



Pollen analysis of three seventeenth-century lead coffins[☆]

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ABSTRACT

Three lead covered wooden coffins containing the remains of a man, a woman, and a child were found during excavations inside the foundation of the 17th-Century Jesuit Chapel at Historic St. Mary's City, Maryland. Pollen analysis of physical samples and alcohol swabs from the coffins was complicated by pollen from agricultural produce stored with the coffin structural materials, the natural background pollen rain, and pollen from soil disturbance plants. The absence of pollen on the man's physical remains and on the interior of his wooden coffin indicates that his death occurred during the winter. Ragweed-type pollen dominated the woman's body and woman's wooden coffin samples, suggesting that she was died during the Fall. Perfectly preserved pine pollen grains in soil placed in the child's wooden coffin to raise the upper portion of the body suggest that the child died and was buried during the Spring. Rosemary sprigs and aster-type pollen found on the woman's chest and pea family pollen found on the woman's lumbar area are interpreted as indicating floral funerary tributes and the practice of traditional English burial rituals.

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1. Introduction

Archeologists discovered three lead covered coffins of graduated sizes (Fig. 1) during excavations of a 17th-century Jesuit Chapel at St. Mary's City, Maryland in 1990. St. Mary's City is located near the junction of the Potomac River and Chesapeake Bay, and became the first capital of Maryland when the colony was established in 1634 (Fig. 2). The city was abandoned in 1695 and long subsequent agrarian use has permitted the archeological record of the early community to be well preserved. Investigations have been ongoing since 1969, and one of the most significant sites is a cross-shaped brick church built in the 1660s and demolished in the early 1700s. It was, the first major Catholic Church built in English America and the first brick structure in the colony. Excavations revealed the three coffins buried in a pit in the north transept of the building (Fig. 3), along with approximately 70 other burials within the church, and several hundred outside in the graveyard (Riordan, 2000, 2009). These are the only 17th-century lead sheathed coffins found thus far by archeologists in North America. Geophysics suggests there are no other lead coffins among the hundreds of burials at the chapel site (Johnson and Johnson 2002), and such unusual mortuary treatment strongly implies that the three individuals were of high social status. A major scientific investigation of the coffins was begun

in 1992 with their lifting from the burial site and opening. Its goals were to retrieve as much information as possible about life and death in early Maryland, obtain 17th-century environmental evidence, and attempt to identify the deceased. Subsequent analysis, some of which is ongoing, indicates that they were members of the colony's elite founding family—the Calverts (Miller et al., 2004).

The largest coffin was well made with an internal wood coffin of Atlantic White Cedar (*Chamaecyparis thyoides*) and Pine (*Pinus* spp.) (Alden 2007), fully covered by two large sheets of lead. It contained the unusually preserved body of an apparently corpulent man who was about five and one half feet tall, right handed, and in his mid- to late fifties when he died. The muscle attachments on his bones were not robust, suggesting a relatively sedentary lifestyle (Owsley and Sledzik 1993). The range of evidence strongly suggests that he was Philip Calvert (ca. A. D. 1625 or 1626–A. D. Winter 1682/1683), youngest son of the first Lord Baltimore and brother of the second, and a person who had a key administrative role in guiding the colony, serving as governor, chancellor and the chief judge of Maryland.

The intermediate coffin consisted of a pine (perhaps Loblolly *Pinus taeda*) coffin covered by two large but miss-cut pieces of lead, suggesting the maker was either incompetent or inexperienced (Alden 2007, Moyer, 1998). It contained the well-preserved skeleton of a woman who appears to have been in her mid- to late sixties when she died. Her right leg had been broken, had been improperly set, and had become infected, leaving a large lesion in the bone. She also suffered from osteoporosis and advanced arthritis. She had undergone severe dental attrition, with only 8 teeth remaining, a condition that may indicate she had large amounts of sugar in her diet (Owsley and Sledzik 1993). She was buried in a dignified manner with remnants of a shroud,

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Fig. 1. Lead coffins in situ.

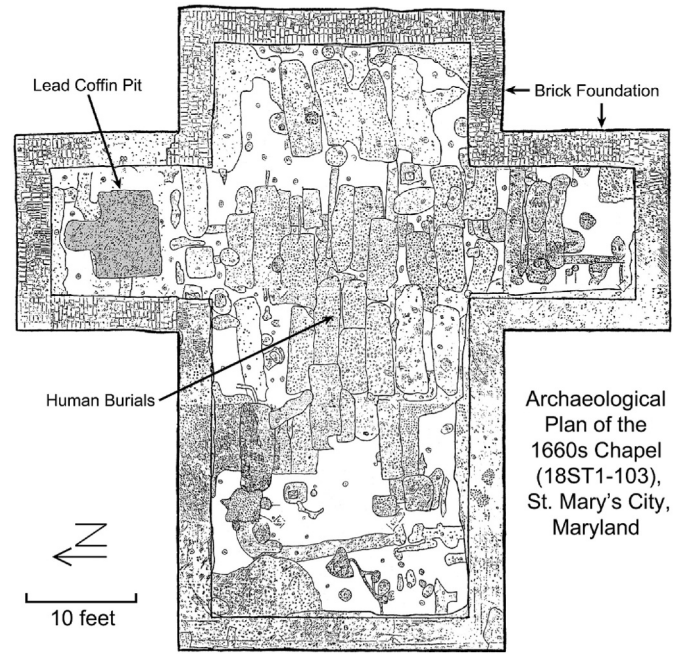


Fig. 3. Archeological plan view, 1660 chapel, St. Mary's City, Maryland.

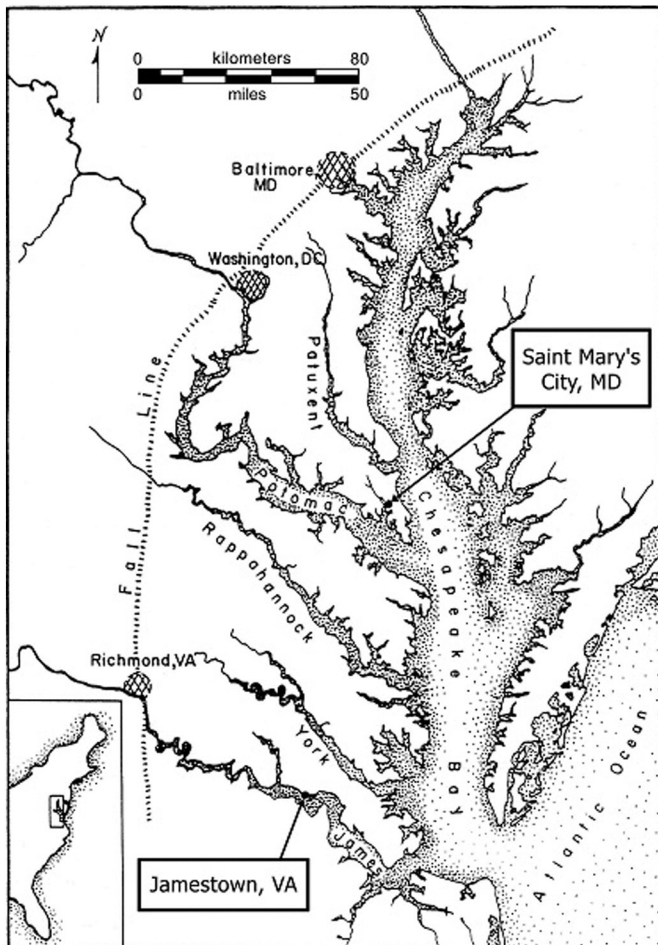


Fig. 2. Location of St. Mary's City, Maryland.

silk ribbons at her wrists, knees and ankles, and sprigs of rosemary (*Rosmarinus officinalis*) strewn through the coffin (Mc Weeney 1993). She is believed to have been Philip Calvert's first wife, Anne Wolsey Calvert, who died at St. Mary's City in 1678 or 1679.

The smallest coffin contained the remains of an approximately six month old girl, who might have been a child of Philip Calvert and his second wife, Jane Sewall Calvert. The child suffered from serious nutritional problems including severe anemia, scurvy and rickets. The practice of swaddling may have been a factor (Owsley and Sledzik 1993). The child appears to have been initially interred in a wood coffin, disinterred, a lead covering patched together from four scraps of lead added to exterior and reburied. The inner wooden coffin was made of black walnut (*Juglans nigra*) and pine (*Pinus* spp.) planks (Alden 2007). The child's head and upper back had been raised slightly at initial burial by placing a sloping layer of soil under the body at the head of the coffin. Later a second type of soil that seems to have been in the form of mud was placed on top of the upper and center sections of the body, possibly to contain odor during the application of the lead covering and re-interment. Because bodies of babies disintegrate rapidly, the fully articulated nature of the bones of this small corpse indicates that the second burial took place not long after the original internment (Owsley and Sledzik 1993). Further information about these individuals and their forensic analysis can be found at http://anthropology.si.edu/writteninbone/lead_coffins.html.

The man's and the woman's coffins were resting on the same sandy soil stratum, with the bottom of the man's coffin only one third centimeter deeper than that of the woman's coffin. This suggests that these coffins were placed in the pit at about the same time. Confirming this is the soil profile (Fig. 4) which shows they were covered by the same soil strata. Their physical burial in the chapel was simultaneous, despite the three or four years difference between their death dates. Sampling under the two adult coffins revealed no accumulation of pollen, demonstrating that the woman's coffin had not been placed nor stored in an open crypt during the time preceding her husband's death. Furthermore, inspection of her coffin during conservation also found no scratches, dents or other markings in the soft lead that would have likely been present if she had been exhumed for reburial with her husband (Moyer 1998). Where she was for the three to four years between her death and that of Philip Calvert is a mystery. The profile shows that two shafts was later cut through the pit fill over and near the woman's

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