

**ANALYSIS OF REMAINS FROM
MOUT OLIVE CEMETERY,
PORTSMOUTH, VIRGINIA**



CHICORA RESEARCH CONTRIBUTION 535

ANALYSIS OF REMAINS FROM MOUT OLIVE CEMETERY, PORTSMOUTH, VIRGINIA

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ABSTRACT

Mount Olive is an African American cemetery organized by seven individuals representing the Mount Olive Club of Portsmouth in 1879. The cemetery is today owned by the City of Portsmouth and through the efforts of the African American Historical Society of Portsmouth, Inc. efforts are being made to preserve the 6.93 acre cemetery. It is part of a cemetery complex that also includes Mount Calvary, apparently assembled by Samuel Fisher beginning about 1894 and today encompassing 3.05 acres; Fisher's Cemetery, also created by Samuel Fisher and consisting of 0.58 acres; and a potter's field that was acquired by Norfolk County in 1882, eventually passing to the City of Portsmouth. The properties are inventoried by the Virginia Department of Historic Resources as the Mount Calvary Cemetery Complex, 124-5125 and has been determined eligible for listing in the National Register of Historic Places.

Earlier this year a brick vault was discovered partially collapsed by Cristina Carlton, who with Mae Breckenridge-Haywood, organized efforts to investigate these remains prior to the vault being sealed by the City. The effort was supported by others in the African American working on the preservation of these cemeteries who realized that bioanthropological studies such as this have an extraordinary opportunity to tell us about the dead, broadening our understanding of our ancestors in ways that would otherwise be impossible using conventional historical documents.

The investigations were conducted by Chicora using minimally invasive techniques. The vault was not further disturbed and only a portion of the bones present were removed for analysis on-site. At the conclusion of the study the remains were replaced in the vault.

This brief report provides information on these remains, the associated casket, and the brick vault. The remains were identified as those of an African American female, between the ages of 39 and 87 years, and as tall as 5'1". She suffered from

osteoarthritis, particularly of the lower back and sciatic region. The individual had lost all of her teeth at least 10 years prior to death. Her burial, in a casket with hardware and a glass viewing plate, suggests that she was held in high regard by those responsible for her burial. The brick burial vault appears similar to many others in the cemetery complex and mimics those identified throughout the region, through South Carolina, Georgia, and into Alabama.

It is likely that the City will confront additional vault damages and we recommend that a standard procedure be developed to allow for the complete examination of the remains prior to appropriate reburial.

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INTRODUCTION

Mount Olive Cemetery

The cemetery complex that includes Mount Olive is situated in south central Portsmouth in what is known as the Prentiss Park neighborhood. Mount Olive Cemetery is identified as parcel 209-020 (6.93 acre). Incorporated with Mount Calvary, Fisher's, and a potter's field, the 10.7 acre cemetery complex is roughly a rectangle measuring about 1,500 by 500 feet. The western boundary is Columbus Avenue; the northern boundary includes I-264 and a series of lots; the eastern boundary is Pulaski Street and a private lot; and the southern boundary, marked by a ditch, borders on privately held parcels (Figure 1).

but his heirs were apparently not interested in farming and sold off portions of the estate. The African American men who comprised the Mount Olive Club consisted of both blacks and mulattoes; some possessed wealth, others were simple laborers; some were elderly and perhaps looking at the prospects of burial in one of the city's potter's fields, while others were relatively young. One was an undertaker, another a pastor of a local church. The group was, in many respects, similar to those who formed the African American Randolph Cemetery in Columbia, South Carolina (Trinkley and Hacker 2007a).

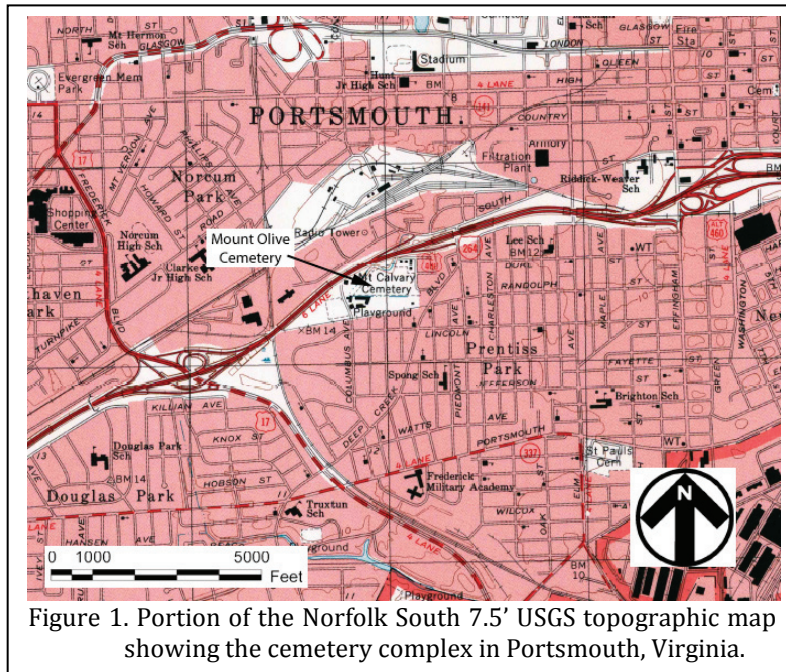


Figure 1. Portion of the Norfolk South 7.5' USGS topographic map showing the cemetery complex in Portsmouth, Virginia.

Some historical synthesis of this cemetery is available in Trinkley and Hacker (2010). We know that on May 5, 1879 the trustees of the Mount Olive Club in Portsmouth purchased unspecified acreage for \$350 (Norfolk County Register of Deeds, DB 110, pg. 517). The property, today encompassing 6.93 acres, was purchased from Dr. Alexander Perry, the heir of Benjamin R. Perry. Perry was an area farmer,

Mount Olive, from the time of the purchase, was considered fairly low and poorly drained. By the 1930s it seems likely that original trustees had all died and the burial ground was receiving little care. The 1930s and 1940s were also the period of significant African American migration, leaving the Jim Crow south for better opportunities elsewhere. This may have served to diminish the number of family members able to help maintain family plots.

By the 1950s it is unlikely that the cemetery was profitable and it doesn't appear that maintenance was being provided. It was in the 1960s that the African American community, aware of Portsmouth's efforts to maintain segregation of cemeteries began to demand their burial places be better cared for. Seeing their taxes spent on white cemeteries they understandably sought parity and demanded that the city provide equal funding to maintain Mount Olive. The city spent the next 30 years fighting these efforts using delay tactics, pleading inadequate finances, and simply ignoring requests. It wasn't until the 1990s that Portsmouth belatedly began efforts to recover and restore the cemetery complex at Pulaski Street, including Mount

Olive.

The cemetery complex was briefly studied in 2007 as part of the cultural resources study for the VDOT Route 58, Martin Luther King Freeway Extension (Barry et al. 2007). As a result of that study, a Department of Historic Resources Reconnaissance Level Survey form was completed for the cemetery complex (DHR #124-5125). Most of this work focused on the potter's field cemetery to the rear (west) of Mount Olive. A series of 32 trenches were mechanically stripped in an effort to identify grave shafts. Twenty-three of these trenches were within the area thought to represent the potter's field cemetery and at least 13 of these produced clearly identifiable coffin stains. The study assigned the archaeological site number 44PM0062/124-5125 to the Mt. Olive Potter's Field and Mt. Calvary Cemetery complex.

Project Background

In November, cemetery volunteer Christina Carlton identified a partially collapsed brick vault grave in Mount Olive Cemetery. She identified the City, which took steps to protect the opening and prevent damage, and the African American Historical Society of Portsmouth.

Human remains have the ability to provide information about the dead that are often available from no other source. Bioanthropological study can identify the age, sex, and ancestry of the individual. It is often possible, using non-intrusive techniques, to assess issues such as diet and disease. With funding, it is possible to take small samples of the bone for genetic studies, as well as further examining dietary contributions.

The items with which the deceased is buried

with can provide additional information about mortuary behavior. Coffin hardware, clothing, and other remains can provide information on social status and possibly wealth.

Arrangements were made for the author to visit the cemetery and examine the remains. It was

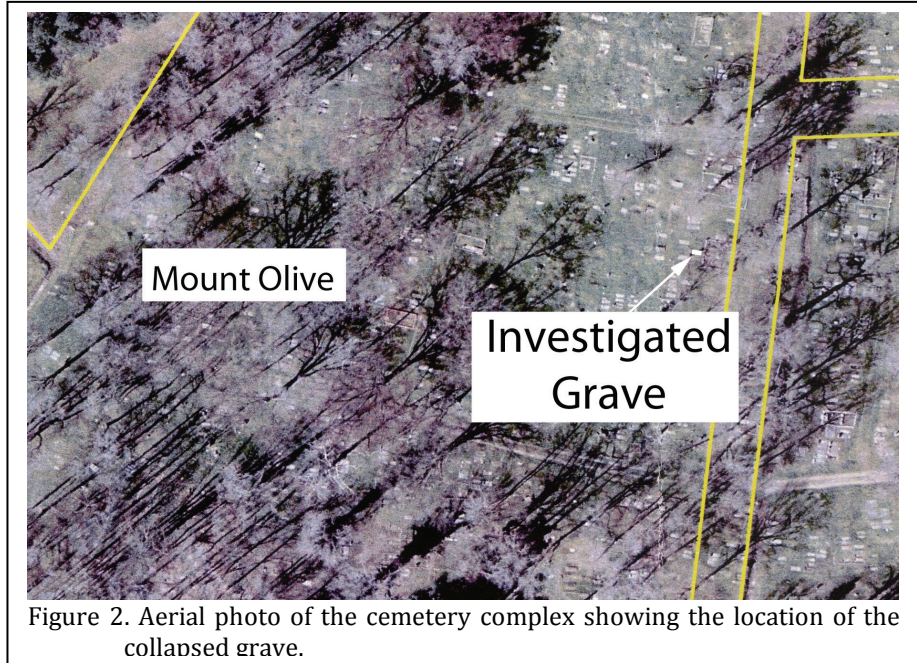


Figure 2. Aerial photo of the cemetery complex showing the location of the collapsed grave.

decided that the examination would be non-intrusive. Only a small sample of the remains would be removed from the vault, measured, photographed, and returned. No samples would be retained and no destructive studies would be conducted.

The grave examined has no marker identifying the deceased, although the grave was immediately west of the well marked Mingo family plot (Figure 2).

Field Investigations

The grave was below ground, in a brick vault with a slightly arched top. The east, or foot of the grave, closest to the coping of an adjacent Mingo family plot, had caved in, exposing the interior.

The grave vault is oriented east-west, and is constructed of brick laid with a cementitious mortar. It measures 30" wide, 72" long, and 24" in height on the east and west walls, with the arch being 26" high. The sides of the vault were originally stuccoed with

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Figure 3. Area of vault prior to work. The top photograph shows the plywood covering placed by the City. The bottom photograph shows the collapsed portion of the vault looking east.

the mortar.

The vault was apparently constructed at grade, but over the years soil has been deposited on top of the vault and grass has grown over it, so that it is no longer distinctly visible. A similar vault is situated immediately north of this one. In fact nearly identical vaults are found throughout the cemetery and several of them have collapsed (see Trinkley and Hacker 2010:75-76).

Damage is almost certainly the result of several factors. While vaulted, none of the arches observed have any significant mass of masonry on the sides in order to absorb the lateral thrust created by the arches. They are therefore inherently

unstable. Some vaults did not use an arch, but were covered by flat constructions, some of brick (probably originally supported by now decayed wood, perhaps even the shipping container for the casket) or concrete. The very wet conditions in the cemetery are a contributing factor, degrading the mortar and weakening construction. The most significant factor may be the operation of riding mowers in the cemetery. These mowers weight 500 to 800 pounds and use on the vaults is problematical.

On December 3, 2010, Ms. Hacker was met at the cemetery by Christina Carlton, Mae Breckinridge-Haywood, and Dr. Margaret Briscoe. Later in the day Brenda Orton, Nadia Orton and Lydia Griffin also came as witnesses to the examination of the grave. As a safety precaution, the City of Portsmouth had placed a sheet of plywood across the grave, with soil piled on either end. Ms. Carlton and Ms. Hacker removed the soil and plywood, exposing the grave and collapsed area.

Inside the collapsed vault opening were brick and concrete fragments, tree debris and leaf litter. These were removed and set aside so that the interior of the grave could be viewed. Inside, the grave vault appeared to be in good condition, with the skull, innominate and left long bones visible, as well as coffin hardware and a fragment of viewing glass lying across the skull and ribs. The skull was located at the west end of the grave, resting on its left side. The consensus of

the group was to not remove any of the intact brick from the collapsed area, so the entrance to the grave remained about 18" by 20".

Attempts were made to gently remove bones with a small plastic rake, but all were firmly imbedded in the soil at the base of the grave. Only a fragment of viewing glass from over the skull/rib area was successfully removed.

A sandy soil covers the interior of the vault, and holds the bones and artifacts firmly. As this cemetery often floods, the grave has probably experienced many episodes of interior flooding and silting. Although some plant roots appear in the top



Figure 4. Recovery efforts were hampered by the small opening size. The decision not to expand the opening was made to minimize damage to the vault.

dated 2008 and 2009, were left in the grave to clearly indicate that the vault had been opened. The plywood sheet back was replaced across the grave and soil was again placed on the ends, leaving the grave as secure as when it was opened.

of the vault, there was no active plant growth in the grave itself.

Ms. Carlton entered the grave through the opening, and was able to remove a portion of the left innominate, a fragment of left radius, a vertebra, and a fragment of threaded clear glass. Subsequently the author entered the grave with small hand tools, and was able to remove two viewing glass fragments and a portion of coffin hardware from the southeast section of the grave, the remainder of the left innominate, left humerus, rib, left ulna, a mandible fragment and the skull. All items were laid on a clean dry surface, photographed, and measured.

The skeletal remains appeared largely undisturbed, with the skull located near the north end of the grave, and the legs near the south end. The left radius and ulna were positioned across the midsection. Fragments of coffin viewing glass lay across the skull and upper torso region. One coffin handle was located in the southeast area of the vault. No coffin wood was identified.

At the conclusion of the study, all bone and objects were returned to the grave vault, and gently pushed to the rear (west end) of the space to prevent damage from future closing of the opening. All brick and concrete debris were returned to the grave opening, and two coins,



Figure 5. Interior of the vault, looking west.

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Skeletal Remains

Cranium and Mandible

The skull was in stable, good condition, although the zygomatic arches and styloid processes were broken and lost post-mortem. On the skull vault the frontal profile was slightly bossed, there was a slight burning of the occipital projection, and frontal grooves and post bregma sulcus were evident.

The face was a medium width, with rectangular orbit shape, a projecting maxilla alveolar, wide interorbital distance, and wide nasal bridge and aperture. Although all teeth were missing pre-mortem, the dental arcade was rectangular, and the chin shape was rounded. Based on these morphological attributes, the person appears to be of African descent.

Cranial measurements were taken on site. The cranial index (comparison of maximum breadth to maximum length) was 80.5mm, indicating a broad or rounded head. Comparison of height to length was 75.8mm, for a high skull; the breadth to height comparison was 94.2mm, for average breadth; the frontoparietal index (comparison of minimum frontal to maximum breadth) was 102.9mm, indicating a broad face. The upper facial index (comparison of upper height to bizygomatic breadth) was 40.5mm, indicating a very wide or broad face. The nasal index (comparison of nasal breadth to nasal height) was 55.9mm, indicating a broad or wide nasal aperture. The gnathic index (comparison of basion/prosthion to basion/nasion measurements) was 103, providing a category of prognathic or projecting profile. These measurements are also indicative of African descent.

Other morphological characteristics included a small, gracile skull with sharp orbital borders, small supraorbital ridges, a rounded frontal and occipital profile, a small, rounded mastoid, and the remains of a narrow zygomatic arch. Based on these attributes, the person was likely a female.



Figure 6. Skull. Top photograph is the front; note rectangular orbit shape, wide interorbital distance, and wide nasal bridge and aperture. Middle photograph is the right side of the skull; note post bregma sulcus, burning of occipital projection, rounded forehead with slight bossing, small orbital ridges, and small mastoid process. Bottom photograph shows the obelion and lambda sutures; note the significant and complete closure.



Figure 7. Mandible and dental arcade. Top photograph shows the mandible; note rounded chin. Bottom photograph shows the dental arcade; note the pre-mortem tooth loss and resorbtion and rectangular shape of the arcade.

Ten sutures of the external cranial vault were examined for closure. All were rated as either significantly or completely closed. Using the Meindl & Lovejoy method, the composite score for the vault system was 18, for a mean age of 48.8 years (mean deviation 8.3, range 30 – 71 years); the composite score for the lateral-anterior system was 14, for a mean age of 56.2 (mean deviation 6.3, range 34 – 68 years) (Buikstra et al 1994: pp32-38).

The gonial angle of the mandible is 145 degrees, a markedly female characteristic.

The teeth are often examined for age estimates. In this case, all teeth were lost pre-mortem, for at least 10 years, based on the total resorbtion and loss of mandibular bone. The mandible bone loss is of such an extent that the bone ridge is very close to the mental foramen. Being edentulous for such a long period would have had an effect on this individual's eating habits and diet (Larsen 1997:78).

Post Cranial Remains

The left innominate was gracile, flared, with a rounded inlet, a long and narrow pubis, a rectangular pubic symphysis, wide greater sciatic notch and elevated sacral articulation, all morphological indicators of a female. In addition, the ventral arc was present, the subpubic concavity was concave in shape, and the medial aspect ridge was present, all Phenice indicators of a female. There was a marked preauricular sulcus, which in the past has been recognized as an indicator of a past pregnancy. However, recent research shows that 10% of nulliparous women and only 17 – 23% of women with pregnancy histories have a preauricular sulcus, so this identifier is no longer considered viable as an indicator of pregnancy (Mann & Hunt 2005: 129).

Using the Buikstra & Ubelaker Standards for sex determination, these remains have a score of 1.4. Scoring goes from 0 (female) to 5 (male), indicating that this is likely a female (Buikstra et al, 1994, pp 16-19).

The pubic symphysis was also examined for age related changes. Using the Suchey-Brooks method (Buikstra et al 1994: pp32-37; Schwartz 2007: 237) the symphyseal face is at Stage 6, with an irregular, pitted face and eroded rim, indicating an approximate mean age of 60 years (range 42 – 87 years).

The auricular surface of the posterior portion of the ilium was also examined for age related changes as described by Lovejoy (Ubelaker 1989: 82). Noted were a marginal breakdown at the

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posterior, an irregular, dense surface, some macroporosity, and irregular lipping of margins. There was moderate retroauricular activity, but this may also be the result of osteoarthritis. Given these characteristics, the auricular surface was determined to be in Stage 7, with an age range of 50-59 years (Schwartz 2007: 240).

One rib was examined. It was the second left rib, and while in good condition, the sternal end was broken post-mortem, removing any possibility of using it for aging purposes, although the epiphyses for the head and tubercle are fused, indicating an age over 24 years (Bass 1995: 137). The head and tubercle are lipped, an indication of middle to old age (Mann & Hunt 2005: 112)

One vertebra was removed and examined. The fourth lumbar vertebra had broken and crumbled post-mortem; however, there was significant lipping on the anterior body, indicating

osteoarthritis. All epiphyses are fused, indicating an age of over 25 years (Bass 1995: 102).

The left femur was removed in hopes that it was intact. Unfortunately, upon examination it was found to have a distal post-mortem break. The maximum length on the osteometric board was 395 mm, with an estimate of 420 mm. While there was minimal evidence of osteoarthritis, there was marked evidence of musculature on the posterior of the bone, indicating strenuous use of the gluteus maximus muscle (White 2000:233). The epiphyses were closed, indicating an age of over 18 years (Bass 1995: 227).

The left radius was also broken post-mortem, and the head was not located; the maximum length on the osteometric board was 167 mm, the estimated length was 222 mm. No evidence of disease was noted. The epiphysis present was closed, indicating an age of over 17 years (Bass 1995: 168).

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Figure 9. Other bones examined. A. Rib, left, second, inferior view. B. Fourth lumbar vertebra, inferior. C. Left femur, posterior view. D. Left radius, anterior view. E. Left ulna.

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The left ulna was removed complete and undamaged, possibly due to its location across the torso, and no contact with the soil. It was 245 mm in length, with osteoarthritic lipping on the head, olecranon, and coronoid process. All epiphyses are closed, indicating an age of over 18 years (Bass 1995: 174). As the only complete long bone from the burial, it was the only one used in estimating maximum stature. The Trotter & Gleser stature tables indicate that this individual may have been 156 cm (61 7/8" or 5'1 7/8"). However, since the individual appears to be over the age of 30, the maximum stature may range from 153-155 cm (60 1/4" - 61" or 5' 1/4" to 5'1").

Conclusion

In conclusion, the brief examination of the skeletal remains indicates that they are most probably those of a female of African American descent, between the ages of 39 to 87 years. She may have been as tall as 5' 1", appears to have suffered from osteoarthritis, particularly of the lower back and sciatic region, and had lost all her teeth at least 10 years prior to death. Her burial, in a coffin with hardware and a glass viewing plate, in a brick burial vault, suggests that if not of a higher economic status, then she was at least held in high regard by those responsible for her burial.

Other Artifacts

Container Fragment

The single piece of clear, threaded glass was removed from the foot of the grave, appears to be the upper lip of a medium sized jar. Recovered from the area of vault damage and spoil, this item was likely not interred in the vault, but probably fell into the vault. The external threaded finish/closure combination is one of the most common bottle closures of the twentieth century.

Viewing Glass

Three fragments of the viewing glass were successfully removed and reassembled on the surface, providing a measurement of 14.5" in width, greater than 17.5" in length, and a thickness of 1/16".

The size and placement of this glass indicates that the casket had glass covering the

upper (but not lower) half of the body. This allowed viewing while still isolating the remains. Glass face plates were incorporated into coffins and caskets very early, although none were patented until 1876 and most of these patents focused on frames and closures (Lang 1984:50).

All six of the styles offered in the 1875 Cincinnati Coffin Co. *Wood Coffins & Caskets* catalog included either "half or full French glass."¹ The company's 1882 *Catalogue of Cloth Covered, Wood Finished and Metallic Burial Caskets* continued to offer glass as a standard item. This suggests that the presence of glass was the norm for the last several decades of the nineteenth century. This appears to be supported by Davidson's study of the African American Freedman's Cemetery in Dallas, although he offers no explanation for the trend (Davidson 1999:373-374).

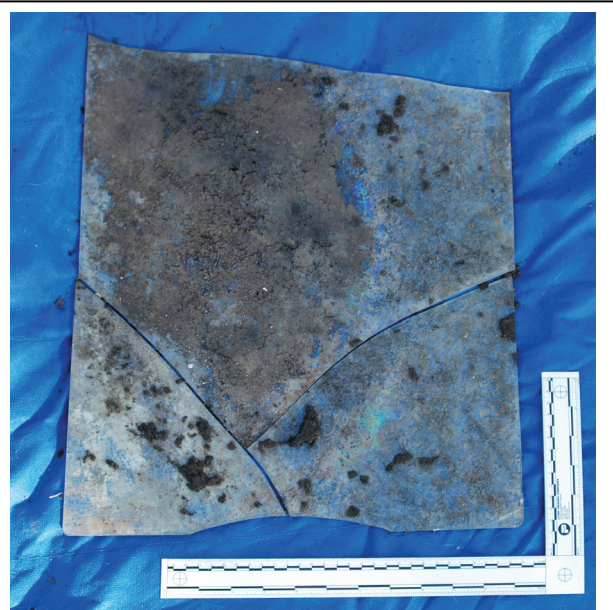


Figure 10. Viewing glass, reassembled.

The glass associated with this casket was very uniform in appearance, exhibiting no distortions or irregularities. As previously mentioned, the glass thickness was 1/16" or 1.6mm. This is very thin (we have seen viewing plate glass twice this thickness) and it is not surprising that the plate shattered as the

¹ "French glass" was a reference to quality: "it will be found, that whilst the French glass gives a clear sharp outline, the English reflects either two or more images in a hazy and imperfect manner" (Ure 1858:927).

casket and outer box began deteriorating.

The presence of glass in only part of the casket may indicate a half couch design (meaning that the lid was two sectioned, allowing the opening of only the head end for viewing).

Coffin Hardware

The item recovered was a portion of a short bar handle consisting of the lug, arm, a fragment of the bar, and tip. The lug is a white metal, and the bar is a plated ferrous metal over a wood core.



Figure 11. Coffin handle lug, arm, and partial bar with tip.

There were generally six of these handles present on a coffin, three to a side.

The lug, shield-shaped and decorated with stylized oak leaves, with a matching arm and tip, was compared to designs in the catalogs available in the Chicora collections. No matches, or even near matches, were identified.

Although a few short bar handles were available as early as the late 1860s, they became common in the 1880s and continued until the 1940s. After about 1920, however, the handles were simplified and most were manufactured inexpensively of stamped steel. Thus, the handle from this burial is suggestive of an 1870-1900 time period.

Social Status Indicators

The burial did not produce nails, decorative tacks, studs, cap lifters, thumbscrews, or escutchions. Their absence may either be indicative of low social status, poverty, or (most likely) the failure to fully excavate the soil in the vault. Without complete recovery it is impossible to make legitimate observations concerning the social status of the individual buried.

The early 1885 *Price List of Cloth Covered and Metallic Caskets* by the Cincinnati Coffin Company reveals that simple cloth covered wood coffins were offered for as little as \$12.00. This catalog also reveals that handles ranged in price from about 7¢ to 96¢ each (or 44¢ to \$5.75 for a set of six).

These are *wholesale* costs and may have little resemblance to the price actually paid by the consumer. Dowd notes that retail prices on caskets could be five to ten times the wholesale cost (Dowd 1921:15). In addition, he observes that a large proportion of the undertakers carried little or no stock, virtually eliminating their overhead costs. Certainly both coffin and hardware wholesalers promoted this approach through liberal terms and quick shipments. Our own examination of the McCormick records reveals markups beginning at 150% on the wholesale cost. Still

born coffins that manufacturers sold for .75¢ to .90¢, McCormick was selling for \$7 to \$10. Coffins being sold for \$3.75 to \$5.25, McCormick was retailing for \$20 to \$25. Even considering freight, these represent a very hefty profit margin on death (Trinkley and Hacker 2007b).

Thus, when we examine coffin hardware from a burial, wholesale costs may provide a standardized approach, but they fail to truly represent the cost to the consumer or the family's public display to the community.

Even a modest \$12 coffin and inexpensive handles, at a total cost of less than \$13 to the undertaker, would cost the family easily \$32. Moreover, what cost \$32 in 1880 would cost \$702 in 2009.

As a basis of comparison Ng and Virtz

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calculate that the average worker income for African American farm owners in the South was about \$72 (Ng and Virts 1993:14). Thus, the \$32 projected cost represents over two-fifths of a black farm owner's income for a year. While urban occupations might have paid better, death was still a huge expense at the end of the nineteenth century.

RECOMMENDATIONS

The Mount Calvary, Mount Olive, Fisher's, and Potter's Field cemetery complex is either eligible for listing on the National Register or potentially eligible – there is some confusion whether the SHPO intended the eligibility determination to apply only to the Potter's Field or the entire cemetery complex. Certainly this study reveals that there is exceptional preservation of human remains and that these remains can make significant contributions to our understanding of African American populations in the Portsmouth area during the late nineteenth century. Consequently, there should be little doubt that the entire cemetery complex is eligible, at least under Criterion D, "information potential."

With this in mind, it is clear that all decisions regarding open vaults, the study of those vaults, and the repair of those vaults should be consistent with the Secretary of Interior's Standards for Preservation (http://www.nps.gov/history/hps/tps/standguide/preserve/preserve_standards.htm; see also Trinkley and Hacker 2010:3-4 for an articulation of these standards in the broader context of the cemetery complex's preservation). Our recommendations regarding these vaults are detailed below.

Immediate Steps

Mowing

All of the vaults in the cemetery complex are at risk of damage by heavy vehicles, including riding mowers that can weigh at least 500-700 pounds. Consequently, it is critical that the City of Portsmouth take immediate steps to eliminate the use of large deck mowers in areas where vaults are reasonably expected. These areas, of course, include most of the cemetery complex, except for Potter's Field.

Thus, while large deck mowers can be operated safely in Potter's Field, the remainder of the cemetery will need to be mowed using nothing larger than a 21-inch walk behind mower. This recommendation is consistent with good preservation advice previously offered (Trinkley and

Hacker 2010:63).

Public Safety

Visitors to the cemetery should be warned of the potential for vaults to collapse. A suitable way to accomplish this, consistent with previous signage recommendations, is for the City to swiftly act to post regulatory signage at the entrances to the cemetery, consistent with previous recommendations (Trinkley and Hacker 2010:67). The city may wish to add specific language concerning vault collapse and advise visitors not to walk on graves.

Identifying Open Vaults

It would be helpful to fully identify all open vaults. This would assist the city to evaluate budget needs and develop a plan for dealing with these concerns. There are both partially open and entirely open vaults present throughout the cemetery complex. While the partially open vaults may pose a greater public safety issue, all open vaults present a potential for the desecration or removal of human remains.

Open vaults could be *temporarily* covered by ¾" plywood with soil placed at each end. This must not be viewed as a permanent solution, but it can effectively protect the public and the vault for short periods while more permanent steps are being planned.

Examination and Study

Vaults

Surprisingly, there has been no comprehensive recordation of vault construction methods. Chicora has examined vault construction at Colonial Cemetery (Savannah, Georgia), Riverside Cemetery (Macon, Georgia), Old City Cemetery (Athens, Georgia), and Magnolia Cemetery (Mobile, Alabama). While there are some consistencies, there is also much variability. This variability documents

not only differences in mortuary behavior, but also local variations in skill and construction techniques. Understanding the construction of the vaults is essential to ensure their appropriate repair.

Each open vault should be carefully documented and photographed. This information will serve as a resource base not only for the repair of vaults in the Mount Calvary, Mount Olive, Fisher's, and Potter's Field cemetery complex, but elsewhere where similar problems are faced.

While historical research may help document those who constructed these vaults, the charges, and even the materials used, more detailed inquires concerning construction techniques and methods must rely on the actual investigation of the vaults themselves.

Human Remains

As this study has documented, the remains present in these vaults – at least those that have not been open for long periods – will exhibit excellent preservation.

This cemetery complex offers an unparalleled sample of a very specific group – working and middle class African Americans that span the last quarter of the nineteenth century through the first half of the twentieth century.

There has been no similar bioanthropological study in Virginia(see Rathbun 1987 for the only vaguely comparable study and Rathbun and Steckel 2002 for an overview of studies in South Carolina, Georgia, Arkansas, Mississippi, Louisiana, and Texas).

Areas of specific research potential include the opportunity to examine biological evidence and population affiliation using genetics, craniometrics, and dental morphology. When other bones are poorly preserved, teeth often remain in good condition. Teeth have the potential to provide information on disease, diet, and nutritional inadequacy – all issues of considerable importance for Portsmouth's African American population.

Although there are no meaningful African genetic databanks at present, the study of burials prior to about 1930 can provide a significant

comparative base of a relatively isolated African American population. For a selected few burials there may also be data on living height, weight, and physical condition, as well as photographs, that would be useful for comparison with the bioanthropological data. The use of chemical analysis using collagen and apatite (focusing on strontium isotope analysis and analysis of lead) can help determine where individuals were born and grew up.

Other skeletal material offers the potential to study infectious disease and nutritional inadequacy. Of perhaps even greater interest is the potential to explore skeletal indicators of work through musculoskeletal deterioration, arthritis, and evidence of trauma.

Examination of the burials at the cemetery complex also offers the opportunity to conduct a forensic study of deaths in the African American community, examining causes and conditions in the Portsmouth area, especially in the early years for which there is little documentation.

Material Culture

There is also the opportunity to conduct archaeological investigations, examining burial and mortuary practices among the African American population. Topics would include the prevalence of different types of funeral hardware, the range of styles, use of the hardware to estimate burial dates for unmarked vaults, and evaluation of social status.

In addition to the coffin hardware, the study might also examine coffin remains, evaluating the variety of woods used, the different coffin latching and hinging mechanisms, the prevalence of viewing glass, and the variation in shapes and designs.

Clothing remains can also be useful in evaluating social status and mortuary customs. Examinations may be able to distinguish between clothing and burial gowns, as well as shrouds. Clothing remains may also provide useful indicators of burial date.

Finally, archaeological studies have revealed that some coffins contain other materials, such as sawdust, perhaps used to absorb fluids or emblaming fluid containers, used to adjust the body in the coffin.

RECOMMENDATIONS

Study Plans

The current study was intended to be minimally invasive and was viewed as a “demonstration study.” As these discussions reveal much more could be ascertained with a more complete, and adequately funded, examination. We therefore recommend that future study plans incorporate the time and ability to fully remove all skeletal and material culture remains for a period of time sufficient to allow complete laboratory study – perhaps one to two weeks. We also recommend that invasive studies be approved for all remains, to consist of possible radiographic studies, as well as dental castings. We also recommend that samples of all suitable femurs be retained for future genetic or chemical study as funding become available.

We anticipate that per burial removal and analysis costs will be \$3,000. While this is not an insignificant sum, the study represents an opportunity to learn about Portsmouth’s African American community in a way that is not likely to be repeated. It is possible to achieve some cost reduction by increasing the number of burials removed at one time, as well as utilizing volunteers to assist in the removal process.

At the conclusion of the studies, the remains would be brought back to the cemetery and would be replaced in their respective vaults. The only damage resulting from the activities would be the removal of a small amount of bone from femurs for future genetic or chemical testing.

Vault Repair

With the remains replaced in a vault, it is possible to secure the burial site. This should be accomplished in a manner that is consistent with the Secretary of Interior’s Standards for Preservation. In other words, the vault top should be repaired or replaced – the grave should not simply be filled in with soil.

Since the resetting of arched brick is likely to be very difficult, especially without some supporting system (such as the coffin or its outer container), it may be appropriate to use pre-cast concrete ledgers as a means of securing the grave, especially if these can be placed over the grave without the need to remove still intact brick vault covers.

Summary

This study clearly reveals the potential of the Mount Calvary, Mount Olive, Fisher’s, and Potter’s Field cemetery complex to address a broad range of bioanthropological questions about an African American population on the coast of Virginia.

Moreover, the opportunity to conduct this research does not necessitate a special effort to disinter remains – it may be conducted in the routine maintenance process of ensuring the preservation of the cemetery.

We recommend that the City of Portsmouth, perhaps in association with the African American Historical Society of Portsmouth, Inc., begin the process of assessing the number of open or damaged vaults and begin the process of securing funds to resolve this issue. Confronting this problem today will prove far less costly than delay that results in legal liability to the city, injury to the public, damaging press to the city, or the loss of invaluable bioanthropological data.

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