The Search for John Bartlam at Cain Hoy: American's First Creamware Potter

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The Search for
John Bartlam
at Cain Hoy:
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by

Stanley South

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The University of South Carolina
The Search for John Bartlam
at Cain Hoy:
America's First Creamware Potter

by
Stanley South

with a contribution by
Carl Steen

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by
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from
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and the
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and the
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Columbia, S.C.
1993

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COLUMBIA, SC 29208

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Brad Rauschenberg
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A special debt of gratitude goes to Carl Steen, President of Diachronic Research Foundation, Inc., co-PI for the project, for his excellent job of carrying out the field work, the results of which are seen in the various appendices in the second half of this report. Carl provided a excavation management report to Archives and History, and it, and his tabulation of artifacts and other data collected by him, is included in the Appendix. Thanks too, to Carl for assisting me with reference sources and for the idea, through one of his reports, of the effectiveness of color plates when used in archaeological reporting, as seen in this volume. I am also indebted to Carl for help with ceramic taxonomy.

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Chapter 1

Searching for John Bartlam at Cain Hoy

Since the early 1970s the project reported here has been a dream of Bradford L. Rauschenberg, Director of Research at the Museum of Early Southern Decorative Arts (MESDA) in Old Salem, North Carolina, and me, Archaeologist and Research Professor at the South Carolina Institute of Archaeology and Anthropology at the University of South Carolina (SCIAA). More recently, in 1991, Carl Steen, President of The Diachronic Research Foundation in Columbia South Carolina, discovered the fascination the search for Bartlam at Cain Hoy holds for those of us interested in eighteenth century pottery. Carl joined me as co-PI for the project. George Terry, System Vice Provost for Libraries and Collections at the University of South Carolina, has long had an interest in locating Bartlam's potworks. The joint SCIAA/Diachronic/MESDA project reported in this volume was made possible through a historic preservation grant from the South Carolina Department of Archives and History.

Historical Background

From the earliest settlement of South Carolina in 1670, its economy depended on plantations rather than manufacturing (Cheves 1897:366). Almost one hundred years passed before the first pottery factory manufactory was established by John Bartlam in St. Thomas Parish at a settlement known in the eighteenth century as "Cain Hoy", but known today as "Cainhoy", on the north bank of the Wando River, north of Charleston. I use the term Cain Hoy to refer to the site where we worked and "Cainhoy" to refer to the present community bearing that name.

Bartlam's factory was of concern to Josiah Wedgwood, saw it as an attempt to take over the earthenware market in the American Colonies from England (Wedgwood 1783; Ramsay 1947:97). Bartlam found good clay at Cain Hoy and was beginning to establish his operation in 1765. In May 1768 he mortgaged his factory to further finance the undertaking, and within a year advertised for young African Americans to work as apprentices in the new business. By 1771 he said he was making "Queens Ware" and "china" at a manufactory, said to be located in Old Church Street in Charleston, and advertised for six apprentices (S.C. Gazette, September 21-28, 1765; S.C. Archives, Mortgages, 3A, p.343; S.C. Gazette and Country Journal, June 6, 1769; S. C. Gazetteer, January 31, 1771 Supplement; Rauschenberg 1991:13). These apprentices may have been African Americans.

His factory had failed by 1773, and his foreman, William Ellis, went to Salem, North Carolina, where he taught the potter Rudolph Christ how to make Queensware and Tortoiseshell ware as well as salt-glazed stoneware (South 1970, 3: 70-72, 1975, "Discovery in Wachovia").

By 1774, Bartlam had moved his factory to Camden and was exporting his "Queen's Ware" to Charleston which was said to be "equal in quality and appearance, and can be afforded as cheap, as any imported from England" (S.C. Gazette, April 11, 1774). He died in 1781 and his property in Camden was seized and sold for debts in 1788 (S.C. Archives, Wills and Inventories; Kershaw County Deeds, B-132).
Bradford Rauschenberg has published a detailed examination of what is known about the Staffordshire potter, John Bartlam of Stoke on Trent Parish in Staffordshire, entitled "John Bartlam, Who Established "new Pottworks in South Carolina" and Became the First Successful Creamware Potter in America (1991: 1-66). I refer the reader to this work for more details of Bartlam's undertaking.

Project Background

In the 1960s, I carried out excavations in the Moravian settlements of Bethabara and Old Salem, North Carolina, assisted by Bradford L. Rauschenberg (South 1967, 1: 3-52), and found examples, made in the 1780s, of the type of mold-made creamware William Ellis had taught Rudolph Christ to make in 1773 (South 1970, 3:70-72, 1971, 5: 171-185). This ware caused something of a sensation among ceramic scholars because no one had seen the type of tortoiseshell ware and creamware made by Bartlam and Ellis prior to that time, and no examples were known to exist (Ramsey 1947: 98).

In 1968 Bradford Rauschenberg found a pottery mold with the initials "R.C." on the back (Rauschenberg 1968: 107; 1991: 90). This mold was for making floral sprigs to decorate pottery, such as that being made in the Leeds factory in England at the time (Rauschenberg 1968, 2(1):107-122; Towner 1965: 152-153). This indicates that Rudolph Christ was making some of the English style pottery I found in Old Salem.

In 1969, I came to South Carolina and began to see cream-colored and polychrome tortoiseshell-glazed pottery on archaeological sites of the Revolutionary War period, at Ninety Six, Fort Watson and Camden (South 1974:180-181). Because the separate identification of the wares, made by either Bartlam, Ellis, or Christ, could not be made, we came to call them "Carolina creamware" as a generic type name. This type creamware has a darker cream color than the British creamware so well known from eighteenth century British colonial sites. As I expected, when Kenneth Lewis excavated at Camden he found many fragments of the Carolina made earthenware, 651 fragments in all, and described the types. But the kiln site where Bartlam made the ware has not yet been located (Lewis 1976: 171).

In 1972 George Terry, now Vice Provost for University Libraries and Collections at the University of South Carolina, researched the documents relating to the Cain Hoy site of Bartlam's factory (Terry Letter 3/16/79). As a result he visited the Cainhoy settlement and found a number of Carolina creamware bisque sherds, indicating that Bartlam's kiln at "Cain Hoy" was likely not far away. He found these clues to Bartlam at a site on St. Thomas Point, just west of the road to a boat dock, in an area where surface bulldozing activity had taken place perhaps to obtain soil for the road to the boat dock and to fill a swimming pool once located nearby.

One unglazed sherd he found was decorated with great skill, using what appears to be a one-hair brush to delicately execute a Chinese style figure in a curved-bow boat (frontispiece). Rauschenberg has illustrated this sherd in a study of John Bartlam and his associates (1991: 33). Other sherds found by George Terry reveal a variety of wares apparently made by John Bartlam in his Cain Hoy factory. The interest in this site was intensified due to the current activity involved with selling off lots on the site for homesites. The collection made by George Terry is in the McKissick Museum. Rauschenberg (1991: 29-49) has discussed and illustrated a number of these fragments.

In September, 1990, George Terry, Chester DePratter, and I visited the St. Thomas Point site and found that it was being developed and lots were being sold. Thus the opportunity to carry out survey and testing on the site became more urgent. DePratter
discovered a shell midden not far from the place where Terry had found the bisque sherds many years before, and it appeared, from artifacts present, that the midden dated to the third quarter of the eighteenth century. Of particular interest was the discovery of a number of broken, but mendable, bisque ware sherds (Plate 32) from the base of a cream paste vessel, the type of ware expected to be recovered around Bartlam's kiln. The interpretation of the piece was that it was taken into a household located at the shell midden during the time the Bartlam factory was in operation between 1765 and 1770. It was thought at the time that this household might be that of Bartlam, who stated that he was then living at his factory. The unfinished bisque cream paste vessel base suggested that perhaps the kiln was likely not far away since such pieces normally have no practical uses and are usually discarded near the kiln.

In March, 1991, Richard Brooks and David Crass, archaeologists with the South Carolina Institute of Archaeology and Anthropology's Savannah River Archaeological Research Program, at George Terry's suggestion, visited the St. Thomas Point site. They drew a sketch, excavated some test units into the shell midden area, and conducted additional surface collection of artifacts. They concluded that the site post-dated 1750, but was not Bartlam's kiln site, though it was of the right period to have been his residence. A desire to locate the kiln was the primary focus of interest generated by Terry's bisque pieces of creamware. In August of 1991, the site was placed on public record for the first time and a research design and proposal was written.

The Project Goals

The primary goal of our joint project was to learn more about the pottery made by John Bartlam at Cainhoy between 1765 and 1770, through a sampling survey of the area where bisque sherds were found by George Terry. Our project in this area hoped to find evidence of Bartlam's factory, kiln site, or waster dump. A close interval shovel testing survey was planned for this area to generally locate the distribution of waster fragments, finished pottery, kilns, or structural evidence. Our plan was that if such an area was identified, further intensification of the shovel testing and larger test squares should allow positive identification of the function of the area. We anticipated that such a plan would likely be able to collect a number of wasters and bisque ware sherds in order to learn something of the range of Bartlam's wares and to discover the area of their greatest concentration. The details of the method we used are presented in this chapter.

In addition to the close-interval shovel testing survey between the trailer site and the road, the area of the shell midden, thought to possibly be the Bartlam residence area, was also shovel tested to determine the extent of the eighteenth century occupation debris associated with it in the hope that further bisque sherds such as those found in the midden in 1990, may be revealed. Steen's shovel testing survey was carried out in March of 1992 and the data he recovered are presented in the Appendix.

Although our primary goal at the site was to recover evidence of Bartlam's ware and the area of its greatest density and to describe such ware. A secondary goal was an interest in the relationship between Bartlam's ware as it could be determined at Cain Hoy and fragments of such ware found on other archaeological sites in South Carolina, if such could be successfully identified. To carry out this phase of the project collections at the South Carolina Institute of Archaeology and Anthropology at the University of South Carolina were examined, as well as those in the Charleston Museum to search for sherds possibly made by Bartlam. These were photographed and the results of this study are reported in Chapter 7.
A third goal of our study was the documentary research related to Bartlam and his ware. Since the proposal for funding this project was written, Brad Rauschenberg has published (1991) his historical and archaeological background reports on the Bartlam, Ellis, Christ pottery operations, including some illustrations of possible Bartlam made pieces that have survived.

The Historic Significance of the Site

I have outlined above the development of this early earthenware factory where the first creamware in America was produced. The site at Cain Hoy is a major asset for understanding the unique contribution Bartlam made to the story of ceramics in America. Documents suggest that Bartlam was very likely involved in the search in South Carolina by Wedgwood and others for kaolin clay (Rauschenberg 1991: 67-79). One hundred years after Bartlam's time South Carolina became a major supplier for kaolin clay for industrial and ceramic uses (Merrens 1978: 234-247). The Carolina creamware and other Bartlam products recovered in this project are of significance for understanding the development of wares by Bartlam at Cain Hoy, Charleston, and Camden, and by William Ellis and Rudolph Christ at Old Salem, North Carolina. Those fragments found on a number of archaeological sites in South Carolina are also of value in understanding the distribution of Bartlam's wares to the consumer.

The simple fact that Bartlam was making pottery to rival that made in England, as witnessed by documents, and that Wedgwood was concerned about the effect Bartlam's factory would have on his export of ceramics to America, is evidence for the importance of this pottery effort in the history of South Carolina (Rauschenberg 1991; Wedgwood 1783). This importance is highlighted when it is remembered that no whole piece of Bartlam's ceramics has survived to the present, forcing us to rely on the archaeological sherds for our knowledge of this ceramic development in America. From our work at Cain Hoy, reported in this volume, we now have a better appreciation of why Wedgwood was afraid of Bartlam's operation in America. George Miller, an expert on British and American ceramics, after reading a draft of this report, said (personal correspondence to South June 4, 1993):

I remember reading Wedgwood's correspondence expressing his concern about Bartlam setting up an industry in South Carolina and thinking that Josiah was being paranoid. However, after seeing what Bartlam produced, it is clear that Wedgwood had good reason to worry about competition from America. The Cain Hoy excavations are a very important contribution to our understanding this forgotten attempt to establish an American industry for potting refined wares.

The Scientific Significance of the Work

The recovery of Bartlam ceramics through this project allows a scientific base, presented in this report, from which any future study of Bartlam and his wares can be undertaken. The historical documents have told us when Bartlam was at Cain Hoy, and the discovery of a few sherds by George Terry, who recognized their importance, has led us to a site at Cainhoy where other sherds of Bartlam's ware have been recovered. The description of these wares of Bartlam and other, non-Bartlam sherds and artifacts is presented in Chapters 4-6 of this report and the tabulations are in the Appendix.

Archaeologists, many of whom are not now familiar with the Carolina creamware they excavate almost routinely on some sites, will now be better informed as to the identification and significance of the Carolina earthenwares they recover from their
sites. I have been contacted by archaeologists asking me to help identify some sherds they have recovered that do not fit the usual appearance of British made ceramics from the mid-eighteenth century. Through this report archaeologists, ceramicists, museum curators, collectors, and others not familiar with Bartlam's Carolina production will be able to identify them for the first time.

The State of Knowledge in the Field of Ceramic Studies

Information about Bartlam's pottery in the Charleston area in the eighteenth century has long been known from documents (Ramsey 1947), but few ceramic specialists are aware of the few published articles based on archaeologically recovered fragments of Bartlam's ware. The current knowledge about Bartlam's production and that of his superintendent, William Ellis, and the influence of Ellis on Rudolph Christ at Salem, North Carolina, is limited to specialists interested in ceramic history in America. It is hoped that this report, and that yet to be written from a more extensive project at Cain Hoy carried out after this study was done, will help to inform those interested in America's early ceramic history.

As a result of the study reported here, the Museum of Early Southern Decorative Arts obtained private funding to support an additional project in partnership with the South Carolina Institute of Archaeology and Anthropology. The results of that project will be reported later in another volume entitled, "Bartlam on the Wando: Staffordshire in Carolina".
Chapter 2

The Method and Results of the Field Search

Research Goal and Strategy

Our primary goal was to find evidence of Bartlam's pottery manufactory and to discover something about the site layout. Our sampling strategy to achieve this was to determine the distribution of Bartlam type ceramics within a 100' by 300' area (the sample frame) where previous surface examination had revealed Bartlam sherds. Carl Steen and his crew, following the project proposal, dug shovel test holes about one foot in diameter at twenty foot intervals to the subsoil level in most cases. Some additional sample holes were dug beyond the originally planned area to obtain as large a coverage of the area as possible in the available time. A total of 153 shovel test holes were excavated and it is these units that comprised our sample frame. The location of these test units on the Cain Hoy site are shown on the site map in Figure 1. The data recovered from these test units are tabulated in the Appendix.

The presence of bisque ware (pottery fired once but awaiting glazing) in the previous surface collections from the site gave us reason to expect that more evidence of Bartlam's local manufacture might be found on this site. Because bisque pottery is unfinished ware, imperfect pieces are usually discarded in the waster dump near the kiln. They are not sold and therefore the presence of bisque fragments is an indication that the source of its manufacture is not far away. Bisque fragments, therefore, are an important means of distinguishing Bartlam’s manufacture from finished pieces made by others. Such wares, and others damaged in the kiln during firing (called "wasters"), were usually discarded by the potter near the kiln, in a "waster dump".

Our strategy was that a concentration of Bartlam ceramic fragments in an area would reveal where five foot sample squares should be dug to obtain a larger sample of Bartlam's ware. An ideal goal would be the location of a kiln or waster dump area where Bartlam manufactured his ware. Responsibility for reporting on the data base recovered by Steen in the March 1992 field work was divided between Steen, who was to conduct an artifact distribution study aimed at determining the areas of greatest density, and South, who was to provide a taxonomic study of the artifacts and ceramics, especially those thought to have been made by John Bartlam. Data collected by Steen is presented in the Appendix and South's taxonomic study is seen in Chapters 3-6.

In addition to Bartlam's ware, we were interested in colono ware, African American made pottery (Ferguson 1992), possibly made by African American apprentices Bartlam may have had (Rauschenberg 1991: 11). Also, if the site had been occupied before or after Bartlam's use of the area, artifacts should reveal this information along with possibly revealing functions other than activities by Bartlam and his associates.
The Field Work

The Cain Hoy site (38BKI1349) is located on the north bank of the Wando River about ten miles from Charleston, in the little community of Cainhoy, in the St. Thomas Point development owned by Waterfront Properties, Inc.

Carl Steen and his helpers dug 153 shovel tests and 17 five-foot squares at Cain Hoy. The profile drawings for each shovel test and sample squares, as well as other records, are on file as the South Carolina Institute of Archaeology and Anthropology at the University of South Carolina. The plan and profile drawings for those squares having features are included in the Appendix, as well as various tabulations of data resulting from his field work. Also seen in the Appendix are Carl's series of artifact distribution drawings for various artifact classes resulting from those tabulations, and tentative house lot reconstruction.

The planned shovel test area of 100 by 300 feet, with holes on twenty foot intervals, was executed by Carl and Kathryn Joseph, and their crew. The size of the core sample area was 140 by 220 feet, which accounted for half of the shovel tests, with the other half being placed beyond the planned research frame to allow a much wider area of distribution than that originally specified in the research plan (Fig. 1).

A grid was established through iron rods placed at 100 foot intervals along the south side of the public dock road, aligned with a nail in a large live oak at the edge of the marsh placed there by surveyors who laid out the lots for Waterfront Properties, Inc., owners of the land at the time the project was carried out. The grid co-ordinates are seen on the site map in Figure 1. The grid north alignment is 52 degrees west of magnetic north. For ease of designation we used "north" to refer to grid north in our field notes.

The site lies in a grove of ancient live oak trees festooned with Spanish moss, beside the Wando River. The shovel tests revealed that a protective layer of soil has been bulldozed onto the site in the past twenty years. This soil cover protects the underlying soil zones containing the artifacts of the eighteenth century occupation, including sherds from pottery made by John Bartlam, the major target of our research effort. On the high ground to grid north of the main part of our sample area is a shell midden and a number of shovel test holes were excavated here (Fig. 1).

The Shovel Test Units and Five-Foot Squares - Results

The reader is referred to Figure 1 as the following discussion is presented. Of the 150 shovel test units excavated, only 31 contained fragments of suspected Bartlam ware. Only 11 of these contained more than a single sherd of the suspected ware. Carl Steen conducted a count of such wares in the field and was able to determine that there was a cluster of adjacent test units containing more than a single sherd of suspected Bartlam ware in an area 20 by 60 feet in size, where the Bartlam sherd count totaled 25. From this information he placed eight five-foot squares in that area (Fig. 1), to recover more suspected Bartlam sherds. These eight squares produced a total of 588 suspected Bartlam sherds.

In addition to the large number of Bartlam type sherds found there, Square 308 contained a mortared brick chimney base and hearth, seen in Steen's drawing in the Appendix. In Square 302, a pit feature contained a quantity of bricks and charcoal as well as shell, bone and other refuse from domestic occupation (Appendix). It was clear that this area was the site of the ruin of a structure and further work would be needed in this area in any future project.
To the east of that cluster, adjacent test units 40 and 46 (20 feet apart) produced a total of 11 suspected Bartlam pottery fragments. This indicated that five-foot squares should be placed in this area and one was placed beside each of the test units. These two five-foot squares produced a total of 579 sherds of suspected Bartlam ware!, Square 313 containing 490 of this total (Fig. 1). Clearly, this area was a significant one for the focused concentration of suspected Bartlam sherds. As can be seen from Steen's profile drawing of Square 313 in the Appendix, a deep pit feature (Fea.8) was present in the southwest quarter of the square, from which many Bartlam type fragments were recovered. This square also revealed one of the modern septic drain field ditches seen in several of the excavated units, dating from the period when the site was used as a trailer park.

In addition to the large number of Bartlam type sherds from the square, and the feature in Square 313, Square 314 revealed a structural posthole (Appendix). These data revealed that a structure also stood in this area, and that further work would be needed to determine more about it and the function of the deep pit (Fea. 8).

To the east of the concentrated deposit of suspected Bartlam ware sherds in Squares 313 and 314, beside the public dock road, test unit 169 revealed four sherds of Bartlam type ware. Test unit 49 on the south side of that road also revealed a Bartlam type sherd. As a result, Steen placed Square 315 adjacent to test unit 49, but this square (dug because the test unit here went through layers of fill) was disappointing in that it produced only five sherds of Bartlam type ware. However, it was not disappointing in terms of architectural information. A pit feature here revealed a quantity of mortar and brick fragments, along with nails, ashes and charcoal. This structural evidence indicated that a building likely stood in this area (Fig. 1).

At test unit 84, seven sherds of Bartlam type ware were discovered but none of the other test units in the area produced even a single sherd. Half way between test unit 84 and the heavy concentration of Bartlam type sherds in the Square 313 and 314 area Steen placed squares 310 and 311. These two squares produced a total of 42 sherds of suspected Bartlam ware (Fig. 1). This situation revealed that in some of the areas where test units did not reveal a single sherd of Bartlam type ware, a five foot square there might well do so.

To the west of the area where the brick chimney base and hearth were found, test unit 125 produced two sherds of suspected Bartlam ware. To obtain a larger sample from this area Steen placed Squares 301 and 303 on each side of test unit 125. The results were that Square 301 produced 9 Bartlam type sherds, with 4 coming from Square 303. In Square 301, however, a structural posthole (Fea. 5) was also discovered, providing evidence for a structure of some kind in this area (Fig. 1).

The shell midden, discovered by Chester DePratter (discussed in Chapter 1) consisted of refuse thrown from an eighteenth century domestic household located on this high ground of the site (Fig. 1). Sherds of Bartlam's bisque ware were found in this midden (Plate 32), making this midden of particular interest to us. Test units in this north area of the site produced 7 out of the 34 with Bartlam type ceramic fragments, but no test hole had more than a single fragment of such ware. The fragments were dispersed as far as sixty feet from the oystershell midden and refuse area.

Bulldozing has disturbed some of the surface of the midden but was apparently limited to that area. Although no structural data as such was found at this location, the pattern of eighteenth century midden containing fragments of Bartlam’s type ware,
including kiln waster bisque fragments, is consistent with that seen in the other areas of the site. My interpretation of this area, based on the domestic refuse contents of the midden and the dispersion of Bartlam type sherds, is that a domestic household structure was located here in the eighteenth century from which the refuse was thrown.

Clues to Structures on the Cain Hoy Site

The results presented here from the shovel test units and five-foot squares have suggested that from the postholes, brick and other structural refuse, as well as a brick chimney base, at least five structures are likely represented at the Cain Hoy site. From Carl Steen's drawings demonstrating the distribution of various architectural and functional artifact classes, he was able to suggest that seven structures were represented (Appendix). If it were possible to strip the topsoil away from the area through carefully controlled archaeological excavation to reveal the other posthole and brick features as well as other concentrations of architectural debris, we would be able to reveal the size and orientation of the structures from which we now only have a few clues.

White Potting Clay on the Cain Hoy Site

During the excavations Carl Steen and his colleagues discovered lumps of light clay in several places. This encouraged us because such clay would be the very material needed by Bartlam to manufacture his creamware. We speculated that perhaps such clay was dug nearby and brought to the site by Bartlam. If this could be demonstrated it would be a needed clue to support the supposition that we were dealing with Bartlam's potworks. This interpretation was given impetus when Carl discovered white clay beside some of the pilings driven to build a new dock on the site. This clay had been brought up from an underlying layer of white clay during the process of sinking the pilings.

The realization that there was a white clay layer beneath the Cain Hoy site from which John Bartlam may well have been obtaining his clay for making his creamware also brought forth another interpretation for the lumps of clay found in some of the test units and five-foot squares. This alternative interpretation is based on the fact that once we know a white clay layer underlies the Cain Hoy site, we must also acknowledge that any deep hole dug into the site by anyone at anytime before our research was undertaken, such as wells, privy holes, cellars, septic tanks, swimming pools, etc., could bring up lumps of white clay to become mixed with the overlying soils and refuse thrown onto the site. White clay alone, therefore, is not sufficient evidence to assume Bartlam brought the clay there.

In the following chapters I examine the artifact assemblage collected by Carl Steen and his associates. I describe the Bartlam ceramics (Chapter 3), the electron microscope study to look at specific ceramic attributes (Chapter 4), the non-Bartlam ceramics (Chapter 5), and the other artifacts recovered (Chapter 6), and the results of a collections survey looking for examples of pottery possibly made by Bartlam (Chapter 7). As these chapters are presented, the artifact story revealed by the field methods described in this chapter will unfold. In so doing, a better understanding can be had of the events that took place on the Cain Hoy site and the people who were involved in them.
Chapter 3

Searching for Bartlam in the Ceramics

A Background Introduction to Pottery Paste, Glaze and Color

In order to separate the ceramic fragments of wares made by Bartlam from those made by others in Staffordshire and elsewhere with the goal of identifying which is which, the reader unfamiliar with such wares might benefit from a general introduction to pottery paste, glaze and color. In a classification of pottery the basic ceramic breakdown is based on hardness, with porcelain being the hardest, stoneware less hard, with earthenware the softest. Bartlam's production was primarily earthenware, but we will see that stoneware was also likely produced by him.

There are many variations of cream, buff, and red paste pottery covered with different colored metallic glazes, with names such as creamware, green glazed ware, redware, blackware. In addition to these Bartlam was also using a buff or a red clay with a combination of slips (different colored cream-consistency clays) to produce different combinations of colored pottery. For instance, a clear lead glaze applied over a white firing clay will produce creamware, but the same glaze applied over a red clay body [paste] will produce a redware.

Varying the metallic oxides added to the lead glaze will produce different colors, copper producing green, manganese producing brown, etc. By varying the color of the clay and the metallic oxides in the glaze, and using different combinations on the interior and exterior of the vessels, a potter can produce a wide range of colors. A lead glazed pinkish paste, for instance, will produce a pumpkin or gold color, and when this exterior combination is used with a copper glaze on the interior, a green and gold ware is the result. This "green and gold" ware was described by Wedgwood in 1767 (Miller 1987: 83).

If a potter wants to produce a combed yellow and brown decorated slipware over a buff paste, a red clay slip (cream consistency clay and water) is sometimes applied over the greenware to hide the buff paste. Then, a thin coating of white clay slip is applied over the brown slip. A comb like tool is then used to scratch a decorative design of parallel lines onto the white slip. When the vessel is fired the white slip separates at the scratches and spreads apart beneath the lead glaze, revealing the red clay slip beneath. Sometimes on mugs, brown slip dots will be applied to the rim area, with the lower part of the vessel receiving the combing. This produces what I refer to as buff paste "combed and dotted yellow slipware," often seen on late seventeenth and eighteenth century British colonial sites. A variation of this combed yellow slipware has a marbelized appearance, which I refer to as "marbeled slip decorated ware."

When white, cream, brown, green or red slip is poured into a slip cup from which a small spout protrudes at the base, slip can be trailed onto the surface of a vessel to produce lines as the ware is turned on the wheel. The flow of the slip from the slip cup is controlled by placing the thumb over the top opening in the cup (Cooper 1968: 13; South 1967: 48). Such ware is known as "trailed slip decorated ware."

When calcined (burned) flint is added to a white china clay a whiter paste and lighter colored ware is produced (Shaw 1829 [1968]: 160-161). When bisque fired
earthenware is painted with cobalt blue decoration, it has been called "blue and white", or "china" ware, or "china glaze" or "pearl white", known today as "pearlware". More will be said of this type ware since our work at Cain Hoy has revealed biscuit fired and glazed fragments made by Bartlam before he left there in 1770. Pearlware was previously thought to date no earlier than 1775 (Miller 1987; Barker 1991).

If a special kiln is used, allowing higher firing temperatures, and a white-firing clay is mixed with calcined flint, a white salt-glazed stoneware can be produced (Shaw 1829, 1968 edition: 129). When the surface is scratched with a nail and ground zaffre (cobalt) is rubbed over the scratches, scratch-blue salt-glazed stoneware is the result (Shaw 1829 [1968]: 177).

If a cream paste ware is dipped in a "tin-ash" glaze (oxide of tin), the result is delft if made in England or Holland, majolica if produced in Italy and Spain, and faience if made in France and elsewhere in Europe.

The above general discussion involves well known processes in mid-eighteenth century pottery technology. A similar range of clays, glazes and colors was also used at Bethabara and Salem, North Carolina, where the potters Gottfried Aust and Rudolph Christ worked and where William Ellis taught Christ how to make Staffordshire type English pottery using plaster of Paris molds (Rauschenberg 1991; South 1967: 33-52, 1970: 70-72, 1971: 171-185, 1974: 163-166).

In the following description of wares I have depended heavily on the presence of bisque and other kiln wasters to discover what molded ware patterns and glazes Bartlam was making. It can be argued strongly that those glazed fragments showing no sign of damage in the kiln, might well be from imported Staffordshire sherds. At present, until a more definitive study using other than simple visual inspection is undertaken, I must agree. What this does is to limit our understanding of the range of Bartlam wares to those identified kiln wasters.

From kiln damaged fragments of glazed ware from the Cain Hoy site I found that the various tortoiseshell colored ware fragments look much like that made in Staffordshire by Bartlam's contemporaries. A big question we have to ask is which of the multi-colored tortoiseshell fragments is Bartlam's (Barker 1991: Plates 20 and 21; Noël Hume 1970: 125; Towner 1957.: Plate 38, 1965: Plate 10B)?

With creamware there is a difference between the darker creamware we have called "Carolina creamware", which we have attributed to John Bartlam, William Ellis and Rudolph Christ and that much lighter cream colored ware typically seen on British colonial sites of the last quarter of the eighteenth century.

We also know from sherds of kiln damaged green glazed creamware that green glazed ware made by Bartlam looks much like that developed by Josiah Wedgwood and Thomas Whieldon in 1759 (Noël Hume 1970: 124). How are we to tell the undamaged Bartlam green glazed ware from the identical appearing ware imported to the Cain Hoy site? Answering this question is one of the major challenges of the Bartlam ceramic research.

Our excavation units within and beyond the 100' by 300' sample frame area (Fig. 1) revealed a number of eighteenth, early nineteenth, and twentieth century artifacts. The artifact density figures resulting from Carl Steen's work are presented in the Appendix. To begin my analysis I divided the assemblage into Native American wares, colono ware, some of which were made by African Americans, wares thought to have been made by
Bartlam, and non-Bartlam European and Chinese wares. I deal only with the Bartlam ware in this chapter.

I used three basic categories to divide the assemblage thought to have been made by John Bartlam from 1765 to 1770: 1) those sherds I have called Bartlam's ware based on strong evidence from kiln wasters, both glazed and bisque fired sherds; 2) those wares probably made by Bartlam, based on less strong evidence such as that from a single sherd, and; 3) those wares possibly made by Bartlam based on circumstantial evidence. Using these attributes the wares, types and patterns of potential Bartlam fragments were identified as follows:

**Taxonomic Considerations of the "Ware Thought to Have Been Made by John Bartlam"

The ware reported here as that thought to have been made by John Bartlam was recovered from the shovel test holes and the five-foot squares at the Cain Hoy site. The ware names I have used and the order of their presentation are based on those used by David Barker in his outstanding presentation of the pottery excavated by him from the waster dump of the Staffordshire potter William Greatbatch (1991: 165). This parallel is especially appropriate since Barker's list of Greatbatch's wares exactly parallels the time frame for Bartlam's operation at Cain Hoy, from 1765 to 1770. Barker's list of Greatbatch wares is as follows, grouped according to those I have interpreted as also having been made by Bartlam and those that were not (1991: 165):

**David Barker's List of Greatbatch Wares (c. 1765 - 1770)**

**Those Greatbatch Wares Also Made by Bartlam**

- Creamware
- Cauliflower ware
- Tortoiseshell ware
- Pineapple ware
- Melon ware
- White salt-glazed stoneware

**Those Greatbatch Wares Not Demonstrated to Have been Made by Bartlam**

- Basket and fruit ware
- Red stoneware
- Shell ware
- Basket and pineapple ware
- Buff stoneware
- 'Serpent' moulded ware

Bartlam also made a number of additional wares not listed by Barker, as well as other variations or ware types and patterns, all of which will be discussed in the following descriptive section.

The primary ware made by Bartlam at Cain Hoy can be defined by the color of the paste as creamware. In his study of the wares of the potter Greatbatch, David Barker defines creamware as follows (1991: 166):
Creamware is simply an earthenware manufactured from refined white-firing clays, strengthened and whitened by the addition of calcined flint, which is covered by a lead glaze. Consequently, the term covers all those variations which are coloured under-glaze by the application of slips of metallic oxides, often referred to as tortoiseshell wares. There is a significant overlap between plain cream and tortoiseshell wares. . . .

The introduction of coloured glazes -- green, yellow and brown, in this case -- is only a minor development of the simple uncoloured creamwares. Green glazed cauliflowers, green and yellow pineapples, melons and other types are all, essentially, creamwares. They were made with the same basic technology, used the same body recipes, were produced alongside the plain creamwares and were fired in the same ovens.

With this definition in mind we can turn to the examination of the fragments recovered from Cain Hoy, with the goal of identifying Bartlam's wares from those made by others. The most firm attribution of a ware to Bartlam comes through those fragments showing signs of damage in the kiln (kiln wasters) or elsewhere in the manufacturing process. Bisque pieces awaiting the glazing process are a prime example of such ware because potters normally did not distribute bisque ware to their customers. Damaged bisque fired ware would be discarded before the glaze was applied, and wares damaged during the glost [glaze] firing, warped pieces, and those with unsightly firing clouds (fire damaged areas on a vessel), cracks, those stuck to other pieces with glaze, and those with debris stuck to them usually were discarded in the waster dump located near the kiln.

Dividing the Ceramic Collection Into Two Groups

From my experience at Bethabara and Old Salem, North Carolina, that revealed fragments of the wares made by Rudolph Christ and Bartlam's foreman, William Ellis, the fragments recovered in our study were divided into two groups (South 1967, 1970, 1971, 1974). These groups were used by Carl Steen in the field to separate the Bartlam and non-Bartlam pottery. The group we were most interested in I call "Ware Thought to Have Been Made by John Bartlam," which includes those fragments such as kiln waster sherds, bisque sherds, and anomalous ceramics in general that seem likely to have been made by John Bartlam when he worked at Cain Hoy between 1765 and 1770. The inventory by count of these wares is included in the Appendix, while the descriptive inventory is presented in this chapter.

The second major category was the "Non-Bartlam Ware from Cain Hoy." This category consisted of the many wares typically found on eighteenth century British colonial sites (Noël Hume 1970; South 1977), such as English delft, Chinese porcelain, colono ware (Ferguson 1992), and many others. Some of these many wares may well have been made by Bartlam, but at present we are not able to make a distinction between some of them as to their European or Cain Hoy origin, as will become evident in the taxonomic presentation to follow. The fragment count of the wares in the two groups is included in the Appendix. The non-Bartlam wares are presented in Chapter 5.
Bartlam's Ceramics from Cain Hoy

A Note on Wares and Moulded Patterns

As discussed above, I am using the ware names used by David Barker in his classification of the wares made by William Greatbatch (1991: 165). Some hollow wares, such as teapots, are molded in the shape of various vegetables and fruits and derive their name from their molded appearance, such as cauliflower ware and pineapple ware. Others are thrown on the wheel and rouletted, such as melon ware bowls and cups. They are all cream paste wares [creamware].

Other wares derive their name from the color of their glaze, such as cream ware, tortoiseshell ware, and green glazed ware, but they are basically colored creams [cream paste ware].

Flatwares are those forms such as plates and platters that are usually press molded onto plaster molds that produced a surface pattern, such as the barleycorn molded ware [pattern], the dot, diaper and basket molded ware [pattern], the bead and reel pattern, and others, usually called "wares". Such patterns are seen on white salt-glazed stoneware, as well as creamware, on which they are glazed with various colors.

Paste hardness is the attribute used to refer to white salt-glazed stoneware, red stoneware and black basalt ware, as well as others.

This note is presented here to remind the reader that total consistency in the taxonomic attributes traditionally used in the literature in the naming of glazed and press-molded patterned wares; hollow, flat, or wheel-thrown; should not be expected.

Bartlam's Bisque-fired Ware

Most of Bartlam's plain bisque sherds we recovered are a cream-colored paste (Plates 1a,c,d and 3d), though some were white (Plate 3b), ranging to a red paste (Plates 1d, and 3a, e). Others had what appear to be orange colored firing clouds where the ware was closer to the heat in the biscuit firing (Plate 3j). When these variable colored pastes were gloss fired with a clear lead glaze, the color would vary from a redware, to an orange pumpkin color, to what we have called "Carolina creamware". A number of the bisque fragments have parallel tool marks on the interior and the exterior, revealing that the pieces were thinned while being turned on the wheel (Plate 3d and 3k).

The footings of some bisque fragments tell us that small vessels, teacups or toys, were being made by Bartlam (Plate 3d and 3l), while others reveal he was making stemmed bowls (Plate 3l). Rauschenberg (1991: 30) illustrates such a stemmed vessel from the surface at Cain Hoy, and the potter Gottfried Aust at Bethabara was also throwing stemmed vessels in imitation of glassware of the period (South 1967: 46). A variety of press molded plate patterns, as well as wheel thrown and press molded hollowwares were also made.

Bartlam's Kiln Waster Fragments

A number of fragments of kiln waster bisque ware sherds will be described throughout the various pottery descriptions. Other fragments are discussed here.

A fragment of a buff paste combed yellow slipware plate form with notched rim lip appears to be a kiln waster (Plate 16i). It may also be a fragment burned in a hearth fire.
after the plate was broken. The glaze of this fragment is light gray, quite unlike the yellow lead glaze usually covering this type slipware.

Other fragments of glazed tortoiseshell ware reveal a quantity of trash in the glaze such as that caused by the explosion of a vessel during firing (Plate 16j). Other tortoiseshell fragments have a dull, incompletely cured glaze (Plate 16k and 1). These are also likely kiln waster sherds from Bartlam's kiln.

Some sherds of what appear to have been intended to be Carolina creamware are a dull green color with a grey paste that is harder than the cream-colored paste of Carolina creamware. I describe this as "dull green glazed ware," and I suspect these are kiln waster pieces of over-fired ware (plate 19i).

A fragment of kiln furniture, called a "bob", used to support vessels in the kiln during firing, was found stuck to the base fragment of yellow and brown buff paste earthenware (Plate 19c), suggesting Bartlam was likely making this type ware.

Two base fragments of cream paste green glazed creamware vessels were found, having a thick layer of green glass almost 1/4"-thick puddled in the base of the vessels before they were broken (Plate 16g and h). The green glazed creamware is one of Bartlam's types. The thick puddling of the glass (glaze) may have resulted from glaze flowing into the base of the vessel from the sides during glost firing. Glass was used in attempts to make porcelain. In regard to the fuzing of glass to earthenware vessels it is interesting to note that Simeon Shaw, in discussing the famous Portland Vase, mentions a process of bonding glass to earthenware in his 1829 History of the Staffordshire Potteries (1968).

**Kiln Furniture**

One fragment of what Barker (1991: 123, 145) calls "wad clay", and which I have referred to as "pugging coils" from the process known as "pugging" (1971: 174), was found in one of the five-foot squares (Plate 16m). In the mid-eighteenth century, potters from an English Staffordshire or German potting tradition, placed their teacups, saucers and other delicate wares in straight-sided clay vessels called saggars (Barker 1991: 123-126; South 1967: 49) for protection during firing. The saggars sometimes had a central hole in the bottom called a "bung" to allow the heat to rise through all the saggars in a stack, and to reach the delicate ware inside each saggar.

In order to keep the stacks of saggars from tilting over during firing, as each saggar was placed on the one beneath, a coil of damp clay was pressed around the rim of the saggar to steady the stack of saggars, or against the side of two saggars where the rim of one met the base of the one above. This "pugging" process, where the damp clay coil was pressed against the crack formed by the junction of two saggars, produced a diagnostic shaped flat ring of clay with a central protruding lip as the clay was pushed into the crack (Plate 16m).

During the firing process these wad clay pugging coils would become fired also, and when the kiln was opened and each saggar removed from its position above another saggar, these wad clay pugging coils would fall to the floor of the kiln where they would accumulate into thousands of fragments to be discarded later in the kiln waster dump, along with any ware damaged during the firing process. Sometimes such a coil fragment might fall into one of the vessels inside a saggar, and be transported by means of that vessel, to another part of the manufacturing site. In the immediate area of the kiln, however, there would be a litter of thousands of fragments of wad clay pugging coils as well as fragments.
of broken saggars and ware damaged in the firing process and thrown onto the kiln waster dump. Such fragments clearly identify a pottery kiln site where fine pottery was being made.

A single wad clay pugging coil apparently found its way, probably within a cup or bowl removed from a sagggar, to a different location than where the fragment was fired in a kiln. It does not locate the kiln. It does, however, as do the bisque and kiln waster fragments, provide evidence that the manufactory for such wares was in the vicinity, perhaps near-by, perhaps on the next point of land adjacent to the Cain Hoy site.

The artifact evidence from our study certainly indicates that someone living on the site had access to Bartlam's kiln waster and biscuit fired wares and was discarding broken fragments along with household refuse. That evidence does not indicate that Bartlam was making his wares in the area tested so far, but that his operation was likely not too far away, perhaps somewhere nearby beyond our test area. As it is, the data clearly are saying to us that his pottery manufactory was located away from our sample frame area. Hopefully, some day Bartlam's kiln ruin and waster dump will be located. When that location is found it will be characterized by kiln furniture in large quantities, with little associated domestic refuse. Such is not the case in the area we have examined, where only a single piece of kiln furniture, a wad clay pugging coil was found along with Bartlam's waster fragments among domestic refuse.

The area where we recovered our sample is characteristic of a domestic household in which someone had access to usable pieces of Bartlam's bisque ware and some of his discarded kiln waster pieces, such as usable, slightly cracked, chipped, or warped vessels. They were used in a domestic household and broken and then discarded along with other household refuse onto a ground surface on which other broken artifacts and refuse were discarded long before Bartlam came on the scene as well as while he was potting in the area. Examples of this domestic refuse are illustrated in Plates 25 through 28. The individual bringing Bartlam's wasters to the Cain Hoy site could have been Bartlam or one or more of his African American slaves or apprentices. I tend to rule out Bartlam in this regard since it is difficult for me to believe he would be taking kiln wasters home with him. He would more likely take home his best ware for his own use. His African American apprentices (if he had them) may have used relatively whole wasters in their households. The presence among the refuse of quantities of colono ware probably made by African Americans strengthens this interpretation (Plate 24e-k), (Ferguson 1992: 84-86). The distribution of colono ware and various other classes of eighteenth century artifacts discarded before, during and after the Bartlam ceramics is seen in figures presented in the Appendix of this report.

Bartlam's "Carolina Creamware" and Look-Alikes

The darker, almost yellow, creamware I saw on archaeological sites in South Carolina in the 1970s I called "Carolina creamware" because I could not determine whether they were made by Bartlam, Rudolph Christ, or William Ellis at Salem, North Carolina, (Rauschenberg 1991: 81-102; South 1974: 180-181). Confusing the issue further, these Salem made wares were known from documentary evidence to have been shipped to Camden as well as Charleston. A generic "Carolina creamware" designation to distinguish this ware from imported British creamware was definitely needed.

When the Bartlam cream paste biscuit fired wares, discussed above, are covered with a clear lead glaze, a creamy yellow ware is produced, which we are calling "Carolina creamware". The richer yellow color of these fragments is the attribute that has allowed us to identify them on a number of archaeological sites in South Carolina (Plate 4). However, Bartlam may well have sometimes produced creamware as light as that being made in
Staffordshire. The contrast in color between a piece of typical Staffordshire creamware (Plate 4e) and "Carolina creamware" is seen in Plate 4.

A basal fragment of cream paste creamware, revealing a damaged exterior, was obviously a kiln waster piece of Carolina creamware, and a handle fragment of this ware was also recovered (Plate 2g and h), both having a lighter color than that usually used to identify the Bartlam/Ellis/Christ Carolina creamware.

However, if the presence of flaws in the paste or glaze is the primary criterion for judging Bartlam's ware, and the finer examples of creamware are always considered to be British in origin, such pro-British anti-Bartlam taxonomic criteria would create, by definition, a class of pottery from a potter who produced only inferior ware! I worked with the scanning electron microscope in an effort to address this Bartlam vs. British paste problem but had little success answering the question of a Bartlam vs a British paste. The negative results are seen in Chapter 4.

Creamware handles on a buff paste and some of the rim sherds appear to be from the mug form usually having brown slipware dots around the upper part of the vessel, with combed slip around the bulbous base (Plate 4g and 4h). This familiar Staffordshire type is known as "combed and dotted yellow slipware". Separating Bartlam's cream paste "Carolina creamware" from the buff paste "dotted yellow slipware" fragments must be done primarily by paste differences since the surface color is about the same.

One light cream-colored fragment with an unglazed exterior and a buff paste and a kiln damaged base, is most certainly a fragment of a Bartlam piece (Plate 4k). Another light piece with kiln damage on the interior has a fluted footring (Plate 4p), while others are from a sieve and possibly a salt shaker (Plate 4j and 5b). A number of base fragments from very small vessels are from toy dishes (Plate 4l,m,n,o).

A cream-colored clay slip can be used to cover a buff paste body, giving the surface appearance of a cream paste creamware. Such slipware looks much like Carolina creamware. An example (Plate 4i), reveals some of the slip flowing away from the body during the glost [glaze] firing, resulting in both the lighter creamware color and the darker yellow color characteristic of Carolina creamware beneath a clear lead glaze. The lightest creamware color comes from a lead glaze over a white paste, such as seen on British creamware, producing the almost white effect seen in Plate 4e.

One fragment is incised with a tool, producing a series of parallel lines made while the vessel was turning on the wheel (Plate 4f).

Bartlam's Cauliflower Ware

The presence of bisque fired sherds of cauliflower moulded ware recovered at Cain Hoy reveals that Bartlam was making this ware (Plate 7a-d, f-g). The fragments appear to be from teapots, and saucers. Cauliflower ware was a popular type in Staffordshire in the 1760s, being made in considerable quantities by William Greatbatch and his contemporaries (Barker 1991: 255-258).

One kiln waster sherd had been bisque fired and then painted with green and yellow glaze, but did not glaze properly in the glost firing (Plate 7e). This is clear evidence, along with the bisque pieces, that Bartlam was making glazed cauliflower ware at Cain Hoy.
Glazed fragments of green glazed cauliflower leaves, and cream and yellow glazed cauliflower flowers on a cream and buff paste were also found (Plate 8). The fragments are from teapots and saucers.

One fragment of moulded red paste green and red ware (green exterior, red interior) was found to have the small dots from the flower head of cauliflower ware (Plate 8i). Because the paste was red, the green glaze over the flower head (which is usually glazed with a clear lead glaze to produce a yellow or white flower head) was much darker green than the same green when applied over a white or cream paste ware. This unusual fragment is very likely from a piece of Bartlam cauliflower ware because of the unusual red paste color and green glaze application over the flower head.

**Bartlam's Tortoiseshell Ware**

Metallic oxides such as manganese, copper, and iron, when applied to the biscuit body, produce colors such as brown, green and yellow when the lead glaze is applied over the biscuit ware. The colors oxidize in the extreme heat of the glost firing and are trapped beneath the lead glaze, producing a colorful mottled-glazed creamware known as tortoiseshell ware (Barker 1991: 194-195; Noel Hume 1970: 125). These colors are seen on a variety of wares from moulded plates to teapots, cups and saucers, and figurines.

Tortoiseshell glazed ware was a very popular ware in the 1760s. It was made by a contemporary of Bartlam, William Greatbatch, from around 1762 to 1782, as well as by other Staffordshire potters, including Thomas Whieldon, whose name was formerly given to this ware (Barker 1991: 128, 194-197, Plates 20 and 21). Miller and Stone (1970: 64-65) illustrate tortoiseshell glazed ware from Michilimackinac, Michigan, which they call the "Whieldon-Wedgwood Type", a popular name for this ware before research revealed that it was being made by most all Staffordshire potters and thus "tortoiseshell ware" is now thought to be a better name for this colorful ware.

It is difficult to determine which of the wares glazed with tortoiseshell colors were made by Bartlam and which made in Staffordshire. This is a challenge we are attempting to address with the Cain Hoy data.

Tortoiseshell glazed kiln waster sherds from Cain Hoy reveal that Bartlam was also glazing his tortoiseshell ware with metallic oxides, painted or sponged on after the biscuit firing, and then covered with a clear lead glaze (Plate 14m). The combination of colors was often yellow and green, yellow and brown, or all three.

A miniature, probably a toy teapot spout (Plate 14a), was among the tortoiseshell glazed vessel fragments recovered from the five-foot square excavation units. Most fragments have a cream-colored paste, but some are on a red paste (Plate 14r and s), causing them to have a pumpkin color rather than the lighter yellow characteristic of Carolina creamware on a cream or buff paste. Other fragments have a fluted rouletted band around the vessel just below the rim (Plate 14g and i).

If the clay was reddish the glazed colors would appear darker, being brown, green, and pumpkin color (Plate 14r and s). If the clay was white, much brighter colors would result, with the pumpkin firing as a bright yellow color (Plate 14c). The exterior of a tortoiseshell glazed piece often had a bleeding brown, green, and yellow color, with the interior being yellow or yellow and manganese brown. From kiln waster fragments we know Bartlam was using tortoiseshell decorative glaze on a pink, a cream, and a white paste.
The tortoiseshell glaze was also used by Bartlam on molded plates with the dot, diaper and basket pattern, the barleycorn pattern, a plain marley pattern, as well as on molded figures. These patterns are discussed under the molded pattern headings below.

**Bartlam's Pineapple Ware**

Mold pressed ware with a pineapple fruit motif of square pyramidal points, usually flanked by ribbed and pointed green serrated leaves was being made by Bartlam. A red paste bisque earthenware fragment is from a teapot lid of pineapple molded ware, appearing much like the higher fired unglazed red stonewares being made in Staffordshire by Greatbatch and others (Plate 6a), (Barker 1991: 259, 264-267).

Glazed pineapple molded ware fragments with red paste, buff paste, as well as cream paste were recovered from the five foot squares at the Cain Hoy site (Plate 6). The red paste fragments are a redware color, the buff fragments are an orange pumpkin color, and the creamware fragment is a yellow color. The brighter yellow cream-colored ware fragment is from a different mold than the other fragments and may well be a Staffordshire piece (Plate 6d). Some fragments have a dull improperly glazed finish and appear to be kiln wasters. The fragments of pineapple leaves also are from red, buff, and cream paste vessels.

Pineapple ware was a popular type creamware in the 1760s, and it is not surprising that Bartlam was making this type molded red and cream paste earthenware. It is seen on many British colonial sites, such as that illustrated by Miller and Stone from Fortress of Louisbourg, Cape Breton Island, Nova Scotia (1970: 121), (see Plate 31 in this report).

**Bartlam's Melon Ware**

Melon ware is characterized by green and yellow colors and by rouletting to produce a series of wavy or smooth parallel lines (Plates 1e-f, 7h-i, and 11). The ware is documented to have been used in many Staffordshire potteries in the 1760s, and Bartlam at Cain Hoy was no exception (Barker 1991: 254-255). Ware having smooth incised line, called "Reeded" ware, is similar to rouletted melon ware (Fig. 1f), (Barker 185). Proof of Bartlam's manufacture of this type ware is seen in bisque sherds recovered from the five-foot squares (Plate 7h,i). Additional proof is provided by kiln waster sherds, some of which have no glaze on the interior, while others are damaged by having a dark grey deposit on the interior caused by improper glazing during the glost firing process (Plate 11a, n). Such wares would not have been exported in this condition from Staffordshire. The melon ware sherds are from saucers and bowls wheel thrown and tooled with metal or wooden "shapes" while turning on the wheel.

**Bartlam's Green Glazed Ware**

A number of the sherds with various molded patterns, such as dot, diaper and basket, barleycorn and molded figurines are glazed with a green, metallic oxide color (copper). Green glaze was frequently used by Bartlam's contemporaries in Staffordshire (Barker 1991: 251), but we are not able to distinguish Bartlam's green glazed ware from that of the Staffordshire potters. We do know from kiln waster sherds that Bartlam was indeed using green glaze on his ware (Plate 10a and 15b). He put green glaze on a reddish paste, where it fired a dark green color. On a buff or cream paste it fired lighter and on a white paste, which Bartlam used, it fired a lighter, brighter green. Bartlam used his green glaze on a variety of molded ware patterns.
Bartlam's Molded Ware Patterns

Bartlam's Barleycorn Molded Ware Pattern

A fragment of Bartlam's bisque barleycorn molded ware with a cream-colored paste was recovered from one of the shovel tests (Plate 1a). This motif is well-known from the 1760s period in Staffordshire (Barker 1991: 250; Noël Hume 1970: 116, 125). This molded ware pattern, often seen on white salt-glazed plate marlies, is composed of a series of zig-zag lines surrounding a small oval with pointed ends, apparently representing a grain of barley.

The glaze colors on barleycorn molded ware sherds are cream, green, tortoiseshell, and pumpkin (Plate 1b and 12). The forms represented are plates and pressed hollowware pieces, one such sherd having a tortoiseshell glaze with a green glazed barleycorn medallion (Plate 12b), probably from a sauceboat. One tortoiseshell glazed fragment, with the yellow and green colors on the interior of the plate and a brown tortoiseshell glaze on the back side, from sample frame unit 68 (Plate 1b), was found to fit a fragment from five-foot square 302G (Plate 12a), located fifteen feet away.

An unusual tortoiseshell glazed fragment of barleycorn molded ware had a mottled green and yellow color applied over the face of the pattern, with a mottled brown tortoiseshell glaze applied on the back (Plate 1b), (Barker 1991: 194-995).

Some green glazed barleycorn fragments have a dull, kiln fire damaged glaze (Plate 12c, f), revealing that these pieces are Bartlam's kiln waster fragments.

Bartlam's Dot, Diaper and Basket Molded Ware Pattern

Dot, diaper and basket molded ware is one of the most frequently seen mold pressed patterns on the flattened edge (marly) on white salt-glazed stoneware plates in the mid-eighteenth century (Noël Hume 1970: 115-116; 1980 [1970]: 27). South 1977: 210, 213). Bartlam apparently used this traditional white salt-glazed stoneware pattern on creamware plates with various glazes. It is interesting to note that the Staffordshire potter, William Greatbatch, Bartlam’s contemporary, did not make use of this pattern for stoneware or creamware between 1762 and 1782, (see Barker's list above), (Barker 1991: 165).

Biscuit fired fragments of the dot, diaper and basket molded ware reveal that Bartlam was making this pattern at Cain Hoy (Plate 9a,b,c,d,e).

Green glazed kiln waster sherds of dot, diaper and basket molded ware indicate that Bartlam was using this glaze over his cream paste bisque ware molded in this pattern (Plate 10a, f,g), since such damaged sherds would not have been exported from Staffordshire. A plate rim of this type molded ware is seen as the frontispiece of the Appendix to this report. A small fragment of green glazed, dot, diaper and basket molded ware is seen in Plate 1i.

A tortoiseshell glazed fragment of this pattern was recovered from the five foot squares (Plate 10d), and a kiln waster sherd of dot, diaper and basket ware was found in one of the sample frame holes (Plate 2i). This kiln waster sherd suggests Bartlam made the piece from which this fragment came. A pale green fragment with a rouletted band near the rim is probably from a green and yellow tortoiseshell vessel (Plate 2k).
Some very small basket-weave sherds with a pale glaze were recovered that are smaller than the weave usually seen on the molded plate forms (Plate 10e, f). These are probably from molded miniature plates or bowls using a fine basket-weave pattern.

Another tortoiseshell fragment with a brown and cream color may well be an imported British piece (Plate 2j), but I included it with the Bartlam ware since at this stage of the study I am not sure which nicely finished tortoiseshell wares were Bartlam's and which imported from Staffordshire. Another tortoiseshell glaze base fragment possibly made by Bartlam is shown in Plate 2j.

**Bartlam's Dot and Diaper Molded Tea Caddy Form**

A dot and diaper design larger than that seen on plate marlys is from some form with flat sides. These flat tile-like fragments are perhaps from a flat-sided tea caddy or similar vessel (Plate 9f).

**Bead and Reel Molded Ware Pattern Probably Made by Bartlam**

Green glazed sherds with a "bead and reel" gadrooning (Noël Hume 1970: 116) were recovered from the five-foot squares at the Cain Hoy site. We have no proof in the form of bisque ware or kiln waster sherds that would demonstrate that Bartlam was making this molded ware. However, we have found in the five-foot squares, a green glazed fragment of a plate with the molded bead and reel pattern, and another without the reel, probably best described as a gadrooned bead pattern. We know that Bartlam was using the "bead and reel" motif with the "partridge eye" impressed element, with sprigged flowers discussed below, (Plate 13a,c), so it is reasonable to suspect he was also making the plain bead and reel molded plate form. Without bisque or kiln wasters, however, we cannot positively attribute the plain "bead and reel" gadrooned molded ware pattern to Bartlam.

**Bartlam's Ring-and-dot Impressed Decoration**

Red and white paste bisque fragments impressed with a circular die with a dot in the center, reveal that Bartlam was producing a redware as well as creamware, with a ring-and-dot impressed motif (Plate 1d, 3b; 13a,c), similar to the "ring-and-dot" decorative motif seen on green-glazed creamware found in a Williamsburg context of 1765-1770 (Noël Hume 1980: 26). Miller and Stone (1970: 67) also illustrate a sherd with this "partridge eye" motif from mid-eighteenth century Michilimackinac, Michigan, and a number were found during my excavations at Brunswick Town, North Carolina (South 1959: 65).

If covered with a clear lead glaze this Bartlam biscuit ware would appear red, if with a green glaze, it would be dark green. The ring-and-dot impressed motif is seen on Vincennes-Sévres, porcelain ca. 1752-57, and is known as "Oeil-de-perdrix", which literally means partridge eye (Savage and Newman 1974: 205). The impression of these dotted circles on French wares probably inspired Bartlam, and perhaps others, to use a single die to laborously impress the ring-and-dot motif on creamware in the 1760s. As labor intensive as this method is, it is nevertheless, how these impressions were made.

**Bartlam's Oval-and-dash Impressed Flower Motif**

Red and white paste Bartlam biscuit fragments are impressed with a die having what I call an "oval-and-dash" impressed flower motif, forming an oval petal, pointed at each end, with a central dash (Plates 3a,b,c). When this petal-shaped stamp was impressed around a central point, it produced a flower impressed pattern. One white paste bisque fragment of this impressed ware also has the ring-and-dot motif (Plate 3b).
A fragment of white paste yellow and green glazed ware (yellow interior, green exterior) was impressed with the oval-and-dash impressed motif, providing us with an example of what Bartlam's finished oval-and-dash petal-impressed flower motifs were supposed to look like in the finished state (Plate 3c). On this yellow and green glazed fragment the oval-and-dash motif is impressed in a circle around a small hole through the body of the piece just below the rim. The presence of both red and white bisque ware impressed with the ring-and-dot and oval-and-dash motif reveals that this fragment of yellow and green glazed ware with an impressed flower motif was also a Bartlam made ware.

**Bartlam's Ring-and-Dot Impressed, Sprig Decorated, Bead and Reel Molded Ware**

From the discovery of the "ring-and-dot" (partridge eye) impressed decorative element on both red and white paste biscuit ware, we know this element was being used by Bartlam, as discussed above. Ivor Noël Hume has described this ring and dot impressed ware (1970 in Atterbury 1980: 26) as a "ring and dot" decoration on a fruit and leaf relief-moulded plate form. This same motif is seen on green glazed sherds I recovered in the ruins of the British colonial town of Brunswick, North Carolina, dating from 1725 to 1775 (South 1959: 65).

At Cain Hoy this motif is seen impressed on the marly of a molded plate having a bead and reel rim motif, that had also had a four-lobed floral sprig added at intervals around the marly (Plate 13a and b). The use of the "ring-and-dot" motif tool strongly suggests that this ware was also made by Bartlam, even though no bisque nor kiln waster examples of this ware was found. The combination of the traditional salt-glazed stoneware "bead and reel" moulded rim treatment with the addition of sprigged flowers in relief spaced around the marly, with the addition of a background of "ring and dot" impressions, is, as far as I can determine, a combination unique to the Cain Hoy assemblage.

**Relief Molded Sprig Decoration Probably Made by Bartlam**

Molded floral sprig relief flowers were applied to the surface of fine earthenwares in the mid-18th century by use of plaster of Paris molds or from metal dies (Barker 1991: 188). The green glazed sprigged flower, used in conjunction with the "partridge eye" impressed motif on a "bead and reel" molded plate, discussed above, was found to have also been glazed with a brown manganese glaze as well as a tortoiseshell glaze (Plate 13g). Comparison can be made with William Greatbatch's mold-applied decorative relief sprigs illustrated by Barker (1991: 188-89).

Two other types of mold-applied flowers with four petals were also found on vessels colored with brown manganese and polychrome tortoiseshell glazes (Plate 13d, h). Since we know Bartlam was using the "partridge eye" impression on pieces having sprigged flowers, it is very likely that Bartlam was making these molded sprig relief decorations found at Cain Hoy.

**Plain Molded Rim Probably Made by Bartlam**

From the complex "bead and reel" combination of molded partridge eye punctated motif with applied sprigs described above, we turn to the most plain molded rim form used by Bartlam on plates. A tortoiseshell glazed sherd from a molded plate rim with flat marly was recovered from one of the five-foot squares (Plate 14j). I have never seen this smooth, plain molded plate marly with no relief molding except on white salt-glazed
stoneware, such as that illustrated by Miller and Stone (1970: 69d). This tortoiseshell glazed sherd is flat on both sides, with no lip or rim treatment of any kind, such as that illustrated in Barker's plate edge taxonomy (no. 1), (Barker 1991: 180-181). It is interesting to note that a similar plain molded rim fragment of white salt-glazed stoneware was also found in one of the five-foot squares (see below under white salt-glazed stoneware). The presence of this tortoiseshell glazed form usually seen on white salt-glazed stoneware, reveals, as do the tortoiseshell glazed barley and dot-diaper-and-basket molded forms (see below), the use by Bartlam of stoneware type molds to make creamware.

Bartlam's Molded Figures

Staffordshire figures were made by many potters from 1740 to 1900 (Barker 1991: Plate 27; Towner 1965: Plates 38-43); Turner 1971: xi) and Bartlam at Cain Hoy also made a variety of figures.

The discovery of a fragment of a biscuit redware molded figure in the sample frame test (Plate 1g), revealed that Bartlam was likely making molded figures at Cain Hoy. Another biscue molded figure with an incised line recovered from a five-foot square excavation unit strengthened this conclusion (Plate 15a). A kiln waster fragment of a figure with a poorly fired green glaze was also recovered, adding to the evidence for Bartlam having produced figures (Plate 15b). Tortoiseshell glazed fragments of figure bases and other parts were also recovered, providing us with a clue to the colors his finished figures had (Plates 1h and 15c,d,e,f,g).

Bartlam's Yellow and Green Glazed Earthenware

As mentioned in the introduction to this section, a green glazed exterior on a buff, or cream, or white clay bisque ware will produce a yellow and green glazed earthenware (plate 199). One fragment of this type ware was a kiln waster sherd, with lumps of quartz stuck to the footring (Plate 19h). This kiln waster sherd is evidence to suggest that Bartlam was making this type glazed creamware.

Bartlam's Yellow and Green Glazed Slipware

A bisque fragment of red paste ware had a green glaze applied to the exterior and a cream-colored slip applied to the interior, but the piece from which it came had never been glost fired. (Plate 18m). The use of a red paste and a slip in this manner allowed Bartlam to produce a red paste yellow and green glazed slipware looking much like the yellow and green glazed ware made with a cream paste but having no slip.

Pearlware

A whiter ware was produced by adding cobalt to the glaze was described in a letter by Josiah Wedgwood in 1779 as "pearl white," and is known to us as pearlware (Noël Hume 1980 [1969]: 390).

Until the 1960s, it was thought that pearlware did not reach American colonial sites until around 1790 (South 1972: 85). However, it was found in an archaeological context dating as early as 1776 by South (1960; 1972: 107), and a context of 1780 by Ferguson (1977: 47-49) and South (1974: 163-165). Wedgwood, in speaking of his "pearl white," refers to "the best blue & white" as a different product in prior production (Noël Hume 1980 [1969]: 390; 1973: 217). I have suggested that this "blue and white" was likely in
use for some time prior to the famous Wedgwood letter of 1779 (South 1974: 163-165), describing the addition of cobalt to transform the usual "blue and white" to "pearl white". More recently, George Miller has arrived at the same conclusion and has carried out a detailed discussion of "pearlware" (1987:83-95).

I have suggested that the earlier "blue and white" pearlware was likely developed from decorating creamware with cobalt colors, which vaporized during firing, sometimes resulting in a ware being creamware on one side (as inside pitchers), and pearlware on the other where vaporized cobalt fused to the glaze, producing a pearlware appearance (South 1974: 163-165). Fragments of this interior-creamware exterior-blue and white (pearlware) were found by Ferguson at Fort Watson (1977-47-49). This earlier type "blue and white" does not have the blue puddling characteristic of Wedgwood's "pearl white" pearlware, but has a more variable bluish tone to the glaze depending on how close it sat to another blue painted piece in the kiln, producing a pseudo-pearlware, as it were. At the present time, both the bluish glazed "pearl white" ware of Wedgwood and the earlier "blue and white" are commonly referred to as pearlware.

For a quarter of a century this process of "pushing back the introduction of pearlware" to an earlier than the previously thought 1790 time frame has been going on as documented above. For some time now, especially since the publication of Ferguson's Fort Watson, South Carolina, study (1977), the 1780 date has been used by many for the introduction of pearlware. In 1991, David Barker published his treatise on the ware of the Staffordshire potter, William Greatbatch, demonstrating the manufacture of pearlware by Greatbatch in a context dating between c. 1770-1782 (Barker 1991: 165).

Bartlam's "Blue and White" "China" Pearlware

At the Cain Hoy site we recovered numerous bisque fragments of cobalt blue-decorated, biscuit-appearing sherds that I thought to be either pearlware or a poorly fired porcelain. These are often covered with a brown patina. Brad Rauschenberg has suggested Bartlam may have been experimenting with making porcelain (1991:35). To explore whether these fragments were porcelain or pearlware I used the scanning electron microscope to compare the elements present, and found that this patina contains the same ingredients as the paste (see the following chapter). The paste of these sherds contains lead (Pb), as did a British blue painted pearlware example, as well as a number of sherds of glazed creamware and some other earthenware samples. The porcelain samples contain no lead.

To me these data indicate that these blue and white sherds of a ware being made by Bartlam are not porcelain. Rather, their elements are more consistent with those of glazed creamwares, British pearlware, and a white clay (containing lead) discovered at Cain Hoy when pilings for a new dock were sunk into the marsh at the edge of the site. The mostly negative results of the electron microscope study used to identify this blue and white Bartlam ware are presented in the following chapter.

Most of these sherds can easily be distinguished from creamware fragments by the feel of the paste, which has a grainy feel compared with the smooth bisque fired creamware sherds made by Bartlam. They are harder than one might expect pearlware bisque sherds to be, but they are a grainy feeling porous earthenware. George Miller (personal communication, June 3, 1993) says that Staffordshire bisque sherds are very smooth, "whereas bone china bisque sherds felt like an emery board." Brad Rauschenberg has discussed bisque fragments of this type blue and white decorated ware and has suggested that Bartlam may have been "experimenting with Cherokee clay [kaolin] in an
attempt to produce porcelain" (1991: 35). Since the sherds are not translucent (the defining attribute of porcelain), and since the electron microscope results suggests the presence of lead (Pb), I determined that Bartlam was attempting to make what he called "China", also known as "China glaze", a ware that George Miller has demonstrated as being the ancestral form of what we now know as pearlware (1987).

The story of Bartlam's "china" begins with an advertisement in the South Carolina Gazette, and Country Journal on March 13, 1770, announcing that G. Bonnin and G.A. Morris were erecting a "china manufacture" in Philadelphia where it had already been proved "that the Clays of America are productive of a good PORCELAIN" (Rauschenberg 1991: 16). The advertisement went on to say that those in South Carolina interested in relocating there would be assisted in procuring passages to Philadelphia. I suspect this advertisement was placed specifically to lure Bartlam's workers to the Bonnin and Morris undertaking.

We do not know how Bartlam felt about this advertisement, but we do know that seven months later, on October 4, 1770, he placed an advertisement in the South Carolina Gazette announcing that "a China Manufactory and Pottery is soon to be opened" in Charleston (Rauschenberg 1991: 13). Bartlam had returned to England in 1769 to "raise some fresh supplies", and on his return to Charleston, he announced his move from Cain Hoy to Charleston and his intention to manufacture "china" and "pottery" clearly indicating two different types of ware would be produced. I believe his "china" was not the translucent porcelain Bonnin and Morris had advertised, but "china glaze", what we know today as pearlware (Miller 1987).

Another advertisement he placed in The South Carolina Gazette on October 11, 1776, revealed that his "pottery" was Queens Ware. He said that he had opened his "POTTERY and CHINA manufactory" and that he "already makes what is called QUEENS WARE, equal to any imported" (Rauschenberg 1991: 14). His "Queen's ware" was the creamware pottery he was making, but what was the "china"? Rauschenberg interprets "china" as queensware with a creamware body (1991: 14). However, the Bonnin and Morris advertisement had implied that their "china" was porcelain, and indeed their Philadelphia operation was America's first porcelain manufactory (Hood 1972; Rauschenberg 1991: 16). But what Bartlam was making was not translucent, the primary defining attribute of porcelain (Miller 1987: 91).

By 1779, when Wedgwood reported adding cobalt to his non-porcelain, non-translucent, blue painted "blue and white" earthenware and called it "pearl white", he was continuing a practice used by other potters to make "china glaze" (personal communication, George L. Miller, 6/3/1993; 1987; Ivor Noël Hume 1980 [1969]: 390, 1980:42). Ivor Noël Hume has conducted a detailed study of the terms "china glaze", "blue and white" and "pearl white" and has concluded that they are basically the same thing which he called pearlware, the name by which it is now well known (1980 [1969]: 42-44). George Miller, in his study, agrees (1987).

I pointed out in 1974, (164-165), however, that "blue and white" is an earlier transition type between creamware and Wedgwood's "pearl white"/pearlware, "pearl white" being the name of the white paste, blue painted, clear lead glazed wares being made long before Wedgwood added cobalt to the glaze in 1779 to produce his "pearl white" which we know today as pearlware. George Miller (1987) has demonstrated convincingly that pearlware was being made by Staffordshire potters before 1779, and was called "china glaze". I predicted in 1974 that "Such sherds [blue and white] may well be found in the future excavations in contexts of the 1770s", representing the transition period from
creamware to pearlware" (1974: 165). At Cain Hoy we now know it was being made at least by 1770.

Pearlware is a good, broad, generic name for the ware that began as "blue and white" or "china glaze", and became Wedgwood's "pearl white". In his masterful study of the wares from the kiln waster dump of William Greatbatch, David Barker (1991) has found that Greatbatch was making a blue under-glaze decorated ware, which he dates to about 1775, the date of the earliest known dated piece of pearlware. George Miller (1987: 90), in his in-depth look at the "china glaze", "blue and white", "pearl white", and "pearlware" question, has concluded that "china glaze" is "blue and white" and Wedgwood's "pearl white", the ware known to us today as pearlware.

Barker (1991: 24, 198) refers to the bisque fragments of this ware made by Greatbatch, as "creamware/pearlware", and although the archaeological context from which the fragments were taken in the kiln waster deposit has a date range of from c. 1770 to 1782, Barker uses the 1775 date based, apparently, on the earliest known dated piece.

From our work at Cain Hoy, we can now push the early date for pearlware back at least to 1770, the date of Bartlam's move from Cain Hoy, because we have found bisque as well as glazed fragments of Bartlam's "china", which date from before he moved. This early ware I have referred to here as Bartlam's "china" pearlware to refer to the blue painted, white paste, glazed ware he was making. Fragments of Bartlam's "china" (pearlware), therefore, are the oldest examples of pearlware yet known, dating between 1765 and 1770.

Before we began our work at Cain Hoy we had seen what appeared to be bisque sherds of painted "blue and white" ware collected by Dr. George Terry, now Vice Provost and Dean of Libraries and Collections at the University of South Carolina. These sherds, plus other bisque sherds, collected from the surface at various times, were the stimulus that kept us anticipating, for nineteen years, the day when we would return to the site to conduct sub-surface excavations to obtain a better sample of the Bartlam kiln waster wares represented by the bisque sherds we found on the surface. One of these blue and white "china" pearlware sherds has recently been illustrated by Bradford Rauschenberg in his summary of the historical background of Bartlam, Ellis and Christ (1991: 33). This fragment is decorated with a finely delineated man in a boat with up-curved stem, which we have referred to as "Bartlam on the Wando" (Rauschenberg 1991: 33), (see frontispiece).

The "blue and white" "china" pearlware bisque sherds were coated with a tough brown film (mentioned above) which, when dry, can be removed by a scalpel without damaging the surface beneath. My interpretation is that this film accumulated over two hundred years while the objects remained in the earth (Plate 17c and cover). This brown surface film has the same color as the patina seen on eighteenth century wine bottle fragments, making me suspect that Bartlam was putting ground glass into the paste of his "china".

Once the patina is removed the blue and white sherds are usually brighter in color than the glazed examples, which appear smoky grey. We believe the lack of a glaze on the bisque fragments has allowed the chemical contents of the paste [including ground glass], to leach to the surface when exposed to moisture, to produce the brown lead oxide covering the surface. Ground glass mixed with clay formed the body of Chelsea porcelain manufactured in the 1750s and the appearance of lead leaching from the paste of Bartlam's blue and white china bisque pearlware sherds suggests that glass may well have been used by him in the paste of this ware (Savage 1980 [1954]: 79).
When the edge of a sherd is cut with a scalpel, small holes in the paste are seen and in these holes is seen the same patina as that covering the fragments. This tends to suggest that lead (in the form of ground glass, perhaps) leached out of the paste as soil acids seeped in, to produce the brown patina.

On the glazed pearlware kiln waster sherds, which are smokey grey and non-reflective in appearance (Plate 18), there is a thin, clear-glassy surface beneath the patina, heavily pitted with numerous bubbly holes that can be seen when a strong hand lens is used to examine the surface of the glaze. No classic glazed pearlware sherds with a glossy surface were included in this Bartlam blue and white "china" pearlware classification category.

One might argue that the patina on these sherds was produced as a result of some problem with firing the ware in the kiln and that these are simply kiln waster sherds discarded because of the appearance of the film. However, in my survey of archaeological collections looking for Bartlam-like sherds (reported in Chapter 7), I found that there are two sites in Charleston having the same type ware with the same type of brown patina on the surface (Plate 30). This evidence indicates that this ware was being distributed to consumers as a finished product, either from Cain Hoy or Bartlam's Charleston manufactory, and that these sherds are not simply damaged kiln wasters. The ware would not have been distributed to consumers with the patina on the surface. Therefore, the patina appears to have been produced in the earth through weathering of the leaded glass in the paste, just as wine bottles weather, becoming pitted and covered with a lead patina. I think, because of the lead Bartlam was putting in his paste through the addition of glass, that we will never find fragments of Bartlam's "china" with the typical glossy pearlware glaze. I placed the glossy pearlware sherds we found into the "non-Bartlam" category.

One of Bartlam's "china" fragments is from a large bowl with a gnarled weeping willow tree Chinese motif delineated in the well of the bowl (Cover). This motif is sometimes seen on pearlware plates (Noël Hume 1980 [1969]: 44). The base of the large bowl is marked with a blue C (Plate 17c) by the artist who painted the decoration. The exterior of the vessel was painted with a blue scene, but we can see only the bottom part (Plate 17c). Another fragment has a version of a Chinese wall, also often seen on pearlware, while yet another is from a Chinese house design (Noël Hume 1980 [1969]: 45), (Plate 18a and b). Another fragment has a decorative dot and diaper border band around the rim very similar to one seen on a Bonnin and Morris sauceboat (Hood 1972: Plate 27), (Plate 18f). These fragments, along with the "Bartlam on the Wando" boatman motif reported by Rauschenberg (1991:33), reveal that Bartlam had a skilled artist to decorate the "china" pearlware he advertised in 1770. This artist was able to delineate extreme detail, as seen on the sherd in Plate 17a.

Bartlam's production of blue and white "china" pearlware by 1770, along with his "Queen's Ware" (Rauschenberg 1991: 14), reveals that he was in keeping with the crest of the pottery production wave of his time.

Salt-glazed Stoneware (Littler's Blue Type) Probably Made by Bartlam

A single kiln waster fragment of salt-glazed stoneware having a cobalt blue exterior wash and a glossy bluish grey interior was recovered. This is known as "Littler's blue", named for William Littler who developed it around 1765 (Shaw 1829: 198). This kiln waster fragment shows considerable damage on the interior from bubbling and blistering of the glossy glaze (Plate 20d). The exterior surface of the same sherd (Plate 20a) showed no sign of kiln firing damage and none of the orange peel like surface characteristic of salt-
glazed ware. Ivor Noël Hume describes "Littler's blue" as "the coating of white salt-glaze with cobalt blue mixed with clay and frit to produce a lustrous blue surface" (1970: 119). Several sherds of this "lustrous blue" type stoneware were recovered from the five foot squares (Plate 20a,b,c).

Simeon Shaw says of Littler's blue that greenware vessels were dipped in a mixture of ground zaffre [cobalt] and flint, dried, and fired in a salt glaze kiln, the ware "... appeared of a fine glossy [blue] surface, free from those minute inequalities observable on all the Pottery glazed with salt only" (1829: 168-169). This was certainly true of the Littler's blue fragments recovered from the Cain Hoy site.

The kiln waster sherd is so badly blistered that it seems unlikely that it was brought from Staffordshire in that condition. This makes us suspect that Bartlam may also have been experimenting with making this type ware. The exterior of the fragment has a molded relief bunch of grapes, with an applied extruded rope of grapevine adjacent to it (Plate 20a). Another has a sprigged relief molded grape leaf (Plate 20c). The fragments have a cream-colored stoneware paste (Plate 20b). On the presence of this damaged sherd I have placed this Littler's blue type stoneware in the group "probably" made by Bartlam.

Ware Possibly Made by Bartlam

Blackware Possibly Made by Bartlam

A few sherds were covered with a black glaze on a buff paste, probably the same type blackware that Barker (1991: 165, 272-273) describes as being made by William Greatbatch in the 1760s. This ware is similar in exterior appearance to black glazed red paste Jackfield pottery (see below), but it has a buff, rather than the red paste characteristic of Jackfield pottery (Noël Hume 1980 [1970]: 24). This buff paste blackware was possibly made by Bartlam since it was a ware being made by his contemporaries.

Black Glazed Ware (Refined) Possibly Made by Bartlam

Some dull dark brown to black, relatively high-fired, earthenware fragments of a refined, Jackfield-like blackware with a grey to black paste were found, having the characteristics of kiln waster fragments. One fragment appears to be from a lid with a scar where a sprig or handle may have originally been attached, while another is from a footringed base with punctated holes, possibly from a tea strainer (Plate 16a,b,c). A fragment of the typically glossy black refined Jackfield blackware we classified in the non-Bartlam ware group is illustrated to demonstrate the contrast between the dull black fragments possibly made by Bartlam and the glossy appearance of the typically seen non-Bartlam Jackfield type refined blackware (Plate 16d).

Combed and Dotted Yellow Slipware Possibly Made by Bartlam

Staffordshire mug fragments having a bulbous bottom half, with a straight upper half, usually yellow in color with brown dots around the upper half and brown combing or marbling around the lower half, are known as combed and dotted yellow slipware. One of the sherds of this ware from Cain Hoy had a red/brown slip applied, which was then wiped away in streaks while the vessel was turning on the wheel to produce a marbled effect (Plate 2d). The exterior lead glaze did not extend to the area around the base of the vessel, a phenomenon often seen on slipware mugs of this type. I cannot separate the Staffordshire fragments of this ware from those possibly made by Bartlam.
A rim fragment of the buff paste combed and dotted yellow slipware mug form, showing the dot from which the form derives its name, is one of the lighter colored pieces (Plate 2b). The interior of these pieces had a clear lead glaze, which over the buff paste gives the darker cream color often characteristic of Carolina creamware as well as the combed and dotted yellow slipware Staffordshire mug fragments often seen on mid-eighteenth century archaeological sites (Plate 2c and 2f). A fragment of a buff paste body sherd of the same type ware showing a white slip as well as the traditional brown slip was also found, (Plate 2a). This unusual piece also suggested to us that perhaps Bartlam may have possibly been making this type combed and dotted yellow slipware.

**Dull Green Glazed Ware Possibly Made by Bartlam**

Another type recovered at Cain Hoy is a thin dull green glazed ware on an oxygen-reduced (low oxygen atmosphere in the kiln), over-fired grey paste, sometimes having manganese dots (Plate 19i). These over-fired dull green fragments may well be kiln waster sherds.

A few fragments do not have a grey paste and do not appear to have been over-fired (Plate 19f). These have a dull grey color from a thinly applied dull green glaze and possibly were intended to have a dull green appearance. I have not seen this ware on other sites of the mid-eighteenth century and suspect it is one of Bartlam's wares.

**Manganese Dotted and Glazed Brown Ware Possibly Made by Bartlam**

Some sherds of a red paste manganese dotted glazed ware, with the color varying from a redware with a few manganese dots (Plate 19b), to a medium brown with more dots (Plate 19d), to a rich brown glaze on a buff paste were also found (Plate 19c). It is difficult to say whether this manganese glazed type was being produced by Bartlam, but it was being made by other potters during the same time period and could possibly have been one of Bartlam's types (South 1967, 1970).

**Pumpkin Colored Ware Possibly Made by Bartlam**

When Bartlam's buff, pale red, or pinkish paste biscuit ware is covered with a clear lead glaze, or one containing iron, the result is an orange pumpkin colored ware (Plate 5). It is thought that this ware is very likely a Bartlam product because this particular color is unusual. It might well be called redware by many observers, but its orange color, half-way between yellow and redware, prompts the "pumpkin colored ware" term.

**Pumpkin and Green Glazed Ware Possibly Made by Bartlam**

Wedgwood mentions his "Green and Gold" wares being sent to the American market (Miller 1987: 83). The "gold" in this reference may well refer to what I have called pumpkin-colored ware (above). The "green and gold" is that which I call pumpkin and green glazed ware. A color illustration of a pumpkin or "gold" teapot is seen in the Mint Museum's publication *The Delhom Gallery Guide: English Pottery* (1982: 35). A pumpkin and green glazed orange paste earthenware fragment is illustrated in Plate 19a. This is a glaze combination well within Bartlam's range of production and is a ware possibly made by him.
Red and Green Glazed Earthenware Possibly Made by Bartlam

Red paste sherds, glazed on one side with a green glaze, produce a red and green glazed ware. Bartlam could possibly have been making this easy to make glazed earthenware.

Red and Yellow Glazed Slipware Possibly Made by Bartlam

An example of red paste, clear lead-glazed, white slipped earthenware is illustrated in Plate 21n. The white slip reveals red dots where the glaze bubbled, allowing the underlying red paste to show through. This is an easily made slipware type that could have been produced by Bartlam.

Red Earthenware (Lead Glazed Redware) Possibly Made by Bartlam

When a red paste ware is covered with a clear lead glaze it produces a red lead glazed earthenware. This is the common redware easily made by any potter and Bartlam was possibly producing this ware (Plate 19b). Sometimes manganese inclusions in the red paste cause a few dots of manganese to bleed brown beneath the lead glaze.

Salt-glazed Stoneware (Glossy Grey), Possibly Made by Bartlam

When we went to Cain Hoy in March 1992, to look for fragments of Bartlam's pottery, we knew that William Ellis, who had worked with Bartlam in Camden and probably in Charleston as well, had gone to Salem, North Carolina in 1773 and had taught Gottfried Aust and Rudolph Christ how to make "Queensware and Tortoiseshell" (Rauschenberg 1991: 86; South 1970: 70-72). We also knew, from the Moravian records, that Ellis had fired queensware and stoneware (Rauschenberg 1991: 88).

We wondered, therefore, whether Bartlam at Cain Hoy, before the arrival of Ellis in America, had produced white salt-glazed stoneware. We suspected that he might have done so, because during excavations at Old Salem, North Carolina, some fragments were found of a glossy glazed grey-white stoneware with little pitting from salt-glazing, which was thought at the time to be alkaline glazed stoneware (South 1971: 171-173), but which later proved to be salt-glazed.

Fragments of a glossy salt-glazed stoneware, similar to the glossy sherds found at Old Salem, were indeed found at Cain Hoy in the five-foot squares (Plate 20e,f,g,i,j,k,l). These fragments might more accurately be called "glossy pale-grey salt-glazed stoneware", since they were darker than the white salt-glazed stoneware I was familiar with from excavations on many British colonial sites of the eighteenth century (Noël Hume 1970: 114-117; South 1977: 210-213).

One glossy white salt-glazed stoneware sherd had an applied floral sprig, and was greenish in appearance, like Chinese celadon (Plate 20e), while another revealed a footring from a child's toy dish, similar to the fragments of toy dishes we had seen on Bartlam's creamware (Plate 20j).

A grey fragment of scratch-blue salt-glazed stoneware (Noël Hume 1980 [1970]: 29) also raised the question as to whether Bartlam might have been making this type stoneware as well, if the grey sherds were indeed from his manufactory (Plate 20h). None of these fragments were obviously kiln wasters so we are able to do little more than to raise the question at this stage of our research.
A white salt-glazed stoneware fragment of a molded vessel with a leaf and vine motif was also found (Plate 20f), as well as one with a brown-slipped dot similar to those seen on combed and dotted yellow slipware mugs (Plate 20i). This brown dotted, white salt-glazed stoneware sherd, is an unusual one and may well have been made by Bartlam. This more traditional white sherd tone contrasts with the light grey ones in color (Plate 20). Attribution of white salt-glazed stoneware fragments possibly made by Bartlam is one of the challenges we face as analysis continues on the Cain Hoy ceramic assemblage.

A flat, plain molded salt-glazed stoneware plate marly with no bead at the lip was similar to a sherd from a plain moulded tortoiseshell glazed rim mentioned above as likely having been made by Bartlam (Barker 1991: 180-181), (Plate 20g).

**Yellow Buff Paste Wares**

A group of buff paste wares in combination with various glazes and slips have a yellow "Carolina creamware" color. They are wares easily produced by earthenware potters and are closer to the wares made by Rudolph Christ and Gottfried Aust at Bethabara and Salem, North Carolina than they are to the usually seen groups of pottery types imported from England (South 1967: 33-52, 1970: 70-74). For this reason I have grouped the following wares as possibly being made by Bartlam. I have no specific proof that this was the case.

**Yellow and Black Ware Possibly Made by Bartlam**

When a buff paste ware is coated on one side with a black metallic oxide and then covered with a lead glaze, the result is a yellow and black ware, possibly being made by Bartlam.

**Yellow and Brown Ware Possibly Made by Bartlam**

When a brown manganese glaze is heavily applied to a buff paste ware on one side only, and covered with a lead glaze, the result is a yellow and brown ware, a type possibly made by Bartlam. A fragment of this ware with a piece of kiln furniture, called a "bob", stuck to the base is illustrated in Plate 19c (Barker 1991: 124-125). This suggests Bartlam was making this type ware because it is unlikely a piece with a supporting bob attached would have been exported from Staffordshire.

**Yellow and Brown Glazed Slipware Possibly Made by Bartlam**

Some sherds with a buff paste have had a white slip applied on one side and then a brown manganese glaze has been applied to the other, producing a bright yellow and brown glazed slipware, possibly made by Bartlam.

**Yellow and Red Glazed Slipware Possibly Made by Bartlam**

When a buff paste ware is covered with a red slip and then lead glazed, a yellow and red glazed slipware is produced. Bartlam may possibly have been making such ware.

**Yellow Buff Paste Ware Possibly Made by Bartlam**

Some fragments of glazed buff paste ware are yellow in color. They could be pieces of Staffordshire combed and dotted yellow slipware mugs or fragments of a clear-
glazed buff paste ware being made by Bartlam. Perhaps some day we will be able to attribute these fragments to either Staffordshire or to Bartlam, but such is not now the case.

**Summary**

The above discussion has presented wares from the three basic categories I have used to divide the assemblage thought to have been made by John Bartlam from 1765 to 1770. These categories are those Bartlam wares (19), based on strong evidence from kiln wasters, both glazed and biscuit fired fragments. The second category are those wares probably made by Bartlam (4), based on less strong evidence such as that from a single sherd. The third category is those wares possibly made by Bartlam (15), based on circumstantial evidence. In the following list Bartlam’s wares are grouped according to the key attributes used for identifying his wares.

**Grouping of Key Attributes for Identifying Bartlam’s Wares**

**Wares Generally Called Creamware**

- **Cream, Buff, and Red Paste Earthenware**
  - Manufacturing by-products
  - Wares based on glaze attributes
  - Wares based on press-molded patterns
  - Wheel thrown wares based on decoration and glaze
  - Wares based on tool-impressed decoration
    - Wares based on a combination of taxonomic attributes

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<th>Manufacturing by-products</th>
<th>Wares based on glaze attributes</th>
<th>Wares based on press-molded patterns</th>
<th>Wheel thrown wares based on decoration and glaze</th>
<th>Wares based on tool-impressed decoration</th>
<th>Wares based on a combination of taxonomic attributes</th>
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<tbody>
<tr>
<td></td>
<td>7. Yellow and green slipware</td>
<td>12. Dot, diaper &amp; basket molded ware</td>
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<td>13. Bead and reel molded ware*</td>
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<td>14. Plain molded ware*</td>
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<td>15. Molded figures</td>
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<td>16. Relief molded sprig decoration*</td>
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<td></td>
<td></td>
<td>20. Dot and diaper molded tea caddy</td>
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</table>

**Wares Generally Called Pearlware**

- **White Paste Earthenware**
  - Wares based on white paste and blue painted decoration
  - 22. Blue and white "china" pearlware

**Wares Generally Called Stoneware**

- **White Paste Stoneware**
  - Wares based on paste hardness
    - 23. Salt-glazed stoneware
      - (Littler's blue type)*

* = probable Bartlam ware
If some readers are surprised that Bartlam was making as many as 23 wares and possibly 15 others at Cain Hoy, it should be kept in mind that he was quoted as saying he intended to make "every kind of Earthen Ware that is usually imported from England", and to produce them at a cheaper price (Rauschenberg 1991: 6). With the possibility that some 38 types of ware might have been made by him, Bartlam appears to have been well on the way to achieving his goal. If we had the kiln waster pile available to us we would likely find that the number of positively identified Bartlam wares would increase.

It is interesting to note that when David Barker excavated the kiln waster dump of Bartlam's contemporary, William Greatbatch, he found that he was making a total of twenty-two wares between 1765 and 1770 (Barker 1991: 165). His list of Greatbatch wares was presented at the beginning of this chapter. Eleven of the wares from that list were also made by Bartlam as well as twelve others not listed by him. When the opportunity arrives to excavate Bartlam's kiln waster dump, we will have a far better idea of what he was and was not producing somewhere at Cain Hoy than we now have from this secondary assemblage.

A more extensive sampling on the St. Thomas Point site beyond the specific research frame where we worked is needed in order to define the limits of the Bartlam wares on the Cain Hoy site, and to possibly discover kiln furniture and other clues to the location of Bartlam's kiln.

With the above information in hand regarding the concentration of Bartlam's wares among household refuse, suppose we then place some 50 five foot squares in the area of concentration. Would we then find evidence in the form of kiln waster sherds for additional likely Bartlam made wares, or has our sampling in this area of the site adequately revealed the number of wares likely to be recovered from the domestic household from which the Bartlam wares were thrown? To address this question and to recover as many fragments of Bartlam's ware as possible, even from a household refuse context, it was important that we return to Cain Hoy to carry out another project.

The second project was necessary because the Cain Hoy site on St. Thomas Point has been sold to private individuals for home sites and may not be available for archaeological study much longer. This second project was undertaken by SCIAA and MESDA with funding raised through the efforts of Brad Rauschenberg. That project was carried out in November and December, 1992. The analysis of the thousands of Bartlam sherds recovered in that project and the report writing awaits additional funding.

We hope to return to Cain Hoy again to carry out shovel testing on a much larger scale than was possible in the projects undertaken so far. Through the cooperation of the individual lot owners, and contributors of funds for a new testing project, we may return to the Cain Hoy site some day to try to locate the kiln.
Plate 1: Bartlam's Bisque Sherds and Glazed Ware

Top row:
- a. biscuit barley pattern sherd
- b. tortoiseshell glazed barley pattern sherd
- c. biscuit teacup base sherd
- d. biscuit red paste ring-and-dot (partridge eye) sherd

Row 2:
- e. biscuit rouletted melon ware sherd
- f. yellow and green glazed, incised "reeded" ware sherd
- g. biscuit, incised, redware moulded figure fragment
- h. tortoiseshell glazed moulded figure fragment
- i. green glazed dot, diaper and basket rim sherd

Plate 2: Combed and Dotted Yellow Slipware, Carolina Creamware and Tortoiseshell Ware

Top row:
- a. body sherd of combed and dotted yellow slipware showing white slip
- b. typical brown dot on buff paste combed and dotted yellow slipware mug rim sherd
- c. typical rim sherd from combed and dotted yellow slipware mug
- d. unglazed exterior base fragment of marbelized slipware showing red slip on buff paste

Row 2:
- e. base sherd of combed and dotted yellow slipware
- f. handle fragment of combed and dotted yellow slipware
- g. kiln waster base sherd of Carolina creamware
- h. moulded handle fragment of Carolina creamware

Row 3:
- i. poorly moulded tortoiseshell glazed dot, diaper and basket ware
- j. brown dotted tortoiseshell ware (probably British). Compare the cream color of this sherd with the darker Carolina creamware (g and h) and with the yellow color characteristic of combed and dotted yellow slipware with a buff paste.
- k. pale greenish brown glazed sherd with a rouletted rim motif
- l. teapot rim fragment of tortoiseshell glazed ware

Notes: Provenience numbers for all sherds in all plates are listed in the Appendix.

A centimeter scale is shown in the plates.
Plate 3: Bartlam's Bisque Sherds

Top Row:

a. the oval-and-dash impressed flower motif on a red bisque paste
b. the oval-and-dash and the "ring-and-dot" (partridge eye impressed motif on a white bisque paste
c. the oval-and-dash impressed flower motif on a white paste, arranged around a central hole to form a flower, with Bartlam's yellow and green glaze
d. a bisque cream paste fragment with foot ring

Row 2:

e. a red bisque paste rim fragment
f. a buff paste bisque sherd with pink firing cloud darkened surface
g. a creamware bisque rim sherd with oxygen-reduced brown dots
h. a buff paste bisque sherd
i. a cream paste bisque stemmed bowl fragment

Row 3:

j. a buff paste bisque sherd showing a red firing cloud near the rim
k. a bisque toy rim sherd showing tool marks
l. a buff paste bisque sherd showing foot ring

Plate 4: Comparison of Cream and Buff Paste Wares

Top row:

a. a buff paste sherd with a clear lead glaze such as usually seen on combed and dotted yellow slipware mugs
b. a cream paste Carolina creamware sherd with a clear lead glaze
c. a cream paste Carolina creamware molded rim sherd with fluted motif
d. a cream paste Carolina creamware knob, probably from a toy teapot lid
e. a white paste British creamware rim sherd to show contrast with Carolina creamware

Row 2:

f. a buff paste Carolina creamware rim sherd with parallel incised lines

Row 3:

g. a handle fragment from a buff paste combed and dotted yellow slipware mug, similar in color to Carolina creamware
h. a cream paste Carolina creamware handle fragment
i. a buff paste body sherd showing the white slip applied to the surface of the piece to produce a creamware color
j. a cream paste Carolina creamware sieve fragment
k. a buff paste kiln waster base sherd with a white slipped surface covered with a lead glaze to produce a lighter cream-colored slipware

Row 4:

l,m,n,o base fragments of toy dishes showing footrings and the typical color of Carolina creamware
p. a base fragment of Carolina creamware with a fluted foot ring
Plate 5: Bartlam's Pumpkin Colored Ware

Top row:

a. buff paste pumpkin colored handle fragment
b. lead glazed cream paste Carolina creamware salt fragment?

Row 2:

c. buff paste pumpkin colored sherds
e. buff paste pumpkin colored handle fragment

Plate 6: Pineapple Molded Ware

Top row:

a. red paste bisque fragment of a pineapple molded teapot lid
b. red paste lead glazed pineapple molded ware fragment
c. buff paste lead glazed pineapple molded ware fragment
d. cream paste lead glazed pineapple molded ware, possibly a fragment
   made in Staffordshire, England. Note the color change with paste
   change.

Row 2:

e,f,g. red paste pineapple molded leaf sherd
h. cream paste pineapple molded leaf sherd
Plate 7: Bartlam's Bisque Cauliflower Molded and Rouletted Melon Ware

Top row:

a, b, c, d. biscuit fired cauliflower ware  
e. a kiln waster fragment of green and yellow cauliflower molded ware

Row 2:

f. a biscuit sherd of cauliflower molded ware with a rococo motif  
g. a biscuit sherd of cauliflower molded ware with leaf motif  
h., i. biscuit sherds of rouletted melon ware

Plate 8: Glazed Cauliflower Molded Sherds

Top row:

a, b, c, d. cream paste cauliflower molded ware  
e. buff paste cauliflower molded ware

Row 2:

f, g. cream paste cauliflower molded ware  
h. tortoiseshell glazed cauliflower moulded ware  
i. red paste green glazed cauliflower moulded ware

Row 3:

j, k. green glazed cauliflower molded ware leaf motif  
l. green glazed cauliflower molded ware with rococo motif  
m. light green glazed cauliflower molded ware leaf motif  
n. green glazed cauliflower molded leaf motif
Plate 9: Bartlam's Bisque Sherds of Dot, Diaper and Basket Molded Ware

Top row:

a,b,c,d. biscuit fired dot, diaper and basket molded ware sherds

Row 2:

e. biscuit fired dot, diaper and basket molded ware sherd with larger than usual basket motif
f. biscuit fired dot and diaper molded sherds, possibly from a flat-sided tea caddy
g. white paste, lead glazed white and green colored fragment of molded cabbage ware, much like Bartlam's molded wares, but this sherd was placed in the non-Bartlam group of wares

Plate 10: Bartlam's Green Glazed Dot, Diaper and Basket Molded Ware

Top row:

a. kiln waster sherd showing back of green glazed dot, diaper and basket molded ware
b. green glazed dot, diaper and basket molded ware sherd

Row 2:

c. green glazed dot, diaper and basket molded ware sherd
d. tortoiseshell glazed dot, diaper and basket molded ware sherd
e. buff paste cream-colored dot, diaper and basket molded ware sherd with smaller than usual basket pattern, possibly from a toy plate
f. green glazed dot, diaper and basket molded ware fragment with smaller than usual basket pattern, possibly from a toy plate
g. kiln waster, heat damaged green glazed fragment of dot, diaper and basket ware
Plate 11: Bartlam's Rouletted Melon Ware

Top row:
- a. kiln waster fragment of melon ware
- b,c,d. fragments of glazed melon ware

Row 2:  
- e,f,g,h. fragments of glazed melon ware

Row 3:  
- i,j,k,l,m. fragments of glazed melon ware
- n. interior kiln damaged fragment of melon ware

Plate 12: Bartlam's Barleycorn Molded Ware

Top row:
- a. tortoiseshell glazed, mended fragments of barleycorn molded ware. The left sherd is from sample frame unit 68, and the right sherd is from five-foot square 302G.
- b. a tortoiseshell glazed fragment with a relief molded medallion with a green glazed barleycorn pattern
- c,d. barleycorn molded ware with a cream-colored glaze

Row 2:  
- e. a tortoiseshell glazed fragment with a relief molded medallion with a green glazed barleycorn pattern
- f. a purple tortoiseshell glazed fragment with a thistle molded pattern

Row 3:  
- g,h. kiln damaged green glazed barleycorn molded ware fragments
- i. a small green glazed barleycorn molded pattern, probably from a toy dish
Plate 13: Bartlam's "Ring-and-dot" and Sprigged Bead and Reel Molded Ware

Top row:  
a,b,c. bead and reel molded plate fragments with "ring-and-dot" impressed motif with applied floral sprigs

Row 2:  
d. four-petal sprig on a tortoiseshell glazed fragment

Row 3:  
e,f. green glazed handle fragments  
g. brown glazed, four-lobed applied relief sprig decoration  
h. brown glazed, four-petal applied relief sprig decoration

Plate 14: Tortoiseshell Glazed Ware

Top Row:  
a. toy teapot spout  
b,c,d,e,f. tortoiseshell glazed fragments

Row 2:  
g. tortoiseshell glazed fragment with rouletted fluted band below the rim  
h. tortoiseshell glazed rim sherd fragment  
i. tortoiseshell glazed fragment with rouletted fluted band

Row 3:  
j. rim and marly fragment of a plain molded tortoiseshell glazed plate  
k,l. yellow and brown tortoiseshell glazed rim fragments  
m. tortoiseshell glazed kiln waster sherd base with fire damage  
n. a yellow and dark brown (almost black) tortoiseshell glazed sherd

Row 4:  
o,p. tortoiseshell glazed handle fragments  
q. yellow and brown tortoiseshell glazed fragment on buff paste  
r. yellow and brown tortoiseshell glazed fragment on pink paste  
s. yellow and green tortoiseshell glazed fragment on red paste  
t. brown and yellow tortoiseshell glazed fragment on white paste
Plate 15: Bartlam’s Molded Figure Fragments

Top row:
- a bisquit fired fragment of a molded figure with an incised line
- a kiln waster fragment of a green glazed figure
- a red paste, pumpkin and brown glazed figure base fragment

Row 2:
- a red paste, pumpkin and brown glazed figure fragment, probably from the same figure as the fragment seen in c
- a white paste, green, violet and white glazed fragment that may be part of a relief moulded dish rather than from a figure
- a tortoiseshell glazed figure fragment
- a tortoiseshell glazed figure fragment from sample frame test unit 50

Plate 16: Bartlam’s Kiln Damaged Fragments

Top row:
- a kiln damaged fragment of refined blackware (very dark brown to black)
- a very dark brown to black ware sieve fragment
- a small kiln damaged rim fragment of dark brown to black ware
- a grey paste glossy refined Jackfield blackware fragment, placed here for comparison with the kiln waster sherds

Row 2:
- a creamware fragment with a blue painted surface wash, with only a couple of dots of glaze over the blue
- a soft earthenware Westerwald type salt-glaze pitted stoneware vessel fragment showing the cobalt blue decorative band in the unglazed bisque stage
- a cream paste, green glazed vessel fragment with 1/4" layer of melted glass puddled on the bottom side of the sherd
- a small fragment of green glazed creamware with 1/4" of glass fused to it

Row 3:
- a notched rim of a buff paste combed yellow slipware plate, with a milky grey rather than a clear lead glaze--possibly a kiln waster piece
- a kiln waster fragment of a yellow and green glazed vessel having an unglazed exterior. The surface is covered with numerous bits of sherd fragments from a vessel that exploded in the kiln.
- kiln waster fragments of yellow interior, yellow and green exterior glazed cream-paste ware with improperly cured glaze
- a wad clay pugging coil once between two saggars in a kiln during firing
Plate 17: Bartlam's Blue and White "China" Pearlware Bisque Sherds

a. unglazed biscuit fired sherd of Bartlam's blue and white "china" pearlware. This fragment shows extremely fine single-hair brush decoration
b. unglazed biscuit fired sherd of Bartlam's blue and white "china" pearlware
c. unglazed biscuit fired base of a large bowl of Bartlam's blue and white "china" pearlware, showing the artist's "C" mark on the base

Plate 18: Bartlam's Blue and White "China" Pearlware Sherds

Top row:

a. (large sherd) unglazed biscuit fired, decorated sherd showing the Chinese wall often seen on Staffordshire pearlware and Chinese porcelain
b. a dull, glazed sherd, showing a Chinese house decorative motif typical of those often seen on Staffordshire pearlware and Chinese porcelain
c. a biscuit fired unglazed fragment of Bartlam's "china"

Row 2:

d, e. lead glazed, smokey fragments of Bartlam's decorated "china"

Row 3:

f, g, h, i. dull, clear lead glazed sherds of Bartlam's decorated "china"
Plate 19: Glazed Earthenware Fragments

Top row:

a. a pumpkin and green glazed earthenware base fragment
b. a manganese-dotted red glazed earthenware fragment
c. a buff paste, yellow interior, brown exterior base fragment with a clay bob stuck to the base
d. a red paste dotted manganese glazed handle fragment

Row 2:

e. a pink paste brown manganese glazed handle fragment
f. a buff paste dull green glazed earthenware fragment
g. a buff paste yellow exterior, green interior earthenware fragment (yellow and green glazed ware)
h. a yellow and green glazed kiln waster base fragment with quartz and kiln debris stuck to the bottom
i. a fragment of grey paste lead glazed earthenware, probably a kiln waster due to reduction firing in the kiln

Plate 20: Salt-glazed Stoneware Fragments

Top row:

a. fragment of Littler's blue type salt-glazed stoneware with grape sprig (the kiln fire blistered interior of this sherd is illustrated in d, below).
b. fragment of Littler's blue type salt-glazed stoneware showing buff paste
c. fragment of Littler's blue type salt-glazed stoneware with grape leaf sprig

Row 2:

d. interior of kiln waster sherd of Littler's blue type salt-glazed stoneware showing blistering from incorrect firing in the kiln. The exterior of this sherd is shown in a, above.
e. fragment of glossy pale grey salt-glazed stoneware with applied decorative floral sprig
f. fragment of glossy white salt-glazed stoneware with molded grave leaf motif
g. fragment of plain rim sherd of pale grey salt-glazed stoneware plate marly

Row 3:

h. fragment of pale grey scratch-blue salt-glazed stoneware

Row 4:

i. white salt-glazed stoneware plate marly with decorative brown slip dot
j. base fragment of pale salt-glazed stoneware toy dish
k. fragment of glossy pale grey salt-glazed stoneware
l. fragment of brown tinted salt-glazed stoneware handle
Chapter 4

Searching for Clues with the Electron Microscope

The reader not interested in the details of paste analysis of Bartlam and non-Bartlam sherds might well want to skip this chapter and move on to the identification of the non-Bartlam wares. Although some revealing contrasts in the chemical elements of various wares were determined, a major finding was that a more specific method of contrasting ceramic wares might prove more effective than the scanning electron microscope. Such a method might be neutron activation analysis.

The Problem

This chapter presents the results of a study designed to identify whether Bartlam's bisque and glazed blue and white "china" pearlware sherds found at Cain Hoy were an attempt to produce porcelain or whether they were blue and white "china glaze" ware which Miller has demonstrated is what we know today as pearlware (Miller 1987). If they were indeed an attempt to make porcelain using the kaolin "Cherokee clay" (Rauschenberg 1991: 67-79), the effort failed as witnessed by the fact that none of the sherds recovered were fired to the hardness of porcelain, or even stoneware. This, plus the fact that none are translucent, caused me to refer to them as pearlware. I wanted to determine, if possible, if any of Bartlam's blue and white "china" ware fragments had been glazed to a glossy finish such as those typically seen on British colonial sites or if all of his blue and white ware lacked the glossy finish. The scanning electron microscope seemed to be a good means of addressing this question because with it the major chemical elements are displayed as a graph with peaks for the major elements present. I wanted to compare the major elements in samples of pearlware with those from Bartlam's bisque blue and white "china" pearlware and samples of Chinese porcelain to examine the similarities and differences.

Also, I wanted to be able to distinguish between glazed creamwares made by Bartlam and those made in Staffordshire, since I was not able to do this through visual means, resulting in my having to classify all glazed cauliflower ware, pineapple ware, and other such creamwares into a single category. As has been seen in the previous chapter the only way I was able to determine which wares Bartlam was making was through kiln waster fragments, especially bisque pieces. I hoped some different element in the wares made from Cain Hoy clay would be found to contrast with the clay in wares known to have been made in Staffordshire and elsewhere.

White salt-glazed stoneware was also a problem in that some fragments were a glossy grey color, suggesting to me that they may have also been made by Bartlam. They could, however, have been exported to the American colonies from Staffordshire, but they were darker and glossier than those with which I was familiar. I needed a means to examine the paste of these wares to see if I could find a chemical element differing, perhaps, along these visual lines to help determine whether Bartlam was indeed making a glossy grey version of white salt-glazed stoneware familiar to me from eighteenth century British colonial sites.
As the study developed, I began asking many other questions such as the comparison between eighteenth century German Westerwald stoneware; nineteenth century ironstone and whiteware; Carolina creamware; British creamware and similar sherds of combed and dotted yellow slipware mugs; seventeenth century British delft; eighteenth century French faience; sixteenth century Spanish majolica; as well as English and Chinese porcelain. In my enthusiasm to get at answers to some of these questions through the electron microscope, I expanded the range of my study to include not only sherds from Cain Hoy, but fragments from South Carolina sites at Camden, Ft. Dorchester, Old Dorchester, Ft. Watson, Newington Plantation, Ninety Six, Ft. Prince George and the sixteenth century Spanish colonial site of Santa Elena. The results, however, were disappointing, prompting a resolve to use a method to specifically examine for trace elements next time.

The Method

To make arrangements to learn how to use the scanning electron microscope, I contacted the director of the University of South Carolina Electron Microscopy Center, Norimitsu Watabe, with whom I had worked on a pilot project using sherds from the Cain Hoy site over twenty years ago. At that time it was not possible to look at sufficient samples to arrive at any conclusions. With the new body of data from Cain Hoy the time had arrived to look at a much larger sample of sherds. I was instructed as to how to use the Hitachi S-2500 Delta scanning electron microscope with attached Kevex energy dispersive analyzer, by Dana Dunkelberger, who was very helpful throughout the project.

The electron microscope can be used to obtain photographs of great magnification of microscopic areas of a sample, or it can be used as I used it, to obtain a graphic presentation of the presence of peaks of the energy spectrum reflecting primary chemical elements in a sample so that they can be visually compared and differences observed. The peaks in the energy spectrum shown on the graphic presentation are the result of the excitation of the electron beam on the sample.

If we know that a principal ingredient of china clay is kaolin (kaolinite), which is a hydrated aluminum silicate, we know that we can expect major elements of aluminum (Al), oxygen (O), and silica (Si) to be present in the paste of pottery containing kaolinite (Encyclopedia Britannica 1965:225). I was not so interested in these ingredients as I was in seeing what combinations of other ingredients the various sherds of pottery would prove to contain that might reflect particular idiosyncracies of the clay source. I had hoped that the clay from Cain Hoy and the broken sherds of pottery made from it, might contain some unusual ingredient that would be like a signature element for use in identifying Bartlam's ware and contrasting it with sherds from clays originating in England, France or Spain, for instance. This was the theory behind the electron microscope study I undertook. It was a hunting and learning expedition.

A sample (No. 111), of British creamware from Ninety Six, South Carolina, is seen in the graphic print-out from the microscope in Figure 2. From left to right the major elements being reflected from the sample in the vacuum chamber are seen as peaks of: oxygen (O), aluminum (Al), silicon (Si), potassium (K), calcium(Ca), titanium (Ti), and iron (Fe). The numbers from .5 to 7 shown in Tables 1 through 4 are simply the points along a scale of 0-10 used by the electron microscope to specifically compare the element peaks shown on the graph. Using this method I obtained 135 graphs of sherd samples.
Figure 2. Electron microscope graph of British creamware, Sample 111, from Ninety Six, S.C., illustrating the profile for the ceramic group "Creamware, Pearlware, Stoneware + Miscellaneous Others".

### TABLE 1: SCANNING ELECTRON MICROSCOPE ENERGY DISPERSIVE ANALYSIS

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<th>Site and Specimen Description</th>
<th>Prov. Number</th>
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| CREAMWARE, PEARLWARE, STONEWARE + MISC. OTHERS |

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A total of 49 other samples were run having this same group of peaking elements, including British creamware, pearlware, ironstone, blue transfer-printed whiteware, tortoise shell ware, melon ware, pineapple ware, caulliflower ware, Bartlam's bisque ware, dot, diaper and basket moulded ware, Carolina creamware, Westerwald stoneware, Jackfield ware, as well as combed yellow slipware, trailed slipware, British annular pearlware, 19th century blue edged whiteware, British white salt glazed stoneware, Bartlam's red pasto "ring-and-dot" ware, red lead glazed earthenware, refined red earthenware, green glazed creamware and pumpkin ware.

These samples were from Cain Hoy (38Bk1349), Camden (38Kel), Old Dorchester (38Dor3), Ft. Dorchester (38Dor4), Newington Plantation (38Dor5), Ft. Prince George (38Pn1), and Ninety-Six, South Carolina (38Gn1 and Gn2).

### LEAD GLAZED CREAMWARES

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<td>0.5</td>
<td>1.5</td>
<td>1.7</td>
<td>2.4</td>
<td>3.3</td>
<td>4.5</td>
</tr>
<tr>
<td>38Bk1349-311B</td>
<td>77</td>
<td>0.5</td>
<td>1.5</td>
<td>1.7</td>
<td>2.4</td>
<td>3.3</td>
<td>4.5</td>
</tr>
<tr>
<td>38Bk1349-305B</td>
<td>58</td>
<td>0.5</td>
<td>1.5</td>
<td>1.7</td>
<td>2.4</td>
<td>3.3</td>
<td>4.5</td>
</tr>
<tr>
<td>38Kel-1503</td>
<td>90</td>
<td>0.5</td>
<td>1.5</td>
<td>1.7</td>
<td>2.4</td>
<td>3.3</td>
<td>4.5</td>
</tr>
</tbody>
</table>
To obtain the sample of each sherd a small chip about 2mm in size was broken from the sherd using needle-nose pliers. Using a tweezers the chip was stuck onto a metal disc coated with a carbon solution to reduce background scatter from the metal disc. The disc with sherd chip mounted onto it was then placed into a chamber so that the fresh break of the chip is toward the electron gun. A vacuum is then created in the chamber. The chip was then viewed on a computer screen and a 250 power magnification was set. A small area to be exposed to the electrons was selected and the rate at which the electrons are reflected is read and transmitted to a second computer screen where the graphic presentation of the energy spectrum is constructed over a period of 100 seconds and revealed as peaks on the graph. The printer is then activated and the result is the print-out seen in Figure 2. It should be remembered that the relative height of the peaks has no significance since this is a presence/absence indicator of the major elements in the paste of the sample.

The Results

Raw Clay

Because so many samples were created in the study, comparison of the results was best presented and in tabular form. The white clay brought to the surface through the setting of the pilings for the new dock (Fig. 1), was sample No. 130. Comparison of the major elements in this clay with two other clay samples recovered from the site can be seen in Table 1. I wanted to compare this local white clay with sherd samples to see if there was a match. They were not identical. In the tables the numbers are simply an expression of the elements on a scale of one to ten.

Glazed Creamware, Pearlware, Stoneware, and Miscellaneous Others

Table 1 presents the elements found in sample No. 25, which was a sherd of Carolina creamware from Square 306B at Cain Hoy. Also sharing this same group of elements were 49 other samples including British creamware, pearlware, Westerwald stoneware, British white salt-glazed stoneware, etc., totalling 25 wares. This group also includes a sample of Bartlam's bisque ware. Obviously, this method of comparison of elements does not discriminate between a wide range of ceramic types familiar to historical archaeologists.

Glazed Creamwares

A group of six glazed creamwares reveal the same set of elements as those seen in the raw clay sample (No. 130) from the piling hole. It is tempting to say, because of this identical elemental make-up, that these sherds were made by Bartlam, but there are unexplained exceptions that prevent us from being able to say this.

Bartlam's Bisque Fired Wares and Miscellaneous Others

The graphic print-out of Bartlam's bisque fired sherd sample 62 is seen in Figure 3 for comparison with the British creamware sherd profile in Figure 2. I have listed six of Bartlam's bisque fired wares, including the single wad clay pugging coil of kiln furniture found on the site (sample No. 13). All six are identical in the peaking of major elements. Note the absence of lead, as might be expected with bisque sherds without lead glaze added. Again, the uniformity is not without exception, since we have seen that such bisque ware is included in the 50 miscellaneous "creamware, pearlware, stoneware" group discussed above as seen in Table 1. In addition, there are 28 other samples, from
Figure 3. Electron microscope graph of a Bartlam bisque cauliflower ware, Sample 62, illustrating the group "Bartlam's Bisque Fired Wares + Miscellaneous Others".

TABLE 2: SCANNING ELECTRON MICROSCOPE ENERGY DISPERSIVE ANALYSIS

<table>
<thead>
<tr>
<th>Site and Specimen Description</th>
<th>Prov. Number</th>
<th>Number</th>
<th>BARTLAM'S BISQUE FIRED WARES + MISC. OTHERS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>O</td>
<td>Al</td>
<td>Si</td>
</tr>
<tr>
<td>38Bk1349-313C</td>
<td>7</td>
<td>1.5</td>
<td>1.7</td>
</tr>
<tr>
<td>38Bk1349-313D</td>
<td>10</td>
<td>1.5</td>
<td>1.7</td>
</tr>
<tr>
<td>38Bk1349-3132</td>
<td>12</td>
<td>1.5</td>
<td>1.7</td>
</tr>
<tr>
<td>38Bk1349-3078</td>
<td>13</td>
<td>1.5</td>
<td>1.7</td>
</tr>
<tr>
<td>38Bk1349-307E</td>
<td>62</td>
<td>1.5</td>
<td>1.7</td>
</tr>
</tbody>
</table>

In addition to the above Bartlam bisque fired wares and raw clay sample, there were 28 other samples showing the same set of peaking elements. The sample sherds were from the sites of Cain Hoy (38Bk1349), Camden (38Ket1), Old Dorchester (38Dr3), Ft. Dorchester (38Dr4), and Newington Plantation (38Dr15).

A wide range of ceramic samples are represented as follows: melon ware, tortoloshell ware, Carolina creamware, British brown stoneware, Westerwald stoneware, British creamware, grey pasto tortoloshell ware, trailed slipware, bisque trailed slipware, green glazed creamware, and glazed cauliflower ware.

TABLE 2: SCANNING ELECTRON MICROSCOPE ENERGY DISPERSIVE ANALYSIS

<table>
<thead>
<tr>
<th>Element</th>
<th>O</th>
<th>Al</th>
<th>Si</th>
<th>Pb</th>
<th>K</th>
<th>Cs</th>
<th>Ti</th>
<th>Fe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Br.pearl</td>
<td>0.5</td>
<td>1.5</td>
<td>1.7</td>
<td>2.4</td>
<td>3.5</td>
<td>3.7</td>
<td>4.5</td>
<td>6.4</td>
</tr>
</tbody>
</table>

Also having these same peaking elements were 6 sherds of trailed slipware, tortoloshell ware, dot, diger and basket moulded ware, and Barltam's tortoloshell glazed "ring and dot" impressed ware, from the Cain Hoy site.
Carolina creamware to stoneware, showing the same group of elements. Again, 10 additional ceramic types are represented. This group of elements is certainly not very diagnostic of anything at this level of analysis. Trace element analysis is needed.

**Creamware and British Blue Painted Pearlware**

Table 2 also presents the elements present in a sherd of British pearlware from Camden, South Carolina. Lead is present in this sample. Also present are six other earthenware sherds from four different ceramic wares. There is no correlation here along ceramic taxonomy lines, with both Bartlam and British sherds appearing in the group.

**Glossy Grey White Salt-glazed Stoneware**

The elements from a group of three glossy grey salt-glazed stoneware fragments suspected to have been made by John Bartlam are tabulated in Table 3. The elements here are virtually the same as those of Bartlam's bisque fired wares seen in Table 2, suggesting that Bartlam may have indeed made these grey paste salt-glazed stoneware sherds. Notice that calcium (Ca), is missing from this stoneware, as it is from Bartlam's bisque ware (Table 2), as well as from the glazed creamwares seen in Table 1. The absence of this element in these sherds is in contrast to Bartlam's bisque blue and white "china" ware and porcelain, to be discussed next.

**Bartlam's Blue and White "China" Ware**

The graph for Bartlam's blue and white "china" ware sample 38, is illustrated in Figure 4, which reveals quite a contrast to the graph for bisque ware seen in Figure 3. With this ware, calcium (Ca), and its beta Ca (B), is present in each sample, as it is with the large "Creamware, pearlware and stoneware" group seen in Table 1. Calcium is also present in the porcelain samples seen in Table 3. Note that the surface patina from sherd Sample 75, is the same as that for the paste in two of the samples.

An important element to notice is phosphorus (P), which is not seen in any of the other samples in Tables 1, 2, or 3, including porcelain (see below). However, Table 4 reveals that lead and phosphorus are both present in the "Delft, Majolica and Faience, etc." group of samples, thus relating Bartlam's blue and white "china" pearlware to the paste of tin ash glazed wares. They are such contrasting wares visually: one group having a white paste and a lead glaze with the other group a soft buff paste coated with a tin ash glaze. This is an example of where a more specific trace element analysis is needed.

These same two elements (lead and phosphorus) are also seen in Sample 40, a dark brown manganese glazed sherd from Cain Hoy in the "Manganese Glazed Black Paste Ware" group of samples. I wonder what ingredient Bartlam was adding to the paste of his "china" ware to cause it to contain phosphorus, an element seen primarily in those samples from Spain, France and England. Was he adding a local limestone containing phosphorus to his "china" clay formula? Carl Steen has suggested that he may have been adding lime from local calcareous marl deposits.

Perhaps the most critical element revealed in these samples of Bartlam's blue and white "china" ware, addressing the major question that stimulated the use of the electron microscope, is the presence of lead (Pb). Porcelain (see below) reveals no lead, nor does Bartlam's bisque ware (Table 2).
Figure 4. Electron microscope graph of Bartlam's blue and white "china" pearlware, Sample 38, illustrating the phosphorus and lead distinguishing it from porcelain and relating it to the profile for the "Delft, Majolica, Faience, etc." group seen in Table 4.

TABLE 3:  SCANNING ELECTRON MICROSCOPE ENERGY DISPERSIVE ANALYSIS

<table>
<thead>
<tr>
<th>Site and Specimen Description</th>
<th>Prov. Number</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>GLOSSY GREY WHITE SALT-GLAZED STONEWARE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Element</td>
<td>O</td>
<td>Na</td>
</tr>
<tr>
<td>385P1349-3068</td>
<td>26</td>
<td>Grey</td>
</tr>
<tr>
<td>385P1348-2018</td>
<td>74</td>
<td>Grey</td>
</tr>
<tr>
<td>385P1348-307B</td>
<td>34</td>
<td>Grey</td>
</tr>
<tr>
<td>385P1349-313F</td>
<td>44</td>
<td>Liqht blue type</td>
</tr>
</tbody>
</table>

BARTLAM'S BLUE AND WHITE "CHINA" WARE

| Element | O | Na | Al | Si | P | Pb | K | Ca | Ca(B) | Ti | Cr | Fe |
| 385P1349-3068 | 2 | Paste | 0.5 | 1 | 1.5 | 1.7 | 2 | 2.4 | 3.3 | 3.7 | 4.5 | 5.4 | 6.4 |
| 385P1348-313F | 38 | Paste | 0.5 | 1 | 1.5 | 1.7 | 2 | 2.4 | 3.3 | 3.7 | 4.5 | 5.4 | 6.4 |
| 385P1348-301B | 78 | Paste | 0.5 | 1 | 1.5 | 1.7 | 2 | 2.4 | 3.3 | 3.7 | 4.5 | 5.4 | 6.4 |
| 385P1349-313F | 75 | Surface glaze | 0.5 | 1 | 1.5 | 1.7 | 2 | 2.4 | 3.3 | 3.7 | 4.5 | 5.4 | 6.4 |

PORCELAIN

| Element | O | Na | Si | P | Pb | Ca | K | Fe |
| 385P1349-313F | 125 | Grey Inposed | 0.5 | 1 | 1.5 | 1.7 | 3.3 | 3.7 | 6.4 |
| 385P1349-313F | 124 | Landscape | 0.5 | 1 | 1.5 | 1.7 | 3.3 | 3.7 | 6.4 |
| 385P1349-313F | 132 | English type | 0.5 | 1 | 1.5 | 1.7 | 3.3 | 3.7 | 6.4 |
| 385P1349-301B | 132 | House model | 0.5 | 1 | 1.5 | 1.7 | 3.3 | 3.7 | 6.4 |
Figure 5. Electron microscope graph of refined Jackfield blackware from Cain Hoy, Sample 54, showing energy dispersive peaks for 12 elements.

TABLE 4: SCANNING ELECTRON MICROSCOPE ENERGY DISPERSIVE ANALYSIS

<table>
<thead>
<tr>
<th>Site and Specimen Description</th>
<th>COMBED AND DOTTED YELLOW SLIPWARE AND MISC. OTHERS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>O</td>
</tr>
<tr>
<td>38Bk1349-313F</td>
<td>51</td>
</tr>
<tr>
<td>38Bk1349-313F</td>
<td>52</td>
</tr>
<tr>
<td>38Bk1349-314H</td>
<td>64</td>
</tr>
<tr>
<td>38D/4-6C-9</td>
<td>120</td>
</tr>
</tbody>
</table>

Another group of 5 samples also had the same set of peaking elements as the combed and dotted yellow slipware samples. These (including the above samples), are from Cain Hoy (38Bk1349), Newington Plantation (38D119), Ft. Prince George (38Pn1), Dorchester (38D14), Spanish Santa Elena (38Bu162), and Camden (38Ke1).

The wares represented in these additional samples are: glazed cauliflower creamware, green barleycorn pumpkin ware, red paste tortoiseshell ware, and orange micaceous redware from 16th century Spanish Santa Elena.

DELFt, MAJOLICA AND FAIENCE, ETC.

<table>
<thead>
<tr>
<th>Element</th>
<th>O</th>
<th>Al</th>
<th>Si</th>
<th>Pb</th>
<th>K</th>
<th>Ca</th>
<th>Ca(B)</th>
<th>Ti</th>
<th>Fe</th>
<th>Fe(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>38Bk1349-317B</td>
<td>43</td>
<td>0.5</td>
<td>1.5</td>
<td>1.7</td>
<td>2</td>
<td>2.4</td>
<td>3.3</td>
<td>3.7</td>
<td>4.5</td>
<td>6.4</td>
</tr>
<tr>
<td>38Bu1622-135</td>
<td>80</td>
<td>0.5</td>
<td>1.5</td>
<td>1.7</td>
<td>2</td>
<td>2.4</td>
<td>3.3</td>
<td>3.7</td>
<td>4.5</td>
<td>6.4</td>
</tr>
<tr>
<td>38Bu1622-12B</td>
<td>82</td>
<td>0.5</td>
<td>1.5</td>
<td>1.7</td>
<td>2</td>
<td>2.4</td>
<td>3.3</td>
<td>3.7</td>
<td>4.5</td>
<td>6.4</td>
</tr>
<tr>
<td>38Bu1622-13B</td>
<td>83</td>
<td>0.5</td>
<td>1.5</td>
<td>1.7</td>
<td>2</td>
<td>2.4</td>
<td>3.3</td>
<td>3.7</td>
<td>4.5</td>
<td>6.4</td>
</tr>
<tr>
<td>38Bu1622-10B</td>
<td>84</td>
<td>0.5</td>
<td>1.5</td>
<td>1.7</td>
<td>2</td>
<td>2.4</td>
<td>3.3</td>
<td>3.7</td>
<td>4.5</td>
<td>6.4</td>
</tr>
<tr>
<td>38D/15-ns</td>
<td>107</td>
<td>0.5</td>
<td>1.5</td>
<td>1.7</td>
<td>2</td>
<td>2.4</td>
<td>3.3</td>
<td>3.7</td>
<td>4.5</td>
<td>6.4</td>
</tr>
<tr>
<td>38Bk1349-301B</td>
<td>72</td>
<td>0.5</td>
<td>1.5</td>
<td>1.7</td>
<td>2</td>
<td>2.4</td>
<td>3.3</td>
<td>3.7</td>
<td>4.5</td>
<td>6.4</td>
</tr>
</tbody>
</table>

MANGANESE GLAZED BLACK PASTE WARE

<table>
<thead>
<tr>
<th>Element</th>
<th>O</th>
<th>Al</th>
<th>Si</th>
<th>Pb</th>
<th>K</th>
<th>Ca</th>
<th>Ca(B)</th>
<th>Ti</th>
<th>Mn</th>
<th>Fe</th>
<th>Fe(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>38Bk1349-313C</td>
<td>39</td>
<td>0.5</td>
<td>1.5</td>
<td>1.7</td>
<td>2</td>
<td>2.4</td>
<td>3.3</td>
<td>3.7</td>
<td>4.5</td>
<td>5.8</td>
<td>6.4</td>
</tr>
<tr>
<td>38Bk1349-313B</td>
<td>40</td>
<td>0.5</td>
<td>1.5</td>
<td>1.7</td>
<td>2</td>
<td>2.4</td>
<td>3.3</td>
<td>3.7</td>
<td>4.5</td>
<td>5.8</td>
<td>6.4</td>
</tr>
<tr>
<td>38Bk1349-313F</td>
<td>54</td>
<td>0.5</td>
<td>1.5</td>
<td>1.7</td>
<td>2</td>
<td>2.4</td>
<td>3.3</td>
<td>3.7</td>
<td>4.5</td>
<td>5.8</td>
<td>6.4</td>
</tr>
<tr>
<td>38Gn2-225C-25</td>
<td>114</td>
<td>0.5</td>
<td>1.5</td>
<td>1.7</td>
<td>2</td>
<td>2.4</td>
<td>3.3</td>
<td>3.7</td>
<td>4.5</td>
<td>5.8</td>
<td>6.4</td>
</tr>
</tbody>
</table>
Sample 2 in Bartlam's blue and white "china" group is unique among all those tested in having a peak for nickel (Ni).

From the lack of visual translucence of Bartlam's blue and white "china", to the earthenware softness of the paste, to the presence lead in the paste, contrasted with its absence in porcelain as demonstrated by the electron microscope study, we are forced to conclude that Bartlam was making what he advertised he was making, "china", which Miller (1987) has demonstrated was what we now know as pearlware. In doing this, it is my opinion that he was making use of kaolin clay, since the grainy texture of the sherds compared with his bisque creamware, suggest this. I also believe, and the data presented here support this, that he was also using ground leaded glass in the paste of this ware, producing the brown patina as the fragments are exposed to moisture and chemical weathering in the earth, and accounting for the lead in the paste.

Porcelain

As noted above, the samples for English and Chinese porcelain in Table 3 present a contrast to Bartlam's blue and white "china" ware in the absence of phosphorus (P) in the porcelain samples, as well as lead (Pb), titanium (Ti) and the beta for calcium, Ca(B). These samples have provided a control for comparison with Bartlam's blue and white "china" discussed above.

The porcelain samples have only seven elements present, including sodium (Na) seldom seen in the other samples. In order to better understand the relationship between those wares having a few elements remaining after the ware is fired and those having as many as 12 elements (see below), I need to know more about the temperatures at which various elements vaporize and disappear from the paste of a ware during firing. Further research will address this question.

Combed and Dotted Slipware and Miscellaneous Others

This group of 11 samples is identical to the large group of "Creamware, pearlware, stoneware and miscellaneous others" seen in Table 1, with the addition of the beta for iron (Fe), (Table 4). These samples also come from a wide range of sites throughout South Carolina, including sixteenth century Spanish Santa Elena. The wares represent a range from slipware, to creamware, pumpkin ware, red paste tortoiseshell ware, and orange micaceous ware from Santa Elena.

Delft, Majolica and Faience, etc.

This group of mostly soft paste tin-ash glazed wares, from a sixteenth to eighteenth century European origin, is characterized by the large number of elements represented in the pattern (13), compared with (6), for instance, for Bartlam's bisque ware. The samples are from Spanish, English and French tin-ash glazed wares as well as a sixteenth century Spanish olive jar fragment and a soft paste brown stoneware I have sometimes seen on eighteenth century British colonial sites.

Manganese Glazed Black Paste Jackfield Ware

A group of four refined, black paste Jackfield samples are seen in Table 4, having the largest number of elements represented in the study (13). The presence of manganese (Mn) is the element responsible for the black color of the ware. An example of the electron microscope profile for this group of samples with many elements is Sample 54, illustrated in Figure 5, where 12 of the elements show peaks.
Summary

The primary question I was asking through the scanning electron microscope tool was whether we could easily distinguish Bartlam's cream ware and other wares from those made in Staffordshire using that method. The answer, as seen from the above data and discussion is "no". If we ask if we can distinguish between black paste manganese glazed refined earthenware and creamware, the answer is "yes", but we can do that already through visual inspection, so we have verified what we already knew because the method chosen was not sensitive enough for the job.

However, another question we were interested in addressing was whether Bartlam's blue and white "china" ware was what is known as "china glaze" and therefore an early pearlware, or whether it was the result of Bartlam trying to make porcelain. From the comparison of Bartlam's blue and white "china" ware with porcelain examples we have seen that Bartlam's "china" contains lead and phosphorus, elements not seen in porcelain or most of the other samples tested. This indicates Bartlam was probably adding powdered leaded glass, an ingredient seen in soft paste porcelain, to his kaolin clay to produce his "china", the discarded fragments of which subsequently became covered with a brown lead oxide patina through time in the earth as the lead in the paste leached from the earthenware body. These data reveal that Bartlam's blue and white "china" was "china glaze", which Miller (1987) has demonstrated to be pearlware.

My experience with the electron microscope has demonstrated to me that a more sensitive and specific means for identifying elements in clays needs to be used rather than relying on the peaks produced by the electron microscope profiles as I have done here. However, I was able to demonstrate that a specific ware, Bartlam's blue and white "china", is quite different from the porcelain samples, answering the question as to it being a porcelain or pearlware through the presence of lead in the paste. Lead was also not present in Bartlam's bisque fired wares, demonstrating that the presence of lead was not simply a result of lead in the clay Bartlam was using but was being added. The sample of Cain Hoy clay from the piling hole (Sample 130, Table 1) did contain lead, but I suspect this was a result of pollution from the marsh after the clay was brought to the surface.
Chapter 5

Identifying the Non-Bartlam Ceramics

When the 38 kiln waster and bisque Bartlam wares, and the probable and possible Bartlam wares, were identified, 48 other wares remained. These wares formed the group I called "Non-Bartlam Wares". These wares are tabulated in the Appendix. The European or Chinese earthenware, stoneware, and porcelain types are those usually seen on eighteenth century sites and are of less interest to us here than are those wares we can tie more firmly to John Bartlam. Some of these wares, such as creamware, redware, pearlware, and some of the white salt-glazed stoneware sherds may well have been made by Bartlam, but further study of the diagnostic attributes is necessary, as pointed out in Chapter 3, before we can positively make a split of some of these wares into the Bartlam and non-Bartlam groups.

The material culture remains recovered in our sampling study at the Cain Hoy site reveal a European domestic occupation, as pointed out in the above section. The fragments of Bartlam's ware are not directly associated with a kiln or a kiln waster dump, an interpretation based on the absence of fragments of kiln furniture. Instead, they are associated with broken fragments of many objects discarded from a household occupied by someone who had access to Bartlam's kiln waster wares, such as biscuit fired and kiln damaged ware. These Bartlam wares were discarded, along with other domestic refuse, onto a site that already had had considerable refuse disposed of on the surface and in pits. The buildings on the site continued to be occupied long after Bartlam left.

Some of the non-Bartlam European wares were made long before Bartlam came to Cain Hoy. Wares such as blue dash charger fragments of delft were no longer made after around 1720 (Plate 22f), (South 1977: 212). North Devon gravel tempered ware and North Devon sgraffito ware are usually associated with a seventeenth and early eighteenth century time frame (Watkins 1960; Noël Hume 1970: 105,133), revealing that the Cain Hoy site was likely occupied long before Bartlam showed up to make his pottery (Plate 21e and 23g).

One of the 48 non-Bartlam wares of particular interest to us is colonia ware (Ferguson 1992), possibly made by African Americans working with Bartlam or discarded on the site before he came to work at Cain Hoy, or after he left (Ferguson 1992: 84-86), (Plate 24). They may have been made by Bartlam's two African American slaves, Fortune and Hector, or apprentices he may have had working with him (Rauschenberg 1991: 10-11, 14).

Native American pottery fragments were also recovered, among which are fragments of pottery radio-carbon dated to 1810 B.C. (Waddell 1965: 82). Others may be contemporary with Bartlam's short stay there (Plate 25). I have conducted no quantitative analysis of the Native American pottery in this report.(South 1977).

The non-Bartlam wares are listed here for comparison with the Bartlam related wares presented in Chapter 3.
Eighteenth Century Earthenware

1. **Agate ware (variegated paste):** Agate ware is made by mixing clays of different colors, producing a marbleized or "agate" appearance beneath the glaze (Draper 1984: 42; Noël Hume 1970: 132).

2. **Black Glazed Slip Decorated Ware:** In 1733 Ralph Shaw patented a brown paste, brown bodied stoneware coated on the interior with a white engobe and decorated with white slipped parallel lines and applied sprigs (Noël Hume 1980 [1970]: 22). Similar wares were also made in earthenware. In the late seventeenth through the nineteenth centuries, for instance, white slip dots and lines on redware or blackware were used to decorate earthenwares (Cooper 1968: 84-85, Plate 228-229; Hodgkin 1891, [1973]: 5-35; Stanley 1963: 33-43).

   A few fragments of white slip-dotted ware were recovered at Cain Hoy (plate 22j). These had a cream-colored paste with a black glaze, over which the white slip (producing yellow dots and parallel lines) had been applied. Since the paste was cream-colored, I suspect this cream paste, black glazed, white slipped dotted ware was possibly made in imitation of the brown paste stonewares of the Ralph Shaw period (21c).

3. **Blackware (refined Jackfield type):** A refined buff, red, to wine, paste ware with a black glaze is known as "Jackfield". Often seen on mid-eighteenth century American archaeological sites, this ware was made by Thomas Whieldon, William Greatbatch, and other Staffordshire potters (Draper 1984:409-42; Noël Hume 1970: 123-124; Barker 1991: 272). "...The name [Jackfield] is usually considered as the generic term for such refined black glazed earthenware made during the second half of the 18th century" (Hughes 1957: 91).

   However, two types of black glazed earthenware are often found on British colonial sites of the mid-eighteenth century, sometimes under the same generic name of "Jackfield". One is a coarser, soft red paste earthenware having a black lead glaze that has a tendency to flake off due to the softness of the paste (Plate 22,1), and I distinguish it from the thin black lead-glazed "Jackfield" earthenware in which the paste varies from a hard, wine colored to a very hard grey earthenware, often so hard it is difficult to distinguish from stoneware (Plate 16d). The refined "Jackfield" blackware is consistent with the character of the creamwares Bartlam was making at Cain Hoy, whereas the coarser black glazed soft redware type is more in keeping with the vernacular pottery tradition pre-dating the popularity explosion of molded polychrome glazed creamware types of the 1760s. The separation of the refined "Jackfield" ware from the coarser "black glazed red paste ware" is done for taxonomic reasons primarily faced by historical archaeologists who must deal with small fragments rather than the finished and refined, black glazed "Jackfield" teapots and whole "Jackfield" bowls and pans seen by the ceramic collector. A "Jackfield" sherd is illustrated in Plate 16d.

   Black glazed redwares were being made in America as well as in Staffordshire in the early nineteenth century (Watkins 1950: Fig. 18, 63 and 64) and Carl Steen has demonstrated a connection between New England, Philadelphia, Edenton, North Carolina and Charleston, South Carolina, in his study of the inter-colonial trade of domestic earthenwares (1990: 36).
4. **Black glazed red paste ware**  The black glazed soft red paste ware pre-dating the "Jackfield" pottery has been discussed in 3 above. A sherd is illustrated in Plate 22,1.

5. **Buckley Ware**: This black glazed earthenware, often fired almost as hard as stoneware, has a variegated red and buff paste. It is frequently seen on mid-eighteenth century British colonial sites (Noël Hume 1970: 132-135). The forms are large pans and storage jars. The date range is from around 1720 to 1775 (South 1977: 211).

6. **Cabbage Ware (molded)**: A single fragment of white paste cabbage ware (Chinese cabbage?) with a green and white glaze color was recovered from a five-foot square (306B), (Plate 9g), (Savage and Newman 1974: 60). The interior of this fragment is a pale creamware. Further evidence in the form of bisque or kiln waster sherds is necessary before we can attribute this ware to Bartlam, but it is well within the range of the type of molded ware he was making and was a type being made in Staffordshire while Bartlam was at Cain Hoy. This fragment may well be a Staffordshire piece.

7. **Combed and Dotted Yellow Slipware**: Clear lead-glazed fragments of cups with applied brown slip lines or dots are often seen on English dotted yellow slipware mugs and cups. Some are on a buff paste with a very glossy glaze, while others are on a red paste over which a white slip has been applied (Plate 21h). The yellow color of this ware makes it difficult to separate fragments from Bartlam-made Carolina creamware, because it too, is a similar yellow color (Plate 21f), (Miller and Stone 1970: 62; Noël Hume 1970: 107, 134-136; South 1977: 209, 211). A rim sherd of this type ware, showing a brown slipped ring rather than the usual row of brown dots below the rim is illustrated in Plate 22k. The cup form has both dots and combed decoration.

Combed yellow slipware plates are made by coating a plate with brown slip and then covering this with a white slip, after which a comb-like tool is used to scratch the surface of the white slip. During firing the scratches open and spread, revealing the underlying layer of slip as a combed decoration. The combed yellow slipware plates do not normally have the brown dots, but a plate fragment with small brown dots was found at Cain Hoy (Plate 21h).

One combed yellow slipware notched plate rim sherd recovered at Cain Hoy appears to be a kiln waster fragment (Plate 21a), but could possibly also simply be fire damaged beyond the kiln. This ware is sometimes said to date from the late seventeenth and early eighteenth centuries (Draper 1984: 14), but is is known to have been made as late as 1795 (Noël Hume 1970: 107, 134-136; South 1977: 211).

Some of the cup and mug fragments recovered at Cain Hoy have a buff paste with a very glossy glaze (Plate 21f), while some plate fragments are on a red paste over which a white slip has been applied (Plate 21h). One combed yellow slipware rim sherd appears to be a kiln waster fragment (Plate 21a).

8. **Creamware**: Creamware has been described in detail in Donald Towner's fine books (1957,1965). Some fragments of the feather and beaded patterns were recovered in our study (Plate 22a,b,c,d). I knew from bisque feather edge pattern sherds from Camden, South Carolina, that when Bartlam was there he was making feather pattern creamware (Rauschenberg 1991: 45; Towner 1965: 61). I also knew from
such sherds that his foreman, William Ellis, was making this pattern creamware when he was at Salem, North Carolina (Rauschenberg 1991: 94). It seemed likely, therefore, that we might recover fragments of feather edge creamware in the biscuit fired stage at Cain Hoy. However, such was not the case. I did find glazed fragments of feather edge creamware in a dark cream (Plate 22b,c), as well as an almost white color (Plate 22a,d), but without a bisque or other kiln waster sherd I am not able to say at this time that he was making this pattern creamware at Cain Hoy. One of the creamware sherds we recovered, however, was dull in its surface color (Plate 22c), showing none of the characteristic glossy lead glaze usually seen on this ware.

Another unique creamware sherd was painted with a blue wash of cobalt, with only two specks of glaze above the enamel (Plate 16e), apparently intended to be a blue underglaze painted creamware. The back of the sherd was a lead glazed creamware. This appears to be a kiln waster sherd. Such sherds make me wonder whether they are a Bartlam product.

9. Creamware, Overglaze Enamelled: A few fragments of overglazed enamelled creamware were recovered from our study (Plate 22e), (Miller and Stone 1970: 46; Noël Hume 1970: 125-128; South 1977: 212).

10. Delft: Fragments of blue and white and polychrome tin-ash glazed delft vessels were recovered in our study (Plate 22g,h), (Miller and Stone 1970:26-36; Noël Hume 1970: 204-205; South 1977: 208, 211). This is one of the major ceramic types found on American historic sites of the British colonial period (South 1962, 1977: 252-253).

11. Delft Blue Dash Charger: The earliest type delft we recovered were fragments of "blue dash chargers", delft plates made in the seventeenth century, and decorated around the edge with a series of blue dashes. This type was probably not made after around 1720 (Plate 22f), (Draper 1984: 28-30; Noël Hume 1970:108-109: South 1977: 212).

12. Delft (white-dotted blue): Fragments of a tin glazed, white paste, spotted blue delft ware were found at Cain Hoy (Plate 21o). After a cobalt blue tin glaze was applied to both surfaces of this ware, a white tin glaze appears to have been sprinkled over the blue surface on both the interior and exterior of the ware to produce a spotted blue ware (Plate 21o). This is an English delft made in imitation of a ware produced at Nevers, a French factory, in the late seventeenth century (Draper 1984: 26). This ware, along with the blue dash charger discussed in 11, above, and the North Devon pottery types, were around long before Bartlam came to Cain Hoy.

13. Rouen Faience: A sherd of French Rouen faience (Noël Hume 1970: 141-142) with a red paste and a rich brown manganese glaze on the exterior and a pale blue tin glaze on the interior is illustrated in Plate 22i. This ware is usually found on American colonial sites post-dating the Revolution.

14. Manganese Brown Glazed and Dotted: This type buff paste ware is characterized by varying quantities of manganese oxide being applied to the surface before the piece was covered with a lead glaze. This results in a bleeding brown dot decorated ware, or if much manganese was used, an almost solid brown manganese glazed ware (Plate 19b,d,e). Fragments of a bleeding manganese dot ware, dating from the early eighteenth century, are from a straight-sided mug.
(Draper 1984: 9), often seen from early eighteenth century contexts. A heavy use of manganese often produces a black colored ware.

15. **Marbled Slipware:** A variant of the combed and dotted yellow slipware produced by many Staffordshire potters is slipware that has the surface combed or marbelized by the potter's fingers (Cooper 1968: Plate 329). This ware comes in both a red and a buff paste. The marbling was made by coating the surface of the ware with black, brown or white slips and then, while the slip was wet, combing and swirling the fingers over the top slip coating to reveal the underlying contrasting slip or body color of the ware.

An example of marbled slipware with an unusual combination of white and brown slips on a buff paste is illustrated in Plate 21k. This may be an American piece, made in New England or Pennsylvania, of the type illustrated by Carl Steen in his study of the inter-colonial trade of domestic earthenwares (1990: 32-34).

16. **North Devon Gravel Tempered Ware:** This gravel tempered ware was exported to the American colonies in the seventeenth century and ceased to be manufactured by the mid-eighteenth century (Watkins 1960; Noel Hume 1970: 133). It is characterized by a pale greenish yellow glaze over a heavily gravel-tempered paste (Plate 23g).

17. **North Devon Sgraffito Slipware:** Sgraffito ware is slip-covered ware that has had the surface scratched to reveal the underlying paste or slip layer beneath the outer slip (Bernard and Hughes 1968: 136).

A fragment of red paste sgraffito slipware reveals a series of roughly executed concentric circles (Plate 21e), characteristic of North Devon sgraffito slipware (Watkins 1960: 18, also see Atterbury 1980: 14), made during the seventeenth and early eighteenth centuries. This fragment dates to the use of the Cain Hoy site long before Bartlam's wares made their entrance there.

18. **Red and Yellow Sgraffito Slipware:** An illustration of the refined, red paste, red and yellow sgraffito slipware probably made by John Astbury (Noel Hume 1970: 122-123), seen on mid-eighteenth century British colonial sites, is illustrated in Plate 21d. A white slip was placed over the red paste and then scratched with a comb tool to reveal the underlying red paste color.

19. **Red Earthenware (redware):** The "common redware", ever-present on eighteenth century sites, is simply a red paste earthenware covered with a lead glaze, producing a redware. As any historical archaeologist who has worked on eighteenth century British colonial sites knows, there are coarse redware fragments from large pans and jars as well as redware fragments from thinner, more refined wares such as teapots and mugs. In order to separate these thick red lead-glazed earthenware fragments taxonomically from the thin red lead-glazed earthenware fragments I began using the thick and thin attribute to separate redware into two groups (South 1959:42-44).

The term "redware", refers to the coarser, softer paste red paste earthenwares, and "refined redware" refers to the fragments from the more delicate wine paste redware forms. The soft paste redware fragments often reveal the glaze flaking away from the soft paste, a situation never seen with refined redware. The redware color produced on a red paste ware can be seen in the slightly manganese dotted fragment in Plate 19b.
20. **Red Earthenware (refined, with wine paste):** The more delicate, refined redwares, from teapots and similar forms, are usually fired harder than the coarse redwares and often have a wine colored paste rather than the brighter red characteristic of the coarser wares. The difference I have observed here between a coarser and a refined ware is similar to that I have seen between the black glazed red paste ware and the more refined Jackfield ware with a wine to black paste discussed in 3 and 4 above.

21. **Thistle Molded Ware:** A single fragment of a purple tortoiseshell glazed molded ware with a thistle pattern was recovered, having a white paste and a clear lead glaze, producing an almost white color on the interior (Plate 12f). I have found no reference for such a pattern and in my experience I have not seen another example. In the absence of kiln waster or bisque sherds of this type ware it cannot be attributed to Bartlam, though it is well within the range of moulded cream-colored wares he was making. The white paste of this ware, rather than the more cream colored paste characteristic of Bartlam's ware, also suggests that this fragment is very likely from an imported piece.

22. **Trailed Slipware:** Trailed slipware is a "coarse reddish-burning clay which after shaping was decorated with slip. This was applied to its surface by means of a quill through which it trickled to make lines and dots forming figures, borders, medallions, conventional designs and so on" (Hughes 1957: 136). The quill mentioned by Hughes was sometimes inserted into a ceramic slip cup (Cooper 1968: 13; South 1967: 48), with the flow of slip being controlled by the thumb placed over the top of the cup as the decoration was applied. Some fragments of buff and red paste trailed slipware were recovered from Cain Hoy.

One burned piece (kiln waster?) of trailed slipware with a cream paste and a yellow interior was covered with a brown slip on the exterior, over which trails of white slip had been applied using a slip cup (Plate 21a). A similar piece was unglazed on the exterior but had a yellow glazed interior (Plate 21b). I was tempted to consider these possible kiln waster sherds as evidence for Bartlam's making trailed slipware, but these two sherds are not sufficient to suggest this.

Another fragment of trailed slipware on a buff paste was covered with a black glaze on both sides, with a white trailed slip on the exterior (Plate 21c) and a small sherd of the same ware had white slip dots (Plate 21j), (see also 2 above).

American potters in New England and Philadelphia were also making trailed slipwares and shipping them to Charleston and to Edenton, North Carolina, as Carl Steen has revealed in his study of the inter-colonial trade of domestic earthenwares (1990). The unusual marbelized slipware fragment shown in Plate 21k is similar in appearance to ware illustrated by Steen from an Edenton, North Carolina cache (1990: 32) and from Franklin Court in Philadelphia (1990: 34).

23. **Yellow and Black Buff Paste Ware:** When a black glaze is applied over the exterior surface of a buff paste vessel and coated with a lead glaze, the result is a yellow-interior and black-exterior buff paste ware, similar to the yellow interior and black glazed, dot-decorated slipware discussed in 2 above.

24. **Yellow-Green Laminated Ware:** In my excavations at the British colonial town of Brunswick, North Carolina, I sometimes recovered sherds of large jars and bowls with a buff paste that did not seem to fit any described category of ceramics.
being made by the British potters in the eighteenth century. The interior of these fragments was covered with a pale green to greenish yellow lead glaze and the sherds are unglazed on the exterior surface. The paste is characterized by fractures that appear along the paste as though layers of clay were added to the ware during manufacture, causing what appears to be a laminated body. I called this ware "Green Laminated Lead-glazed Earthenware" (South 1959: 53). It is sometimes called "white sandy ware".

It has the appearance of Spanish olive jar sherds and I pointed out in 1959 that John Goggin did not think it was Spanish in origin, but the question still remains with us thirty-four years later. Since I puzzled over this ware in 1959, I have excavated many years at the Spanish colonial town of Santa Elena, on Parris Island, South Carolina, and I still say the ware looks like Spanish olive jar technology. However, this possible Iberian vessel may well also be French. Sherds of this ware, usually seen on eighteenth century British colonial sites, were also found at Cain Hoy (Plate 23f).

**Eighteenth Century Stoneware**

25. **Black Unglazed Stoneware** ("black basaltes"): A black unglazed stoneware, which Wedgwood called "black basaltes", was made after 1750 (Noël Hume 1970: 121). Teapots and vases and engine lathe-turned pieces, sometimes with applied sprigs, are the forms revealed by the fragments seen on eighteenth century British colonial sites.

26. **Brown Stoneware**: Eighteenth century British colonial sites have numerous fragments of British stoneware. The fragments are from brown and grey salt-glazed stoneware jugs and large mouth storage jars. This type stoneware was made from around 1690 to 1775 and is South's type 54 (Noël Hume 1970: 112-114; South 1977: 210).

Not all brown salt-glazed stoneware was made by British potters. The excavation of the kiln of the "poor potter" of Yorktown, Virginia, has demonstrated an American manufactory of brown salt-glazed stoneware from around 1720 to around 1745 (Barka 1973: 291-318).

27. **Fulham Stoneware**: Fragments of mugs of Fulham stoneware reveal a brown iron dipped salt-glazed stoneware top half and a grey salt-glazed stoneware bottom half. They date from around 1690 to around 1775 (Noël Hume 1970: 111-112; South 1977: 210). These, too, were made by the "poor potter" of Yorktown (Barka 1973: 307).

28. **Nottingham Stoneware**: Salt-glazed stoneware sherds with a lustrous sheen are known as Nottingham stoneware. The time range is from around 1700 to about 1810 (Draper 1984: 34; Noël Hume 1970: 113; South 1977: 210). The ware was not limited to Nottingham production. Sometimes vessels are decorated with a coating of sand in panels, or figures of dogs, sheep and bears are coated with this sanded Nottingham stoneware (Draper 1984: frontispiece). A fragment of such ware is seen in Plate 23d.
29. **Red Unglazed Stoneware**: Dry-bodied red unglazed stoneware was produced by a number of Staffordshire potters in the mid-eighteenth century, after the ware was developed late in the seventeenth century (Draper 1984: 35; Noël Hume 1970: 121-122; South 1977: 211). A fragment of a red unglazed earthenware pineapple ware teapot lid having the appearance of red unglazed stoneware was recovered at the Cain Hoy site (Plate 6a).

30. **Scratch-blue Salt-glazed Stoneware**: White salt-glazed stoneware was sometimes decorated by scratching flowers and other decorations into the surface using a nail, with the scratches being filled with zaffre (Shaw 1829 [1968]: 177). Although dating from the 1720s, scratch blue salt-glazed stoneware was made in Staffordshire primarily from around 1744 to around 1775 (South's type 34), (Noël Hume 1970: 117; South 1977: 210). A fragment is illustrated in Plate 20h.

31. **Westerwald Stoneware**: Rhenish blue and grey salt-glazed stoneware mug, jug, and chamber pot forms, often called "Westerwald stoneware", are found on mid-eighteenth century British colonial sites. The necks are often glazed a manganese purple. They date from the first three quarters of the eighteenth century (Plate 23e), (Noël Hume 1970: 279-285; South 1977: 210).

A small, but surprising, piece of buff paste earthenware appears to be a kiln waster fragment of Westerwald, except it is earthenware, not stoneware (Plate 16f), (Miller and Stone 1970: 74-76; Noël Hume 1970: 280-281). The mug or jug from which this fragment came had been in a saltglaze kiln, but the cobalt blue decorative band had not glazed properly, resulting in a dull black band of color where a bright blue one should have been. The soft paste reveals that the piece had not been fired hot enough to turn the clay from an earthenware to a stoneware. It seems unlikely that such a kiln damaged piece would have been exported from Germany. Was Bartlam experimenting with making Westerwald type stoneware? If so, this would not be the first surprise the fragments from Cain Hoy have given us. The electron microscope profile of this sherd is the same as that for Bartlam's bisque ware shown in Fig. 3 and Table 2 in Chapter 4, but many other wares from many sites did also, so no Bartlam connection is demonstrated.

32. **White salt-glazed Stoneware**: In the mid-eighteenth century, from around 1740 to 1765, molded white salt-glazed stoneware plates were being made by a number of Staffordshire potters (Barker 1991: 271; Noël Hume 1970: 114-118: South 1977: 210). We know Bartlam was likely making white salt-glazed stoneware since his foreman, William Ellis, after he left Bartlam's factory in Camden, South Carolina, taught Rudolph Christ at Salem, North Carolina, how to make white salt-glazed stoneware (Rauschenberg 1991: 88); South 1971: 172).

Separating the glossy grey sherds from the white salt-glazed ones is not a taxonomic problem. The problem lies with their attribution. I selected some that had a grey paste and glossy surface as possible candidates for Bartlam stoneware, but others with a whiter appearance, were kept in the "non-Bartlam" category. Some of the fragments reveal the typical relief molded patterns usually seen on white salt-glazed stoneware and on some of Bartlam's creamware--the barleycorn pattern and the dot, diaper and basket patterns, for instance (Plate 23a,b,c).

Glossy grey type "white" salt-glazed stoneware fragments were found, suggesting that Bartlam may have made the vessels from which these pieces came. These possible kiln waster sherds were classified under wares thought to have been made by Bartlam.
Porcelain

33. Chinese Porcelain: Blue underglaze decorated Chinese porcelain is usually found on British colonial sites (Plate 23i,j). (Garner 1970; Godden 1966; Noël Hume 1970: 257-265; South 1959: 34-37). One grey and blue base fragment from a bowl was recovered from Cain Hoy having an unusual series of what appear to be crudely executed fingernail incisions beneath the glaze (Plate 23h, at the top of the sherd above the blue decorative band). The greyish white porcelain body with underglaze incising is sometimes seen on porcelain from sixteenth century Ming Dynasty or the earlier Sung Dynasty in China, appearing on green glazed celadon ware, where remarkable underglaze decorations were incised to be revealed beneath the glaze subtle shades of green glaze (Hobson 1923: 181-183). The incising on the fragment from Cain Hoy is not so well done, revealing crudely applied incisions, obviously not executed with the expertise given such incising in the sixteenth century. My research has not revealed a source for eighteenth century porcelain such as this.

Another fragment has the familiar "Chinese house" motif as an underglaze blue decoration (Plate 23i). This motif is also seen on Bartlam's pearlware (Plate 18b) and Staffordshire pearlware (Plate 22n). On historic sites, underglaze blue Chinese porcelain dates from around 1660 to 1800 (Noël Hume 1970: 257; South 1977: 210).

34. English Porcelain: A white background as opposed to a light blue-tinted background is the distinguishing attribute I have long used to distinguish English porcelain from that made in China (South 1959: 34-41) and that is the attribute I used to separate the fragments recovered at the Cain Hoy site. English porcelain began to be manufactured around 1745 and was made until around 1795 (Noël Hume 1970: 137; South 1977: 210).

35. Overglaze Enamelled Porcelain: Blue underglaze decorated Chinese porcelain contrasts with overglaze enamelled porcelain decorations are seen in a variety colors. However, in the eighteenth century the overglaze enamelled decoration was primarily red, often combining with underglaze blue to produce red and blue decorative motifs. Sometimes the overglaze enamelling has been worn or wiped away, but the dull outline of where it was will remain on the surface of the glaze. Its period of manufacture is the same as that for Chinese porcelain, from around 1660, and was popular in the early nineteenth century (Noël Hume 1970: 261; South 1977: 210). It also was being made by British potters (Godden 1966). Because most of the nineteenth century porcelain is without the underglaze blue, it appears whiter than the bluish toned earlier underglaze blue Chinese porcelain.

Nineteenth Century Earthenware

36. Annular Creamware and Pearlware: Creamware and pearlware with annular rings or bands of various colors, sometimes called "banded ware," or "dipt" ware, was made from the late eighteenth century until around 1840 (Noël Hume 1970: 132-133; Miller 1991: 6-7; South 1977: 212; Rensselear 1980 [1966]: 240-244). It was also made in whiteware (see below). It is characterized by annular rings of various colors, panels of blue or yellow or buff, sometimes with mocha decoration, and sometimes with rouletting around the rim.
Ironstone-Whiteware (Ironstone, Whiteware, "Stone China", "Granite Ware"): This ware is often called "Ironstone" china after Charles "Mason's patent ironstone china" of 1813 (Godden 1980:102; Miller 1991: 9-10), a process for making a "vitrified or semi-vitrified, heavy, dense ware" (Miller 1991: 10; Fisher 1980 [1959]: 263). Prior to the 1830s they were decorated in imitation of Chinese porcelains.

George Miller has defined this decorated early 19th century ware as "stone china" and "white granite wares", evolving from Mason's ironstone, and he has defined "stone china" dating from the 1850s to the end of the 19th century (Miller 1991: 10). Stone china was transfer-printed, painted, sprigged, moulded and otherwise manipulated, until by the latter part of the nineteenth century marked and unmarked pieces of "white granite ware" is sometimes the only type of ware found on some American historic sites, such as tenant farm sites.

I have long combined white undecorated ironstone sherds with whiteware sherds, making a grouping that cuts across hardness lines, since ironstone is a stoneware and whiteware is an earthenware. Problems emerge when one discovers that many of the pieces with marks announcing that they are "Ironstone", or "Stone china", or "Granite ware" are in reality, a soft paste earthenware. In 1974, I suggested combining the white sherds of these types taxonomically for convenience (South 1974: 247-248).

An important classification is termed "Ironstone-Whiteware", which is a combination of white earthenware types and those generally harder fired ironstone or granite ware types (Noël Hume 1970; South 1972). Whiteware has a manufacture range from ca. 1820 to ca. 1900+, and ironstone has a range from ca. 1813 to ca. 1900 (South 1972: 85). The hardness, which is a major means of distinguishing these types, is so variable that often a vessel with the softness of earthenware will have "Ironstone China", or some similar designation as part of its mark. Because of this difficulty, and because of the similar time period of manufacture, the separation of these types on the basis of hardness appears to be an invalid approach. For this reason the types have been combined into the classification "Ironstone-Whiteware".

In view of the more recent analysis by George Miller (1991), a definition is currently available for separating "ironstone ware" into decorated "stone china" and plain "white granite ware", but a question still remains that was addressed by my "Ironstone-Whiteware" definition in 1974. That question is, what are we to call the soft white earthenware fragments with marks that state that the ware is "ironstone" or "granite ware"? And what of the non-marked pieces of this same soft (earthenware) "ironstone/whiteware"? Are they "stone china", "granite ware" or "whiteware"? That is why I have called the entire group "Ironstone-Whiteware". Miller's definition is o.k. as long as you are dealing with documents, or with whole marked pieces in collections, but it does not take into consideration those archaeologically seen plain, white, soft, absorbant, earthenware fragments of vessels once marked "ironstone", or "stone china", or "white granite ware". Those fragments are still best dealt with taxonomically by a classificatory category such as the term "ironstone-whiteware", as I suggested in 1974.
38. **Ironstone-Whiteware (annular):** The use of colorful annular bands around ironstone and whiteware vessels is much the same as those seen on banded creamware (see annular creamware and pearlware above), (Rensselaer 1980 [1966]: 240-244).

39. **Pearlware (blue painted, polychrome painted and edged):** This group of pearlware types were made from around 1780 to 1840 (Noël Hume 1970: 129; South 1977: 212). The evolutionary origin of pearlware from "blue and white", to "china glaze", to Wedgwood's "pearl white", to pearlware, has been discussed at some length above in the Bartlam ceramics section of this report. The finished glazed fragments were all placed in this grouping since I am not yet able to distinguish Staffordshire glazed pearlware from that made by Bartlam (see discussion under Bartlam's ware above). One fragment of glazed blue painted pearlware showing the roof of the Chinese house motif is illustrated in Plate 22n (Noël Hume 1980 [1969]: 45).

40. **Transfer-printed (creamware, pearlware, whiteware):** The decoration of ceramics with transfer-printed scenes came from transfer-printing on white salt-glazed stoneware, beginning about 1755, and continued on creamware, pearlware and whiteware until the 1850s (Atterbury 1980: 165-217; Miller 1991: 9; Noël Hume 1970: 130; South 1977: 210-212). Detailed analysis can break these wares into various periods and functions, such as the study by George Miller on "Classification and Economic Scaling of 19th Century Ceramics (1980: 1-40, 1991:9).

41. **Whiteware (plain and polychrome painted):** Underglaze polychrome painting on whiteware continued long after its first appearance on pearlware around 1795 (South 1977: 212). Whiteware continues throughout the nineteenth century to the present as a basic ceramic ware decorated with a wide variety of techniques and colors.

42. **Whiteware (blue and green edged):** Special treatment of the edge of ceramic vessels began with white salt-glazed stonewares, continued through various molded patterns of creamware, such as feather edged, shell edged, Queens, Royal, etc. as shown in the Leeds pattern book (Noël Hume 1970: 116; Towner 1965: 59) until colors began to be applied to shell edged wares, resulting in the green and blue edged pearlware and whiteware so popular in the early nineteenth century (Noël Hume 1970: 129; South 1977: 212). A fragment of shell edged whiteware is seen in Plate 22m. The "English Shell Edged Earthenware: Alias Leeds Ware, Alias Feather Edge" have been extensively discussed and tightly dated by George Miller (1990: 107-136). Miller (1990:115) refers to this edge decorated ware as the rococo style with overglaze decoration.

43. **Yellowware:** A yellow firing wheel thrown and mold cast ware covered with a clear lead or alkaline glaze was being produced in America from 1797 throughout the nineteenth century. It is often decorated with bands of blue, white, or contrasting colors (Ketchum 1987; South 1974: 252). The production of this ware was centered in New Jersey, Ohio and Maryland.
Nineteenth Century Stoneware

44. Albany Slip Stoneware: Brown and grey salt-glazed stoneware jars and jugs with crudely executed floral decorations and numbers in cobalt blue are diagnostic of many salt-glazed potters of the nineteenth century, after around 1830, such as the potters of Cheesequake, New Jersey (Mitchell 1973: 319-338). The interior surface of such vessels are often covered with a dark brown slip-glaze known as Albany slip (Greer 1981; Watkins 1950: 11). Its widespread use on stoneware is due to its ability to produce a smooth brown coating at stoneware firing temperatures. Although such stoneware vessels are primarily salt-glazed on the exterior, the interior brown Albany slip allows the salt-glazed stoneware of this type to be easily recognized as a nineteenth century product. For this reason the ware has come to be known as "Albany slip stoneware". Two sherds of brown salt-glazed, cobalt blue decorated stoneware with an interior Albany slip were recorded in our study (see 46 below).

45. Brown and Cobalt Blue Salt-glazed Stoneware: Two sherds of Brown and grey salt-glazed stoneware decorated with cobalt blue, with an Albany slipped interior, were recovered in our study (see 45 above). It was made by many stoneware potters in America during the nineteenth century (Greer 1981; Michael and Jack 1973, Michael 1973; Watkins 1850).

Nineteenth Century Porcelain

46. Nineteenth Century Porcelain: A wide variety of English plain and overglaze decorated porcelain was being made in nineteenth century (Noël Hume 1970: 137; Godden 1966), (see 34 above). The Chinese were exporting Canton porcelain until about 1830 (South 1977: 210), characterised by a broad blue band around the rim. The porcelain recorded in this study, however, is listed in 33-34 above, no clearly diagnostic nineteenth century fragments being identified.

Colono Ware

Bartlam advertised for "a few young negroes" to become apprentices at his potting business at Cain Hoy (Rauschenberg 1991: 11). We might assume, therefore, that, along with his two slaves, Fortune and Hector, that African Americans were working with him (Rauschenberg 1992: 10). Colona ware pottery, thought to be made by African Americans (Ferguson 1992: 82-96), is abundant at Cain Hoy, with many fragments being recovered. Some of these bowl and small pot fragments are illustrated in Plate 24, along with a handle fragment of a colona ware cup (Plate 24j).

One pottery type is unusual in that it has several techniques of decoration: incised lines; small punctations made with a comb-like tool to form a decorative zone; and rows of triangular chevron-like punctations, burnishing and a notched rim (Plate 24f and g). This type is unlike known Native American pottery.
48. Native American Pottery

The earliest radio-carbon dated Indian pottery, dating to around 1810 B.C., is a type that has been decorated by a series of finger-punctated and pinched impressions as a pattern over the surface of the vessel (Plate 24a), (Waddell 1965: 82). Over three thousand years later another type of pottery was characteristic (Plate 24b,c,d). This reed-punctated, complicated stamped and smoothed pottery was made by Indians who raised corn and other crops in fields along the banks of rivers such as the Wando.

One fragment of pottery is covered with a white slip on the interior, and one is tempted to suggest this may have been done by one of Bartlam's African American workers experimenting with white slips. However, Ferguson points out that much of the early pottery being made by African Americans was similar to that made by Native Americans, and that red painted and red filmed (slipped) wares are characteristic of the Indian pottery of the early eighteenth century (1992: 82), so the white and red slipped fragments found at Cain Hoy may well have been by Indians on the site long before Bartlam arrived (Plate 24h and i). Some of the questions raised by Ferguson's study of colonno ware (1992) regarding the attribution of Native American and African American pottery will take some time to answer.

Summary

From the above listing of 48 types of pottery, from Native American pottery dating from around 1810 years B.C. to nineteenth century American made Albany slip stonewares dating from the early years of the nineteenth century, we have learned that the Cain Hoy site has been a place chosen for people to live for thousands of years. It is still a beautiful and pleasant place to live, to which those who have recently moved there into their new homes will testify.

The Native Americans and African Americans who lived here made their own pottery locally, as did Bartlam, leaving broken fragments behind for us to find. The majority of the non-Bartlam wares listed here, however (48 types), are from other parts of the world -- from Staffordshire and elsewhere in England, Holland, France and China. These European wares date over a period of one hundred years, from the seventeenth to the early nineteenth century.

Some of these "non-Bartlam" wares date from the period when Bartlam was manufacturing his pottery. Some may have been made by him, but we are not always able to separate his finished wares from those made in Staffordshire by his contemporaries. If the kiln and waster dump are located, such a separation might then be made. I have placed in this non-Bartlam section any wares that do not meet the kiln waster criteria I set for the identification of Bartlam's ware. What we see is a cross-section of wares often seen on British colonial sites of the eighteenth century elsewhere on American historic sites. They range from the late seventeenth century to the nineteenth century, before, during and after Bartlam worked at Cain Hoy. Only at the extreme temporal ends can we separate those wares not likely associated with Bartlam's occupation.

Recognition of Bartlam's presence comes, therefore, from those wares discussed in Chapter 3. Those non-Bartlam wares we see here, however, were not the easiest to purchase by servants, Indians and soldiers. Someone with means, for instance, had to
have been involved in the purchase and transport of Chinese porcelain, German stonewares, Dutch delft, French faience and English creamware to America. Who brought them to the location at the Cain Hoy site where our sampling took place? In this study we have gathered some clues to address this question. In the next section I discuss those artifacts other than ceramics from which additional clues to the past use of the site are forthcoming.
Plate 21: Slipware Fragments and a Delft Sherd Imitating French Ware

Top row:

a. a buff paste yellow (interior) and black glazed (exterior), trailed white slipware fragment, kiln or fire damaged
b. a buff paste fragment of a yellow glazed interior, non-glazed exterior, yellow and red trailed slipware vessel
c. a buff paste, black glazed, white trailed slipware fragment
d. a red paste, brown glazed interior, white slipped, sgraffito (scratched) decorative motif, probably Astbury ware
e. a red paste, unglazed interior, white slipped and scratch decorated sherd of sgraffito ware known as North Devon sgraffito ware

Row 2:

f. a buff paste, brown slip-decorated fragment of dotted yellow slipware
g. a buff paste, brown trailed slip decorated fragment
h. a red paste, white slipware fragment with a small brown dot decoration of a red and yellow slipware notched rim plate
i. a buff paste fragment with smeared brown dots from a pale dotted yellow slipware vessel

Row 3:

j. a buff paste fragment of pale dotted yellow slipware with unusually small dots

k. a buff paste, black and white slipware fragment of a notched rim plate, having a finger-marbled decoration similar to those reported by Steen from Philadelphia and New England

m. a bisque fragment of Bartlam's yellow and green glazed slipware

n. an unusual buff paste, white-dotted blue tin glazed-on-both-sides fragment of delft (late 17th century), made in imitation of ware made at Nevres, France

Plate 22: Fragments of Non-Bartlam Wares

Top row:

a. a fragment of Leed's type beaded pattern molded creamware
b. a fragment of Queen's pattern molded creamware
c. a fragment of feather pattern molded creamware with a dull glaze
d. a fragment of lighter colored creamware. Notice the contrast between the lighter shade in this sherd and the darker shade shown in c.
e. a fragment of overglaze-enamelled creamware

Row 2:

f. a rim sherd fragment of a delft blue dash charger (platter)
g. a sherd of blue decorated delft
h. a sherd of polychrome painted delft
i. a fragment of Rouen faience with the typical red paste, a brown manganese glazed exterior, and a bluish tone tin glazed interior

Row 3:

j. a buff paste, black glazed-on-both-sides earthenware, decorated with white slip dots that produce a yellow color beneath the lead glaze

k. a rim fragment of a combed and dotted yellow slipware mug with an unusual line around the neck instead of the usual brown dots

l. a fragment of black glazed red paste earthenware

m. a rim fragment of blue-edged whiteware

n. a fragment of blue painted pearlware showing part of the Chinese house motif. Notice the bluish color of the pearlware compared with the whiter whiteware shown in m.
Plate 23: Non-Bartlam Earthenware, Stoneware and Porcelain

Top row:
- a. a barleycorn molded pattern fragment of white salt-glazed stoneware
- b, c. dot, diaper and basket molded fragments of white salt-glazed stoneware
- d. a fragment of sanded Nottingham stoneware
- e. a Westerwald salt-glazed stoneware sherd

Row 2:
- f. a fragment of yellow-pale green laminated ware, possibly Iberian or French
- g. a fragment of North Devon gravel tempered ware
- h. an unusual fragment of grey paste, underglaze fingernail incised, Chinese porcelain

Row 3:
- i. a fragment of Chinese porcelain showing the Chinese house motif
- j. a fragment of Chinese porcelain showing a landscape motif
- k. a fragment of English porcelain

Plate 24: African American Colono Ware and Native American Pottery

Top row:
- a. Awendaw finger punctated pottery made by Native Americans. This type has been radiocarbon dated to around 1810 B.C.
- b, c, d. Native American pottery of the Mississippian Period in South Carolina, around 1200 to 1550 A.D.
- e. a fragment of a plain colono ware bowl

Row 2:
- f, g. fragments of unusual pottery of unknown type, perhaps Native American or African American in origin

Row 3:
- h. an unusual fragment of white slipped pottery possibly colono ware, possibly made by one of John Bartlam's African American workers?
- i. a fragment of red slipped (red filmed) pottery of the type often seen on Native American sites of the early eighteenth century
- j. a fragment of a colono ware cup handle
- k. a rim fragment of a colono ware pot
Chapter 6

Examining the Artifacts from Cain Hoy

If the area of the Cain Hoy site on St. Thomas Point had included the location of John Bartlam's pottery kiln and waster dump we would have found remains of his pottery-making activity such as saggar fragments and kiln furniture. However, such was not the case. The artifacts, other than the pottery kiln waster fragments, consisted of an array of objects usually seen on eighteenth century domestic archaeological sites. In this chapter I will present a sampling of the types of artifacts recovered to give the reader an idea of the range of objects found along with the African American, Chinese, European, Native American, and Bartlam ceramics reported in the previous sections. The artifact tables are presented in the Appendix.

In my classification scheme for artifacts from eighteenth century domestic households I divided the artifacts into eight groups as follows (South 1977: 83-140):

The Artifact Groups

- Kitchen Artifact Group
- Architectural Group
- Furniture Group
- Arms Group
- Clothing Group
- Personal Group
- Tobacco Pipe Group
- Activities Group

In addition to the above artifact groups there is a refuse "Bone Group".

I have photographed some of the artifacts recovered to illustrate the variety within several of the above groups. One of these groups is "Personal", containing such items as the heavily worn George II halfpenny that has a date of 1757 (Plate 25a). A fragment had been cut from one edge of the coin, a common practice used to make change from silver coins in the eighteenth century (South 1962:1). I have never seen such a cut made on a coin with as low a denomination as a halfpenny to make change. This coin, shows King George II on the obverse and a seated Britannia on the reverse (Noël Hume 1970: 157). One of Bartlam's metallic glazes was copper, which produces a green color. Metallic copper can be used for this purpose. Could Bartlam have been using such old coins as a source of copper for his glazes? Another "Personal" group artifact is a brass pocket knife, once carried by some eighteenth century resident of Cain Hoy (Plate 28c).

A fragment of brass with parallel decorative lines may be fragments of the base of a candlestick, or possibly a bell (Plate 25b). A flat, embossed piece of lead appears to be from a bale seal having "J j/2" [1 1/2] impressed on the face (Plate 25c), (Noël Hume 1970: 269-271). Another item from the "Personal" artifact group is a bone fan blade revealing a touch of elegance (Plate 25d).
A series of glass or "paste" sleeve link sets from the "Clothing" artifact group are clues to the dress of the period (Plate 25f,g,h,i), as are a brass button face-plate intaglio bust of a be-wigged gentleman, or a lady (Plate 25e), and half of a faceted black button (Plate 25j), (Noël Hume 1970: 88-90; South 1977: 100, button type 13). The intaglio bust appears similar to some portraits of King George seen on coins. A copper wire hook, from a "hook and eye" set of clothing fasteners, is another clue to eighteenth century dress (Plate 25p), (Noël Hume 1970: 255).

A number of colored glass beads were found in the 1/4 inch screen used to recover objects from the shovel test units and sample squares (Plate 25j, k,l,m,n,o). It seems likely that we would have discovered many more beads by using a finer mesh screen. These beads were also personal items and the variety in type and color is greater than I have seen on most eighteenth century British colonial sites.

One of the groups of artifact types is the "Arms" group (South 1977: 100), which includes lead grips for holding gunflints into the cocks of flintlock muskets (Plate 26a), and lead bullets (Plate 26b), (Noël Hume 1970: 221; Hamilton 1960: 13).

The "Clothing" artifact group includes brass buttons (Plate 26c, d), and decorative brass shoe buckles (Plate 26g, h), as well as sleeve-links (Plate 26i), (Noël Hume 1970: 84-90; South 1977: 70-72, 100).

The "Furniture" artifact group consists of furniture hardware such as drawer pulls, keyhole escutcheons (Noël Hume 1970: 227-233; South 1977: 95-96, 98), as well as brass tacks (Plate 26e).

The "Kitchen" artifact group is composed of ceramics, glassware, tableware and kitchenware items used in the preparation and serving of meals (South 1977: 96-99). Glass tumblers (Plate 27a), and parfait glasses (Plate 27b), as well as wine bottles (Plate 27c), are among the eighteenth century kitchen related artifacts recovered from Cain Hoy. Burned corncobs and peach pits (Plate 27f,g,h,i), as well as animal "Bone" group refuse are clues to some of the foods being consumed, as are the shells remaining from meals of oyster and other shellfish. Some of the glassware reflects a typical eighteenth century domestic household refuse deposit, but as we will see below, there is also a strong indication that the site was also occupied by someone of a lower socio-economic status.

The glassware of various periods has been tabulated by Carl Steen and his table is presented in the Appendix.

The presence of pewter spoon handles (Plate 28a, b) and bone-handled two-tined iron forks (Plate 28d) is also a clue to the consumption of food in a domestic "Kitchen" group context at Cain Hoy.

The "Tobacco pipe" artifact group includes many pieces of the long-stemmed white clay pipes and bowls, such as the one shown in Plate 27d, marked "TD". Ivor Noël Hume has discussed these interesting and long-studied objects (1970: 296-313) and major tomes have been written on them (Walker 1977). One of the most interesting aspects of such tobacco pipes is the means of dating the accumulation of the sample through the size of the hole in the stem (Harrington 1954; Noël Hume 1970: 298-301). Using the Binford formula (Maxwell and Binford 1961:108), with the pipestem data presented by Steen in the Appendix of this report, a mean pipestem date of 1730.6 is derived for the period of accumulation of the sample of pipestems. A problem with sites having an accumulation of pipestems after the Revolutionary War period, as Cain Hoy does, is that pipestem
Plate 25: Personal and Other Artifacts from the Eighteenth Century

Top row:

a. a George II halfpenny dated 1757, from which a fragment has been cut
b. probably a fragment of what appears to be a brass candlestick base
c. a fragment of a lead bale seal marked "1 1/2"
d. a fragment of a bone rib from a lady's fan

Row 2:
e. a brass intaglio button or sleeve-link face

Row 3:
f, g, h. glass sleeve-link sets, white, green, clear
i. faceted black cast glass button

Row 4:
j, k, l, m, n, o. various colored glass beads
p. a copper wire clothing hook

Plate 26: Arms and Clothing Group Artifacts

Top row:
a. a folded lead gunflint grip used to hold the flint into the jaws of the cock of a flintlock musket
b. a lead bullet for a musket
c, d. eighteenth century brass buttons

Row 2:
e. a brass furniture tack

Row 3:
f. an iron buckle
g, h. decorative brass shoe buckle fragments
i. part of a metal sleeve link
Plate 27: Kitchen, Tobacco Pipe and Activities Group Artifacts

Top row:

a. the base of a glass tumbler. Note pontil mark.
b. the base of a glass parfait glass
c. the rim and lip area of a glass wine bottle

Row 2:

d. a bowl fragment of a "TD" pipe
e. a cast lead net weight. Note the casting sprue on the right.
f, g, h. burned corncob fragments
i. a burned peach seed fragment
j. a bone basketmaker's awl, broken at the narrow worn neck caused by turning the rectangular awl when it is inserted into the weave in order to open a hole to receive the withe

Plate 28: Kitchen, Personal, and Architecture Group Artifacts

Left to right:

a, b. pewter spoon handle fragments
c. a brass side plate for a small personal pocket knife
d. an iron two-tined fork with the bone handle side plates missing
e. a blacksmith wrought nail
f, (top and bottom). fragments of burned clay from a stick and clay daub chimney, or from a lathed wall, showing the wood grain impressions from the wood used in the construction
samples accumulated after that time usually produce a mean pipestem date in the 1730s and 1740s (Binford 1962; South 1962). This may well be the case here. Since we know from the ceramics present, dating from the early eighteenth to the early nineteenth century, that the site was occupied for virtually the entire eighteenth century, the pipestem date is of little use to us for analytical purposes.

The "Activities" artifact group is composed of tools, toys, storage items, items related to the stable and barn, as well as locally made colono ware pottery, and fishing gear, such as the cast lead net weight illustrated in Plate 27e, reflecting the activity of fishing with nets (South 1977: 96).

Another activity reflected in the artifacts from Cain Hoy is basketmaking, mirrored in the bone awl type tool used in the area today by African Americans and other basketmakers to hold open a space for the introduction of the withes during the weaving process. The tip of such a tool, broken at the point where the tool is worn narrow by its being twisted to form an opening for the withes, is illustrated in Plate 27j.

Blacksmith wrought nails are a major eighteenth century "architecture" group artifact reflecting building construction on the site (Plate 28e). Also a clue to architecture are a number of fragments of burned clay having the impression of wood grain from wood imprinted into the clay before it was hardened by fire (Plate 28f,g). These fragments are sometimes "T" shaped in cross-section, where the clay was pressed between wooden slats, similar in shape to the wad clay pugging coils resulting from pressing clay against the junction of two saggars in the kiln, and similar also, to the clay or mortar applied to split lathes to make plaster walls.

One interpretation of these fragments is that they may be from a stick and clay chimney, such as that illustrated on the dust jacket of Leland Ferguson's book Uncommon Ground: Archaeology and Early African America, 1650-1800 (1992). Archaeologists have found posthole evidence for stick and clay chimneys and some discussion has gone on as to why there is an apparent absence of chimneys in Virginia slave quarters (Ferguson 1992: 57-58). Such chimneys reflect a lower socio-economic status structure as might result from an African American or other colonial American occupation on this area of the site.

Summary of the Artifacts from Cain Hoy

From the Awendaw pottery (Waddell 1965: 82) found on the Cain Hoy site we know it was occupied by Native Americans thousands of years before John Bartlam showed up there to use the white clay he found there (Plate 24), (Rauschenberg 1991: 9).

Around 500-700 years ago, Native Americans, during the Mississippian Period, known to archaeologists in South Carolina as Chicora (South 1973: 55), were again living on the site (Plate 24), but this time they were raising crops such as corn and cooking it in pots they made. By the late seventeenth century Europeans and African Americans were living in the area that later came to be known as Cain Hoy on the north bank of the Wando River. We know the specifics of this from the archaeological remains they left behind as described above and we know the general picture from maps and records of the period.

We know too, that Native Americans were in the area and were in contact with Europeans and their African American slaves and they left their mark in the
archaeological record. The British immigrants to Cain Hoy brought with them pottery from a place called North Devon, and elsewhere, in England, in the early eighteenth century, and these too, became broken and the fragments discarded to be found by us. The British new-comers built a house with a brick chimney and sometime during the eighteenth century, another structure was built using more humble materials.

In 1765, another Englishman from Staffordshire, a potter known as John Bartlam, came to a place somewhere in Cain Hoy because there was good white clay there he could use to make a cream-colored pottery to be fired in his kiln. He brought British goods with him, such as nails, glassware, kitchen items, wine bottles, barrels, tools, and many other things necessary to maintaining a household. Archaeologists are not able to separate objects such as broken bone handled forks, pewter spoon fragments, and other such refuse of the 1765-1770 period of Bartlam's use of the site from those items from twenty or thirty years before discarded there by others. We know he was near-by, however, because we have recovered many fragments of the pottery he made. This is discussed in the previous section of this report.

Our research has revealed that there are clues to an African American presence at the Cain Hoy location where we worked. Perhaps these people pre-date Bartlam there, were contemporary with him, possibly associated with him, or were there long after he left. We know that the area has long been the home for many African Americans, some of whom have, no doubt, family roots going back many generations into the past. The colonia ware found during our study certainly was not made by Bartlam, or Europeans, or Native Americans, but was likely the product of African Americans living on the area of the site we tested. Many other artifacts on the site were very likely brought there by African Americans.

Our research has also revealed British colonial artifacts typical of a mid-eighteenth century domestic household occupation at the site and one of my suppositions is that perhaps one of Bartlam's African American workers may have lived here who had access to Bartlam's waster wares that were still usable in such a household but which Bartlam considered too kiln damaged to be sold.

Whoever lived at the Cain Hoy site was involved in fishing, hunting, weaving baskets, eating corn, peaches and shellfish, and living in structures having brick as well as clay caulking. At the present level of our investigation we cannot separate the occupation periods represented by the artifacts recovered from our research frame. However, we have learned quite a bit about the occupants of this piece of land. We know, for instance, that Bartlam's kiln for making his pottery is likely to be found somewhere other than the location where we worked. This is revealed by the absence of kiln furniture and bricks from which it was likely made. If the ruins we have dealt with in our study are those of a domestic household, and the evidence indicates that it is, I wonder how many other domestic household ruins in this area might also contain quantities of Bartlam's ware? A collections search in the area or a more extensive testing project than we were able to carry out might provide clues to answering this question and perhaps to the location of Bartlam's kiln.

When Bartlam was beset by financial problems in 1768, he had to mortgage his "slaves, Fortune and Hector, a canoe, two horses, two carts, four bedsteads, three feather beds, four mattresses, nine pairs of sheets, two tables, the rest of his household and kitchen furniture, and five hundred dozen of Earthen Ware" (Rauschenberg 1991: 10). What happened to these 6,000 pieces of Bartlam ware? What would they have consisted of? It is my opinion that they would have been biscuit fired ware awaiting glazing and final firing, along with finished glazed pieces ready to be sold.

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The 6,000 pieces of his ware may well have been tied up in legal channels in the year to follow, a year during which Bartlam was sick (Rauschenberg 1991: 10-11). These 6,000 pieces of glazed and bisque pieces might have been taken to Charleston to be sold in the public market or by some merchant. However, if they were never claimed by those who foreclosed on his mortgage, they may have become distributed among residents of Cain Hoy, especially his apprentices, to whom he may well also have been indebted. If this scenario is at all close to the truth, some 6000 pieces of Bartlam's glazed and unglazed ware would have found their way into domestic households in the area along with any of his wares purchased at his Cain Hoy or Charleston locations. The bisque pieces, though fragile, could function for a short time, as the finished pieces would have, as additions to the table service of those who admired them.

The recovery of a range of 23 varieties of Bartlam's glazed and unglazed ware is what we have found at the Cain Hoy domestic household site we examined. If the artifacts we have found are from a domestic household group of buildings where was Bartlam's potworks? This is a good question. The answer has not been revealed by our research. Perhaps some day it will be found. We now take a more detailed look at the eight artifact groups listed above to determine what clues lie in a quantitative comparison of the artifact groups I have illustrated here.

Analysis of the Artifacts from Cain Hoy

Artifact Analysis - The Carolina Artifact Pattern Model

In 1977, I developed a model for comparing artifact collections from eighteenth century sites and called it the "Carolina Artifact Pattern Model" (South 1977 83-139). In my discussion of theoretical considerations for constructing such a model I said the following (1977:85):

It does not take a trained archaeologist or a knowledge of how to analyze data quantitatively to be able to recognize a potter's kiln waster dump and come to the conclusion that it does not represent a typical domestic dwelling.

The opposite is also true: it does not take a trained archaeologist or a knowledge of how to analyze data quantitatively to be able to recognize a domestic household refuse dump with broken animal bone, broken pottery, fragments of wine bottles, case bottles, tumblers, wine glass, nails, window glass, etc., and a single fragment of kiln furniture (saggars, trivets, saggar pins, bobs pugging coils) and come to the conclusion that it does not represent a kiln site. While people living near the kiln might carry home a usable cup or pot, they probably would not carry kiln furniture to their homes -- thus the kiln might be next door to our research frame. However, quantitative analysis can produce data that can be used to make comparisons beyond the first impression level.

By comparing the percentage relationships between artifacts from domestic household refuse classified into eight groups, the Carolina Artifact Pattern Model was created as a tool to assist the archaeologist in comparing artifact collections from sites having had varying functions in the past. By making such comparison between sites when the function of one site is known from documentation, clues to the function of the second site can be elicited from the artifact pattern. The percentage relationships for the eight artifact groups comprising the Carolina Artifact Pattern of domestic household refuse look like this (South 1977):
The Carolina Artifact Pattern

<table>
<thead>
<tr>
<th>Artifact Group</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kitchen artifact group</td>
<td>63.1%</td>
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<tr>
<td>Architecture artifact group</td>
<td>25.5</td>
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<tr>
<td>Furniture artifact group</td>
<td>.2</td>
</tr>
<tr>
<td>Arms artifact group</td>
<td>.5</td>
</tr>
<tr>
<td>Clothing artifact group</td>
<td>3.0</td>
</tr>
<tr>
<td>Personal artifact group</td>
<td>.2</td>
</tr>
<tr>
<td>Tobacco pipes</td>
<td>5.8</td>
</tr>
<tr>
<td>Activities artifact group</td>
<td>1.7</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

From the artifact group table in the Appendix I have determined that the Carolina Artifact Pattern for the 1088 objects recovered by Carl Steen in his shovel tests and the 8360 artifacts recovered from the five-foot squares, produce percentage relationship profiles as follows:

The Cain Hoy Shovel Test Artifact Profile

<table>
<thead>
<tr>
<th>Artifact Group</th>
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<tbody>
<tr>
<td>Kitchen Group</td>
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</tr>
<tr>
<td>Architecture Group</td>
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</tr>
<tr>
<td>Furniture Group</td>
<td>.1</td>
</tr>
<tr>
<td>Arms Group</td>
<td>0</td>
</tr>
<tr>
<td>Clothing Group</td>
<td>.3</td>
</tr>
<tr>
<td>Personal Group</td>
<td>0</td>
</tr>
<tr>
<td>Tobacco Pipe Group</td>
<td>3.1</td>
</tr>
<tr>
<td>Activities Group</td>
<td>33.0</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The Cain Hoy Five-foot Squares Artifact Profile

<table>
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<th>Artifact Group</th>
<th>Percent</th>
</tr>
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<tbody>
<tr>
<td>Kitchen Group</td>
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<tr>
<td>Architecture Group</td>
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<tr>
<td>Arms Group</td>
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</tr>
<tr>
<td>Clothing Group</td>
<td>.3</td>
</tr>
<tr>
<td>Personal Group</td>
<td>.1</td>
</tr>
<tr>
<td>Tobacco Pipe Group</td>
<td>3.7</td>
</tr>
<tr>
<td>Activities Group</td>
<td>26.5</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

When we compare these Cain Hoy profiles with the Carolina Pattern we find that the Activities Group Artifacts are much higher at Cain Hoy. There is no parallel between the profiles produced from the Cain Hoy data and the Carolina Pattern. As demonstrated in my original discussion of the Carolina Pattern, when this happens the deviation from the pattern is examined to arrive at some insight as to what caused the deviation. In the case of the Cain Hoy profiles it is the colono ware that results in the Activities Group being so high. We then turn to this type ware, made by African Americans (Ferguson 1992) to see what is known about it in relation to the Carolina Artifact Pattern Model.
Through the work of Drucker and Anthony (1979) and Wheaton, Friedlander and Garrow (1983: 284), it has been determined that the colono ware should be placed in the Kitchen Artifact Group, instead of in the Activities Group as I did with the Carolina Artifact Pattern. Based on their findings through excavation of slave sites in South Carolina, they have been able to revise the Carolina Artifact Pattern to reflect this, and have devised the "Carolina Slave Artifact Pattern" (Wheaton, Friedlander and Garrow 1983: 283). The percentage relationship for the various groups in the Carolina Slave Artifact Pattern are as follow:

**The Carolina Slave Artifact Pattern**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kitchen</td>
<td>77.4</td>
</tr>
<tr>
<td>Architecture</td>
<td>17.8</td>
</tr>
<tr>
<td>Furniture</td>
<td>.1</td>
</tr>
<tr>
<td>Arms</td>
<td>.1</td>
</tr>
<tr>
<td>Clothing</td>
<td>.5</td>
</tr>
<tr>
<td>Personal</td>
<td>.1</td>
</tr>
<tr>
<td>Tobacco Pipe</td>
<td>3.5</td>
</tr>
<tr>
<td>Activities</td>
<td>.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100.0</td>
</tr>
</tbody>
</table>

The observed range they show for this Carolina Slave Artifact Pattern for the Kitchen Artifact Group is: 70.7% to 84.2% and for the Architecture Group it is: 11.8 to 25.0%.

When we add colono ware to the Kitchen Artifact Group and remove it from the Activities Artifact Group for the Cain Hoy profiles as recommended, we find that the Cain Hoy artifact profiles appear as follows:

**The Revised Cain Hoy Shovel Test Profile**

<table>
<thead>
<tr>
<th></th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kitchen</td>
<td>876</td>
<td>80.5</td>
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<tr>
<td>Architecture</td>
<td>173</td>
<td>15.9</td>
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<tr>
<td>Furniture</td>
<td>1</td>
<td>.1</td>
</tr>
<tr>
<td>Arms</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Clothing</td>
<td>3</td>
<td>.3</td>
</tr>
<tr>
<td>Personal</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Tobacco Pipe</td>
<td>34</td>
<td>3.1</td>
</tr>
<tr>
<td>Activities</td>
<td>1</td>
<td>.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1088</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**The Revised Cain Hoy Profile from the Five-foot Squares**

<table>
<thead>
<tr>
<th></th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kitchen</td>
<td>6750</td>
<td>81.3</td>
</tr>
<tr>
<td>Architecture</td>
<td>1029</td>
<td>12.4</td>
</tr>
<tr>
<td>Furniture</td>
<td>9</td>
<td>.1</td>
</tr>
<tr>
<td>Arms</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Clothing</td>
<td>25</td>
<td>.3</td>
</tr>
<tr>
<td>Personal</td>
<td>9</td>
<td>.1</td>
</tr>
<tr>
<td>Tobacco Pipe</td>
<td>305</td>
<td>3.7</td>
</tr>
<tr>
<td>Activities</td>
<td>179</td>
<td>2.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>8306</td>
<td>100.0</td>
</tr>
</tbody>
</table>
From this comparison of the Cain Hoy shovel test data with those data from the five-foot squares it is apparent that the shovel tests are an accurate reflection of the archaeological universe represented by the five-foot squares. The sampling method we used to monitor the artifacts on the Cain Hoy site clearly predicted what we would find in the much larger sample we obtained from the five-foot squares.

When comparison is made between the Cain Hoy profiles and the Carolina Slave Artifact Pattern we find that they are very close, with the Cain Hoy profiles falling within the observed range of the Carolina Slave Artifact Pattern. This finding is not what one might expect from a British colonial household. It might be argued that Bartlam's pottery on the site was a result of the kiln being located there and that if we remove his pottery from the artifact profiles we might end up with the domestic household Carolina Artifact Pattern of refuse disposal. I have done this and recalculated the percentages and they still fall within the Carolina Slave Artifact Pattern.

What this artifact analysis tells us is that the quantity of colono ware being discarded at the Cain Hoy site was sufficient to cause the artifacts to fall within what we know to be the Carolina Slave Artifact Pattern. I suggest that these data are telling us that the site was occupied by one or more slaves, or free African Americans or someone in a similar socio-economic level. This finding is in keeping with the observations of the artifact associations discussed above not based on quantitative pattern recognition.

However, the presence of a brick chimney base along with brick and mortar scatters on the site, suggest a more affluent style of architecture was present there in addition to that seen at the Yaughan and Curriboo slave built structures (Wheaton and Garrow 1985: 239-259). A few of the artifacts also suggest more access to resources than one might expect from a slave occupation, stemmed wine glass fragments, for instance (Appendix), but such unexpected wares are sometimes seen on slave occupied sites (Bullen and Bullen 1945). Nevertheless, the best resource we have at present to understand what the artifacts from the colonial period are trying to tell us is comparison through quantitative analysis using the method I have presented here.
Chapter 7

The Collections Search for Bartlam's Ware

One of the goals of the search for Bartlam at Cain Hoy survey was to search for possible examples of his ware in various archaeological collections. The Charleston Museum was an ideal place to begin this inquiry, with the sites excavated by Martha Zierden and her colleagues. Another goal was the collections from various sites throughout South Carolina at the South Carolina Institute of Archaeology and Anthropology at the University of South Carolina, excavated by me and others through the years. The Yauhannah Bluff site, for example, presently being examined by James L. Michie and William Weeks at the Waccamaw Regional Studies Program at Coastal Carolina College, has produced Bartlam-like ware. The collection, long held at the McKissick Museum at the University of South Carolina, of those sherds collected by George Terry, has been reported by Bradford Rauschenberg in his report on John Bartlam (1991). From an examination of many collections a selection of possible Bartlam ware fragments was made and these are dealt with here for comparison with those data presented in previous chapters.

This study was by no means inclusive of all sites possibly having on them fragments of Bartlam's ware. Such a study in other archaeological collections as well as private ones and in other museums in North and South Carolina and Georgia might well reveal further clues to Bartlam, Ellis and Christ. I did not visit those museums that have collections of whole vessels of the type made by Bartlam and by Staffordshire potters. To do so would require a far more extensive project than that reported here. Such a study should be made in the future, now that we have a better feel for what Bartlam was making as reported in this volume.

In my study I examined collections from archaeological sites searching for clues to Bartlam through the Staffordshire type pottery made by him. In spite of the fact that I had examined all of the Bartlam sherds recovered in our survey, along with others that likely were not, I am still not able to confidently tell his finished ware from that made in Staffordshire. However, I chose particular sherds that could have been made by him based on color, the presence of a patina, some irregularity in the glaze as clues to the selection of sherds described here. The sherds I chose came from an examination of collections from the following sites, excavated by various archaeologists:

Atlantic Wharf  
Cain Hoy  
Camden  
Cornwallis House  
Dorchester  
Exchange Building  
Ft. Dorchester  
Ft. Prince George  
Ft. Watson  

ARL34981  
38BK1349  
38KE1  
38KE1  
38OR3  
ARL 14273  
38OR4  
38PN1  
38CR1  

Martha Zierden  
Carl Steen  
Kenneth Lewis, Alan Calmes  
Bob Strickland  
Alan Albright, Ralph Wilbanks  
Johnny Miller  
Richard Carrillo  
John Combes  
Leland Ferguson

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Several creamware fragments from the Miles Brewton House collection in the Charleston Museum were the kind of ware I was looking for (Plate 29). A green glazed press molded plate fragment having the "ring-and-dot" impressed punctations is seen to have been made by Bartlam at Cain Hoy (Plate 13). Perhaps others in Staffordshire were also using this type decorative treatment, so this piece cannot be said to have been exclusively made by Bartlam. Other types were cauliflower and tortoiseshell ware (Plate 29d-f) that could have been made by any number of Staffordshire potters, including Bartlam.

One of the most important results of my collections survey was the discovery that archaeologists, on two sites in Charleston, have fragments of Bartlam's blue and white "china" (Plate 30). These are the Miles Brewton House and the Exchange Building. These fragments have the same appearance as those recovered from Cain Hoy, and they also have the brown patina on the surface, which I think comes from Bartlam putting ground up leaded glass into his formula for his "china".

This finding clearly indicates that Bartlam's "china" found its way through consumers into various places in Charleston, either from Cain Hoy or his Charleston pot works, demonstrating that the brown patina is not simply kiln damage limited to Cain Hoy, but is something that has been built up onto the surface of the pieces through the years in the earth after they were broken.

The daisy appearing floral motif (Plate 30b), provides us with another example of the skill of Bartlam's decorator. This design is similar to those sometimes seen on delft. Rauschenberg, in his discussion of the decorations on some pieces of Bartlam's blue and white "china", has noted the chinoiserie style used by Bartlam's decorator (1991:33-34).

Although my collections survey of possible Bartlam ware was not designed to be a definitive study of surviving pieces in museum collections, the Charleston Museum has two examples that I have illustrated in Plate 31. One is a pineapple ware teapot from the museum's History Collection and the other is a brown tortoiseshell teacup from excavations at the Heyward-Washington House in Charleston. They could well be Bartlam pieces, but as yet I have no way to tell for sure.

A few sherds of possible Bartlam ware were recovered from the Yauhannah Bluff site by James Michie and Bill Weeks through the Waccamaw Regional Studies Program at Coastal Carolina College in Conway, South Carolina (Plate 32). One sherd in particular, a melon ware sherd, appears to be a kiln waster, or perhaps a sherd that has an accumulation of the brown patina seen on Bartlam's blue and white "china" (Plate 32a). This sherd is very much like one recovered from Cain Hoy, also showing similar damage to the glaze (Plate 11a). A green glazed fragment of melon ware, a fragment of tortoiseshell glazed dot,
diaper and basket ware, and a green and yellow fragment of cream paste ware were also recovered from the Yauhannah Bluff excavations (Plate 32b-d).

In the collections at the South Carolina Institute of Archaeology and Anthropology at the University of South Carolina, picked up from the surface of the shell midden deposit before the current project began, are two bowl base fragments of Bartlam's bisque fired ware (Plate 32e-f). One (Plate 32e), is a cream-colored paste typical of Bartlam's bisque ware pictured in Plates 3 and 9. The other one (Plate 32f), is a much darker, brown colored bisque base, having been oxygen reduced while it was being fired in the kiln. This is an obvious kiln waster piece from Bartlam's kiln, and is one of those giving rise to the anticipation we felt as we began planning to carry out this survey on the Cain Hoy site to look for more such examples of Bartlam's kiln waster ware.

Because we know from the documents Bartlam once operated his pot works in Camden, we expected to see a number of fragments of his Carolina creamware as we examined the Camden collection. I have illustrated some of these, along with some fragments of tortoiseshell ware in Plate 33. One brown tortoiseshell fragment appears to be part of the tail of a bird figurine (Plate 33j).

From the collections at Ninety Six, South Carolina, some mold pressed anthropomorphic stub-stemmed pipe fragments are present, similar to those seen to have been made by Gottfried Aust and Rudolph Christ at Bethabara and Salem, North Carolina (South 1967:50). We found no such pipes at Cain Hoy, but the glaze on these is the Carolina creamware color. Such pipes could have been made by Bartlam after he moved to Camden, or these may simply have been exported from Bethabara or Salem, North Carolina to Ninety Six.

A dark brown manganese glazed, red paste fragment in the Newington Plantation collection is the same type ware found at Cain Hoy (Plate 33m). A handle fragment of this same ware is illustrated in Plate 19e. Bartlam may well have been making this type brown earthenware.

A white bisque ribbed fragment of what appears to possibly be a piece of Bartlam's "china" paste is in the Newington Plantation collection (Plate 33n).

Other sherds likely made by Bartlam at Camden are illustrated in Plate 34. These Carolina creamware and tortoiseshell glazed sherds are typical of those I began seeing when I first came to South Carolina and began calling "Carolina creamware". An anthropomorphic pipe fragment such as those found at Ninety Six and discussed above, is also among those sherds recovered at Camden (Plate 34a) and may have been made there by Bartlam. However, such suggestions are probably not reasonable since we know that Aust and Christ were shipping wagon loads of pottery to what was then known as Pinetree, but known today as Camden (South 1971:75), and that such anthropomorphic pipes might well not have been made by Bartlam.

Summary

The survey undertaken here, to examine and illustrate some of the fragments found on archaeological sites that may have a connection to Bartlam, has allowed us to do just that. We still are not able in all cases to distinguish, in such collections, between those made by Bartlam and those imported from the Staffordshire district of England. However, this study has demonstrated, through
fragments of Bartlam's ware found at two sites in Charleston, that his blue and white "china" was being supplied to consumers there. We have also seen clues to the connection of Bartlam to the Moravian potters Gottfried Aust and Rudolph Christ at Bethabara and Salem, North Carolina. We also have illustrated that Bartlam type ware was widely spread across South Carolina, either from Cain Hoy or his Camden manufactory. This phase of our study has allowed a broader look at Bartlam like wares in archaeological collections in the area, broadening the perspective from Cain Hoy to the broader colonial community in the Carolinas during the third quarter of the eighteenth century.

As mentioned in the first chapter, carrying out this project has long been a dream of Brad Rauschenberg and myself. The dream was to excavate for clues to John Bartlam in Cain Hoy and Charleston to discover fragments of pottery from America's first creamware potter. When Carl Steen joined in the search as co-PI, and funding was made available through the South Carolina Department of Archives and History, the dream became a reality.

In 1970 I predicted that when such an excavation was carried out, the ware recovered "will look very much like that produced by Rudolph Christ at Salem, as does the ware from Camden" (South 1971:178). That prediction has been richly fulfilled in that it is indeed difficult to separate much of the ware of Bartlam from Ellis or Christ at Cain Hoy, Charleston or Camden. We are, however, learning more as the search continues.
Plate 29:  Creamware Fragments from the Charleston Museum, Charleston, South Carolina

Top row:  From the Miles Brewton House

a. a press molded creamware teapot spout
b. a creamware teapot foot
c. a creamware animal foot?

From the Heyward-Washington House

d. a brown tortoiseshell creamware fragment, very similar to one from Cain Hoy illustrated in Plate 2j

Row 2:  From the Miles Brewton House

e. a press molded green glazed plate fragment with relief motif and the ring-and-dot impressed motif known to have been made by John Bartlam at Cain Hoy
f. a press molded cauliflower creamware fragment

Plate 30:  Bartlam's Blue and White "China" from the Charleston Museum

Top row:  (Note: This photo shows the sherds with a warmer cream color than their true blue and white tone.)

From the Exchange Building

a. cup fragment with the brown patina characteristic of Bartlam's blue and white "china", thought to be produced by weathering of lead glass added to the paste

From the Miles Brewton House

b. platter fragment of Bartlam's blue and white "china" with floral motif
   Note the brown patina remaining on the glued-on fragment at the top

Row 2:  From the Exchange Building

c. bowl base of Bartlam's blue and white "china" with brown patina
Plate 31: Pineapple Teapot and Brown Tortoiseshell Teacup from the Charleston Museum, Charleston, South Carolina

Left: Pineapple teapot from the Charleston Museum History Collection
Right: Brown tortoiseshell teacup from the Heyward Washington House excavation

Plate 32: Creamware Sherds from the Waccamaw Regional Studies Program at Coastal Carolina College, Conway, South Carolina

Top row: From Yauhannah Bluff
   a. kiln waster fragment of melon ware (compare with a similar fragment from Cain Hoy in Plate 11)
   b. a green glazed melon ware fragment
   c. a tortoiseshell glazed fragment of dot, diaper and basket press molded ware
   d. a fragment of green and yellow ware known to have been made by Bartlam (see Plate 19g and h)

Row 2: Bartlam's Bisque Sherds from the South Carolina Institute of Archaeology and Anthropology at the University of South Carolina, Columbia

From Cain Hoy

   e. a large bowl base of Bartlam's bisque fired ware from the surface of the oystershell midden at the Cain Hoy site

   f. a brown (oxygen reduced) bisque bowl fragment from the surface of the oystershell midden at the Cain Hoy site
Plate 33: Creamware and Other Sherds from the Collections of the South Carolina Institute of Archaeology and Anthropology at the University of South Carolina, Columbia

From Camden

Top row:  
a-e. creamware and tortoiseshell sherds likely made by Bartlam when he worked in Camden, South Carolina  
Row 2:  
f. creamware beaded rim fragment  
Row 3:  
g-j. creamware and tortoiseshell sherds likely made by Bartlam. The fragment at j appears to be from a molded figure of a bird.

From Ninety Six

Row 4:  
k-l. anthropomorphic stub-stemmed mold pressed pipes, probably made by Gottfried Aust or Rudolph Christ at Bethabara or Salem, North Carolina

From Newington Plantation

m. a brown manganese glazed, red paste fragment such as that seen in Plate 19e, from Cain Hoy  
n. a fragment of a ribbed cup of a ware similar to Bartlam's blue and white "china" ware

Plate 34: Sherds from Ware Likely Made by Bartlam at Camden

From Camden

Top row:  
a. a fragment of an anthropomorphic pipe bowl possibly made by Gottfried Aust or Rudolph Christ at Bethabara or Salem, North Carolina, or possibly made by Bartlam when he had his pot works there  
b. a tortoiseshell glazed fragment with the darker "Carolina creamware" color, likely made by Bartlam  
c. a feather edge Carolina creamware sherd very likely made by Bartlam  
d. a tortoiseshell glazed sherd with a green rope rouletted rim decoration. (This sherd has been illustrated by Rauschenberg 1991: 44 and by South 1971:177).

Row 2:  
e. a toy creamware bowl fragment probably made by Bartlam. He was making toy Carolina creamware dishes at Cain Hoy (see Plate 4)  
f. a fragment of a press molded sauceboat likely made by Bartlam  
g. a pale green glazed buff paste handle fragment  
h. a tortoiseshell glazed fragment typical of the darker "Carolina creamware" color thought to have been made by Bartlam, Ellis or Christ

Row 3:  
i. a Carolina creamware sherd with a rouletted bead  
j. a Carolina creamware sherd with a crazed glaze  
k. the interior base of a Carolina creamware sherd
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