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The Man in the Iron Coffin: An Interdisciplinary Effort to Name the Past

ABSTRACT

The examination of a cast-iron coffin from the Mason family cemetery at Pulaski, Tennessee, offered an exceptional opportunity to study relatively well-preserved human remains, associated artifacts, and the coffin itself. Only a few studies of cast-iron coffins and their contents have incorporated the results of interdisciplinary research in the interpretation of the burial and the remains. The investigation is based on the use of an evolving protocol that promotes the collection of relevant information from several disciplines when evaluating cast-iron coffins and their contents. Multiple lines of evidence identify the remains as those of Isaac Newton Mason, a private in the First Tennessee Confederate Cavalry Regiment, and provide a detailed and intimate glimpse into the past.

Introduction

Information on the past, its people, and the societies in which they lived can be obtained from many archaeological contexts. Among these, human burials and related artifacts provide an intimate view of the society represented and the individual involved. Unfortunately, the preservation of buried human remains and artifacts is variable and can be greatly reduced over time.

In North America, one of the best burial containers manufactured for the preservation of human remains and their associated artifacts was the cast-iron or metallic coffin. Cast-iron coffins were introduced during the 19th century as wooden coffin manufacture shifted from traditional hexagonal coffins to more elaborate designs in response to a social movement toward the beautification of death (Little et al. 1992). After the War of 1812, interest in preserving the body grew and, at the same time, coffin making moved from urban cabinetmakers to commercial burial case manufacturing. Although many industrial coffin manufacturers introduced "body preserving" coffins made out of iron, zinc, and clay, one of the most innovative and popular designs was made of cast iron (Crane, Breed & Co. 1858, 1867).

Almond D. Fisk's cast-iron coffin, patented in 1848, was one of the first iron coffins to advertise an airtight environment. The coffin design incorporated protruding flanges encircling both the top and bottom portions that were joined with a lead seal and then bolted together. This created an excellent anaerobic environment conducive to superior human tissue preservation, which was also being promoted by more sophisticated embalming techniques.

Because of the outstanding preservation afforded by these burial containers, the correct recovery and careful examination of cast-iron coffins and their contents offer an exceptional opportunity to obtain information on social customs, dress, and health, including nutrition, disease, trauma, and activity patterns. Fields of research that can contribute to these investigations include forensic anthropology (osteology), forensic pathology, historical archaeology, historiography, costume history, and genealogy.

To date, studies of iron coffins and their contents have been limited. Opportunities to examine cast-iron coffin burials have been rare, in part because the costly coffins were restricted to use by the wealthy (Owsley and Mann 1995; Owsley and Compton 1997; Rogers et al. 1997; Bass and Jefferson 2003). Complete study is also often precluded by external damage brought on by vandalism or construction-related mishaps.

This study began when excavation of a private 19th-century cemetery revealed an unknown and unmarked grave that contained a cast-iron coffin (Figure 1). Coffins in this multifamily cemetery near Pulaski, Tennessee, were to be disinterred and reburied in another location. The Mason family descendants wished to establish the

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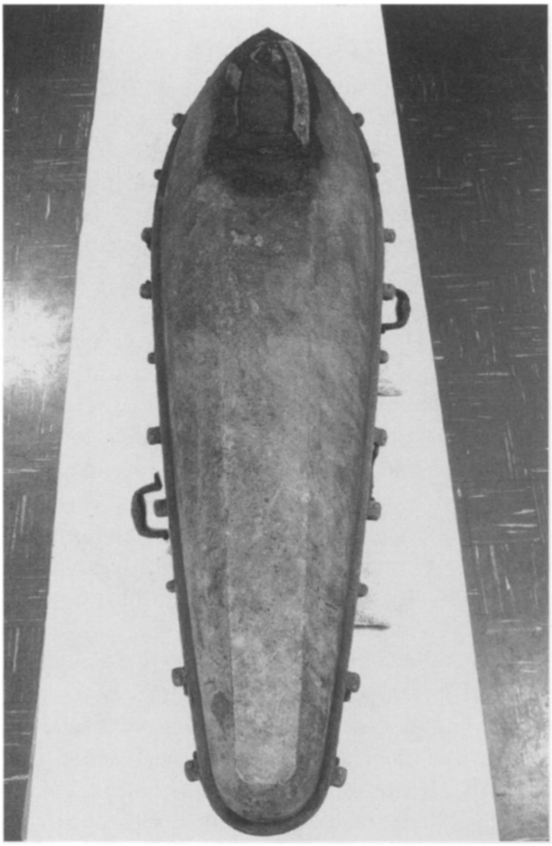

FIGURE 1. Fisk Model No. 3 Plain Case cast-iron coffin. (Photo by Chip Clark, National Museum of Natural History, Smithsonian Institution.)

identity of the individual in order to properly mark the new grave and thereby complete the inventory of burials in their section of the relocated cemetery. Therefore, the coffin was transported to the Smithsonian Institution's National Museum of Natural History (NMNH) Anthropology Conservation Laboratory for the examination of its contents. The purpose of this study was twofold: to derive as much information as possible from every aspect of the burial, utilizing a multidisciplinary approach, and to obtain a personal identification of the deceased.

Methods and Laboratory Procedures

The multidisciplinary approach to the investigation of this burial required scheduling a time when all specialists—pathologist, osteologist, costume specialist, genealogist, and historian—could be together for the opening of the coffin. Therefore, before the coffin was brought to the Smithsonian, it was temporarily reinterred in the new cemetery until arrangements could be made and a standardized protocol developed for its examination. A sheet of plywood was placed directly on the coffin in the temporary grave as a soil barrier to facilitate removal and help protect the aged metal casket. Unfortunately, a special feature of the coffin defeated part of the planned protection during the temporary reburial. The coffin design incorporated a glass viewing plate over the face of the deceased. The viewing window was comprised of a plate of sealed clear glass with a removable metal cover. The viewing plate cover was the highest point of the coffin, and the plywood used to cover the coffin rested directly on it. When the grave was filled, the pressure from the weight of the soil on the plywood broke the metal cover which, in turn, cracked the glass viewing plate (Figures 2 and 3). During the ensuing year,

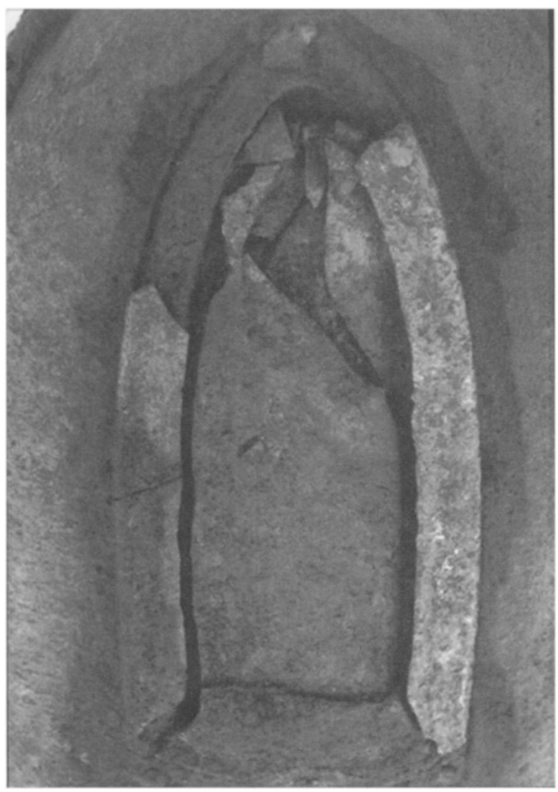

FIGURE 2. Damaged metal faceplate. (Photo by Chip Clark, National Museum of Natural History, Smithsonian Institution.)

FIGURE 3. Cracked glass viewing plate. (Photo by Chip Clark, National Museum of Natural History, Smithsonian Institution.)

moisture from the surrounding waterlogged soil seeped into the coffin.

In April 2003, the cast-iron coffin was transported to the NMNH in Washington, DC, and was in apparent good condition despite its extraordinary arrival weight of 311.6 kg (687 lbs.). The heavy weight was the result of water that had completely filled the coffin during the temporary interment period. In order to open the coffin and proceed with the analysis, a small hole (1/4-in. diameter) was drilled into the base to drain the water. Later, with the water drained and the contents cleaned and returned to the coffin for its return to Tennessee, its weight was 97.5 kg (215 lbs.). Once the coffin was drained, the bolts connecting the coffin body and lid were drilled out and the lid removed.

The analytical plan followed during this examination is outlined in Appendix A. This interdisciplinary approach involved a pathologist responsible for autopsying the remains, including toxicological and microbiological testing, and osteologists who conducted the forensic anthropological examination. In addition to determining age, sex, and race, the specialists examined the bones and teeth for evidence of injury, disease, and indicators of habitual activity. Extensive photography, computed tomography, and selected radiography of the bones documented and aided this assessment. Small quantities of bone were removed for stable carbon and nitrogen isotope analysis to collect information about diet. A costume specialist supervised the removal of the clothing as well as its cleaning and detailed examination. The coffin and its hardware were examined by an historical archaeologist. The final step was comparison of the biological and archaeological data with the historical and genealogical record in order to establish personal identification.

Results

The primary results of this investigation are summarized below. Additional details on specific components of the analysis are presented in Appendix B.

Coffin

The burial container is a "torpedo-shaped" Fisk metallic coffin, Plain Case Model No. 3, manufactured by Crane, Breed & Co. (1867; Allen 2002a; 2002b). The Fisk Plain Case cast-iron coffin was patented in 1858 (Habenstein and Lamers 1955) and remained popular throughout the Civil War. A glass viewing plate with its removable metal cover is at the head end of the coffin lid; both the glass and the metal cover are in the shape of what is known as a lancet window, which has a narrow, pointed arch. The metallic plate was broken into 16 pieces by the weight on the plywood sheet used during the temporary reinterment. The glass viewing plate beneath contained a large crack that extended diagonally across its entire length and additional smaller cracks at either end.

The hardware found on the coffin included swing-bail handles and slotted-head bolts that are indicative of the 1850s and 1860s. Use of slotted-head bolts diminished after 1877 (Allen 2002a). This diagnostic hardware suggests coffin manufacture between 1858 and the 1860s.

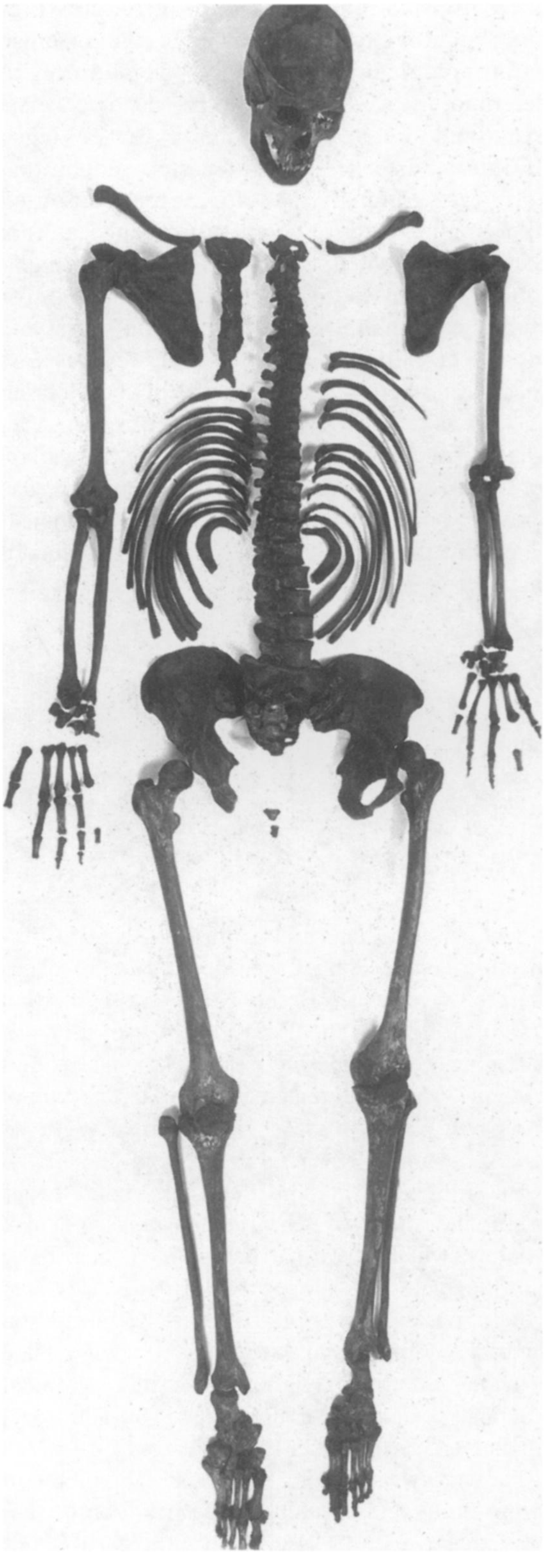

FIGURE 4. Exceptional preservation of the darkly stained skeleton. (Photo by Chip Clark, National Museum of Natural History, Smithsonian Institution.)

The cost of an iron coffin was substantial. Wholesale prices in 1867 for adult-size Plain Case coffins ranged from about $30 to $53 (Crane, Breed & Co. 1867), significantly higher than traditional wooden hexagonal coffins (Habenstein and Lamers 1955). The fact that this individual was buried in a cast-iron coffin indicates the individual or family had some degree of wealth.

Human Remains

The iron coffin contained a fully clothed and well-preserved skeleton (Figure 4). The computed tomography (CT) scans revealed the preservation of about 200 g of brain tissue and extensive disarticulation and disarray of the bones within the thorax, in addition to clothing-related items such as buttons (Figure 5). Imaging facilitated removal of the clothing and helped determine the course of the rest of the examination, as it showed that the organs and other soft tissues had almost completely decomposed. The CT scans also revealed that the disarticulation was due to postmortem shifting of the bones incurred during movement of the water-filled coffin, rather than injuries sustained by the individual at the time of death.

Forensic pathology sampling was conducted to obtain evidence of disease and drugs or toxic chemicals in the human tissues and burial environment. Despite the advanced stage of soft tissue decomposition, information about the individual's life and death was obtained. Cultures taken at the time of the coffin's opening revealed nonpathogenic soil organisms including a spore-forming bacillus species. No disease-producing pathogens were identified that would have contributed to this individual's death. The laboratory examination of brain tissue for strychnine and arsenic was negative, ruling out embalming practices in which arsenic was prevalent—from approximately 1860 to 1910. Radioimmunoassay analysis of the hair revealed cotinine, a metabolic product of nicotine. The level of cotinine is consistent with tobacco use. Opiates were not found in the hair. Although the test was negative for opiates, the results do not confirm that this individual did not consume morphine for pain relief or recreation, only that the test did not detect an opiate in the hair sample.

A biological profile was established for the individual using standard methods of data

FIGURE 5. Computed tomography image of the skull and clothed upper thorax. The skeleton had shifted when the water-filled coffin was moved, although it was evident that the hands had been folded across the chest. (Graphic by Rebecca Snyder, National Museum of Natural History, Smithsonian Institution.)

collection for skeletal remains. Osteological examination of the bones and teeth determined the individual to be a Caucasian male, aged 33 to 37 years old at death, and approximately 5 ft. 10 in. tall. The remains of fine, medium-brown hair recovered from the head end of the coffin supplemented the individual's profile.

The dentition shows extensive pathology. Eight teeth were present in the maxillae at the time of death; eight maxillary teeth, including five molars, were lost before death and their sockets had fully remodeled. Two of the remaining teeth have cavities; three have periodontal abscesses. Thirteen mandibular teeth were present. Both first molars and the right second molar were lost before death, and their sockets had completely remodeled. Eight mandibular teeth have cavities, two so severe that the pulp chambers are exposed and the sockets are abscessed. The right lateral incisor socket is also abscessed although the tooth is not decayed.

Loss of molars would have made chewing more difficult. This would have been exacerbated by degeneration of the temporo-mandibular joints and the mandibular condyles, which show pitted-type porosity and remodeling. Antemortem erosion had greatly reduced the joint surfaces of the condyles, resulting in a hypoplastic condition that, not unlike the dental abscesses, was likely an aggravating source of discomfort in life.

No pipe-wear facets are present, although dark staining from tobacco use is evident. In addition, calculus buildup was heavy, especially on the anterior dentition. Heavy calculus, tooth decay, periodontal disease and resorption, and only slight levels of tooth wear indicate a non-abrasive, cariogenic diet, poor oral hygiene, and a lack of dental care.

Diet was further defined through stable carbon and nitrogen isotope analysis. Chemical analyses of bone for stable carbon and nitrogen isotopes have proven useful for interpreting dietary patterns of past and present peoples and organisms (Vogel and van der Merwe 1977; van der Merwe and Vogel 1978; Ambrose and DeNiro 1986; Keegan 1989; Buikstra and Milner 1991; Tieszen et al. 1992). The method is based on differences in the isotopic composition of plants due to environmental variations of climate and aridity. The different carbon and nitrogen isotope values at this initial level of the food chain are transferred to the tissues of the consumer (animal or human). General dietary patterns are defined by measuring these isotopic differences with the results presented as $\delta^{13}C$ (delta carbon) and $\delta^{15}N$ (delta nitrogen) values in parts per million (‰).

The positive stable carbon and nitrogen isotope values obtained from this man's bone ($\delta^{13}C$ value of -10.53‰ and a $\delta^{15}N$ value of 10.99‰) indicate a diet based on plants and moderate levels of animal protein. Plant foods the man ate would have primarily been those using the C4 photosynthesis pathway, probably corn, sorghum, and sugar. Assuming the man lived near his burial place in Tennessee, corn would have been a dietary staple and, being high in carbohydrates, would have contributed to a cavity-causing, plaque-inducing diet. The indicated level of protein obtained from the nitrogen isotope data is consistent individuals of moderate or higher socioeconomic status of this time period. These results are consistent with a C4-animal/plant-based diet and correspond well with values of individuals identified as American born and raised (Ubelaker and Owsley 2003).

The general condition of the bones indicates good skeletal health. With the exception of the temporo-mandibular joints and slight vertebral arthritis, few pathological changes are noted. The skeletal changes that are documented for this individual do not reflect disease but, rather, are markers of habitual activity. In general, slight to moderate development of the muscle-attachment sites on the bones of the arms and legs indicate this individual participated in only a moderate degree of heavy labor. More specific review of the bones reveals several activity indicators related to horseback riding. These are not the skeletal modifications of a recreational rider but of someone who rode often over a lifetime. For instance, the left and right acetabulae show slight superior elongation, a common trait among long-term horseback riders (Erickson et al. 2002). The gluteus muscle-attachment sites are defined on the ilia. The gluteus maximus extends the hip in order to keep the individual upright in unstable conditions, such as horseback riding (Capasso et al. 1999). The femora have Poirier's facets, which are formed by the continual spreading of the thighs while on horseback. Common in horseback riders is the development of rotational tissues that attach to the lesser trochanter (Capasso et al. 1999). This development is seen in the attachment ridges of the ilio-femoral ligaments, which are raised and clearly defined on the proximal femora. Slight lipping is also noted on the distal joints of the femora as well as the head of the right femur on the joint margin. The tibiae have well-defined soleal lines on the posterior proximal surface, commonly seen as the result of using calf muscles while riding horses. In addition, multiple thoracic vertebrae display depressions in their centra, identified as Schmorl's depressions, or herniations of the vertebral endplates (Figure 6). These degenerative changes were caused by vertical compression. In this case, a contributing factor was likely the characteristic sitting position of a horseback rider, which can exacerbate the tolerated level of impact on the spine (Capasso et al. 1999).

Despite the skeletal evidence for activities during life, no cause of death could be determined from gross visual and radiographic analysis of the human remains. Gunshot wounds or bladed injuries that kill by entering vital organs often also strike bone; there were no such marks on this skeleton. Fractures of the skull and postcranial skeleton are also absent as are changes in bone indicative of disease processes such as cancer, long-term infection, or tuberculosis.

The only hard tissue evidence that may relate to the circumstances surrounding this man's death is present in the four fingernails recovered from the coffin in the region of the finger bones. No other fingernails were recovered, a loss not resulting from decomposition of the nails themselves but possibly due to the fact that nails become loose during the early stages of soft tissue decomposition. The nails can then be dislodged when handling or moving a body. The few fingernails that were collected may indicate that a period of time elapsed between the death of the individual and the transfer of the body into the coffin.

Clothing

The individual was dressed in men's clothing. He was wearing a black broadcloth, fully lined, single-breasted frock coat of standard construction (Figure 7). This tailor-made coat has a fitted back, a quilted collar and lapel lining for a smooth fold line, and a skirt with a vent opening in the center of the back. A small rectangular hole in the right front skirt of the coat near its bottom had been neatly mended with a patch. The back of the coat has an intentionally made vertical slit that was not part of the coat construction.

FIGURE 6. Multiple thoracic vertebrae display Schmorl's depressions. (Photo by Chip Clark, National Museum of Natural History, Smithsonian Institution.)

FIGURE 7. Tailor-made black broadcloth frock coat. (Photo by Chip Clark, National Museum of Natural History, Smithsonian Institution.)

Loose masses of thread present throughout the chest and back region are believed to represent a deteriorated vest that most likely had a wool front and silk back. Silk fabric, bowed and tied as a necktie, is still present (Figure 8). Although there is no surviving cotton fabric, presumably this individual would have been buried wearing a white cotton shirt. As evidenced from earlier investigations, the protein-based fibers of wool and silk survive in better condition than the cellulosic fibers of cotton (Ballard 1996).

The tailor-made trousers have a concealed five-button fly with an additional button at the top of the waistband. Two sew-through buttons with well-preserved yellow gilt at the top of the posterior waistband are probably for suspender use. The trousers were constructed with a center back seam and a pieced yoke for fitting, producing a relatively rectangular silhouette. The back of the left leg of the trousers has a slit measuring 2-1/8 in. that was intentionally made with scissors or a knife. The side seam of the right pant leg was also intentionally opened almost its entire length, from the hem to approximately crotch level.

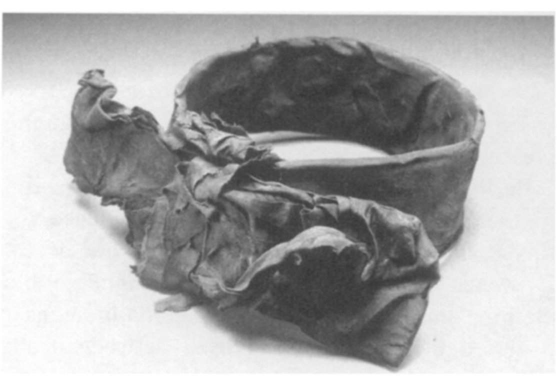

FIGURE 8. Silk bow tie. (Photo by Chip Clark, National Museum of Natural History, Smithsonian Institution.)

In addition to the tailor-made suit, this man was wearing a pair of expensive, good quality riding boots (Figure 9). This style of high-top boot, possessing a narrow waist with a comparatively high stacked heel, is typical of boots made after 1840 and was common during the Civil War period and later. This boot style was used by both civilians and military personnel.

Black broadcloth frock coats with trousers first appeared about 1816 for less formal wear; by

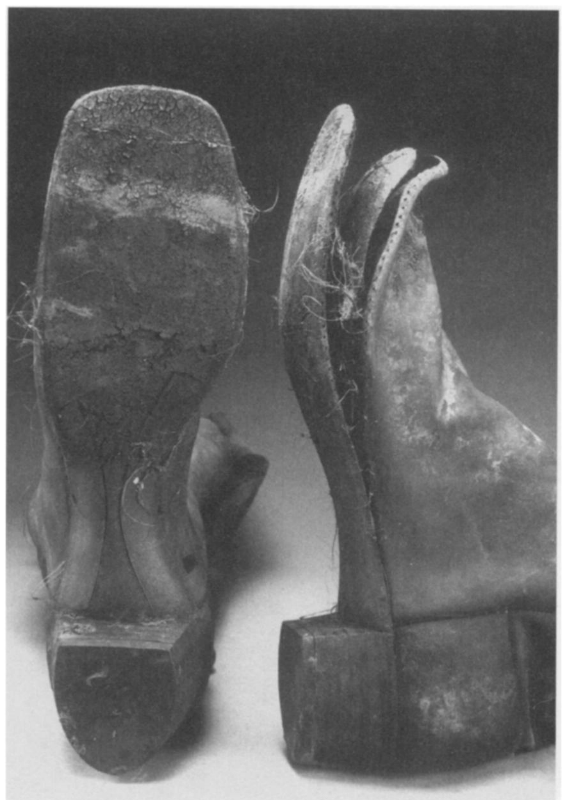

FIGURE 9. Custom-made leather riding boots. (Photo by Chip Clark, National Museum of Natural History, Smithsonian Institution.)

1850, they were acceptable for most occasions (McClellan 1910; Waugh 1964:113–114). The single-breasted coats of the earlier part of the 19th century gave way to double-breasted ones by the 1860s. Given that this suit had been mended on the skirt, it was most likely worn for several years prior to the individual's death. A tailor-made suit, even if slightly worn and dated, with a silk and wool vest and silk necktie indicates a relatively high social status. The expensive boots show that riding was an important part of this man's daily life.

In addition to reflecting class and occupation, this individual's clothing reveals information about his death. Modifications in the clothes and the presence of boots suggest a lapse of at least a few days prior to the body being prepared for burial. Such preparations, usually done in the home, would have included removing work or field clothes and redressing the man in his suit. Tears and cuts in both the frock coat and the trousers suggest dressing a body already entering the early stages of decomposition. A slit that runs the entire back midseam of the coat (Figure10) was intentionally made and would have provided an easier way to dress the deceased, whose body would have been swollen by tissue gases (bloating) (Clark et al. 1997). The slit would have broadened the width of the coat so that one arm could be inserted and facilitated further extension to allow insertion of the other arm.

FIGURE 10. The coat was halved by a large slit that ran up the back. (Photo by Chip Clark, National Museum of Natural History, Smithsonian Institution.)

Modifications of the pant legs suggest dressing over the boots. Swelling and skin slippage would have made it difficult to replace these high-top boots once removed. The small tear at the cuff made it easier to pull the left pant leg up over the boot. The right pant leg was opened at the seam and wrapped around the leg.

Boots are uncommon in historic burials due to their cost, and this pair was in good condition at the time of burial, especially considering the burial was in a Southern state. If this individual died during the Civil War, the boots suggest a death early in the war years since most surviving examples of Confederate-era boots are extremely worn due to the difficulty in obtaining new ones (June Swann 2003, pers. comm.).

Discussion

The results of the laboratory analysis identify the individual in the iron coffin as a white male, 5 ft. 10 in. tall, of medium build, aged 33 to 37 years old at the time of death. He was of relatively high socioeconomic status based on his burial container, clothing, and skeleton, which suggested he experienced only a moderate degree of heavy labor and had a diet with moderate levels of protein. He was an experienced equestrian based on activity-induced bony changes and the presence of good quality riding boots.

Perhaps one of the most intriguing results of the laboratory analysis was the evidence for this man's burial several days after his death. Evidence in the form of modifications in his clothing and the absence of fingernails suggest a period of a few days elapsed between death and preparation for burial.

In order for a personal identification to be made, the biological and artifactual data described above had to be merged with the historical and genealogical information on the Mason family of Pulaski, Tennessee. Review of the historical information about the cemetery shows the location of Burial 30 in close proximity to the marked graves of the Mason family. As Mason family members died, they were buried in the northern part of the cemetery and subsequent interments progressed toward the south. The burial plan appeared to be that the children of Isaac Mason (Sr.) (Burial 7) and his wife Nancy Edwards Mason (Burial 6) would be positioned around their parents (Figure 11). This is evidenced by the apparent reservation of space for the children of Isaac Mason as interments progressed southward. Burial 30 (Figure 12) was positioned immediately south of Isaac Mason (Sr.) and adjacent to some of his sons and other close relatives (Allen 2002a). This placement suggested that the individual had a close familial relationship with Isaac Mason.

In total, Isaac Mason (Sr.) had 10 children, two of whom died in infancy. Of the remainder, all boys, Benjamin Washington Mason and Carson T. Mason were buried in Maplewood Cemetery, Pulaski, Tennessee. Joseph G. Mason was buried in Prospect, Tennessee, and Winfield S. Mason was buried in Alabama. Gustavus, Albert, and James, who died between 1858

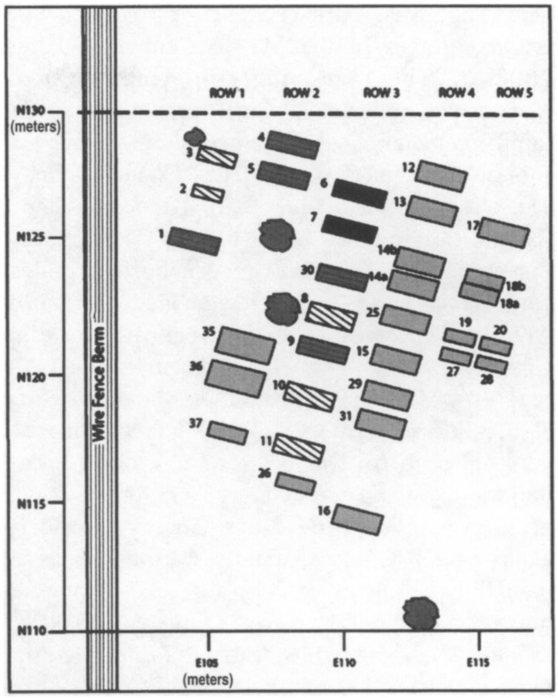

FIGURE 11. Distribution of burials in the Mason family section of the cemetery, see Figure 12. (Drawing adapted by Marcia Bakry from Allen 2002a.)

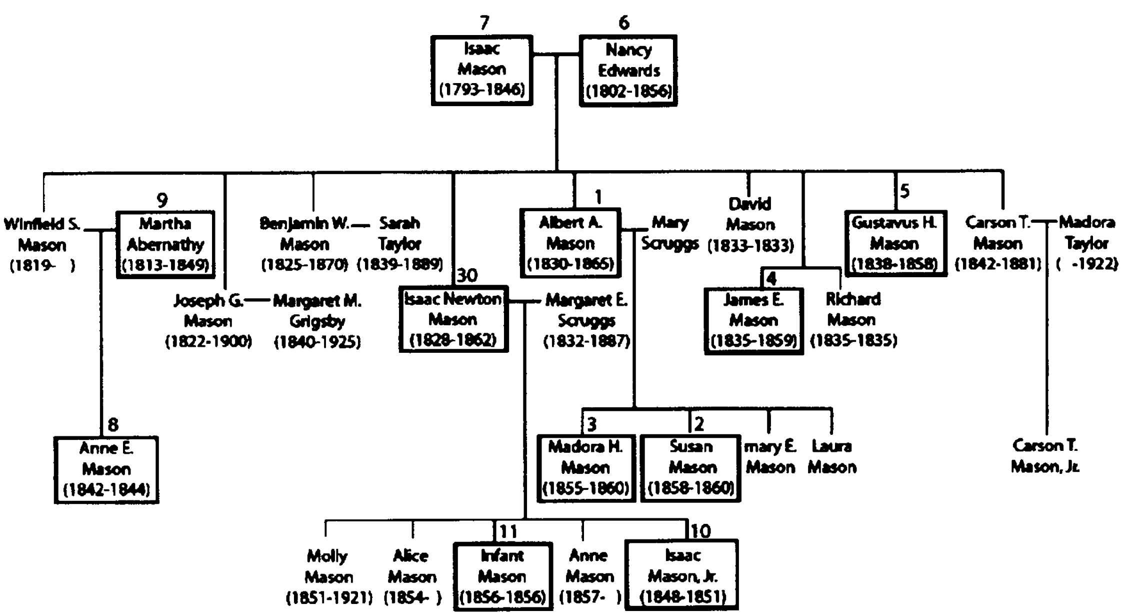

FIGURE 12. The Isaac Mason family lineage with the highlighted numbered boxes identifying individuals buried in the cemetery. (Drawing adapted by Marcia Bakry from Allen 2002a.)

and 1865, were buried in cast-iron coffins with marked graves in the Mason Cemetery (Allen 2002a). The remaining son, Isaac Newton Mason was believed to have been buried in the family cemetery, but no grave site was known.

Isaac Newton Mason of Giles County, Tennessee, was born on 8 June 1826. Historic records list his holdings as 1,640 acres of land, farming equipment, 27 slaves, and a host of mules, cattle, and hogs. Isaac Newton and his family would have been considered wealthy before the Civil War. The 1860 U.S. Census valued his real estate at $19,299 and personal property at $23,865 (Johnson 2003). Much of Mason's personal property was taken or destroyed during the war by the Federal army and roving bands of thieves. An 1867 Giles County Chancery Court case lists Mason family wartime losses as including 130 acres of corn, 60 head of hogs, 6 horses, 4 mules, 23 head of cattle, 26 stacks of fodder, 2 horse wagons, and all farming equipment (Johnson 2003). In December 1861, Isaac and his brother Albert enlisted in the Confederate Military as privates in the 11th Tennessee Cavalry Battalion, 6th (1st) Tennessee Cavalry Regiment (Johnson 2003). The brothers participated in the Battle of Shiloh in April 1862.

Isaac Newton Mason is reported to have died in April or May of 1862 at the age of 35 years, although the records are unclear as to how, when, and where he passed away. One document indicates that he died from injuries incurred during a fall from a train near Iuka, Mississippi (Nelson 1908). Isaac was reportedly taken to a hospital in Tuscumbia, Alabama, although there is no record that he was treated there.

If Isaac did die as reported, how his body was returned to his home is unknown. Such an event was rare in Giles County, as nearly 800 soldiers from this locality died during the war and less than a dozen were brought home for burial (Bob Wamble 2004, pers. comm.). If the body was brought home from Tuscumbia, it traveled over a distance of nearly 80 miles on poor winding roads under Union control. A best estimate suggests that at least three days were required for the trip (Bob Wamble 2004, pers. comm.).

The history of Isaac Newton Mason, even the uncertainties or gap in the historical record about his death, offers several points of correspondence with the biological and social profile of the man in the cast-iron coffin. His age, social position, and lifestyle, as defined through the historical record, are supported by the results of the laboratory analysis in nearly every respect. Some of the circumstances of Isaac N. Mason's burial were revealed in the laboratory study. Although no bone injuries were evident, an elapsed time between death and burial is indicated.

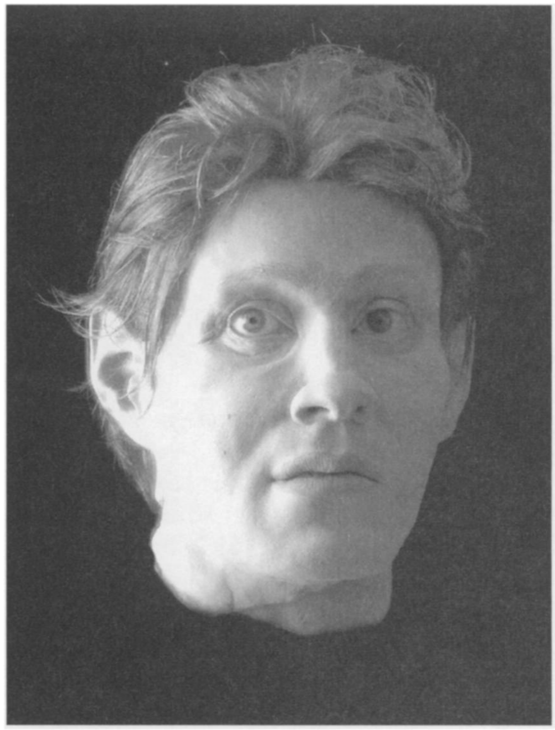

FIGURE 13. A reconstruction of the face of Isaac Newton Mason was completed by John Gurche©.

Conclusion

Determining the identity of a decomposed, skeletonized individual is a challenge commonly faced by forensic anthropologists in contemporary medico-legal investigations. It is even more challenging to apply these investigative techniques to remains of individuals from the past. As a result of uncertainties in the burial record and variable effects of preservation, under the best of conditions it can be difficult to recover enough bones to reconstruct even a partial skeleton and to confirm identity of historic remains.

The cast-iron coffin from the Mason Family cemetery offered a unique opportunity to name the past through the examination of one who lived it. The analysis of the human remains and artifacts was aided by the use of a burial container that resulted in good preservation. Multiple lines of evidence were applied to the study of these remains for optimal data collection. The results placed the date of the burial within a relatively narrow temporal span and created a detailed biological and social profile. In combination with historical and genealogical data, enough evidence was obtained to identify the man in the cast-iron coffin as Isaac Newton Mason, a private in the First Tennessee Confederate Cavalry Regiment, from Pulaski, Tennessee (Figure 13).

The research design implemented in this investigation is presented in Appendix A as a suggested guideline for others initiating similar projects. Although this report describes only a single individual and the circumstances of that death, this study has greater relevance for documenting and interpreting mortuary practices and health in the mid-19th-century upper South. Given that the individual died early in the course of the Civil War, it appears that the family had the resources to bring his body home over a considerable distance and provide him with an expensive coffin. This contrasts with the Mason family's subsequent financial decline, a result of wartime conditions. Within five years of Isaac Newton Mason's death, his family had lost an extraordinary sum. Because of the financial decline of the South subsequent to the Civil War, burials conducted late in the war would presumably differ and offer an interesting perspective on changes in mortuary customs relative to changing sociopolitical events and regional circumstances. The results of this study also contribute to the recording of standardized health-related and metric data for sample-based comparative research. Specific details required for this type of database research are presented in Appendix B.

Acknowledgments

Guy and Fran Mason represented the family and enabled all phases of this investigation. Claudia Johnson and Fran Mason researched and provided in-depth historical and genealogical information. The cemetery relocation was completed by DuVall & Associates, Inc., of Franklin, Tennessee, Dan Sumner Allen IV, principal investigator. Pulaski attorney, Stan Pierchoski, arranged for the state disinterment and transit permits. Science photographer Chip Clark provided the photographs. The CT scan was taken by Rebecca Snyder. The facial reconstruction shown in Figure 13 was prepared by John Gurche. The scientific team also included forensic anthropologists David Hunt and Ashley McKeown, and assistants Sandra Schlachtmeyer and Cass Taylor. The genealogical chart and map of the cemetery were prepared by Marcia Bakry, the latter based on the archaeology field report. Stephen Rogers represented the Tennessee Historical Commission and helped in the disinterment and transport of the coffin to the NMNH. Malcolm and Margaret Richardson provided editorial guidance. Anamay Melmed standardized the stylistic format of the manuscript. Arthur Aufderheide reviewed the scientific protocol and pathology report. Skye Chang's internship and the isotope analysis were sponsored by the NMNH Research Training Program, Mary Sangrey, coordinator, with funding provided by the National Science Foundation, Grant DBI-02435123. Michele Urie coordinated press relations. Kathy Abbot and Rob Wallace helped arrange funding.

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APPENDIX A
A Protocol for the Analysis of Cast-Iron Coffin Burials

The following protocol was followed during this investigation.

I. Preliminary Steps
   A. Describe and measure the coffin.
      1. Make, model, distinguishable marking
      2. Coffin condition and preservation
      3. Visual documentation (photographs)
   B. Describe the coffin opening and interior.
      1. Coffin interior
      2. Body preservation and positioning
      3. Type of clothing, textile preservation
      4. Visual documentation (photographs)
   C. Collect samples from inside the coffin.
      1. Dirt and/or water
      2. Potential embalming materials
      3. Coffin lining
      4. Coffin sealant

II. Taphonomic Observations
   A. Describe soft tissue, bone, and dental preservation.
   B. Document special cases of soft tissue preservation (adipocere, brain tissue, calcified cartilage, nails, and hair).
   C. Document any postmortem alterations incurred while disinterring or transporting the coffin.

III. Computed Tomography
   Computed tomography provides images of the body and associated artifacts to determine material densities in volumetric space. The technology provides a digital record of the individual that can be viewed independently of the body itself.
   A. Remove the body from the coffin and create images to evaluate the structure and positioning of soft and hard tissues.
   B. Determine the positions of associated artifacts.

IV. Clothing Analysis
   A. Describe the textiles and their placement on the body.
   B. If possible, remove textiles to expose the body for description and autopsy.

C. Collect samples of the textiles.
D. Clean and, if appropriate, conserve the textiles and shoes.
E. Photograph selected items.

V. Autopsy
Body information is derived from the autopsy procedure (dissection) and from laboratory testing of samples collected during the autopsy.
A. Evaluate soft tissues and determine what will be sampled.
B. Collect soft tissue samples (adipocere, brain, spinal cord, identifiable organs, hair).
C. Conduct laboratory analysis of the samples.
1. Microbiology—culture microorganisms from the collected samples.
2. Toxicology—test for the presence of drugs, heavy metals, and toxic chemicals (e.g., strychnine, arsenic, mercury, lead) present in tissue samples and within the coffin environment.

VI. Cleaning and Conservation of the Bones in Preparation for Examination
Cleaning and conservation must be completed before comprehensive osteological and forensic evaluation can begin.
A. Remove adhering textiles and tissues from the bones.
B. Clean and conserve the skeleton.
C. Collect bone samples—specific bones may be selected for stable isotope and elemental analyses (conservation treatment methods should take this into account).

VII. Osteological Analysis
Depending on preservation, the skeletal analysis may include the following:
A. Complete skeletal inventory and analysis.
1. Complete the bone inventory.
2. Complete the dental inventory.
3. Finalize the inventory information for integration into a computer database.
B. Identify age, sex, and ancestry.
C. Identify pathological conditions.
1. Examine the skeleton for evidence of infection, traumatic injury (antemortem, perimortem), metastatic disease, muscle pulls and tears (enthesopathies), arthritic changes, anomalies, nutritional status, and anemia.
2. Document examples of physical exertion and strain such as bone cortical excavations, disk herniations, Schmorl's depressions, and joint and vertebral arthritis.
3. Examine the bones for evidence of gunshot wounds, cut marks, or other types of injuries, either antemortem or perimortem.
4. Examine the skeleton for evidence of congenital and developmental anomalies.
D. Collect cranial and postcranial metrics.
1. Collect three-dimensional coordinate data for the cranium.
2. Collect mandibular measurements.
3. Collect morphometric data from the postcranial skeleton (these measurements provide information about physical size, robusticity, and stature).
4. Compare the morphometric data with selected 19th- and 20th-century reference samples that provide an appropriate interpretive context.
E. Conduct an oral health examination.
1. Evaluate the teeth and alveolar sockets for the presence of carious lesions, abscesses, antemortem loss, postmortem loss, enamel hypoplasia, calculus, antemortem chipping and fractures, and staining, such as from using tobacco.
2. Assess dental wear.
3. Document task activity wear (e.g., pipe wear facets).
4. Evaluate and describe dental restorations.
F. Conduct tissue sampling for laboratory analyses.

VIII. Radiography
Use conventional radiography to complete the following:
A. X-ray the dentition and cranium (specific views); these images are used in determining age and dental health.
B. X-ray the humeri, femora, and tibiae (specific views); these images are evaluated for the presence of growth arrest lines and long bone pathology.

C. X-ray designated anatomical and pathological specimens.

IX. Photography
A. Photograph the coffin and its contents including the clothing and human remains (i.e., preserved tissues, skull, dentition, skeletal pathology, and special morphological features).
B. Photograph the skeleton in anatomical position (layout view).
C. Photograph specimens selected for bone sampling (isotopes, mtDNA).
D. Photograph selected artifacts.

X. Stable Isotope Analysis
Collagen and apatite carbon and nitrogen stable isotope values are determined from bone and teeth. Isotope data provides nutritional information and clues as to the place of origin.
A. Collect a tooth sample for the determination of childhood diet.
B. Collect dense cortical bone sample for the determination of adult diet.

XI. Mitochondrial DNA Analysis
Mitochondrial DNA analysis represents a future resource for determining individual identity. This analysis contributes to improved understanding of mtDNA preservation in iron coffin environments.
Such information has implications for forensic investigations involving similar situations (e.g., environments where the body is protected in a sealed environment).
A. Select samples for future testing.
B. Conduct mtDNA testing.

XII. Determination of Individual Identity
Often the goal of these investigations is to determine personal identification. This objective requires a merger of forensic/skeletal data, the archaeological record, and historical/genealogical information.
A. Consult with relevant parties (project genealogist and/or historian).
Compare specific information for each possible individual including age, sex, stature, physical features, information about earlier injuries, existing photographs, military service records.
B. Conduct possible maternal lineage mtDNA collection and comparisons.
C. Consult historic photographs of a suspected individual. They may be superimposed on the skull to check correspondence and fit. This process involves computer graphic and morphometric comparisons using photographs of the skull specifically positioned in accordance with available historic photographs.

APPENDIX B
Additional Information on the Coffin and Its Contents

Coffin

The maximum length of the coffin is 182.9 cm. Its maximum width is 61.2 cm including the protruding flange that is 2.4 cm wide and surrounds the entire exterior at the joint where the top and bottom halves meet. The head end of the coffin is 36.7 cm wide, as measured from the inner side of the top handle lug. The toe end of the coffin is 27.6 cm wide. The height of the sealed coffin is 32.3 cm. at the midsection, 31.1 cm at the head end, and 28.0 cm at the toe end. The height of the coffin body, or bottom half, is a uniform 12.7 cm.

The upper half, or lid, of the coffin features three continuously beveled tiers, pyramiding to a flat top surface. The lower half of the coffin, or body, has two faceted panels that gently bevel in toward the bottom. The eight cast-iron handles present are a swing-bail style and are secured by round-head stove bolts with slotted heads. The handles have concave backs. This style of handle is typical of burials prior to the 1880s (Allen 2002a:92). Four handles are attached to the coffin with the smooth convex side outward. Two other adhering handles were mounted with the concave back facing outward. Two of the handles had become detached from the coffin. There are 16 bolts connecting all handles. The head diameter of the mounting bolts is 1.3 cm, the length of the bolts is 3.4 cm, and the bolt shaft diameter is 0.7 cm. The handle lugs are 3.6 cm long and 3.1 cm high. The handle itself is 13.1 cm long. The height of the bail arm is 6.2 cm with the narrow end measuring 2 cm and the widest point in the center measuring 3.2 cm. Six additional round-head stove bolts, smaller than those used to secure the handles, were used to attach the coffin lid to the coffin body. The bottom coffin flange was drilled and threaded so no nuts were used with the represented bolts.

The metal cover for the glass viewing plate is 48.5 cm long with base and midpoint widths of 20.5 cm. It is secured with five screws: two at the end with square corners, one on either side of the plate at its midpoint, and one at the pointed end. The glass viewing plate measures 41.2 cm long, 15.1 cm wide at the midpoint, and 14.5 cm wide at the squared end.

Autopsy

Data collection for the analysis of the human remains was guided by a specially devised protocol that parallels the approach used in modern forensic cases involving the identification of individuals represented by bodies showing advanced decomposition. As part of this protocol, standard autopsy procedures were followed as determined by the preservation of soft tissues, with sampling of tissues and taphonomic description of the remains.

Taphonomy

The body was completely clothed, including boots. The cranium had been displaced and rested on its vertex (upside-down) in the left head end of the coffin. No skin or other external soft tissue adhered to the cranium, and the cranial base and maxillae were fully exposed. At the time of death, eight teeth had been present in the maxillae, but most of these had been displaced postmortem and were later retrieved from the coffin. The mandible had separated from the cranium and was not readily visible.

Based on initial visual assessment and palpation of the clothing, the body seemed skeletonized. The postcranial bones were somewhat disarrayed but, in general, retained anatomic relationship. The degree of articulation could not be fully assessed due to the presence of clothing. Prior to the removal of the clothing, the remains were carefully placed in a body bag and transported to the museum's computed tomography (CT) scanner. Culture samples were taken, and the external visual examination was completed prior to scanning the body.

After removing the clothes and boots, the remains were further examined for the presence of soft tissue. Segments of skin with some underlying soft tissue were recovered from the left anterior chest region. There was no attachment of this tissue to underlying bony structures. Skin from the chest measured 9 cm by 4 cm at its greatest dimension. An additional ovoid segment of skin measuring 6 cm by 4 cm was present on the posterior portion of the right side of the chest cavity. Two separate segments of skin and some muscle tissue were also present on the posterior portions of both lower legs. The flap of skin from the right leg measured 35 cm by 13 cm and continued over the calcaneus for a distance of 5 cm onto the plantar aspect of the foot. Similar skin and soft tissue were noted over the rear portion of the left lower leg. This piece measured 30 cm by 18 cm and extended over the calcaneus onto the plantar aspect of the foot for a distance of 4 cm. The presence of tall boots undoubtedly aided in the preservation of the lower leg tissue.

In addition to soft tissue, the body was examined for the presence of hair, fingernails, and toenails. No hair or scalp was attached to the skull, although body and head hairs were scattered over the surface of the clothes and throughout the bones. In the thoracic region, hairs were present but difficult to distinguish from the black silk and wool fibers of the deteriorated vest and coat lining. The hair from the head was fine and medium brown in color. Small locks measured up to 6 cm in length with the longest single segment of hair being 10 cm. The body hair was lighter in color than the head hair and was blonde to light brown. Four fingernails were found in the region of the finger bones and ranged in size from 0.9 cm to 1.4 cm. The presence of soft tissues, hair, and nails allowed for the testing for certain toxins and pathogens.

Microbiology

As soon as the coffin lid was removed, culture samples were taken under aseptic conditions from the anterior frontal region of the skull, the mid-casket area, the mid-knee region, and from boot level. These specimens were placed in a transport media (remel) and sent overnight to Valley View Regional Hospital Microbiology Laboratory in Oklahoma for processing. A number of microorganisms were grown, which revealed a variety of nonpathogenic soil organisms that included Aeromonas and Pseudomonas. A spore-forming *Bacillus subtilis* was also grown.

Toxicology

A gas chromatography mass spectrometry study was conducted for the presence of strychnine and arsenic. The material selected for study consisted of brain tissue that was removed from the cranial cavity at the time of autopsy. The specimen was frozen, and approximately 5 g of tissue were submitted to National Medical Services, Willow Grove, Pennsylvania, for processing. Arsenic and strychnine were not detected in the brain tissue.

Radioimmunoassay of Hair

Radioimmunoassay of a hair sample was performed by Valley View Regional Hospital, Ada, Oklahoma (Cartmell et al. 1991). The hair was negative for opiates and cocaine but had cotinine present in levels consistent with tobacco use.

Osteology

Removal of the clothing and remaining body tissues revealed that the skeleton was in excellent condition and externally blackened due to iron sulfide staining. A bluish discoloration was also noted on the anterior surface of the lower femora and upper tibiae due to the presence of vivianite, a hydrated iron phosphate that is occasionally observed on fossils and skeletal remains. The bones were water saturated, and some of the more friable bones such as the ribs and vertebral bodies displayed erosion from contact with the coffin floor. Examination of the remains provided information on sex, age, ancestry, bone and dental pathology, stature and robusticity, and functional morphology.

Sex, Age, and Ancestry

Sex was identified as male, based on the morphology of the skull and pelvis and relatively large joints and teeth. The cranium shows slight development of the supraorbital brow ridges and brow at glabella. The mastoid processes and occipital condyles are moderately large. The nuchal ridge exhibits moderate development with no occipital protuberance present. The palate is relatively large, and the mandible has a slightly squared chin. Male traits in the os coxae include a lack of auricular surface height, absence of pre-auricular sulci, a moderately narrow subpubic angle, and the absence of ventral arcs on the pubic bones. The greater sciatic notches of the os coxae are intermediate in breadth. The postcranial bones exhibit slight development of the muscle attachment sites, although the joint surfaces are large.

An age determination of 33 to 37 years was based on surface changes of the pubic symphysis, auricular surfaces, cranial suture closure, and dental and skeletal pathology. The surfaces of the pubic bones show complete formation of the dorsal and ventral ramparts and rim with slight retention of billowing on the inferior end of the left symphyseal face. The ventral rims are slightly irregular, especially on the right side. Both surfaces display trace porosity, which may be due to slight postmortem erosion of the bone in the wet environment. The sacroiliac (auricular) surfaces display transverse organization with no visible porosity or apical activity. These age-related features of the pelvis are characteristic of a male in his thirties (Lovejoy et al. 1985).

In the cranium, the sagittal and lambdoid sutures are open ectocranially. The coronal suture exhibits closure on the left and right sides at pterion. Endocranially the coronal and sagittal sutures are fully united, but the lambdoid suture is still visible. The posterior palatine suture is nearly united; the incisive sutures are faintly visible.

The postcranial bones show complete epiphyseal union including the sternal epiphyses of the clavicles. The manubrium, sternal body, and xyphoid are fused. Degenerative changes are noted in several postcranial elements, but the condition is slight in severity.

The morphology of the skull, including metric comparison to established reference samples (Ousley and Jantz 1996), identifies this individual as a white male with European ancestry. The cranial shape is mesocranic and the forehead is moderately low and sloping. The mid-face has a narrow interorbital width, a narrow nasal chamber, and a sharply defined inferior nasal border. In spite of advanced dental pathology, the canine fossae are not readily apparent. The nasal chamber is slightly asymmetrical with the inferior border of the left side slightly lower than the right. The malars are moderately small, and the temporal fossae are deep. The dentition has a slight overbite, as indicated by the pattern of tooth wear and articulation of the mandible with the cranium, but is not prognathic. The mandible is V-shaped and somewhat gracile. The teeth exhibit simple cusp morphology. The ancestry identified by the cranial morphology is consistent with that noted for the femora. The femora are straight with slight posterior curvature of their superior halves.

Bone Pathology

The temporo-mandibular joints show remodeling characterized by trace porosity and marked concavity of the temporal fossae. The mandibular condyles have only small areas of joint surface remaining due to pathological erosion.

The spinal column exhibits slight degenerative changes including arthritic lipping and Schmorl's depressions (i.e., vertebral body endplate herniations) in multiple vertebrae. The articular facets of cervical vertebrae three through seven have trace porosity and osteophytes. Thoracic vertebrae one through nine show slight lipping of the articular facet margins and slight porosity of the joint surfaces. The body of the ninth thoracic vertebra has trace lipping of its anterior, inferior margin. More obvious lipping of the anterior body is noted for thoracic vertebrae 10, 11, and 12. The third lumbar vertebra displays a small area of porosity and a small area of osteophyte formation on the joint surfaces of its inferior articular facets. The inferior right articular facet of the fourth lumbar vertebra has slight porosity and surface osteophytes.

Thoracic vertebrae 7 through 11 have Schmorl's depressions in their vertebral endplates. The seventh thoracic vertebra has a slight circular depression in its inferior endplate with a diameter of 3.0 mm and a depth of approximately 0.8 mm. The eighth thoracic vertebra has a larger, centrally located defect in its inferior endplate. This defect is characterized by a main area with a depressed extension spanning to the left lateral edge of the endplate. The main depression has a transverse diameter of 9 mm and an anterior-posterior (AP) diameter of 5.7 mm. The canal running from the main area is 12.8 mm in length and 2.5 mm wide. The depth of the central defect is 1 mm. The ninth thoracic vertebra exhibits depressions in both its superior and inferior endplates. The superior depression has slight definition and is linear in shape running anterior-posterior. It measures 12.5 mm from the anterior edge to the edge of the neural canal. The inferior defect is much more pronounced and runs from the anterior to the posterior edge of the endplate into the border of the neural canal. The defect measures 21.7 mm in length by 3.6 mm in width and 1.4 mm in depth. This defect shows herniation into the neural canal. The 10th thoracic vertebra has a small Schmorl's depression in its superior endplate and a larger depression in its inferior surface. The superior defect is too slight to score. The inferior defect is somewhat V-shaped with the point of the V located anteriorly and centrally. The dimensions of the inferior defect are 21 mm transverse by 13 mm AP. The depth of the defect is 3.2 mm. The 11th thoracic vertebra has a well-defined Schmorl's depression in its inferior endplate that is characterized by two depressed areas. The larger area has herniated into the neural canal and measures 12.2 mm by 4.8 mm with a depth of 2.7 mm. The smaller depression measures 3.1 mm by 6 mm with a depth of 1.5 mm. The 12th thoracic vertebra has a faint depression in its inferior end plate that is too slight to score. The body of the 12th thoracic vertebra also has slight anterior compression resulting in an anterior body height of 24.3 mm and a posterior body height of 31.5 mm. The lipping along the anterior margin of the T12 body is the most severe lipping noted for the vertebral bodies.

Degenerative changes on other bones are minor. The distal joint of the left humerus has trace arthritic lipping on its margin. The head of the right femur has slight lipping along its dorsal margin, and the distal femora have slight lipping along the posterior aspects of the joint margins. The lateral margin of the right patella has slight lipping.

Dental Pathology

Eight teeth are present in the maxillae: the left canine and lateral incisor, the right central incisor, lateral incisor, canine, first and second premolars, and third molar. Eight maxillary teeth were lost antemortem, and their sockets have fully remodeled. The missing teeth include the left first, second, and third molars, first and second premolars, and central incisor, and the right first and second molars. Two of the remaining maxillary teeth have carious lesions. The left canine and right second premolar have small areas of decay on their distal interproximal surfaces, specifically at contact facets with adjacent teeth that are no longer present due to antemortem loss. Three maxillary teeth are scored for periodontal abscesses characterized by expansion of the tooth socket and advanced resorption of the alveolar bone. The right central incisor was held in place by gum tissue only, based on advanced socket resorption and porosity. The right lateral incisor also displays periodontal abscessing of the tooth socket, although a greater portion of the distal root is held in place within the socket. The right second premolar has severe cupping (expansion) of the socket and is held in place by only the small apical portion of the root.

A diastema measuring 4.3 mm is present between the roots of the maxillary left canine and lateral incisor. The crown of the left lateral incisor has a facet along its mesial-occlusal edge indicating previous contact with the crown of the central incisor, which would have partially overlapped the lateral incisor crown. The right central and lateral incisors have normal spacing, but the right lateral incisor shows slight supereruption.

Thirteen mandibular teeth are present in their sockets. Three teeth, the left first molar and right first and second molars, were lost antemortem, and their sockets have completely remodeled. Represented teeth include the left second and third molars, first and second premolars, canine, lateral and central incisors, and the right central and lateral incisors, canine, first and second premolars, and third molar. Eight mandibular teeth are carious. The right third molar and second premolar are represented by single tooth roots only due to complete caries destruction of the crowns. The pulp chambers are exposed for these two teeth and the sockets display periapical abscesses. The right first premolar has a small cavity in its distal interproximal crown at its point of contact with the second premolar, which is represented by a root only. The left mandibular second molar has a small interproximal cavity in its distal crown at its contact facet with the third molar. The third molar has a large carious lesion in the mesial interproximal surface of the crown. The decay extends into the root, and the pulp chamber is exposed. Periapical abscessing affected the mandibular left second and third molars. Periodontal abscessing is also noted for the right lateral incisor socket. This tooth does not display decay.

The left central and right lateral incisors show marked supereruption, as the crowns of these teeth project above the other anterior mandibular crowns. The left central incisor projects approximately 4 mm above the occlusal edge of the left lateral incisor. The right lateral incisor projects approximately 3 mm above the occlusal edge of the right central incisor. The remaining anterior mandibular teeth are tightly spaced but do not show crowding.

Calculus buildup is heavy and characterized by coalesced rings surrounding the roots of the teeth. The calculus margin marks the level of resorption for the gingiva. The two supererupted mandibular teeth have particularly heavy, three-dimensional calculus deposition. The level of tooth wear is slight with only blunting of the cusps. A small amount of dentin is exposed on the incisors, canines, and premolars.

Functional Morphology

The stature of this individual was approximately 5 ft. 10 in., based on a left femur length of 480 mm (Trotter and Gleser 1958). The skeleton is slightly robust. The right clavicle is slightly larger than the left one and shows greater development of the muscle-attachment sites. There are also slight size differences between the left and right humeri with the right being larger in diameter and longer in length. The ulna and radius are also longer on the right side and have slightly larger shaft diameters, suggesting right-handedness. In addition, the right scapula exhibits more notable pleating of its blade relative to the left side. There is slight definition of the bone at the attachment sites for the teres muscles on the proximal humeri, and the deltoid tuberosities are slightly defined.

There are sharply defined ridges on the medial and dorsal aspects of the distal femora. The left femur has a distal femoral cortical excavation that measures approximately 16 mm in diameter. The lineae aspera are poorly defined, measuring 8 mm wide and approximately 1 mm high at mid-shaft on the right side. The tibiae have defined soleal lines on the posterior proximal surface. No squatting facets are noted on the distal tibiae.

Several developmental features can be attributed to horseback riding. The left and right acetabulae show slight superior elongation. The attachment sites of the gluteus muscles are defined on the ilia. The femora have large Poirier's facets, and the attachment ridges of the ilio-femoral ligaments are raised and clearly defined on the proximal femora.

Stable Isotope Analysis

A sample of bone was submitted to the Stable Isotope Laboratory at Augustana College for purposes of dietary interpretation. The sample of this study consisted of well-preserved bone, as indicated by a high collagen yield (19.89%), a high percent carbon value (44.45), and a C/N ratio of 3.22. On a scale of 1 to 5 (1 reflecting visibly degraded, poorly preserved bone), the sample received the highest visual rating of 5. The bone yielded a $\delta^{13}C$ value of -10.53‰ and a $\delta^{15}N$ value of 10.99‰.

Clothing Analysis

The individual was wearing a black broadcloth frock coat, indicated by the presence of a waist seam. The coat was of standard construction. A center back seam with a curved back seam on either side created a fitted back. The coat is single-breasted with three buttonholes and an additional buttonhole in the left lapel. The collar and lapel lining show evidence of quilting in a curved pattern, causing the collar to be firm and folded over in a smooth line. The skirt of the coat is 18 in. long and has a vent opening in the center of the back with a turn-over hem and seam on either side. The coat had been fully lined, but the lining had deteriorated and is represented by a mass of thread that is distinct from the thread representing the deteriorated vest. A rectangular hole (2 x 1-3/8 in.) in the right front skirt of the coat near its bottom has been mended with a patch. There is a slit in the left breast of the coat for a pocket, which had come loose. The sleeves remain set in the coat and are of two-part construction. They are slightly shaped at the elbow.

The second button from the bottom is still attached to the coat. The button is metal based and thread covered. It matches three other buttons that were found loose in the coffin. Two metal buttons, once thread covered, are on the back of the coat at the waist seam.

The tailor-made trousers have an inseam of 31 in. and a waist of 32 in. The trouser front has a concealed five-button fly with an additional button at the top of the waistband. Two sew-through buttons with well-preserved yellow gilt are present at the top of the posterior waistband, probably for suspender use. An adjustable enameled buckle with two strips of fabric in place is present at the back of the trousers. The trousers were constructed with a center back seam and a pieced yoke for fitting, producing a relatively rectangular silhouette. The seam edges are raw, which is not unusual with broadcloth. Buttons were present on the side pockets.

Silk material that had constituted a necktie is still present. It was woven in a square with self stripes near the edges. It had been folded to create a thick band around the neck, with less fabric at the ends to be tied into the bow.

In addition to the tailor-made suit, the man was wearing a pair of good quality leather boots. There are nine lifts in the heel. The widest part of the sole is 3 in. and the length of the boot is 10 in. All seams are hand-stitched. Both boots are missing the piece of leather at the front top of the boot that would have covered the kneecap and was often made of a different leather than the rest of the boot (June Swann 2003, pers. comm.). This piece had been removed, either by preference of the owner or during burial preparations to avoid distorting the trouser leg, which in life would have been tucked in the top. The toe end is slightly rounded with a high toe spring and a snug fit at the waist.