BUTTONS AND BRICKS; SOME ARTIFACTUAL INFORMATION FROM SMITH COUNTY, TENNESSEE

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ABSTRACT

An artifact found on a farm in Smith County, Tennessee, is believed to be a mold for making pewter buttons. The kind of buttons that would have been produced using this mold suggests a similarity to eighteenth century examples from the northeastern United States. An examination of the site where this mold was found led to the discovery of a partially standing brick kiln that is a uniquely preserved example of brick making technology as it existed during the nineteenth century. Both of these artifacts have wide ranging implications for understanding two areas of past technology that are frequently manifested in the historic archaeological record.

Introduction

In early March, 1989, Mike Hackett of Nashville, Tennessee, came by the Division of Archaeology so that I could examine an unusual "stone" that had been found many years ago on his father's farm in Smith County in Middle Tennessee. Though I had never before seen anything exactly like it, its general appearance suggested that it was a mold for making buttons. A quick search of some appropriate literature suggested the further likelihood that it had been used for making pewter buttons, similar to ones known to have been produced during the eighteenth century in certain areas of the northeastern United States. Mike Hackett agreed to loan me the item for a few days and also put me in contact with his father, who consented to show me the location where the item had been found.

Several days later, accompanied by Ervin Smith, the County Historian for Smith County, I visited Mr. Neal Hackett at his farm in Paynes Bend (of the Cumberland River) a few miles west of Carthage, Tennessee. Mr. Hackett kindly took us on a tour of his farm, showing us such things as a standing nineteenth century log house, a nearby family cemetery, the site where a "Dr. Austin" had planned to build a hospital, the remains of Dr. Austin's brick kiln, and finally the site of an "old poplar frame house," which is where the stone that appeared to be a button mold had been found. Before we reached this last site, I was wide-eyed with excitement concerning the previous one. What we passed was the partially standing remains of a brick kiln that was evidently constructed around 1900 and is a type of kiln that illustrates what was already by that time a dying technology. It is extremely unlikely that there is another even partially standing kiln of this type anywhere in Tennessee.

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We spent several hours at the Hackett farm recording site locations, making measurements, and taking photographs. According to Mr. Hackett, his grandfather, Russ Hackett, had purchased this farm about eighty years ago, and the log house and the poplar frame house (where the button mold was found) were already old buildings at that time. Russ Hackett lived in the log house, which had previously been the home of the above mentioned Dr. Austin, but Mr. Hackett did not know who the earliest owner of the frame house might have been. During the twentieth century, the frame house was occupied by a series of tenants and was still standing until the 1950s. The button mold was found when a thick stone-walled outbuilding (a "cellar") near the north front corner of the frame house was torn down (about the same time that the house was razed).

The family cemetery on the Hackett farm is known as the Purnell Cemetery, but the oldest marked grave is one for: "B. ROE ESQ" "BO 1785" "DECD FEB 6 1834." Through conversations with other informants suggested by Mr. Hackett, it soon became clear that this was the grave of Benjamin Roe, who moved from Maryland to Tennessee around 1800, and had probably built and lived in the poplar frame house, which stood about 2,000 feet south of the cemetery.

It seemed likely that there was some connection between Benjamin Roe and the button mold, but in order to understand the historical context of both it and the partially standing brick kiln, it was necessary to undertake a substantial amount of archival research.

Because the button mold seemed similar to objects known primarily from the northeastern United States, information was requested from a number of colleagues in that part of the country. Most of the individuals who were contacted responded in an interested and helpful manner (see Acknowledgements).

Land Use History

Benjamin Roe was born in Maryland in 1785 and by the early 1800s had moved from that state to Middle Tennessee with his father, John Roe, Sr., and brother, John Roe, Jr. The father and both sons lived in the same general area of Smith County, where they had substantial property holdings (Mrs. Marraline Atwood and Mrs. O. A. Purnell, personal communications, March, 1989). The earliest record found for Benjamin Roe (sometimes spelled Rowe) concerns his serving as a jury member in 1808 (Smith County Court Minute Books, Book 3, 1808-1811, p. 347). His name continues to appear frequently in Smith County court cases recorded during the 1820s and 1830s.

The earliest land transaction found for Benjamin Roe concerns two tracts of 50 and 75 acres that he purchased in 1809 (Smith County Deed Book C, p. 213 and Book F, p. 315). The deeds for these tracts are not clear as to exact location, but in 1812 (Smith County Deed Book E, p. 111) Roe purchased 156 acres adjoining what he already owned. It is clear from this deed that he now owned 281 acres on "the South side of Cumberland River," and it is reasonably certain that this was roughly the same tract that is now the Hackett Farm. In 1815, Roe sold 40 acres from the south part of his tract to a Ralph Flowers (Smith County Deed Book E, p. 324). The remaining estate of 200(+) acres remained in Roe family ownership until the 1860s.

United States census reports for the first half of the nineteenth century show that in 1820 (Smith County, No. 1604) Benjamin Roe's household consisted of him, his wife, five children, and four slaves. By 1830 (Smith County, No. 545) the household had increased to seventeen (including six slaves).

Benjamin Roe died in 1834. His will (Smith County Wills, Vol. 3, 1828-1842, p. 107) names his children: Jacob, Anna, William C., Robert A., Emily H., Easter H. and Mary S. His widow, Mary Roe, was to receive one-third of the estate "including the Mansion and out Houses and provisions for the present year during her natural life."

Several informants who were raised in the Hackett farm area have indicated a belief that the two-story frame house that formerly stood at the south end of this property once belonged to Benjamin Roe. Evidently it is the "Mansion" referred to in Roe's will. It seems likely that it may have been built as early as 1809.

A surviving Smith County tax list for 1837 (Tennessee State Library and Archives, Tax List, Microfilm Roll No. 8) shows 200 acres in District 13 still listed under the names of the deceased Benjamin Roe (105 acres and 6 slaves) and his widow, Mary Roe (95 acres).

Mary Roe and four of her children were still living on the family estate in 1840 (United States Census, Smith County, p. 254), and she still had possession of six slaves. At one point there were at least eight slaves belonging to Benjamin Roe's estate. Their names were Robin (or Robert), Miles, Jim, Solomon, Edmond, Monah, Edy, and Doctor (Smith County Inventory and Will Books, 1827-1841, p. 114 and 240).

Mary Roe died in 1843. An inventory of the sale of her estate contains a long list of items sold to neighbors and family members (Smith County Inventory Records, 1840-1853, pp. 361-364), including livestock, items of furniture, a "spinning machine," lots of barrels, and, of at least some interest, "1 set of pewter."

By 1850 (United States Census, Smith County, p. 634) William C. and Robert A. Roe were in charge of their deceased parents estate. Living close to them was their brother-in-law, Ira B. Purnell, who had recently married their sister Easter H. (as noted on Ira Purnell's tombstone in the Purnell Family Cemetery). Based on Purnell family tradition (Mrs. O. A. Purnell, personal communication, April, 1989), it seems probable that Ira and Easter Purnell were already living in the log house that still stands near the north end of the Hackett Farm.

The 1860 United States Census (Smith County, District 13, Nos. 29 and 30) clearly illustrates the situation at that time. Ira B. Purnell and Robert A. Roe are listed as the heads of adjoining households. Purnell is listed as a 35 year old farmer with $8,000 worth of real estate and a $5,000 personal estate. His household included his wife, Easter H. (33), and children Samuel W. (9), Mary A. (6), James (4), and Lanid (?). Robert Roe is listed as a 41 year old "merchant" with $9,000 real estate and $5,000 personal estate. His household was shared by Jordan Mckinzie (17), a farm hand, and Stephen Healey (27), a farmer, and his family.

The fact that Benjamin Roe's son Robert is listed as a merchant on the 1860 census is of interest in terms of trying to place the button mold into its historical context. Both John and his brother William are identified as "laborers" on the 1850 census, which is the first census that lists occupations. For Benjamin Roe there is nothing that has been found that would indicate an occupation other than farming, but Robert's one-time listing as a merchant at least suggests that this might have also been a family activity in years past. If Benjamin Roe operated a store in the early 1800s, a mold for making pewter buttons to sell would not be an unexpected item to find in association with his house site. Whether or not such an item would still have been in use as late as 1860 is another matter.

By the mid-1860s, Robert A.Roe's financial status was not good. The family farm, now 204 acres (in District 13), was sold at a sheriff's sale in 1866. The following year, Roe released his remaining claim to the property to his brother-in-law, Ira B. Purnell, and noted in the deed that it was "the land on which I now live." Purnell also secured the rights to this same tract from its now legal owner, John H.Bates, and traded Bates a nearby 170 acre farm that he (Purnell) owned (Smith County Deed Book CC, pp. 320-322).

By 1870, Purnell is listed on the census as a 46 year old farmer with $9,900 worth of real estate and a $1,860 personal estate. Purnell's wife and seven children were living with him. Robert A. Roe (53) lived in an adjoining household, alone and "without occupation" (1870 United States Census, Smith County, District 13, Nos. 2 and 3). The picture that emerges is of Purnell and his family living comfortably in the log house to the north while Robert Roe, the last of Benjamin Roe's children to live in the old family home to the south, was now in the declining phase of his life.

The only surviving late 1800s tax lists for Smith County are for 1871 and 1875 (Smith County Trustees Office, Tax Book). Ira B. Purnell is listed as the owner of 437 acres of land in District 13 (he also owned 5 dogs). Robert Roe does not appear on the United States census listings consulted for the post-1870 period. Ira Purnell's first wife died in 1885. He remarried in 1888, and lived until 1897 (tombstone inscriptions in the Purnell family cemetery).

By 1890, Ira Purnell's daughter Alice had married B. D. Austin of the Smith County community of Riddleton. Purnell sold part of his land to them in that year (Smith County Deed Book 8, p. 226), and they obtained the rest of it by 1900 (Deed Book 11, p. 417 and Book 13, p. 10). It was probably near 1900 when the Austins moved into the same log house that had been the Purnell home (Neal Hackett and Mrs. A. O. Purnell, personal communications, March and April, 1989).

Barnett D. Austin is listed as a 41 year old "Physician" on the 1900 census (Smith County, District 13, No. 217). He owned his own farm and shared his household with his wife Alice (34), son Stanley (8), and Susan Helton (18), a white servant.

A story known to several local informants is that Dr. Austin intended to build a hospital on his property. Around 1900 he had a large quantity of dressed limestone foundation blocks brought to his farm, and employed at least some local workers to build and fire a large kiln of bricks. Dr. Austin became financially

unable to carry out his construction plans, and the brick and stone were not used for their intended purpose. In later years, major portions of both of these materials were used by other people, but not enough to completely remove the kiln. It is the remains of this brick kiln that still stands on the Hackett Farm.

This story is corroborated by a 1908 deed by which B. D. and Alice Austin sold their farm, now containing 475 acres, to J. W. Williams and H. R. Vaughn, with the following exceptions:

> The family burying ground is exempted sacred, and not to be transferred under any circumstances ... B. D. Austin is to have right of way for the purpose of hauling brick over the road on the upper end of the farm where it now runs and at the gate into Bates lot (Smith County Deed Book 19, pp. 170-171).

Obviously, Dr. Austin was reserving an option to still make some use of the bricks that he had paid to have made.

The 475 acre Austin Farm came into possession of the Hackett family in 1911, and the Russ Hackett family became the next residents of the Purnell log house. Initially the farm land was co-owned with William Hull (Smith County Deed Book 57, p. 604), and was referred to as the Hull-Hackett Farm. "Uncle Billy" Hull, who had moved to Carthage around 1906, was the father of one of Carthage's most famous former residents, Cordell Hull, United States Secretary of State from 1933 to 1944 (Hinton 1942: 10 and 36; Crowell 1988: 332).

The Button Mold

The stone object found at the Hackett Farm is made from a 5 to 7 mm (about 1/4 inch) thick piece of dark gray slate (or possibly graphitic schist), rectangular in shape, measuring 65 by 70 mm (2 1/2 by 2 3/4 inches). On what will be referred to as the "front" side (Figure 1) there are nine circular depressions, each containing a different carved geometric design. Each of these depressions is slightly more than 1 mm deep and 14 to 15 mm in diameter. Apparently each depression was initially made by drilling with a 9/16 inch bit or auger, which left a small feed-screw or starter hole at the center of the depression. The design was then carved with some type of hand tool(s) in the bottom of the depression. In most cases the starter hole was incorporated into the design, but in some of the depressions it was removed when the design was carved.

The "back" side of this object (Figure 2) has four depressions that are approximately the same depth as those on the front. Two of these are 16 mm in diameter, and two are 18 mm in diameter (5/8 and 3/4 inches). The same basic technique was used for making the designs on this side as was used on the front.

Figure 1. Button mold ("front" side), with modeling clay impressions of depressions.

Figure 2. Button mold ("back" side), with modeling clay impressions of depressions.

There is little doubt that the intended function of this stone was as a mold for making soft metal buttons. Most likely these would have been pewter buttons. As noted above, there is direct historical information for the use of pewter vessels in the Benjamin Roe household. Beyond this, however, pewter was widely used by all social levels in America during the eighteenth century, only gradually declining in use during the nineteenth century (Montgomery 1973: 1). Unlike the remains of ceramic vessels which form a major ingredient of the historic archaeological record, part of pewter's value was that it could easilybe remelted and reused (Martin 1989). Though during the period when pewter was most popular, it is assumed that most buttons used in America were imported from Europe, the commercial manufacture of buttons is documented as early as 1739 in Philadelphia, and it is generally assumed "that flat or solid white-metal buttons had been cast in sand or in two- or three-piece molds (somewhat akin to those used in making bullets) by colonial metal workers throughout most of the eighteenth century" (Noel-Hume 1970: 92-93). In addition to pewter's commercial uses, it was not uncommon for early American families to have their own molds for making pewter spoons and buttons (Olsen 1964; Tunis 1965: 75).

Luscomb's (1967: 148-149) discussion of pewter buttons includes the following comments:

> Pewter was commonly used in the late eighteenth and early nineteenth centuries for making men's buttons. It was used again after the middle of the nineteenth century for women's wear. Pewter is an alloy of tin and other metals such as antimony, bismuth, copper, or lead. Various combinations were used, but the best pewter was considered to be that made of at least 90 percent tin.
>
> The first pewter buttons were probably made in Europe ... although early histories mention pewterers in several [American] states that made buttons of this material, only buttons with Connecticut pewterers names have so far been found. A large portion of pewter buttons have no back markings. The first pewter buttons were made in molds that include a self-shank.

Luscomb (1967: 148) includes an illustration with two examples of these pewter button molds that produced a "gang" of buttons (4 and 10), complete with shanks. These are double handled, hinged devices, much more sophisticated than the type of mold illustrated in Figures 1 and 2.

Luscomb's comment that this was the earliest type of pewter button mold is probably in error. In point of fact, one-piece stone molds for casting buttons (1 to 3 buttons per mold) and other small pewter and lead objects have long been recognized as artifacts associated with early historic period Indians in New England (Willoughby 1935: 243-244). At least one example, recovered in modern times, was associated with a ca. 1660 Indian burial in Rhode Island (Paul Robinson to S. Smith, photograph and letter dated May 1, 1989). Basically the same casting technology was still being used by American Indians during the eighteenth century, as far west as Illinois (Good 1972: 91). This was a technology that the American Indians learned from some of their early European contacts, and it is similar to small scale casting techniques used in Europe as early as Roman times. Early contact between the American Indians and the Dutch

is one likely point of origin (James Bradley to S. Smith, letter dated May 30, 1989).

While the Hackett Farm mold is at least similar to the available illustrations of Indian examples, it is also very different from them. This is true in terms of the greater number of casting depressions (12 as opposed to at most 3), the occurrences of the depressions on both sides of the stone, and the type of designs employed.

It seems most likely that this particular mold is of Anglo-American origin. One of the earliest books devoted to what is now called historical archaeology (Calver and Bolton 1950: 102) contains an illustration of a one piece "die or matrix" for casting Revolutionary War military buttons. It appears to be made of stone, although the writers do not identify the material. A more recent guide to Revolutionary War period artifacts (Neumann and Kravic 1975: 189-193) illustrates a number of types of small molds, including two one-piece molds for single buttons. Beyond this, however, no example of a button mold that is really like the Hackett Farm specimen is presently known to the writer.

It is not entirely clear what type of eyes would have been most common for buttons cast in a one-piece mold. Olsen's (1963: 552) discussion of button types includes a kind of button that was :

> ... cast from whitemetal or brass and with a brass-wire eye set into a boss on the button back. The cast button was held in a chunk and spun, while a tool cut the button back to the desired thickness. A burred edge around the eye and the concentric tool marks usually identify this type.

Olsen estimates that buttons made in this manner were manufactured from about 1760 to 1780. It seems likely that such buttons may have been produced in one-piece molds, but the depressions in the Hackett Farm mold are so shallow that it is difficult to imagine that buttons produced with this device would withstand any additional thinning. Most likely a wire eye would have been attached as the liquid metal for each button was poured or an eye would have been soldered in place after the molding was complete. Several of the 1726-1865 button types discussed and illustrated by South (1964) have soldered eyes, but not one of his types seems to have been made in exactly the same manner that is suggested by the Hackett Farm mold.

The designs on the individual depressions in the Hackett Farm mold seem to offer the best indication of its probable cultural associations and period of use. These designs are not known to occur on Colonial buttons from the seventeenth or very early eighteenth centuries (Henry Miller to S. Smith, letter dated June 5, 1989). They are, however, very similar to designs in use from the mid-1700s to the early 1800s. The large collection of buttons from 1715-1781 Fort Michilimackinac (Stone 1974: 45-67), for example, contains numerous examples of civilian buttons with basket-weave and pinwheel designs similar to the designs in Figure 1 (upper photo, lower right and upper right). The multiple-pointed star design in Figure 1 (upper photo, middle left) is very similar to a Revolutionary War button illustrated by Neumann and Kravic (1975: 56). Similar

star designs are also shown on pewter buttons illustrated by Luscomb (1967: 149) and said to date to the period 1800 to 1820).

Archaeological work on historic period sites in Tennessee has produced a few examples of pewter buttons with designs similar to those on the Hackett Farm button mold. The archaeological excavation of Tellico Blockhouse (1794-1807) in East Tennessee yielded at least one cast pewter button with a basket-weave pattern on the face (Polhemus 1980: 243). This button was made in a three-piece mold, which left mold seams on the disc and eye.

The writer is currently engaged in research concerning the site of Fort Blount in Middle Tennessee (Smith and Rogers 1989). Recent archaeological work on this 1794 to 1798 militia and federal military site produced one pewter button with a grid or basket-weave pattern on the front. This specimen is 19 mm in diameter and was probably (it has not yet undergone laboratory cleaning) made in a three-piece mold.

The suggestion derived from the various sources consulted is that the designs imparted to buttons that would have been produced in the Hackett Farm mold are typical of buttons that were being widely manufactured for civilian used during the mid- to late 1700s and to some extent into the early 1800s. The manufacturing technology indicated by the mold is, however, unlike any of the standard techniques used by early American pewterers (Tunis 1965: 72-76). The casting technique suggested is a relatively simple kind, similar to a technology best known from seventeenth-century American Indian sites (but based on early casting techniques that originated in Europe). There is a strong implication that the Hackett Farm mold is an example of what could be termed a "folk" artifact, an item of local manufacture made to produce buttons resembling those being made at the time by commercial manufacturers.

This does not mean that the mold was necessarily made in Tennessee. If it once belonged to Benjamin Roe or some other early member of the Roe family, it might have been brought here from Maryland. If so, it may or may not have even been used in Tennessee. On the other hand, Middle Tennessee, in the early 1800s, previous to the arrival of the first steamboat at Nashville in 1819 (Caldwell 1968: 187), was still a frontier where most of the material needs had to be supplied by local means. The use of such a device during this time frame does not seem at all unlikely.

The Brick Kiln

As noted in the historical background section, the remains of a partially standing brick kiln are located on the Hackett Farm near the area where Dr. B. D. Austin had intended to build a hospital, around 1900. The building and firing of this kiln had definitely been completed before 1908.

The visible remains (Figure 3) of this kiln reflect a brickmaking technology that was used in America in a similar form from the seventeenth to the nineteenth centuries. This included the use of local clay deposits, mixing these clays with water in a pug-mill, hand molding the clay mixture using box molds, air drying

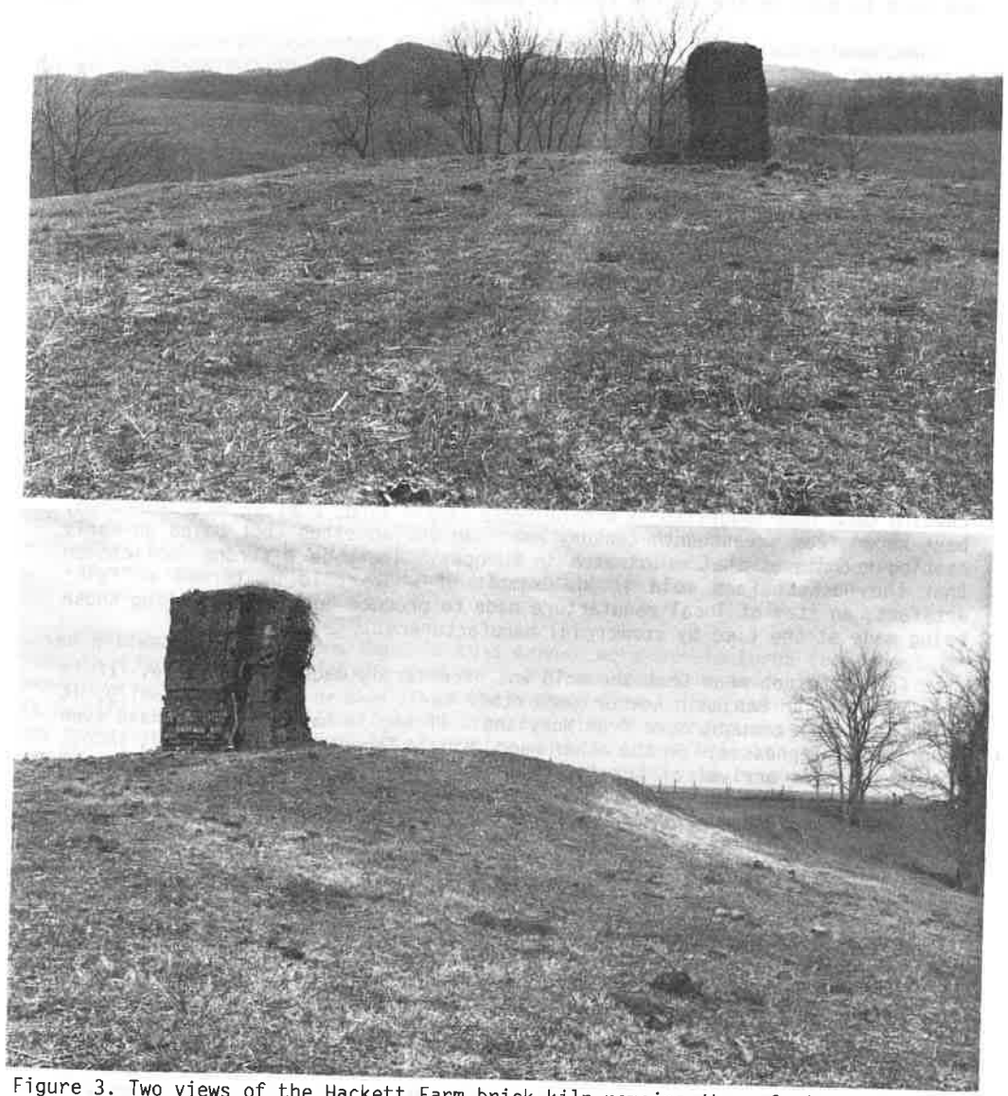

Figure 3. Two views of the Hackett Farm brick kiln remains (top, facing east; bottom, facing northwest).

the formed bricks, and firing these "green" bricks with wood in a large stack or open "kiln." By the late nineteenth century, this technology had been largely replaced by mechanical means of production, but it was still in use in some areas through the first quarter of the twentieth century.

In his autobiographical novel, Ed Bell (1935) describes a small brickyard that operated in the eastern Middle Tennessee town of Smithville in the early 1900s:

> You will not find many brickyards of that kind now even in Tennessee; because it is much cheaper to turn out bricks by machinery under ten-acre sheds where the rain can't fall, and to bake them in kilns with gas and coal... [in Redmon's brickyard] it took all of a blazing summer to produce a comparative few. They molded their brick by hand, laid them out for drying on yards open to the weather; and sometimes, before the brick were firm enough to handle, it rained and the molding had to be done all over again. ... The old brickmakers hated the rain and the shade.
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> The equipment of Redmon's brickyards was simple. There was an iron wheel for grinding the clay in two circular, plank-bottomed pits; there were two dirt scoops, a turning plow, two wagons with regular box beds and an extra set of gravel frames of collapsible sideboards and two-by-fours, five flat brickbarrows for the dry brick, one deep metal tray barrow for the mud of the brick not yet molded, twelve or fifteen wooden molds holding three bricks each, an upright screen for sieving sand, a scraper and roller to keep the yard level, picks, shovels, mules, some men and some boys.
>
> In the process of working the wet clay to the proper texture for molding, the big wheel moved in two directions on the long axle which rested on a hub in the center of the pits: vertically around the pit, and horizontally sliding along the axle from the hub to the outer edge and back as the wheel rolled. When one of the pits was scooped full of loose clay and watered, the mules walked around the bank pulling the free end of the axle until the clay was just right to knead with the hands, neither too slushy nor too tough. Each morning it had to be ground before molding could begin as the moisture soaked out during the night. While one supply was used, the other pit was filled and got ready. The wheel had to be swapped back and forth between the two. The molders stood in holes waist-deep up about the center of the yard, kneading the clay and shaping it into pones, then dropping these into the molds for the offbearers to take away. The molds had to be kept moist and sanded on the inside so the brick would slip out with clean edges.
>
> When the brick got several hours old, somebody had to straddle the rows and pull them up on edge - the work was called edging - to let the sun shine on the bottoms. A day later they were stacked in ricks so the air could get to them better and to make room for fresh ones. Shingle panels covered the ricks against the night rains. Then they rolled them in wheelbarrow loads of sixty to the high-walled shed near

> the yard. The setters built the kiln inside in the shape of a truncated pyramid, leaving long tunnels through the bottom. These were the kiln's eyes. In the fall they fired the kiln five days with green wood to dry it thoroughly and three days with seasoned wood at full blast, and the people came from all around to see the fires burn through the night (Bell 1935: 62-64).

The brickmaking activity that occurred when the Hackett Farm kiln was built would have been comparable to Bell's description. In more specific terms, the Hackett Farm remains indicate either a "clamp" (as described by Heite 1970: 44) or a "scove kiln" (as described by Nelson 1911: 36). The difference between these two kiln types has been previously discussed in the Tennessee Anthropologist (Smith and Watrin: 1986: 137-138). Either type of structure was constructed by stacking a large mass of "green" (dried but unfired) bricks to form the basic kiln structure. In a scove kiln, the unfired bricks were enclosed in an outer wall of soft, underfired bricks from some previous firing.

With both the scove kiln and the clamp the stacking began with parallel rows of unburnt bricks forming the footings for the "benches." These footings were usually placed directly on a prepared, flat ground (clay) surface, but sometimes a brick paved floor was used. The use of a brick floor was probably more common when building a scove kiln (Smith et al. 1977: 89-90). Construction of the benches left an opening between each bench that became a fire channel or tunnel. Each tunnel was enclosed by overspanning the courses of unfired bricks as they were stacked higher. When the level of the top of the tunnels was reached, construction of the kiln was continued with several higher courses forming a "solid" (actually with adequate spacing between the bricks for heat circulation) square-sided mass of unfired bricks (or for the scove kiln with an outer wall of fired-brick). With the possible addition of a shed roof, the structure was ready for firing (for more complete descriptions of this basic technology as it existed in Tennessee see Guymon 1986; Smith et al.1977: 64-95; Smith and Watrin 1986).

The standing portion of the Hackett Farm kiln is part of the interior of the south one-fourth of the original stack. One intact section and one half section of two of the firing tunnels are still present. This provides what is, perhaps, the most interesting detail remaining. The typical means of forming the fire tunnels in such kilns seems to have been by overspanning the brick courses from both sides forming a triangular-shaped arch (Guymon 1986, Fig. 2; Mease 1813: 4-5 and Fig. 2; Smith and Watrin 1986, Fig. 5). The two remaining sections in the Hackett Farm kiln show that it was constructed using "half arches." The overspanning was carried out from one side (the north side) against a vertically flat surface on the south (Figure 4).

It will be difficult to ever know how common this construction technique was. This is a detail that would be hard to interpret from a typical archaeological example. Normally a clamp or scove kiln was disassembled after the firing, leaving only the bottom one or two courses of the benches to form part of the archaeological record. Investigators wishing to correctly interpret the remains of similar kilns need to watch closely for any evidence of unilateral overspanning.

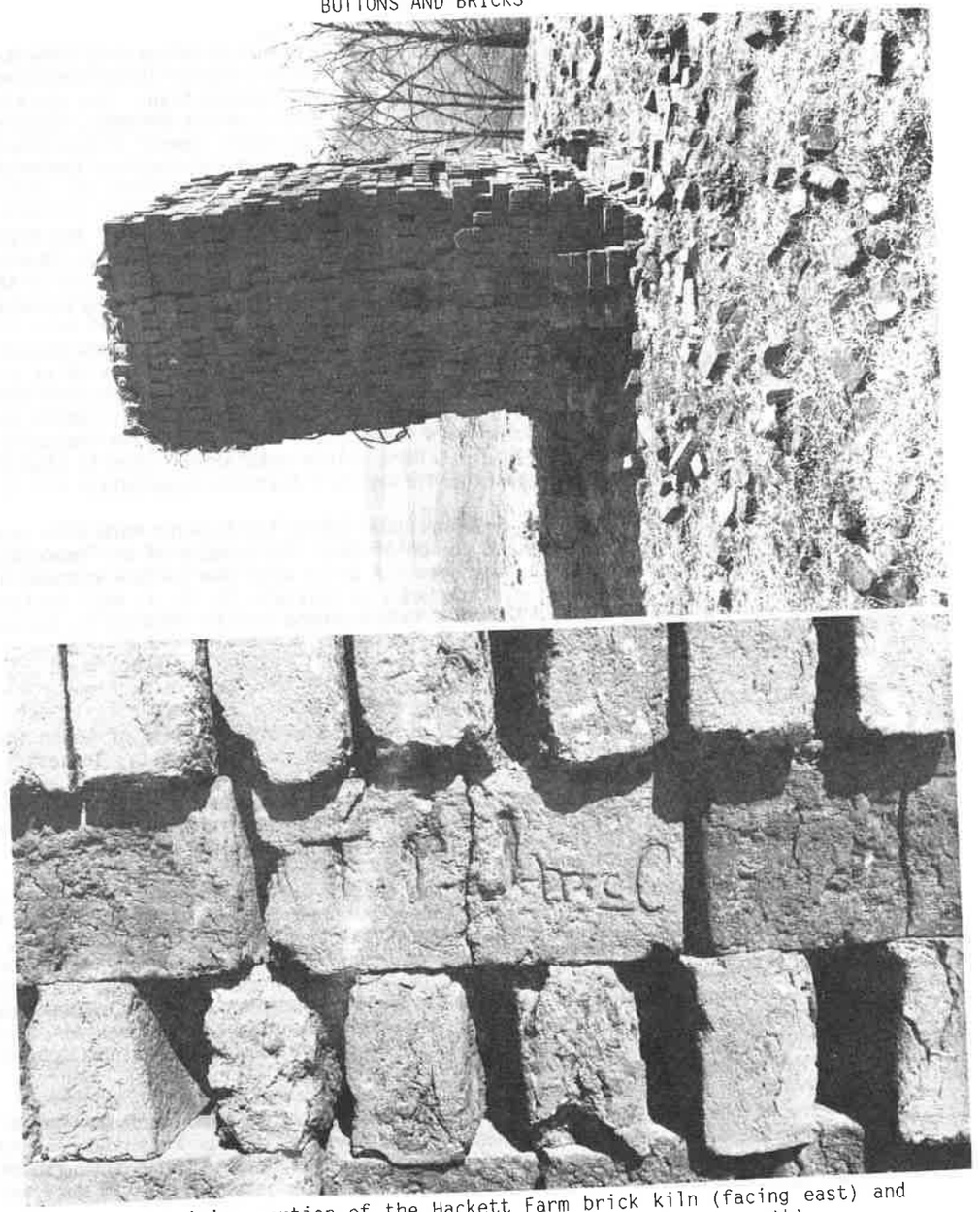

Figure 4. Remaining portion of the Hackett Farm brick kiln (facing east) and detail of stacking pattern with marked brick (facing north).

Based on what is still a slim data base of information concerning Tennessee brick kilns, the Hackett Farm kiln seems to have been a rather large structure. The remaining section shows that it was at least 30 courses high. The stacking pattern used is very simple, consisting of rows of bricks set on edge, changing direction 90 degrees with each course. These are "standard common" bricks (Smith 1978: 33), approximately 8 x 3 3/4 x 2 1/4 inches. Thirty courses therefore indicate that the kiln was at least 9 to 10 feet tall.

It was also estimated, based on visible surface evidence, that the stack covered an area at least 50 feet north-south by 20 to 30 feet east-west. Spacing of the two remaining fire channels further suggests that if the long axis of the kiln was at least 50 feet, then there may have been as many as 15 firing tunnels.

Compared to the three previously described Tennessee examples, the Hackett Farm kiln appears to be larger than either the Hermitage kilns (Smith et al. 1977: 81-89), the best understood of which was 43 by 33 feet (with nine fire channels at right angles to the long axis), or the Zimmerle kiln (Smith and Watrin 1986), which was approximately 24 feet square (with eight fire channels). The most likely reason for the Hackett Farm kiln's substantial size is that it reflects planning for a large brick building (Dr. Austin's hospital).

As noted above, all of the examples observed in the Hackett Farm kiln seem to be hand molded, 8-inch standard common bricks. No example of an "impressed center" brick (Guymon 1986: 32) was seen. A brick with one surface exposed on the south wall of the remaining stack has the initials "T. P. J. McC" incised (Figure 4). A search of Dr. Austin's neighborhood on the 1900 U. S. Census failed to identify anyone with these initials.

Conclusions

This paper has examined two historic period artifacts, one of which was found and the other which remains on the same farm in Smith County, Tennessee. Though in most respects very different, each item does reflect a no longer extant manufacturing technology that was once common. Each has added a new dimension to our understanding of eighteenth to nineteenth-century technologies that are likely manifestations in Tennessee's historic period archaeological record.

The Hackett farm button mold is potentially of interest concerning a variety of research questions not only in Tennessee, but over much of North America. It may be a very unusual artifact, reflecting a relatively rare "folk" technology. Yet, it is not clear to what extent evidence of this technology has been recognized. Persons reporting pewter buttons from archaeological contexts need to be specific as to whether or not all of their examples have the seam lines produced by two- and three-piece molds. Careful attention to such details could eventually lead to an understanding of the frequency of pewter buttons made in one-piece molds.

One of the most unclear aspects of this mold at this time concerns whether or not it was actually used in Tennessee. The obvious test for this would be the finding of matching buttons on regional historic period sites. If none can be found here, the next likely place to look would be in eighteenth-century Maryland

collections. The writer would, of course, welcome the receipt from other researchers of any relevant information concerning this object.

The Hackett farm brick kiln remains constitute an equally rare kind of "artifact." While there could still be several thousand eighteenth to early twentieth century brick kilns of this general type represented as archaeological sites in Tennessee, it is doubtful that there is even one other partially standing example. Such is contrary to the rules of brick production, which dictated that once the firing of a clamp or scove kiln was complete the structure was disassembled and all usable brick removed for their intended purpose. That this did not occur as planned with Dr. Austin's kiln and that local demands for brick did not entirely deplete the stock anyway are chance occurrences unlikely to have been repeated many times.

The interesting thing about the Hackett Farm example is that because it is partially standing, one can see that its structure, particularly the construction of the fire tunnels, is different than what has been thought to be the norm for this type of kiln. How many times investigators can be sure of this kind of detail from purely archaeological remains is unknown, but they need to be aware of the potential existence of clues concerning this and similar details.

Information on the Hackett Farm kiln adds one more example to the slim body of existing data for brick kiln sites in the Tennessee region. However, the following bears repeating:

> To restate the obvious, the real meaning of the Zimmerle Kiln [and now the Hackett Farm kiln] data will not be known until there has been a major increase in archaeological information collected concerning comparable sites. If this article serves to stimulate the collection of such data, it will have served a major intended purpose (Smith and Watrin 1986: 142)

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