed bone button represent items that were in the out-kitchen when the wooden floor was taken up. The mixture of modern container glass suggests that this may have occurred within the past few decades. Another difference between this out-kitchen and the servants’ quarters kitchen (Room J)



Figure 15 View of out-kitchen fireplace in slathouse. Note the bake oven, cooking fireplace and single step bench.

is the marked absence of personal items such as jewelry and toys, as well as buttons, writing slate pencils, and glass tableware. In the diversity of items the servants’ quarters is more indicative of domestic household refuse while the out-kitchen is functionally specific.

The fireplace in the out-kitchen (Figure 15) is also of interest as regards the different

construction technique compared to the servants’ quarters. The fireplace and bake oven have a common cedar lintel and while each is raised above the wooden floor; i.e., the

bake oven is raised 93 cm (3 feet) and the fireplace is 78 cm (2.5 feet), the two stone steps seen in the servants' quarters fireplace is absent. The dual function cooking hearth and bake oven, both situated in a much larger building, suggests food preparation for the elite household members rather than a smaller household of servants.

Cellar Below Room A - Unit C This unit was placed on the inside of Cocoon in the area designated Room A by Humphreys on the west side of the main entrance (Figure 16). More specifically, floor beam insets visible on the standing masonry adjacent to the unit (Figure 17) indicated that the excavation unit was situated in the cellar space below Room A. As such, the purpose of the excavation was to expose a section of the cellar level, which judging from a



Figure 17 View of unit C in cellar of Room A.

1923 photograph of Cocoon in Humphreys' book (Figure 18), was a full height space accessed from outside through an arched opening situated below the south or front 'welcoming arm' staircase. Full cellars below the main residence were common features found in merchant houses in the 18th century (Smith 2003) and it was hoped that an investigation in

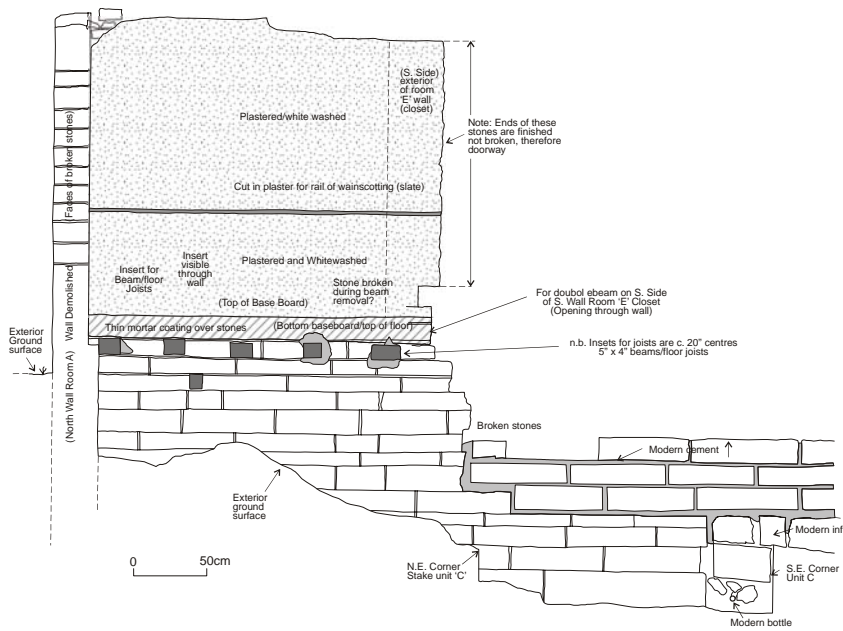


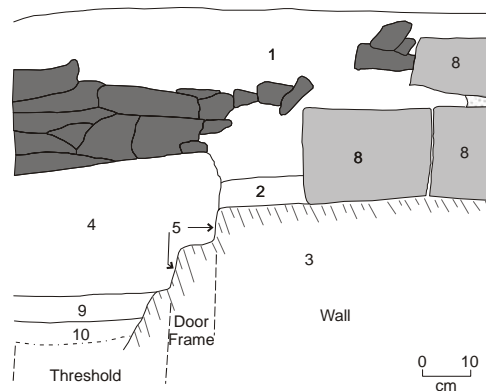
Figure 16 West (interior) elevation of Room A showing cellar level and standing main floor masonry with architectural features indicated.

glass, wrought nails, a few shards of 19th century container glass, a single barrel hoop and a wrought copper nail (Table 5). The small ceramic collection is comprised of glazed coarse red earthenware and only a couple of sherds of undecorated refined earthenware. A single sherd of 18th century white salt-glazed stoneware was recovered. The absence of wood flooring and timbers suggests that building materials were scavenged prior to demolition or collapse and items of value or interest were removed at this time. The cellar floor surface appears to have been the natural bedrock with only a thin layer of accumulated or natural sediment.

South Section of Cellar Below Room A - Unit E



Figure 21 Unit E at the entrance to cellar room A. View looking south.



- Lot Descriptions
- 1 Rubble debris, large pieces of limestone roofing slates and Dark brown loam (7.5YR 3/2)hard compaction
 - 2 Reddish brown (7.5YR 3/3) loam medium compaction
 - 3 Limestone bedrock hard compaction
 - 4 Dark brown (7.5YR 3/3) loam with some limestone debris, loose compaction
 - 5 Interface. Straight cuts into bedrock for a door frame and threshold
 - 8 Stones from the south wall of Room A
 - 9 Loose limestone (2.5Y 5/4) loose compaction
 - 10 Reddish brown (5YR 3/4) loam. A natural layer.

Figure 20 Unit E at the entrance to cellar room A. View looking south.

Another unit was placed inside the cellar below Room A adjacent to the south wall foundation (Figure 20). According to Humphreys’ 1923 plan view this is the location of a doorway that led into the cellar room just outside the arched entrance to the enclosed space below the entrance steps (Figure 4). Excavation in the unit revealed the bottom

two courses of the wall foundation resting on the natural bedrock. Cuts in the bedrock for the doorpost and threshold, presumably, were found flanking the doorway on the east and west sides (Figure 21). As with unit C to the north, in the same cellar room, the surface of the unit was covered with a layer of wall and roof collapse about 20 centimetres deep. The few artifacts recovered from this location were found within the rubble collapse layer and a layer of reddish brown loam covering the bedrock floor (Table 6). In both layers a mixture of artifacts dating from the late 18th to 20th centuries were found. Wrought nails and creamware, for example, occurred alongside modern wire nails, 19th century cut nails and 19th century blue printed ceramics and modern container glass fragments. The bedrock floor of the unit was at a level that would have allowed for a full height cellar. No artifacts were recovered *in situ* to indicate the original function of this room in the 18th century.

Test Unit on Northwest Corner of House – Exterior Room J - Unit F

This unit was placed on the outside corner of the building adjacent to the north and west foundation walls forming the corner of Room J (Figure 3). The 1 x 1 metre square represents the only unit to be excavated on the exterior of the structure. After removing a deposit of rubble, a reddish brown sediment designated lot 2 was exposed. Although the layer was only about 10 centimetres deep more than 450 artifacts were recovered (Table 7) representing the densest concentration of material recovered from any excavation unit. The most interesting aspect of this assemblage is the relatively large quantity of tableware and storage/cooking ceramics recovered. Together these make up more than 28% of the collection and include types dating from the first half of the 18th century throughout the 19th century. Early varieties include Frechen stoneware, stoneware Bartmann bottle sherds, tin-glazed earthenware, French Beauvais stoneware, scratch blue stoneware and white salt-glazed stoneware. Types that may also date to the first half of the 18th century include oriental porcelain and glazed red earthenware. Later 18th and early 19th century varieties are numerous and consist of undecorated creamware and green edged, blue painted and brown and blue printed pearlware. Later 19th century types are represented by black, blue and flow blue transfer printed (post-1845), sponged and painted refined white earthenware. The absence of ironstone suggests a date before

ca.1860 when this type supplanted refined white earthenware in popularity. The other relatively large Class of artifacts is container glass which is largely represented by wine and case bottle fragments. Considering the variety of materials and the density of the finds in the deposit the area is best described as an exterior surface kitchen midden containing household items which have accumulated against the exterior wall as a result of the downward slope of the land, over a period of perhaps 150 years from the early decades of the 18th century to the middle of the 19th century.

RECORDING STANDING ARCHITECTURE

Another aspect of a comprehensive conservation program involves the recording of architectural elements. Using traditional recording techniques standing architecture and below-ground architectural ruins are drawn to scale using a system of conventions employed by archaeologists who work on similar sites, the same cultural tradition or region. Among archaeologists, and more recently within the field of vernacular architecture, there is debate concerning the level of detail, comprehensiveness and recording terminology. On one side of the argument are those who advocate a systematic and objective method of recording, the end goal of which is meant to be an almost exhaustive list of traits and features down to the seemingly minutest detail (Ferris 1989). Those on the other side of the debate argue for selective recording; i.e., drawing only those elements that contribute to the historical understanding of a building in relation to the level of current knowledge. The former school, advocated for the most part by archaeologists, usually involves a specialized recording system (Davies in Harris 1993; Ferris 1989; Harvey 1997). Detractors of this approach usually point out that the use of arcane terminology results in obfuscation rather than enlightenment (Meeson 1989; Smith 1989).

For the present study, working as is so often the case under the restrictions of time and funding, recording was carried out using a combination of traditional ‘selective’ recording and specialized recording adapted from the field of archaeology. For the former, certain elements of the structure were recorded with an eye towards capturing the details that seemed at the time to be unique, temporally and stylistically diagnostic, useful for reconstructing the appearance of the house as originally built, and of assistance for

interpreting the evolution of the structure. The process of selection was subjective in the sense that not all standing and below grade walls were recorded but also interpretative in that there was a conscious attempt to capture the most information with the least expenditure of time. The latter approach employs the Harris matrix, a system of archaeological recording designed to objectively illustrate the sequence of deposition, or in the case of standing ruins – construction, destruction and modification. Although objective when applied to archaeological deposits, when applied to standing architecture this approach forces the observer to interpret that which is being recorded and to examine in the field those aspects that cannot be captured later with photography or even, it is argued, by drawing using traditional techniques. For example, it is often necessary to carry out ‘investigative probing’; i.e., removing mortar or plaster from wall abutments to determine sequence of construction. Therefore, it is crucial that an integrated approach to studying an historic structure use both recording techniques: selective recording by scaled drawings and specialized recording using the Harris matrix (Appendix A).

Another aspect of recording not to be diminished in importance is photography. Paradoxically, photographs in themselves are not an adequate means of recording because, although they are truly objective renderings of the feature being studied, they lack the subjectivity needed for interpretation. They are useful, however, as a record of the current condition of the architecture, and as a comprehensive archive of a building. It is quite possible to photograph each elevation of a building at a high resolution using digital camera technology in a relatively brief period of time compared to the time that would be required for drawing. These ‘as found’ records can be used to gauge the rate of deterioration of a building and as such they serve as an important tool for managing a culture resource. As demonstrated above in connection with the cellar entrance below Room A, historical photographs also serve as useful documents for interpretative purposes if a structure later falls into disrepair and ultimate collapse. Finally, photographs provide important visual keys to a structure when specific elements are under discussion.

WHAT HAS A COMPREHENSIVE CONSERVATION APPROACH TOLD US?

One of the most fundamental questions to be answered with the present study concerns the construction date of Cocoon. In the Bermuda National Trust file, the building is purported to date to the early 18th century based on architectural style. Dating vernacular architecture on stylistic grounds alone, however, can sometimes be problematic: houses built centuries apart can sometimes appear quite similar due to retention of anachronistic elements, later structural additions and modifications (DPBNT 2002: 5,12). Studies of several Bermudian historic houses over the past three decades clearly demonstrate that dating based on architectural style alone is often inconclusive and estimates of age must be accompanied by other information, either historical and/or archaeological.

Tucker House in St. George's, for example, was dated to the second decade of the 18th century by Fleming (1974) but later investigations by Brown et al. (1991) suggested that the house dated between 1752 and 1772 "based on the general character of the building and the several pre-Tucker layers made of second quarter 18th century artifacts". Archaeological investigations at Stanley House in Flatts have recovered material dating from the late 19th to early 20th century (Bream 1991:111-12). Based on architectural style, presumably, the house is purported to date from the late 17th or early 18th century, but this is purely conjectural as Bream freely admits (*in* Smith 2003:118). In the absence of historic records from this area before the late 19th century further archaeological work is necessary to resolve the debate. Springfield in Sandys is reported to have been built between 1740 and 1750 for the main house (White 1999:55) and 1788 to 1813 for the slave quarters and the buttery. Dating for the main house is based on archaeological research conducted by the Colonial Williamsburg Foundation (Jarvis 1994) aided by a team from the Bermuda National Trust (White 1999:52). However, there is still some question of the date for the slave quarters and buttery due to conflicting documentary sources and further archaeological research is necessary to resolve the problem (Smith 2003:126-7). Two other residences, Longhouse (Smith 2003: 125) and Far Rockaway, may date to the first decades of the 18th century. Longhouse is dated based on archaeological excavations and historical inference in its possible connection with the slave smuggling trade in the late 18th and early 19th century (Packwood 1993). Far Rockaway is thought to date to the 1720s but this is based on a combination of often

conflicting oral tradition and historical documentation. No archaeological investigation has as yet been carried out on the property (Smith 2003: 132-3).

From the foregoing it is clear that attempts to date an historic house must rely on as many converging sources of information as possible. Historical, architectural and archaeological studies must accompany any in-depth study of an historic house wherever possible. It is critical that all three sources be considered and equal weight be given to each, at least initially, when all types of information are available. In many Bermudian cases, however, historical documentation is often lacking and vernacular architectural style is inconclusive. The problem with dating based on style alone is that *folk housing* and *national-styled dwellings*, or a blend of the two, may be represented in any given structure. Folk styles are “designed without a conscious attempt to mimic current fashion” and to serve the basic need of shelter (McAlester and McAlester 1984). Such structures are less influenced by temporal trends. National-style architecture reflects a conscious attempt of the occupant/builder to conform to construction and detailing that are currently in style in nationally-based popular culture (McAlester and McAlester 1984). However, just as anachronistic elements may be expected to occur from time to time so too can architectural styles be adopted with rapidity in a progressive cultural milieu (Leath 1999:48). Archaeological data on the other hand, is almost always present on a domestic site, both in the ground and as ruins, either buried or standing. What is needed is a database of material culture associated with each historic house where archaeological investigation has taken place. In this way, through comparative analyses of artifacts recovered in archaeological context, general patterns may emerge that will aid in placing any given house in a larger social, economic and historical context.

As discussed, at Cocoon, for example, documentary evidence is at present largely unavailable and it is not known on what basis Humphreys (1923) attributed the ca. 1700 construction date to the residence. Archaeological excavations on the site however, resulted in the recovery of a small number of ceramics dating to the 18th century that support this tentative historical date. Rather than the actual number of sherds found, it is the variety of types that supports an 18th century occupation date. Ceramic types such as white salt-glazed stoneware, tin-glazed earthenware, Frechen stoneware, Beauvais coarse earthenware, scratch blue stoneware, and English brown stoneware (Figure 22) date from

the beginning to the last quarter of the 18th century. The absence of 17th century ceramic waretypes is significant and suggests that the house was constructed, at the earliest, in the first decades of the 18th century.

The majority of the 327 ceramic sherds recovered date from the late 18th century/early 19th century up to the 20th century. Most of these are tableware varieties of refined earthenwares (n=299) together with a few cooking/storage wares (n=28) (Table 8). Early tableware types include soft paste porcelain, creamware (undecorated and banded) and pearlware (over- and under-glaze painted, banded, green edged, and transfer-

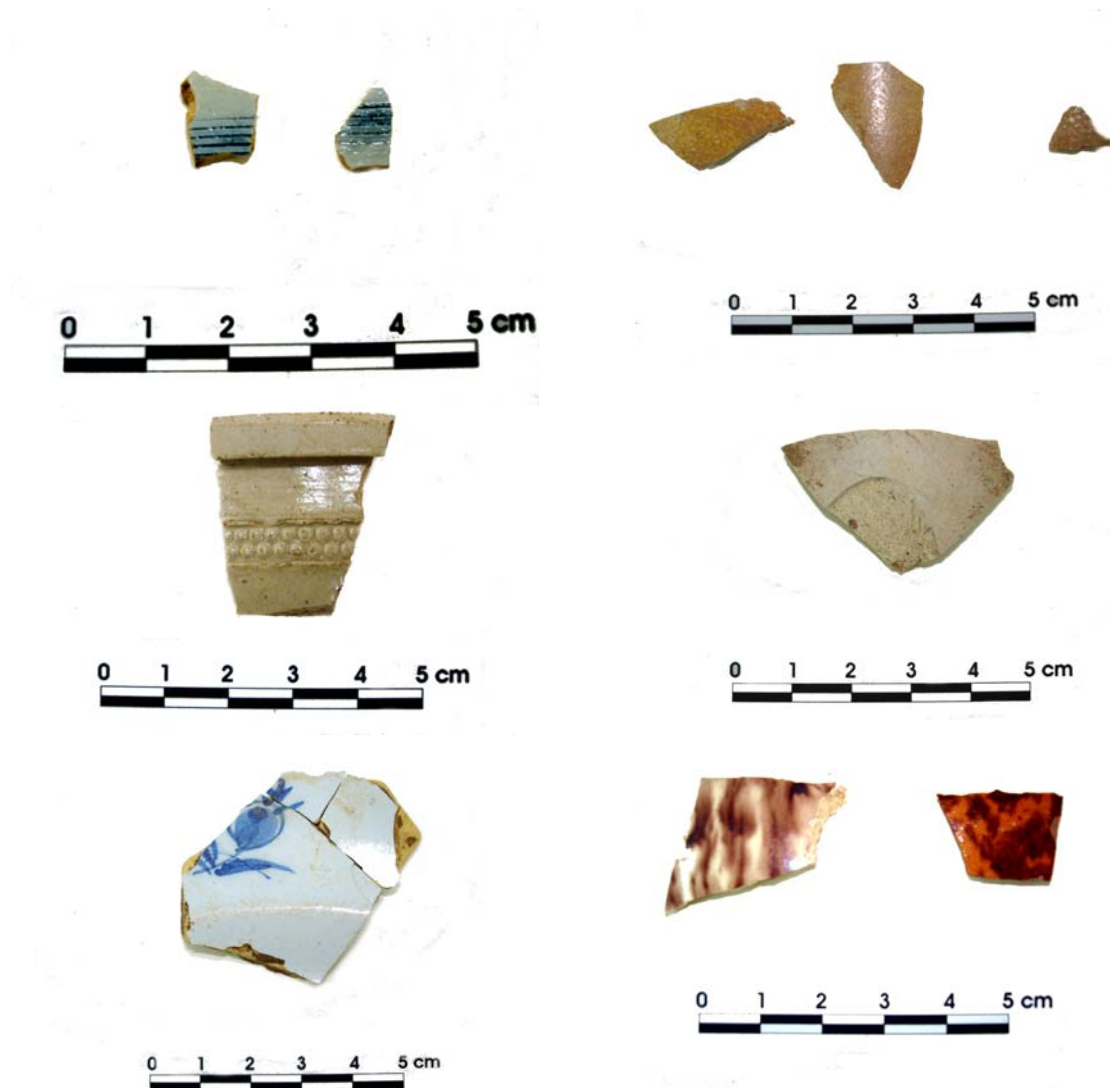


Figure 22 From top left clockwise: scratch blue stoneware; Frechen stoneware jug fragments; French Beauvais stoneware; marbled stoneware; tin glazed earthenware; English white salt-glazed stoneware.

printed) (Figure 22). Mid-century tableware varieties such as transfer printed occur in a range of colours; e.g., flow blue, blue, black, green, red, purple and gilded, together with minimally decorated types such as sponged/stamped, banded and painted, moulded and undecorated (Figure 22). Tablewares dating to the last third of the 19th century include ironstones, porcelaineous stonewares, and gilded and hard-paste porcelain (Figure 22). Cooking and storage wares consist of coarse red earthenwares (glazed and unglazed) and salt-glazed stonewares (Table 8).

Ceramics recovered from excavations are also important sources of information for reconstructing aspects of the social milieu of which the house was a part. Some indication of socioeconomic status of the occupants can be gained by looking at the types of decoration found on the refined tablewares. Traditionally this has been done for ceramic assemblages using the socioeconomic indices developed by Miller (1980, 1991). However, since this method requires a count of whole vessels, and the fragmentation of the Cocoon sample prohibits a reliable estimate of the number and type of vessels, another way to gain a sense of the relative wealth of the occupants is through a comparison of the number of highly decorated, expensive, types such as transfer-printed and porcelain (n=86) to the minimally decorated types (banded, painted, edged, moulded, sponged/stamped) (n=21) which had considerably lower purchase prices. For the period 1760s-1870s, the ratio of inexpensive to expensive types exceeds 4:1 (86 compared to 21). In the absence of published comparative material available from 19th century domestic sites in Bermuda, the figure does suggest that the occupants were of a higher than average socioeconomic class. Beyond this however, for the measure to have any analytical value a larger database of domestic site archaeological ceramic assemblages is needed not only from elite residences, but also a variety of households representative of all levels of Bermudian society in the 18th and 19th centuries.

It is hardly surprising that, given the primacy of the English ceramic industry and the global market for these goods in the 19th century, almost the entire ceramic assemblage is composed of types from the potteries in England. The only exceptions are some of the 18th century wares such as Beauvais and Frechen stoneware and the Chinese export porcelains which occur in small numbers. In general, wider trade networks are characteristic of the 17th and 18th centuries and excavations at early domestic sites in

Bermuda, for example the Grove (Triggs 2004) and Tucker House (Brown et al. 1991) have yielded ceramics from several European countries; e.g., France, Germany, Portugal, Spain, Italy, Holland, in addition to utilitarian wares from New England and possibly the Caribbean. The dominance of the English in the ceramic industry beginning in the latter part of the 18th and throughout the 19th century, particularly those countries that were under the British Dominion changed this pattern. For example, during this period the same British ceramic types can be found on contemporaneous colonial sites in Canada and Australia.

Wider economic ties in the late 19th century and early 20th centuries are indicated by the presence of other consumer goods recovered from the excavations at Cocoon. Container glass in particular provides useful clues as to the nature of the economic networks operating at this time as these vessels replaced utilitarian ceramics for a wide variety of products. The mass production of glass containers at the end of the 19th century, made possible by technological improvements in manufacture, resulted in a rash of consumer goods such as beverages, condiments and health/pharmaceutical products. At Cocoon, condiment bottles with moulded designs identifying the manufacturer have been found that originate from England, Canada (*Libby McNeil and Libby Limited of Canada*), and Scotland. Several pharmaceutical bottles were also recovered advertising extracts and other concoctions from France, Germany and the United States (*Vaseline, Chesebrough, New York* patented in 1872). Domestic commerce is represented by two beverage bottle fragments with Bermuda companies embossed on the sides: *Bermuda Mineral Water Co. / Sea Venture Registered Trademark*; and *John Barritt & Son / Manufacturers / Superior Mineral Water / Hamilton / Bermuda*. Clearly, the residents of Cocoon at the turn of the 20th century were active participants in the new economic order characterized by the mass consumption of industrially-produced goods.

The other question surrounding Cocoon is its function as a merchant house. Based on certain architectural elements and similarities between Cocoon and other purported 18th century houses, the idea has been entertained that the cellar at Cocoon may have been used for storage of goods for commercial purposes (Smith 2005: pers. comm.). As discussed above, there is little in the way of archaeological evidence that would support this idea, although two standardized weight measures recovered from the cellar



Figure 23 Lead weights recovered from unit D in Room J servants' quarters.

suggest some commercial activity occurred at the house (Figure 23). Clearly, additional archaeological and historical investigation would shed further light on this question.

CONCLUSIONS

It has been the intent of this article to demonstrate how a comprehensive program

consisting of historical research, systematic recording and archaeology can be of value to those charged with the management and conservation of domestic built heritage. Of course, the program can be applied to any historic site where architectural remains are present, but the absence of a coordinated conservation program that includes archaeology places domestic sites, particularly, at peril of being lost before being properly documented. Traditional archaeological excavation and surveying should be viewed as a source of primary information on a site that once destroyed or irrevocably disturbed cannot ever be retrieved. An archaeological approach to recording structures is also important for creating an unbiased record of the site through photography and for understanding the evolution of the site throughout its history by selective recording using measured drawings. Moreover, the application of specialized archaeological techniques of recording, such as the Harris matrix, is critical for documenting the structural evolution of the building and the relation of this to the material remains found in the ground.

On a larger scale, the significance of the work at Cocoon goes beyond the specific site itself and is of academic interest to those researching other historical houses in Bermuda. Meaningful comparison of findings can only be done, however, if similar recording and excavation standards are maintained. For example, the excavation results at Cocoon are able to be compared to other 18th century structures excavated by professional archaeologists working in Bermuda under the auspices of the Bermuda

Maritime Museum, the National Trust and universities from the U.S., U.K. and Canada. The important common element with all this work is the maintenance of professional excavation standards. Excavation without proper training can only result in a loss of information. The adoption of standard excavation and recording terminology and techniques would also foster and facilitate sharing of information. Research of this kind has the potential to provide wider insight into social and trade networks, economic strategies adopted by 18th century merchants in Bermuda, and lay the groundwork for developing building chronologies based on more than stylistic grounds alone. A government-funded agency concerned with heritage conservation involving archaeological research is one means of accomplishing this goal.

The goal of a comprehensive conservation program ultimately is to protect the individual pieces of the historic fabric of Bermuda – pieces which are being lost at an increasing rate as development continues and historic properties face the constant threat of eradication from the historical landscape.

APPENDIX A

ARCHAEOLOGY OF STANDING STRUCTURES

Structures, like deposits, must be viewed as artifacts that are created by people and which are subsequently altered and added onto through time. In order to truly understand the history of any given structure it is necessary to view these man-made objects as having their own unique developmental sequence. Indeed, this very principle is fundamental in architectural studies where structural elements such as roof beams, floor joists, fasteners and windows provide important clues as to the evolution of a building (DPBNT 2002: 13). One of the earliest and best examples of the application of archaeological methods in the study of buildings was carried out by John James in his study of the multi-period

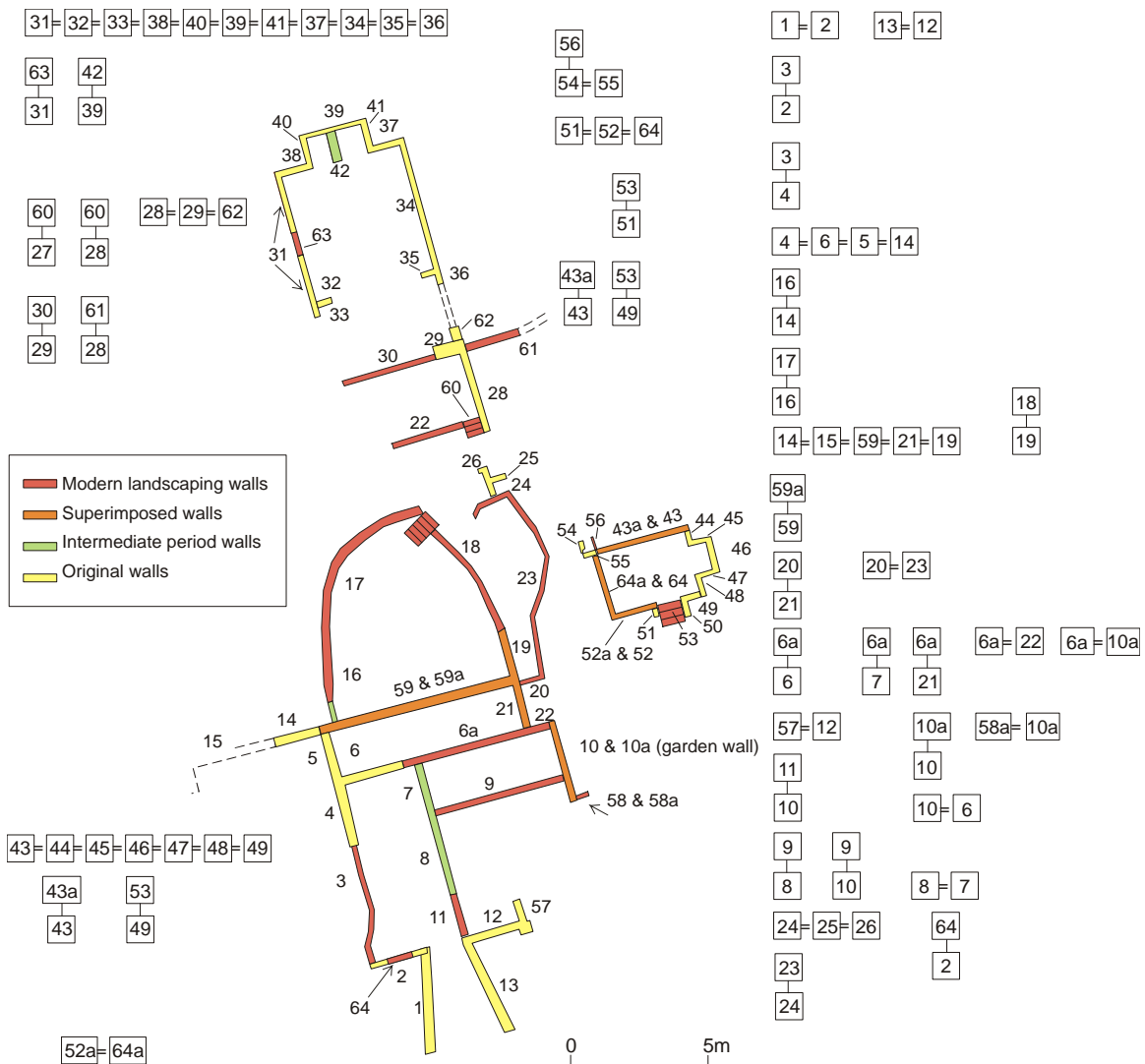
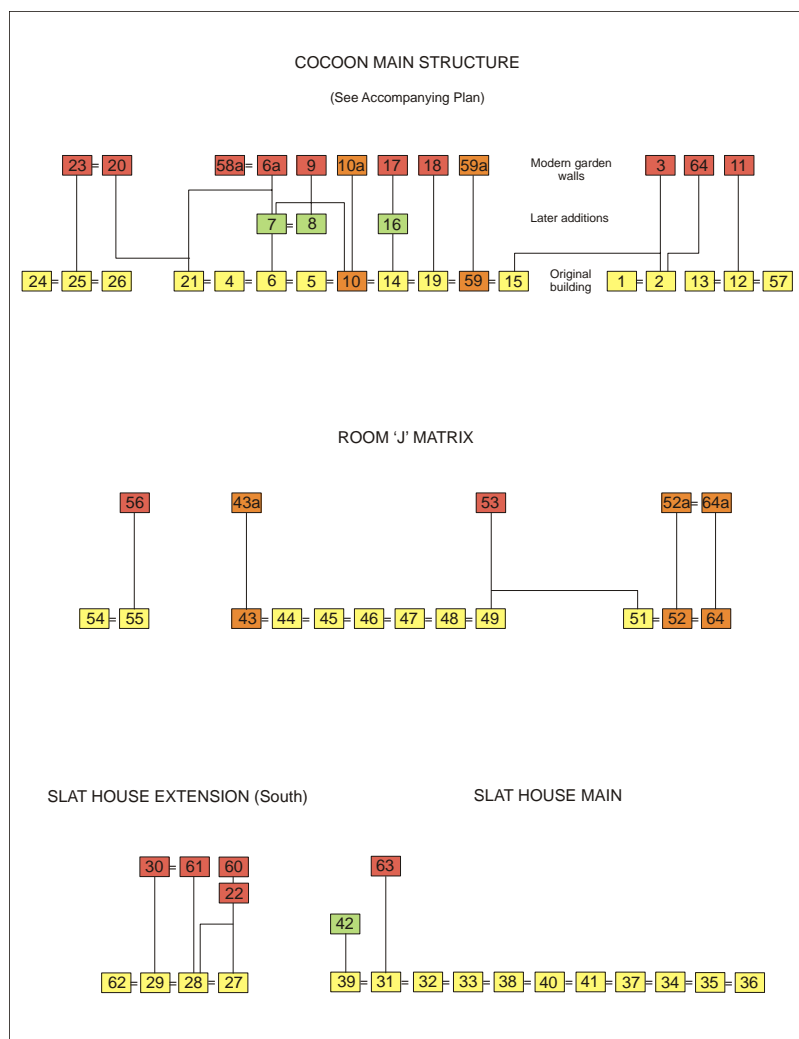


Figure 24 Site plan showing wall segments and matrix components.

Chartres cathedral (James 1979). More recently, some vernacular architectural historians have borrowed concepts from archaeological theory and applied these to gain a better understanding of architectural evolution; i.e., stratigraphy, horizon and *terminus post quem* (Lanier and Herman 1997). More specifically, a technique referred to as the Harris matrix, originally developed to illustrate the stratigraphic sequence for sites with complex stratigraphy (Harris 1973), has been applied to standing structures (e.g., Davies 1993; Harvey 1997).

Widely used in terrestrial excavations, the matrix is ideally suited to the purpose of sequencing or phasing standing architecture with only a few modifications to the traditional application. For example, the Law of Superposition, a fundamental



stratigraphic concept, does not always apply to structures in the same way as it would with layers or other stratigraphic units. It is not uncommon for a building to have undergone later structural additions that have been inserted *below* an existing standing wall. To a skilled recorder familiar with building techniques, these apparent anomalies will often be identifiable as differences in building material, mortar/cement type, construction technique and abutment

Figure 25 Completed matrixes for each site area.

analysis. When these 'stratigraphic anomalies' are recognized, a reliable building sequence can be constructed for any given structure, no matter how complex.

Aside from the practicality of this method, the real significance of this approach is that it allows for an interpretation of the development of a structure using a rigorous, and repeatable, methodology. The fact that this is an objective procedure distinguishes it from more subjective analyses of structures using architectural style, for instance, as the primary means for dating components of a building. As discussed, dating based on stylistic elements can be notoriously unreliable due to problems such as anachronistic elements that can occur sometimes in a vernacular structure or the blending of folk and national architectural styles.

RECORDING COCOON USING THE HARRIS MATRIX

Initial documentation of the standing ruins at Cocoon was done by recording the complex array of modern and original walls. One of the first steps in this process was to complete a floor plan of the existing walls visible on the site. Using the surveyor's total station an accurate site plan was produced. When overlain on the plan produced by Humphreys in 1923 this plan helped to identify and distinguish some modern architectural elements such as garden walls and later additions from original walls. The missing element with the traditional floor plan, however, is the sequence of wall construction determined through wall abutment analysis and close inspection of inserts, mortar and wall surface treatments. For this purpose the plan view was used as a site template which was broken down into more than 64 individual wall segments (Figure 24). Examination of each wall abutment was next carried out to determine the sequence of construction for all above-ground architectural remains. The Harris matrix provides a convenient method, essentially a shorthand technique, for illustrating the sequence of construction by recording the three possible relationships for walls graphically. Wall segments that are later than adjoining segments are placed one above the other; wall segments that are contemporaneous are placed next to each other. In this way the sequential relationships between all wall segments are drawn on the site plan template in mini-matrixes. These are later combined into a final matrix for each separate area of the site (Figure 25). For Cocoon there are three building areas that are unconnected above ground: the slathouse,

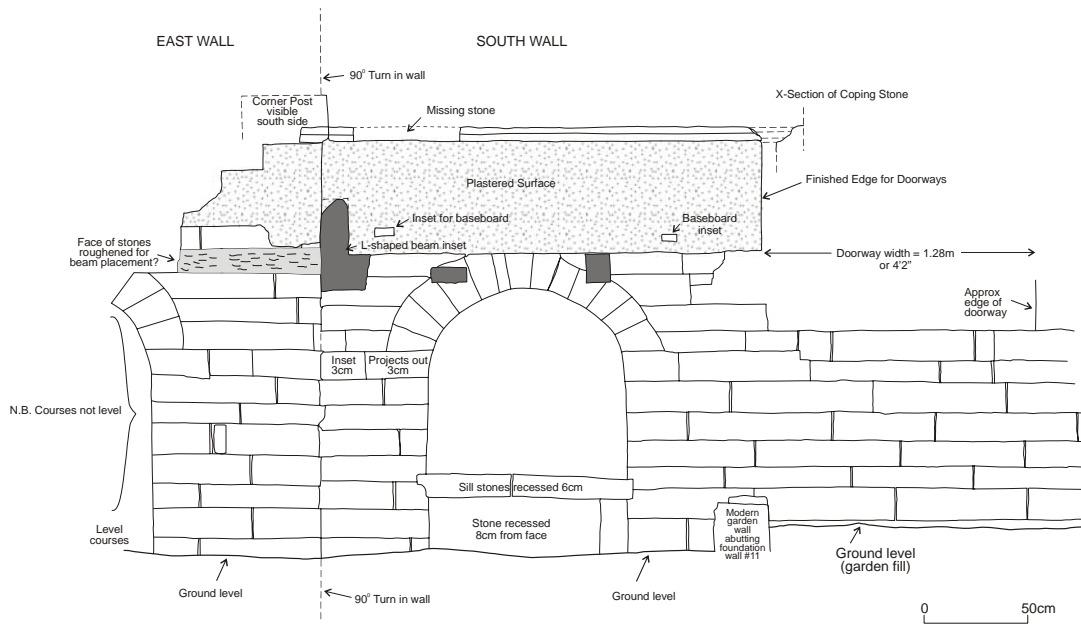


Figure 27 South wall elevation – interior.

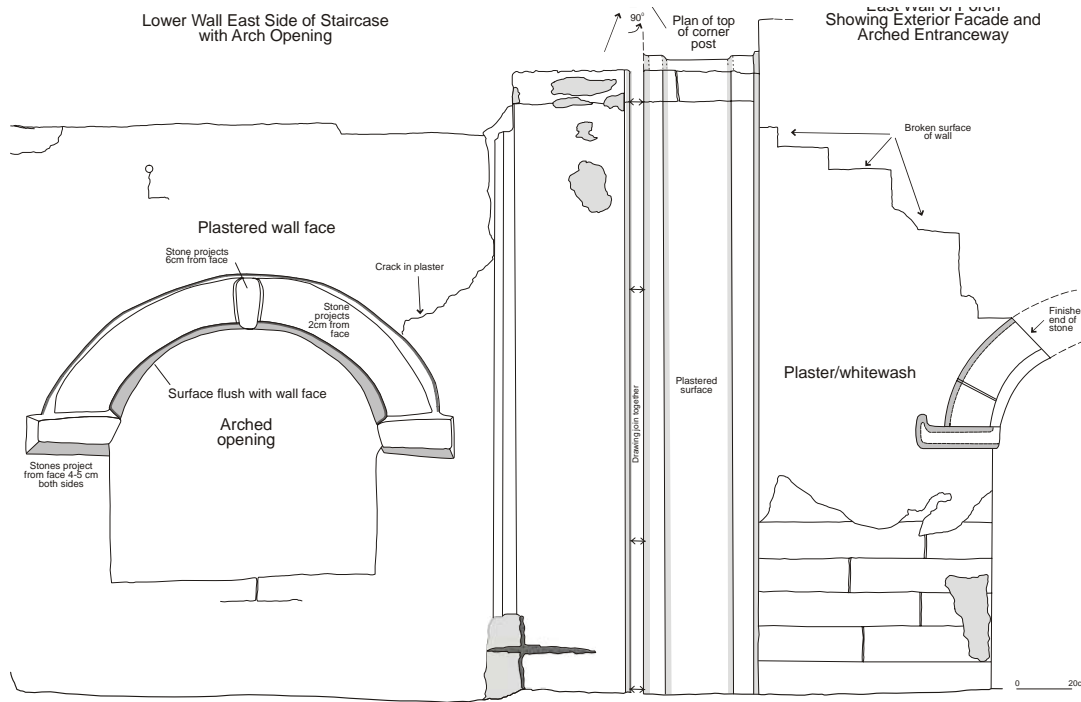


Figure 26 South wall elevation – exterior.

Room J, and the main structure of Cocoon. Should later excavation reveal the below-ground connections between individual areas, a single site matrix could be produced showing the sequence of building construction for the entire site.



Figure 28 Photograph of closet E in Hallway F.

Phases of building construction are indicated on the site plan and on the matrix. Based on the investigations to date three periods are definable for the architecture: Segments shaded yellow represent the original walls of the structure, presumably constructed in the first decades of the 18th century; green segments represent later additions to the building at an unspecified time; red represent modern garden walls and the latest additions associated with landscaping. Depending on the age of the structure and the level of building activity that has occurred, it is possible for any given structure to have several phases and sub-phases according to

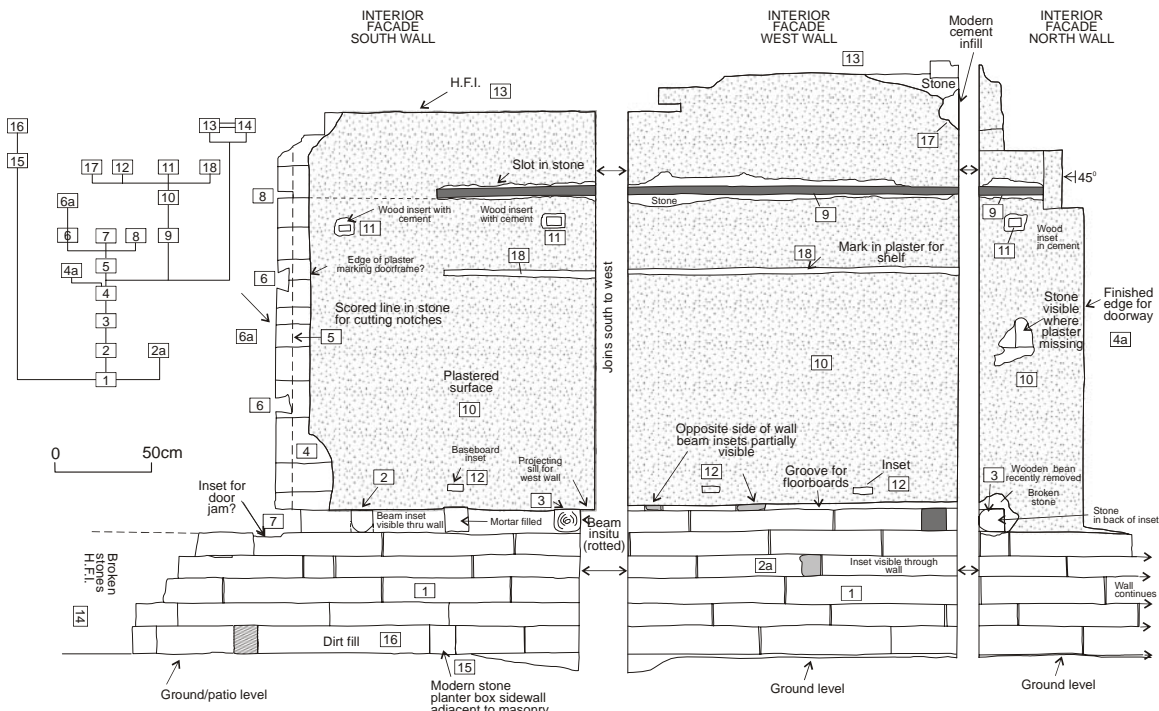


Figure 29 Drawing of closet E in Hallway F (Figure 28) with matrix showing sequence of alterations.

the chosen level of analysis. Assigning absolute dates to any particular phase should be the final step in this type of analysis. This requires either further archaeological excavation and the recovery of artifacts from primary deposits such as builders' trenches, or further archival research that might result in maps or other documents that would be useful for dating construction periods or periods of demolition, repair or alteration. It is important to point out that the matrix represents the current state of knowledge of a structure. As further information becomes available, either through excavation or documentary research, the matrix may be modified as needed. Construction of the matrix and the underlying analysis of the architecture, however, represent the first step in gaining an understanding of any given structure.

Another application of the matrix is for elevations of standing walls. In traditional architectural recording, elevations are drawn at a chosen scale and selected architectural details are reproduced using standard conventions of shading, and stippling, etc. (Figure 26, 27). These drawings should be 'as found' drawings and should not seek to 'clean-up' or interpret missing elements by inserting these where they are thought to have been located originally. Essentially, the measured drawings complement the photographed wall segments as a record of the site during the time of recording. The former are interpretative to some extent in that selected elements are chosen – there is an infinite amount of detail that could be represented – due to time constraints, while the latter are a more objective record of the existing condition of a structure (Figure 28).

A measured drawing that incorporates a matrix, however, is both interpretative and analytical (Figure 29). The interpretative aspect of the example drawing is reflected by the descriptive terms entered on the drawing by the recorder. The matrix showing the sequential relationships (earlier than, later than, or contemporary with) of the individual architectural elements; for example timber insets, grooves, plaster, plaster, baseboards, window and door openings, is analytical in that the drawing is a diagram of the relative temporal ordering of all events represented on the wall under study. As more wall sections are drawn and later combined, a single matrix could be used to illustrate the structural evolution of an entire building, or the surviving elements of a building. As before, these matrix drawings should serve as working documents to be updated when new information becomes available. They should be correlated with archival records as

well as the archaeological record in the event that building materials are found during excavations on the site.

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COCOON ARTICLE FIGURE CAPTIONS:

- Figure 1 Location map of Cocoon, Warwick Parish, Bermuda.
- Figure 2 Plate 14, 'The Cocoon,' Warwick. South Front. In Humphreys, *Bermuda Houses*, 1923, pp. 37.
- Figure 3 Site contour plan showing structures, excavation units and Room designations.
- Figure 4 Plate 13. 'The Cocoon,' Warwick. Plan of Ground Floor. In Humphreys, *Bermuda Houses*, 1923, pp. 34,35.
- Figure 5 Detail of 'Locust Hall' alias Cocoon. In Great Britain. Ordnance Survey Islands of Bermuda surveyed and contoured in 1898-9 by Lieut. A.J. Savage, R.E ; heliozincographed and published at the Ordnance Survey Office Scale: Scale 1:10,560., 6 in. to 1 statute mile, 880 ft. to 1 in Publisher: Southampton : The Ordnance Survey, 1901.
- Figure 6 Aerial plan of study area showing Cocoon location and former laneway. Bermuda Government 2005.
- Figure 7 Three-dimensional orthographic plan of site showing structures, rooms and excavation units.
- Figure 8 Overlay of existing architectural features on Humphreys' plan, 1923.
- Figure 9 'Room J' excavation with standing fireplace, looking northeast.
- Figure 10 Burnt floorboards in unit A, revealed below rubble in the west section of the building.
- Figure 11 West (interior) elevation of fireplace in Room J.
- Figure 12 Glazed ceramic doorknob found in units A and C. Identical examples can be seen at Verdmont, Smith's Parish.
- Figure 13 View of unit B, slat house/out-kitchen, showing sub-floor supports in bedrock.
- Figure 14 Post hole profiles in bedrock from sub-floor supports in unit B, slathouse out-kitchen.
- Figure 15 View of out-kitchen fireplace in slathouse. Note the bake oven, cooking fireplace and single step bench.
- Figure 16 View of unit C in cellar of Room A.
- Figure 17 West (interior) elevation of Room A showing cellar level and standing main floor masonry with architectural features indicated.
- Figure 18 Plate 17, 'Cocoon,' Warwick. Detail of Veranda. In Humphreys, *Bermuda Houses*, 1923, pp. 43.
- Figure 19 Wall slate from interior of Room A found in excavation unit C.
- Figure 20 Unit E at the entrance to cellar room A. View looking south.
- Figure 21 South profile of cellar unit E showing doorway features cut into bedrock.
- Figure 22 18th century ceramic samples from Cocoon excavation.
- Figure 23 Weights recovered from unit D in Room J servants' quarters.
- Figure 24 Site plan showing wall segments and matrix components.
- Figure 25 Completed matrixes for each site area.
- Figure 26 South wall elevation – interior.
- Figure 27 South wall elevation – exterior.
- Figure 28 Photograph of closet E in Hallway F.
- Figure 29 Wall elevation with matrix.

TABLES

Section	Freq.	%
Class		
Bone	1599	46.5
Ceramic cooking/storage	4	0.1
Coral?	1	0.0
Fasteners	8	0.2
Glass bev. Containers	183	5.3
Glass tableware	19	0.6
Grooming and hygiene	2	0.1
Hardware	2	0.1
Knitting	3	0.1
Lighting devices	69	2.0
Metal containers	687	20.0
Metal cooking ware	2	0.1
Miscellaneous hardware	28	0.8
Miscellaneous material	337	9.8
Nails	152	4.4
Pharmaceutical containers	8	0.2
Smoking pipes	1	0.0
Sewing	2	0.1
Shell	43	1.3
Tableware	96	2.8
Toys and leisure	7	0.2
Window glass	170	4.9
Writing	13	0.4
Unit D - Room J Total	3436	100.0

Section	Freq.	%
Class		
Ammunition	1	0.1
Apparel	1	0.1
Bone	644	37.4
Ceramic cooking/storage	3	0.2
Ceramic Tableware	42	2.4
Clothing Fasteners	9	0.5
Door and window hardware	14	0.8
Glass containers	75	4.4
Glass tableware	20	1.2
Grooming and hygiene	2	0.1
Hardware	3	0.2
Jewellery	2	0.1
Lighting devices	9	0.5
Metal containers	21	1.2
Miscellaneous hardware	9	0.5
Miscellaneous material	69	4.0
Nails	227	13.2
Pharmaceutical containers	5	0.3
Shell	15	0.9
Toys and leisure	5	0.3
Unidentified/Samples	452	26.2
Window glass	91	5.3
Writing	4	0.2
Unit A - Room J Total	1723	100.0

Table 3 Unit A Room J West Section Sub-floor

Class	Freq.	%
Apparel	1	0.1
Bone	504	65.9
Ceramic cooking/storage	3	0.4
Door and window hardware	3	0.4
Clothing fasteners	2	0.3
Glass bev. Containers	10	1.3
Glass tableware	11	1.4
Grooming and hygiene	2	0.3
Hardware	2	0.3
Jewelry	2	0.3
Lighting devices	5	0.7
Miscellaneous hardware	5	0.7
Miscellaneous material	16	2.1
Nails	103	13.5
Pharmaceutical containers	1	0.1
Shell	11	1.4
Ceramic tableware	38	5.0
Toys and leisure	4	0.5
Window glass	39	5.1
Writing	3	0.4
Grand Total	765	100.0

Table 4 Unit B Slathouse – Subfloor

Class	Freq.	%
Bone	91	51.4
Ceramic cooking/storage	1	0.6
Construction materials	1	0.6
Clothing fasteners	1	0.6
Glass beverage containers	14	7.9
Hardware	1	0.6
Metal cookingware	1	0.6
Misc. material	3	1.7
Nails	28	15.8
Personal items	1	0.6
Pipes	1	0.6
Shell	15	8.5
Ceramic tableware	15	8.5
Window glass	4	2.3
Grand Total	177	100.0

Table 5 Unit C Cellar Room

Class	Freq.	%
Agriculture/Horticulture	4	0.6
Bone	62	9.5
Door and window hardware	4	0.6
Clothing fasteners	4	0.7
Glass containers	384	58.7
Lighting devices	1	0.2
Metal containers	2	0.3
Metal cookingware	4	0.6
Miscellaneous hardware	5	0.8
Miscellaneous material	24	3.7
Nails	63	9.6
Shell	27	4.1
Tableware ceramics	9	1.4
Window glass	61	9.3
Unit C - cellar Total	654	100.0

Table 6 Unit E - Cellar

Class	Freq.	%
Bone	10	9.4
Ceramic cooking/storage	1	0.9
Door and window hardware	2	1.9
Glass bev. Containers	24	22.6
Hand/Maintenance tools	1	0.9
Hardware	1	0.9
Miscellaneous material	1	0.9
Nails	37	34.9
Other fasteners	1	0.9
Shell	2	1.9
Tableware	8	7.5
Toys and leisure (marble)	1	0.9
Window glass	17	16.0
Total	106	100.0

Table 7 Unit F - exterior	Freq.	%
Bone	51	11.3
Ceramic cooking/storage	23	5.1
Fasteners	2	0.4
Glass bev. Containers	87	19.2
Glass tableware	5	1.1
Grooming and hygiene	1	0.2
Hardware	2	0.4
Lighting devices	5	1.1
Metal containers	14	3.1
Miscellaneous material	4	0.9
Nails	18	4.0
Pipes	2	0.4
Shell	52	11.5
Tableware ceramics	104	23.0
Window glass	82	18.1
Writing (stoneware inkwell)	1	0.2
Total	453	100.0

Table 8				
18th Century Earthenwares and Stonewares (ca. 1700-1770s)		Mid-19th Century Tablewares (Refined White Earthenwares) (ca. 1835-1870)		19th C. Cooking/Storage Wares
White salt-glazed stoneware	4	Porcelain (plain and gilded)	4	<i>Coarse Red Earthenware</i>
Tin-glazed earthenware	13	<i>Transfer Printed</i>		Glazed
Frechen Stoneware	3	Flow blue	5	Unglazed
Beauvais coarse stoneware	1	Blue	39	Salt Glazed Stoneware
Scratch blue stoneware	3	Black	2	
English brown stoneware	2	Green	4	
	26	Red	2	
		Purple	2	
Late 18 th /Early 19th C. Tablewares (Creamware and Pearlware) (ca. 1760-1830s)				20th Century Tablewares
Porcelain	5	<i>Minimally Decorated</i>		Refined and Porcelaineous
<i>Transfer Printed</i>		Sponged/Stamped	3	Unidentifiable
Blue	19	Banded	4	
Brown	4	Painted	3	
<i>Minimally Decorated</i>		Moulded	1	
Painted	5	Undecorated	29	
Banded	2		98	
Edged	4	Last Third 19th Century Tablewares		
Undecorated	68	Porcelaineous stoneware	23	
	107	Ironstone	10	
		Gilded/Hard Paste Porcelain	1	
			34	