



FIGURE 4: Bone buttons recovered in association with the remains of an adult male in Coffin C1.

of the burial, the coffin lid collapsed onto the human remains, and sediment gradually filled large portions of the coffin. The underside of the coffin lid near the head of the burial bears deep impressions of the teeth of the individual. Upon full exposure of the human remains it was seen that one arm was crossed over the body while the other was laid straight along side of the body.

There was a thin layer (0.15 foot) of sediment separating the base of C2 from the top of C4, found at 5.2 feet below the existing surface. C4 is the best preserved of all of the coffins observed and recovered. This adult-sized, hexagonal coffin has a slightly arched lid as a result of beveling the joints between the two boards that were used to construct the lid. Narrow-width decorative white metal strapping runs the length of the coffin's midline. Another length of this material is oriented along the width of the coffin at the shoulder position. Together the metal straps visually describe a cross. Metal screws were employed in attaching the coffin's lid, something that was not typical of the other coffins that were recovered during the project. Large screws and nails were also employed in other portions of the coffin's construction.

The coffin contained dark colored sediments, indicating that the it had been breached at some point well before its recent exposure in the construction trench. These sediments were thickest in the area of the skull and thinned below this area. The sediments continued the length of the humerus at the body's side and then ceased.

The arms of the adult female were oriented along the sides of the body (Figure 5). Hair is preserved in the area of the head and groin. A thin plain band of what is apparently yellow gold was on the ring finger of the left hand. The band appears to have been soldered in one place. A folded length of fabric (blanket?) covered the body from the lower portions of the rib cage down to the knees. The hands, but not the arms of the body, are resting on top of the fabric at the level of the waist. Gary McGowan identified the material as woolen, with a looped, machine produced weave. The use of this technique indicates that the fabric was produced after the 1820s. Quantities of wood shavings were found beneath the body and between the legs.

Coffins C3, C5, and C6

These three coffins, all containing the remains of adults, were stacked in a common grave pit with C3 being the uppermost and C6 the lowermost. A white substance, possibly lime or plaster, covered the lid of C6, and may have been employed to make it easier to stack C5 on top of the slightly beveled lid of C6.

The hexagonal coffin of C3 was encountered at 4.75 feet below surface and contained the remains of an adult male (Crist 2005). The head of the coffin was oriented to the west, as were the rest of those observed and recovered during the project. The lid of the coffin had been damaged by the backhoe used to open the construction trench.

The coffin contained sand, fill that was used to temporary close the trench prior to the removal of the burials. When the coffin was opened and the interior excavated, there was the visual impression that the body was a bit tall for the size of the coffin. The skeleton exhibited a



FIGURE 5: View of the interior of adult female burial in coffin C4. A woolen blanket is visible covering the body and extending from the lower portions of the rib cage to the base to the knees.

healed right tibial periostitis, an inflammation of the outer layer of the bone. This is the result of a localized infection of unknown origin (Crist 2005). Hair was preserved on the skull. The arms were arranged along the side of the body.

C5 occurred at 6.1 feet below the surface. The hexagonal coffin contained the remains of an adult female. The coffin lid was slightly arched. Some bent or formed wood is incorporated in the construction of the coffin's lid. The outside of the bottom right portion of the coffin was covered with a white material (lime or plaster?) that was also found covering the lid of C6 below.

The arms of the skeleton were situated along the sides of the body with the hands resting on the abdomen. Quantities of soft tissue are preserved in the area of the torso, abdomen, and legs, and hair occurs in the area of the groin. The skeleton exhibited a wide pre-auricular sulcus, which is evidence of at least one pregnancy (Crist 2005).

At the base of the common grave shaft (7.0 feet below surface) was C6, a hexagonal, arched lid coffin containing the probable remains of an adult male (Crist 2005). Nine nails run up the edge of one section of the coffin's lid, spaced at intervals of 4-6 inches. The coffin was beginning to collapse in the field.

Hair and what may be portions of scalp are preserved on the skull. A bluish stain also occurred on the skull. Pubic hair is also preserved. The arms are arranged along the side of the body and some finger bones of each hand lay beneath the left and right femur. Wood shavings were found below the head and shoulders.

Coffins C8, C10, C11, and C16

The four coffins were stacked in a common grave shaft with C8 at the top and C16 at the bottom. Three adults and a child are represented in the burials. C8 rested on two wooden chocks placed on the lid of coffin C10 in order to make it easier to stack C8 on the arched lid of coffin C10. A mold-made clay pipe stem (Figure 6) was recovered during the screening of the fill from the grave shaft at the level of C10. Its style is typical of the 19th century but can't be pinned down to a specific decade. There is no conflict between the potential age range that can be associated with the style of coffins recovered and the period of use of pipes similar to the one from the grave shaft. Shell (oyster? clam?) was also in the pit fill at this level.

The remains of an adult female were found in C8, a hexagonal coffin found at 3.0 feet below the surface. The south wall of the construction trench had to be undercut to fully expose the coffin. C10, containing an adult female, was found at 4.2 feet below surface.

An adult male is associated with C11, encountered at 4.8 feet below surface. White metal decorative strapping is on the coffin. There is considerable soft tissue and hair preserved in the burial. The arms are oriented along the side of the body with the hands laying on the abdomen. Large quantities of wood shavings and wood debris occurred beneath the lower legs and feet.

FIGURE 6: White clay pipe stem recovered from the fill of the grave shaft containing coffins C8, C10, C11, and C16. The artifact was found at the level of C10 in the grave shaft. To the left can be seen the beginnings of the pipe bowl.



C16, a child-sized coffin with arched lid was encountered at approximately 6 feet below surface. Decorative white metal strapping crosses the width of the coffin at its shoulder and helps to bind the two pieces of the coffin's lid.

Coffins C14, C15, and C17

These coffins, all containing very young children (Crist 2005), were stacked in a common grave shaft with C14 at the top and C17 at the bottom. C14, found at 3.9 feet below surface, is a hexagonal coffin with an arched lid containing the remains of a newborn. The interior of the coffin lid had the Roman numerals XIII carved into it. Wood shavings and wood debris were found throughout the base of the coffin.

The remains of an 8-16 months old child were found in C15, encountered immediately beneath C14 at 4.5 feet below surface. It, too, is hexagonal in shape with an arched lid. Strips of lace or other fabric were preserved on top of the skull and may be part of a bonnet or other head covering. The skull had collapsed. Hair and what may be scalp are preserved in association. The arms were positioned along the side of the body. Blue staining occurs on portions of the skull and the tibia.

An 8-16 months old child is found in C17 at 5.6 feet below surface. C17 is another hexagonal coffin with arched lid. Portions of the skull are stained blue. Cloth strips (lace?) are associated with the skull and may be portions of a bonnet. Wood shavings and wood debris are found through the base of the coffin.

Age of Interments

The most precise thing that can be said about the age of the burials is that they are probably interred no earlier than 1824 and later than the post Civil War era. The hexagonal shape of the coffins conforms to the style of coffins during this period of history. Further, none of the Washington Avenue burials seemed to have been subjected to embalming, a practice that only became widely used during and after the Civil War. Historical research collated by Andy Waskie suggests that the burials were once part of the Old St. Joseph's Catholic Burial Ground also known as "Bishop's Ground". The burial ground was officially opened in 1824 due to overcrowding at other graveyards and the increased number of burials due to epidemics. The burials at Bishop's Ground were apparently moved to Holy Cross Cemetery during the early 20th century.

The woolen fabric or blanket from C4 could not have been produced prior to the 1820s. The machine cut nails, screws, and clay pipe stem have manufacturing and use histories do not contradict the assumptions made above.

SUMMARY AND CONCLUSIONS

Likely a part of the Catholic cemetery at the Bishop's Ground dating from 1824, the burials recovered along Washington Avenue were made before the time when embalming corpses was habitual. In all cases, the heads of the coffins were oriented to the west, a relatively common custom throughout historic times in the region and elsewhere. The alignment

of the coffins basically paralleled the east-west orientation of the trench and the current street (Washington Avenue).

All of the coffins are hexagonal in shape, but of differing sizes (see Appendix B). They appear to have been constructed using a combination of screws and machine cut nails; however, much of this hardware had rusted away. Many of the coffins had slightly arched tops created by beveling the joints between the boards forming the lid of the coffin. Some have decorative white metal strapping placed along the seams of the boards used to fashion the coffin lids. This metal decoration occurs on the coffins of both children and adults. The coffins appear to have been constructed to fit the individual, rather than employing standardized shapes and sizes of cut boards. This is readily seen in the measurements taken in the field from relatively complete coffins.

ADULT SIZED COFFINS

Length	Width at Shoulder	Width at foot
5.9 feet	2.4 feet	0.9 feet
6.35 feet	1.8 feet	0.8 feet
5.8 feet	1.8 feet	0.7 feet
6.35 feet	1.7 feet	0.6 feet

CHILD SIZED COFFINS

2.7 feet	1.0 feet	0.5 feet
3.2 feet	1.1 feet	0.5 feet
3.0 feet	1.0 feet	0.4 feet

All interments were in the extended position, laying on their backs with their arms at their sides. In some cases, the hands were laid on the abdomen. In general, skeletal preservation was excellent, especially in the case of adult interments. The preservation of quantities of soft tissue occurs in a small number of cases involving adults (C5 and C11). What factors are involved in the preservation of soft tissue in these cases is not clear. The depth of the interment does not seem to be a factor as coffin C5 was found at 6.1 feet below surface and C11 at 4.8 feet below surface.

The skeletal material of child burials does not match the condition of the adults. This is ascribed to the condition of the human skeleton at this stage of its development and related taphonomic factors. The bony plates of the skull have not had time to fuse leading to the collapse of the skulls once related soft tissue has decayed. Likewise, the ends/articular surfaces or epiphyses of long bones and other skeletal elements have not had time to fuse with the shafts of bones. In two cases (C7 and C15) the dried and shrunken remains of what may be brain tissue was in association with the collapsed skulls.

Unusual blue staining was observed on some of the human remains (C7, C15, C17). All of the observed cases involved children. Similar blue discolorations have been observed elsewhere and are thought to be a result of the peculiarities of soil chemistry in some contexts (Dr. John Foss, personal communication 2003). Why such a natural process would only have affected the skeletons of children at the Washington Avenue locality is unclear.

The remains of children are the most well represented (n=6). The representation of adult males (n=4) and females (n=5) is relatively equitable.

Material remains associated with the interments are few. The most widespread addition to the coffins are wood shavings that are found beneath and surrounding the bodies. The shavings may have been stuffing in cloth pillows or cushions used to support the body, although no remnants of fabric were found in direct association with the shavings. It has been suggested that wood shavings in coffins functioned to absorb bodily fluids and mitigate the smell of decay prior to burial (discussion on Historical Archaeology listserv - Hist-Arch - October 2002).

A single adult male burial (C1) provided evidence of clothing in the form of bone buttons. The remnants of silk ribbons are associated with child burials and were probably parts of bonnets or decorative elements on other clothing. This handful of observations makes it clear that organic decay since the time of burial has been sufficient to largely destroy most, if not all fabric. The general lack of buttons or pins could be interpreted in a number of ways:

- 1.) The deceased were buried wearing clothing that employed cloth fastenings;
- 2.) The deceased were wrapped in a shroud; or
- 3.) Any clothing that the deceased wore during a wake or public viewing was removed prior to burial.

It is interesting that the woolen blanket associated with an adult female (C4) was so well preserved, given the general lack of preserved fabric in other interments. One might assume that if the deceased in other burials were in fact clothed, than the fabric was made of something other than wool. Regardless of our vision of how the deceased were clothed for burial, it is clear that they did not go into the grave wearing shoes. The sturdier materials from which shoes are fashioned would probably have been preserved to some degree had they been present originally.

From a material perspective, the "richest" burial is that of the adult female in C4. Her coffin had two distinctive bands of decorative metal strapping, she was wearing a yellow gold ring, and she was partially covered with a folded woolen blanket. Nonetheless, on the basis of material evidence, it is impossible to say that the burials as a group exhibited any distinctions regarding social or economic class.

The stacking of coffins in a common grave shaft is a pattern that could be interpreted in a variety of ways. One way to view the pattern would be to assume that the individuals sharing a grave are family members and are being interred in a family plot. We would also have to assume

in this scenario that the grave shaft is periodically reopened to bury more recently deceased members of the family. If, in contrast, we assume that all of the coffins were buried at the same time, then we must invoke some mass tragedy or epidemic. Had the grave shafts been carefully excavated using standard archaeological procedures, evidence to support or refute these assumptions may have been seen in the micro-stratigraphy of the grave fill, or a broad range of time represented by artifacts that inadvertently became incorporated into the grave fill. In hopes of possibly resolving this interpretive dilemma in the future, soft tissue samples for DNA analysis were taken from interments in a common grave by Dr. Joe Lorenz and assistants.

Another, somewhat similar way to look at the stacking of coffins in a common grave is to assume that all of the coffins were buried at the same time, but do not represent members of a family. Such might be the case in the context of an epidemic where large numbers of people of relatively low economic status needed to be buried. On the basis of his historical research, Waskie believes that the Washington Avenue interments are 19th century Catholic burials made during an epidemic (personal communication 2005).

It also is interesting that where multiple burials involving adults and children occur, the children are always positioned on the bottom of the stack of coffins. This could be considered as a practical accommodation, i.e., it would not require maintaining the same large excavation size through the entirety of the grave shaft. It also would make the stacking of the coffins more stable; you would not want to place a child's coffin on top of an adult sized coffin, then place an adult-sized coffin on top of the child's coffin.

Finally, it should be noted that future ground disturbances in the vicinity of the Washington Avenue have the potential to uncover additional burials and human remains. The current project has shown that burials were missed when the cemetery at Bishop's Ground was moved, and this is likely to be the case for other cemeteries known to once have existed along Washington Avenue.

APPENDIX A

RESULTS OF PHYSICAL ANTHROPOLOGICAL EXAMINATION

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April 21, 2005

Honorable Anne E. Lazarus
Judge, Philadelphia Orphans' Court
Room 306, City Hall
Philadelphia, PA 19107

RE: Results of Physical Anthropological Examination of Undocumented Human Remains
Washington Avenue Near Seventh Street
Philadelphia, Pennsylvania

Judge Lazarus:

I am very pleased to provide you with this report regarding the results of the physical anthropological analysis of the undocumented human skeletal remains excavated from beneath Washington Avenue near Seventh Street in February 2002.

Together with fellow anthropologist Dr. Arthur Washburn and forensic dentist Dr. Myron Goldberg, we examined each set of remains and determined the sex, ancestry or race, and age at death for each individual. We also examined the remains for evidence of disease, trauma, and cause of death. Additionally, based on the nature of the materials found in association with the remains we formulated a date range for the burials.

Below is a summary of the project, the methods we used to examine the remains, and our results.

Project Summary

On October 22, 2001, a private contractor's crew working for the City of Philadelphia inadvertently unearthed three wooden coffins beneath Washington Avenue near Seventh Street while using a backhoe to install a new water line.

The workers observed human skeletal remains and at least three other intact coffins in the 2½-foot-wide backhoe trench, which was located approximately 12 feet north of the curb on the south side of Washington Avenue, a 100-foot wide street. The Philadelphia Police Department report (No. 0103044007 of Nov 18, 2001) cited the address as 738 Washington Avenue, located between Seventh and Eighth Streets. The coffins rested approximately 5½ feet below the current street grade.

I first became involved in the Washington Avenue Burials Project on November 15, 2001 when Suzanne L. Haney of the Southwark Civil War District Committee requested my assistance with respect to the discovery of the undocumented coffins and human remains. Over the ensuing three months, I worked with Ms. Haney and Dr. Anthony Waskie of the General Meade Society and Temple University to plan the excavation of the disturbed remains.

Under provisions of your Orphans' Court decree (No. 94 NP of 2002), a team of volunteers from the Department of Anthropology at Temple University, the Mütter Museum of the College of Physicians of Philadelphia, and various Civil War historical societies removed 15 coffins from the water line trench. Drs. Michael Stewart and Arthur Washburn from Temple University directed the excavations, which were conducted between February 6 and 7, 2002. The coffins and remains were subsequently transported to the Anthropology Laboratory at Temple University for examination and analysis.