BRICKS, BRICKMAKING
AND THE
LIBERTY HALL KILN

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Anthropology 377
Spring 1977
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This novice's 1977 spring term Liberty Hall experience started with a one month stay at the sight near the farmhouse. Not knowing what to expect, he jumped into a trench and began to dig. If the truth must be known, he started off more interested in gaining full exposure to the sun than in gaining full exposure to archaeology. But as the novelty of "fun in the sun" wore off, he found himself laboriously trowelling mounds of seemingly unending rubble, or, as they say at the "dig," common brick fragments. He very quickly began to wonder why he had signed up for Anthropology 377, but he soon learned why. As much of the rubble was removed, layed brick was discovered and so was this student's interest in archaeology. The layed brick, along with all of the unstructured fragments and areas of obvious burning, has caused suspicion that a brick kiln has been unearthed. It is believed that much of the construction at Liberty Hall was done with brick. If this is so, then these "molded, rectangular blocks of clay, baked by the sun or in a kiln until hard, and used as a building and paving material" had to be made somewhere. Historical records and common sense say that they were made at the sight of the construction. Making bricks elsewhere and then transporting them would not have
been as economical as self-made brick. Brick seems to be the most used, longest lasting building material in the area. Many brick structures in Lexington pre-date Liberty Hall, and they are still standing. Modern builders seem to believe that these early builders were knowledgeable because one of the newest structures in Lexington, Washington and Lee's Lewis Hall, is made mainly of brick. Because of its widespread use and primarily its importance at Liberty Hall, this budding young archaeologist believes that information about brick should be compiled into a paper. In this work, this student hopes to give a history of brickmaking as well as tell how brick is made and how the different glazes come about.
"Of all man's arts, ceramics deals with earth, water, air and fire - those elements which the ancients considered the essentials of our world. The fire is the key." Fire has been around forever, and man has learned to use it productively. With fire man can turn basic clay into a durable object used for building; man can easily make brick, and he has been doing so for a long time. "The ceramic kiln was one of man's earliest tools, the primitive form of which dates back to at least 8000 B.C. Simply the building of a fire for the purpose of making ceramic or brick can be considered a primitive kiln. It is possible that man was using brick to build structures as early as 8000 B.C., which means brick has been around for nearly ten thousand years. Ancient drawings exist which show the early existence of kilns.

Modern kilns, like older ones, are merely furnaces in which clay is fired. Extreme heat applied to clay forms brick, and little can be done to improve the method of brickmaking. Better structures can cause the clay to harden faster, but the final result is the same: brick. Modern man continues to use brick daily because of its positive points; brick is cheap and easy to make, very dur-
able and long lasting, and it is attractive. As long as man has fire and clay, he will be able to make brick. It has been around for a long time, and this historian sees no reason for its becoming extinct.

The use of bricks in America is as old as Colonial America itself. These early bricks were made at the site of their use, and, unlike English brick, no regulations were made pertaining to the size. In Colonial America, the sizes of the bricks varied, as did the shrinkage caused by the use of different clays. Normal American wall brick was approximately 9" x 4½" x 2½", although slight variations did occur. A modern brick that appears to be your everyday basic brick measures 7½" x 3.5" x 2.25", in other words, it is smaller than the basic early American brick.

According to Ivor Hume, excavating the area of a kiln is not a very productive site as far as datable artifacts go. As for this reporter's experience with a possible kiln site, he tends to agree with Mr. Hume, although some artifacts have been discovered. Among them are a few fragments of creamware ceramic which, according to site supervisor Parker Potter, have been dated to around 1800. This
shows that the kiln, if it is such, existed around that time. It is thought that the bricks were made around the 1770's because that is when the school was moved to Liberty Hall.

Dating of brick fragments is difficult. During the 18th century, the people were better conservationists than now (as far as brick goes), and they often re-used old brick in new structures. Since brick is merely clay, analysis of the content is not very useful. Dating can somewhat be done by studying the hardness, color and measurements of the brick and relating the finds to the general information known about brick of different periods, but this, too, lacks accuracy. The age of a structure can be determined by dating artifacts found, not by dating the structure itself.

Brick enjoys a rather long but generally unchanging history. It has been used for thousands of years throughout the world, and it continues to be important today. In the field at Liberty Hall, it is believed that a brick kiln has been unearthed which will add to the total picture of the early school.

Further in this paper, brickmaking, labwork with brick, and the possible importance of a kiln at Liberty Hall will be discussed.
Since brick has been around for thousands of years, it is obvious that brickmaking is an ancient art. Bricks probably first came about accidentally; early man undoubtedly discovered that the clay around an open fire became extremely hard and durable. Seeing this, he gradually realized that the fired clay could be used as a building material which would be easier to work with than stone. The clay can be molded to any size and shape that is desired, and, unlike stone, brick must not be excavated and transported. As time went on, man learned how to manufacture brick in a controlled manner.

To make brick, one needs only fire and clay. The clay is molded into the desired shape and heated until hard. Kilns, ovens used for baking the clay, are conveniences, not necessities. They allow for more controlled brickmaking because they trap the heat and, therefore, cause the clay to harden faster. Chamber's Cyclopaedia of 1738 gives excellent directions for firing the shaped clay. "The bricks being set in, and the kiln covered with pieces of bricks, they put in wood, to dry them with a gentle fire; and this they continue till they are pretty dry, which is known by the smoak's
turning from a whitish dark, to a thin black smoak. They then cease to put in wood, and proceed to burn with brush, furze, straw, heath, brake, or fern faggots; having first dammed up the mouth of the kiln with a shinlog, i.e. pieces of brick piled upon one another, and closed with wet brick-earth, instead of mortar; and they continue to put in more faggots, till the kiln and its arches look white, and the fire appear a-top of the kiln; upon which they slacken the fire for an hour, and let all cool by degrees. This they continue to do, alternately heating and slacking, till the ware be thoroughly burnt; which is usually effected in 48 hours.\textsuperscript{10}

Working out at Liberty Hall has made one aware of the different colors of brick. The colors are determined by the color of the clay used as well as the amount of heat to which the brick is exposed.\textsuperscript{11} Because all the brick fired simultaneously is exposed to different amounts of heat, one firing can result in brick of varying shades and with different glazes. The darker bricks are generally the ones baked the longest, and the glaze results from direct, close contact to the fire. Bricks furthest from the fire are the lightest in color and have the least amounts of glaze.\textsuperscript{12} According to Richard Neve who wrote \textit{The City and Country Purchaser's and Builder's}
Dictionary in 1736, there are three kinds of brick which come from each firing. They are as follows:

"The first and best sort for lasting are those which lie next to the Fire, and have, as it were, a Gloss on them, which proceeds from the Salt-petre inherent in them, which by the Violence of the Fire, runs and glazes them; these are called Clinkers. The second and most general Sort for Building, are those which lie next in the Kiln, or Clamp, to those before mentioned. The third and worst Sort, are those which lie on the Outsides of the Kilns or Clamps, where the Salt-petre is not digested for want of due Heat; and these, when they come to be exposed to the Weather for some Time, will moulder away like Dirt; and are called Samel or Sandal-bricks. 'Tis an Observation, that whilst Bricks are burning, those on the windy Side of a Clamp, are the worst of all." It should be mentioned that the bricks around the farmhouse area of the Liberty Hall project, where the kiln is thought to be, are a combination of all three types mentioned above.

Brickmaking is an old and very simple art. It has been an important part of the building of America and the whole world. As long as there continues to be clay and fire, there will continue to be brick.
No paper written on any single artifact type would be complete without a section describing lab techniques in dealing with that artifact. Most artifacts taken to the lab are cleaned, drawn, described, and recorded. But as for brick, not much lab work is done. Small finds of brick are taken to the lab and weighed. The weight is recorded for statistical purposes only. No other work is done with the brick.

The amount of brick brought into the lab varies from site to site. For example, because of the vast amounts of brick found in the area around the farmhouse, only a very small percentage is bagged. In structure one, where there is very little brick, all fragments are sent to the lab.

In the laboratory, brick fragments are not very important, but brick in the field, especially laid brick, is extremely useful in gaining knowledge about structures. Brick as individual artifacts is not very useful, but together in the field it is important.
IMPORTANCE OF

LIBERTY HALL KILN
The newest area of excavation in the Liberty Hall project is that area around the farmhouse. Much brick, whole, fragmented, glazed, and unglazed has been found. This, along with the fact that little to no mortar has been found, and areas of burning have been excavated, has caused reason to believe that a brick kiln has been found. This new structure would be meaningless if the proper questions were not asked. Is a kiln significant, and, if it is, what is its importance to Liberty Hall?

Research on the topic of brickmaking in the 18th century has caused this reporter to conclude that the discovery of a brick kiln from an 18th century site is important in that it adds to the total blueprint of the history of Liberty Hall Academy. One can see what area was used primarily for construction purposes, and what was made in that area. Although it is bad to jump to conclusions, this archaeologist believes that the kiln which has been found is where most, if not all, of the brick used for construction on the site was made in the area around the farmhouse. This is important because it is now known where the brick was made. Because of the cost of transporting ready-made brick compared to the cost of self-made brick, most 18th century construction was done with brick made at the site, so it is not surprising that a kiln has been found.
Brick has been around for nearly ten thousand years. During this time, the basic methods of brickmaking have not changed very much. Kilns, furnaces in which bricks are fired, have been improved somewhat, but there is not much room for improvement because of the simplicity of them. Construction in Colonial America was done with self-made brick which was fired at the site. The 1977 spring term Liberty Hall project has resulted in the discovery of a brick kiln near the farmhouse. This kiln is important in adding to the total picture of the 18th century academy, but its discovery should come as no surprise.

It is hoped that this research paper has helped to answer questions about brick, brickmaking, and the kiln at Liberty Hall.
ACKNOWLEDGEMENTS

I would like to thank the following people for helping me with this paper:

Dr. J. S. McCown for taking the time to talk to me about bricks and brickmaking on the phone.
Parker Potter for giving me information on the kiln at Liberty Hall.
Kurt Russ for giving me information on labwork with brick.
Jeff Peck for making available to me numerous books used to research this paper.
FOOTNOTES


2 William P. Irvin, Jr., from research for his paper.

3 Daniel Rhodes, Kilns (Radnor, Pa.: Chilton Book Company, 1968), preface.

4 Ibid, p. 3.


6 Ibid, p. 123.


8 Historical Archaeology p. 174.

9 Artifacts of Colonial America p. 80.

10 Historical Archaeology p. 173.


12 Ibid.

13 Artifacts of Colonial America p. 81.

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