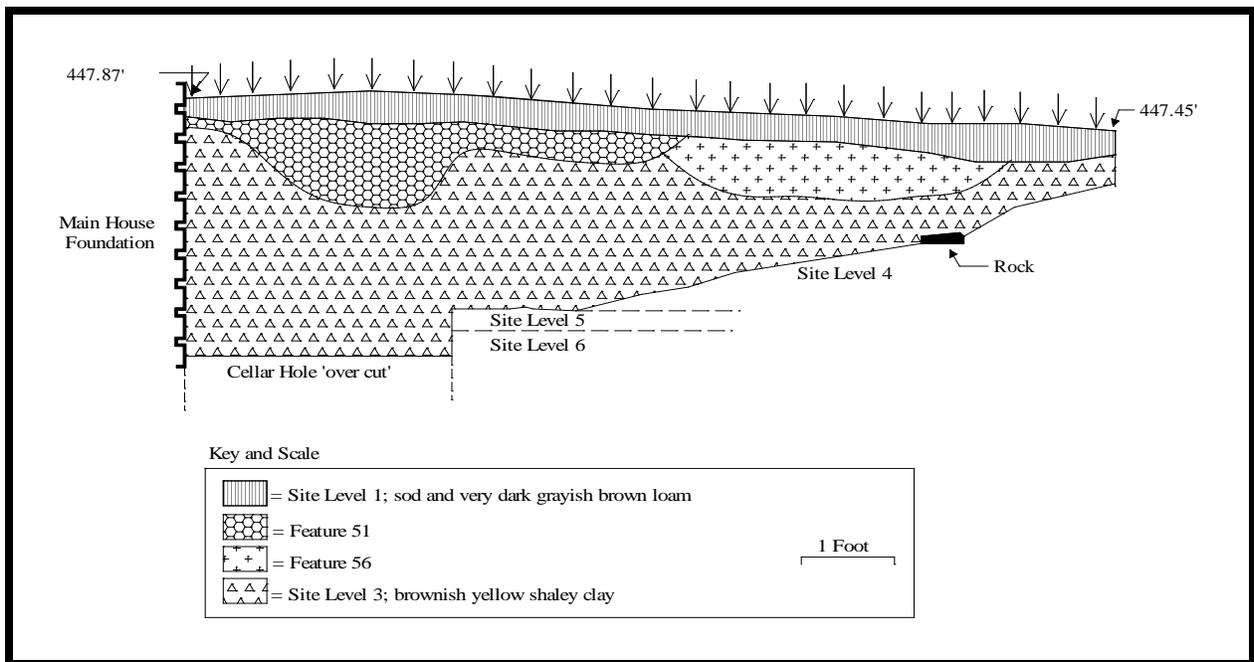


Field Soil Level 2, a dark yellowish brown clay layer mixed with shale and water-rounded cobbles, is comparable to Site Soil Level 3 and interpreted to be cellar hole fill. Customarily when a full basement is dug, masonry is laid directly against the interior face of the cellar hole. Figure 25 illustrates, however, that the Priestley House cellar hole was “over cut” by nearly three feet. Stone basement walls were built as free-standing elements, requiring backfilling with Site Soil Level 3 shaley clay from the rim of the cellar hole. This condition was documented on both the north and south sides of the house.

Figure 25. East Profile, Test Pit 4, depicting cellar hole “over cut.”



Four hundred and seventy-six artifacts, including 368 pieces of window glass, were recovered from Field Soil Level 2. This soil layer established grade level on the riverside of the house at the time of the Priestley family occupation. The small number of domestic artifacts found in the layer (n=20; 4%) indicates refuse was not customarily disposed of from nor permitted to accumulate near the south entrance door. The door was likely the main entrance by which visitors were received into the house.

Soil layers identified under Field Soil Level 2 are virtually identical to those encountered and recorded in test pits dug on the north (Priestley Avenue) side of the house. Field Soil Level 3 is comparable to Site Soil Level 4, a mottled clay loam also dug from the cellar hole during construction of the house. Field Soil Level 4 is comparable to Site Soil Level 5, a dark brown clay loam recognized as land surface prior to house construction. And, Field Soil Level 5 is comparable to Site Soil Level 6, yellowish brown clay loam subsoil.

Because Test Pit 4 was investigated near the end of the 1986 season and Field Soil Levels 3-5 were the same as those previously excavated along the north side of the house, only enough work was done in the excavation unit to define these layers where exposed by removal of Level 2 soil from the cellar hole “over cut.” Therefore, the artifactual content of Field Soil Levels 3-5 is unknown.

Laboratory Store Room and South Side of Laboratory

Test Pit 3 was dug in a corner formed by the [laboratory] store room and south side of the laboratory wing of the house (see Figure 4). Upon removal of Level 1 sod/loam, numerous soil disturbances were observed and are attributed to the 1970 restoration project. During the restoration project, “the passage between the drawing room and the laboratory was reconstructed” (Spiers and Associates 1981: 2-37). The passage, identified on the 1800 Plan as a Store Room, connected Dr. Priestley’s laboratory and library (see Figure 3). At an unknown date in the 19th century the small room was removed from the house. Because the 1800 Plan had not yet been discovered when restoration occurred, both the store room and library were misinterpreted. Importantly, the 1800 Plan indicates the store room had an outside door, facing east. This opening was not included in the 1970 reconstruction.

Perhaps the most noteworthy find in Test Pit 3 was the fully articulated skeleton of a large bird, tentatively identified as a turkey, recovered from Feature 53 (see Figure 26). Feature 53 is an irregularly shaped pit into which refuse was dumped. Oddly the bird’s skeleton was complete except for the skull. Associated with the skeleton were 253 artifacts, including numerous window glass pieces, brick fragments, cut nails, tea- and tableware ceramic sherds, and 66 pieces of unusually thin, burnt glass identified as broken laboratory equipment. Although not all of the

artifacts in the feature assemblage date to the Priestley period, creamware and pearlware ceramic types and the broken glass laboratory equipment strongly associate this refuse pit with Priestley family occupation of the site. While it cannot be proven, it is interesting to speculate that the bird was the subject of laboratory experimentation. Dr. Priestley occasionally exposed animals, such as mice, to the effects of gases with which he was working (cf. Kieft n.d.: 5).

Figure 26. Articulated bird skeleton found in Feature 53.

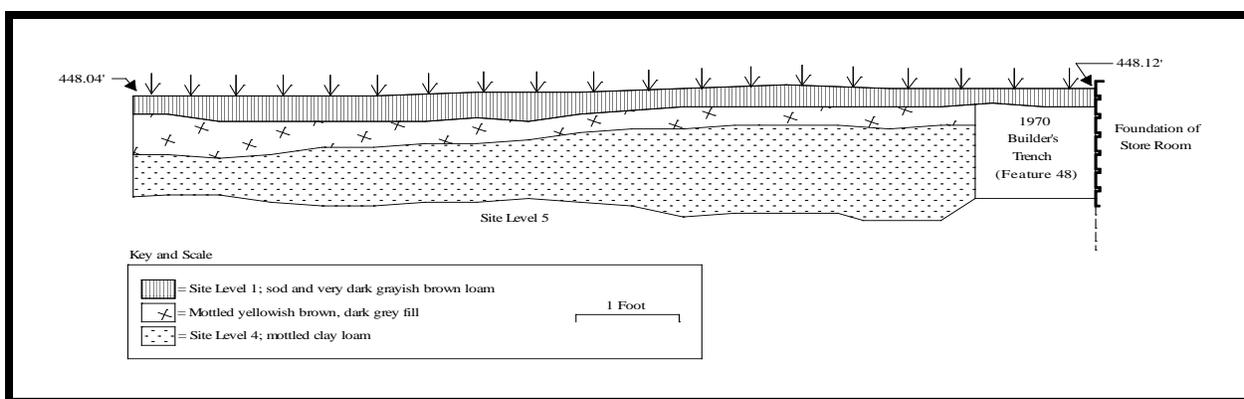


Underlying Level 1 sod/loam, Field Soil Level 2 was recorded as a mottled yellowish brown, dark gray fill (see Figure 27). Its unusual coloration suggests it did not develop in place, but rather was borrowed from another location on the property. This was done long before the store room was reconstructed in 1970, since its builder's trench was cut through the layer. It is entirely possible the fill layer was deposited when the store room was removed from the house in the 19th century.

Field Soil Level 3, the layer into which Feature 53 was dug, represents grade level at about the time the Priestleys occupied the property. This layer is comparable to Site Soil Level 4, mottled clay loam, removed from the cellar hole during construction of the house. Field Soil

Level 3 contained 55 prehistoric artifacts and 272 historic period objects, including fragments of glass and ceramic laboratory equipment. A Mean Ceramic Date of 1792.8 was calculated for the layer. Although the date is based on a small ceramic sample (n=39) and therefore may be skewed, it indicates relatively little refuse was deposited at this location after the Priestley period. Consequently, it is inferred that the store room and outside door were removed shortly after the Priestley family vacated the premises.

Figure 27. South Profile, Test Pit 3.



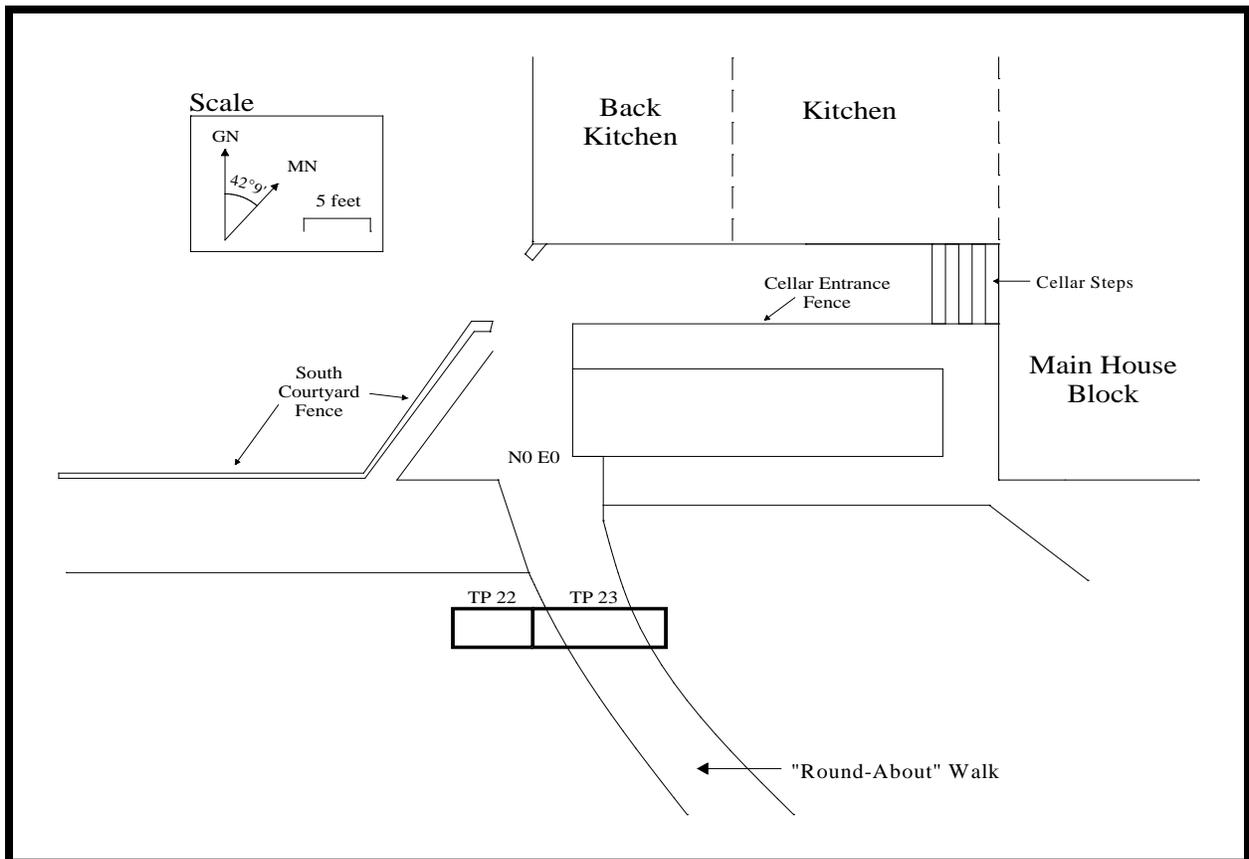
As illustrated in Figure 27, the soil profile of Test Pit 3 bears no evidence of intentional paving, such as gravel, covering the Priestley period ground surface. A distinctive paving material at the store room outside door is indicated on the 1800 Plan, but curiously does not appear in the Plan's south (riverside) elevation. Because this area was so badly disturbed by removal and subsequent reconstruction of the store room, it is not possible to determine if the paving shown in plan view existed.

Since Test Pit 3 was investigated during the final rainy days of the 1986 field season, Field Soil Level 4, a dark brown clay loam recognized elsewhere on the site as a buried land surface, was exposed but not excavated. Its artifactual content, expected to be prehistoric in nature, remains undefined.

Round-about Walk

Test Pits 22 and 23, dug to further investigate subsurface soil stains and a high concentration of prehistoric chipping debris found by Shovel Tests 14-16, revealed a section of the “round-about walk” discussed by Rudy Favretti in his **Historic Landscape Report...** (1992: 3-4) and illustrated in the 1800 Plan. Figure 28 depicts the relationship of the two excavation units and the round-about walk.

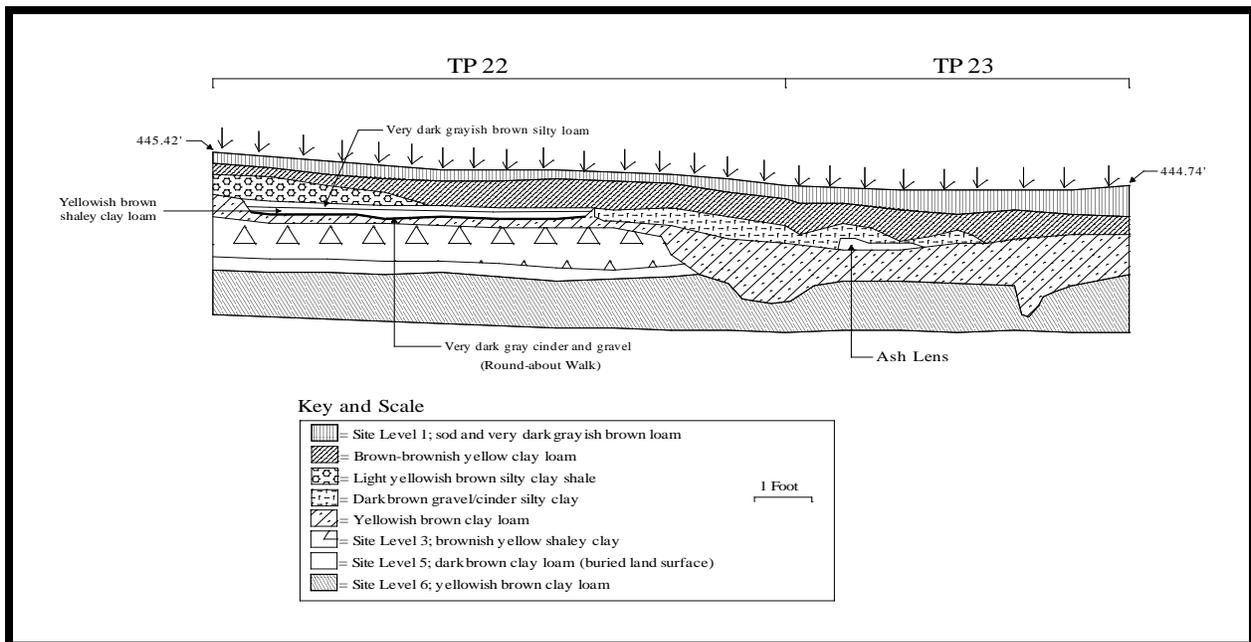
Figure 28. Overlay of Test Pits 22 and 23 on 1800 Plan.



The two test pits were characterized by complex stratigraphy and discernible intrusions (see Figure 29). A 3"-7" layer of Site Soil Level 1 sod/loam blanketed both excavation units. Field Soil Level 2, a brown to yellowish brown clay loam, covered both units and maintained a similar east to west slope present on the ground surface. Directly under Field Soil Level 2 in Test Pit 22 a light yellowish brown silty clay shale layer was detected in the eastern portion of the square. It is an intentional fill layer deposited after the round-about walk was abandoned. The round-about walk, labeled Field Soil Level 3 in Test Pit 22, is clearly demarcated in the south soil

profile of Test Pit 22 (Figure 29) at a depth of 10"-12" below grade. It appeared as a well-defined bed-like cut into Field Soil Level 4. The base of the walk was composed of very dark gray cinder and gravel. The prism of the walk was filled with two layers, a very dark grayish brown silty loam overlying a yellowish brown shaley clay loam. The shaley clay loam is interpreted to be the surface of the walk as constructed; whereas, the silty loam is soil which accumulated on the walk over time.

Figure 29. South Profile, Test Pits 22 and 23, depicting Round-about Walk.



Field Soil Level 4, the layer into which the walk was constructed, consisted of a yellowish brown clay loam, representing fill brought to this location from elsewhere on the site. As seen in the soil profile (Figure 29), Field Soil Level 4 filled a significant disturbance which removed the buried land surface in the western fifth of Test Pit 22 and all of Test Pit 23. The reason for land surface removal is unknown, but the rich brown loam may have been borrowed for horticultural purposes associated with the original Priestley period landscape plan.

Underlying Field Soil Level 4 in Test Pit 22 is a thick layer of brownish yellow shaley clay fill comparable to Site Soil Level 3. This soil is interpreted to be cellar hole fill spread around the house after excavation of the cellar hole. It encapsulates and preserves a vestige of Field Soil

Level 6, a dark brown clay loam. This layer represents the buried land surface and is comparable to Site Soil Level 5. Field Soil Level 7 in Test Pit 22 and Field Soil Level 5 in Test Pit 23 are comparable to Site Soil Level 6, the yellowish brown clay loam subsoil. Plow scars, aligned on an east-west axis, were observed in the subsoil in both excavation units, indicating agricultural usage of the property prior to construction of the Priestley House.

Two hundred and fifty-two prehistoric artifacts, including chipping debris and two projectile points, were recovered from Field Soil Level 6 (the buried land surface) in Test Pit 22. Site Soil Level 6 subsoil in Test Pits 22 and 23 yielded 682 prehistoric artifacts, including 3 projectile points. The significance of these finds is discussed in the **Prehistoric Occupation** section of this report.

Back Kitchen Soil Deposits

At the time of 1986 investigations earthen deposits and a stone-lined well were noted under the Back Kitchen floor where wood boards had been removed. The floor boards were not original and had been relaid during the 1970 restoration project. Concrete retaining walls were also poured against existing east and west stone foundation walls (see plans on file in the Pennsylvania Historical and Museum Commission's Division of Architecture and Conservation dated August 14, 1968, Project No. GSA 984-1).

The same grid system employed to investigate archaeological deposits outside the house was extended to accessible interior space in the Back Kitchen. Back Kitchen investigations in 1986 included careful mapping of disturbance caused by the 1970 restoration project and delineation of the well head, consisting of mortar-laid sandstone. Time limitations only permitted collection of artifacts from and partial removal of Field Soil Level 1, a disturbed reddish brown sandy loam mixed with brick fragments, mortar, stone, nails, and plaster, from grid squares N20 E0 and N20 E10 and the southern portions of N30 E0 and N30 E10. The recovery of 485 artifacts from the fill, including many Priestley period ceramic types such as creamwares and pearlwares, indicated that significant deposits were disturbed by the 1970 construction project without regard for their archaeological importance.

During the 1992 archaeological investigation, the remainder of the Back Kitchen wood floor was removed and a scaffold was constructed over the well. Again artifacts and the same disturbed fill layer, Field Soil Level 1, were removed from previously unexposed portions of grid squares N30 E0 and N30 E10. The layer was also characterized by large quantities of coal ash and cinder (not collected) which had been dumped at this location throughout the late 19th and early 20th centuries. [The Priestley House was heated with a coal-fired furnace until 1970.] The presence of these waste materials in such large quantities indicates the Back Kitchen wood floor was probably in poor repair throughout much of this century, permitting easy access for refuse disposal.

Field Soil Level 2 consisted of a dark brown clayey loam and was marked by additional coal ash and cinder deposits. The layer contained 5,151 artifacts; and even though modern objects such as electrical wire and wire nails were included in the assemblage, a Mean Ceramic Date of 1801.47 was calculated for the soil level. Obviously a significant portion of the diagnostic ceramic types discarded in the Back Kitchen date to the Priestley period. They include combed Staffordshire slipware, creamware, Jackfield ware, shell-edged pearlware, annular pearlware, white salt-glazed stoneware, basalt ware, dry-bodied stoneware, and English stoneware (Figures 30-32).

The only features found in the Back Kitchen deposits were revealed when Field Soil Level 3, a mottled clay loam and shaley layer, was exposed. Feature 11, was an oblong depression with straight sides; it contained one artifact -- a 1779 George III farthing. No particular activity or function can be inferred from the shape of the feature located directly east of the well head (see Figure 33).

Figure 30. Plain and decorated creamware tea- and tableware sherds.

Figure 31. Shell-edged pearlware, decorated creamware, and Wedgwood black basalt tea-and tableware sherds.

Figure 32. English stoneware ink bottle.

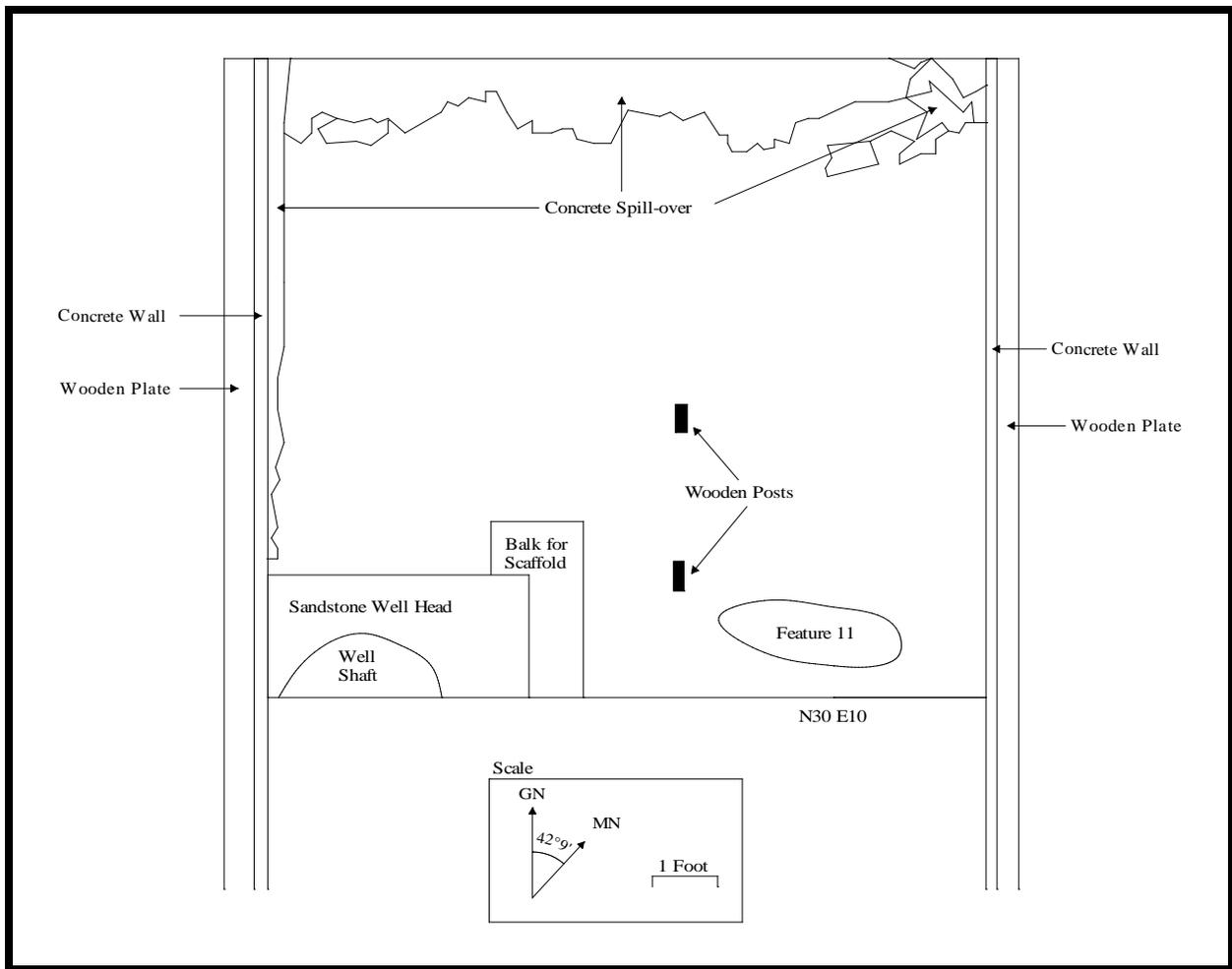


Two pieces of dimensional lumber, interpreted to be possible support posts, were also observed at the top of Field Soil Level 3 (see Figure 33). Each was still in a vertical position and measured 2"x 6". Curiously, they are located near the mid-line of the Back Kitchen room. Their function, however, is unknown.

Field Soil Level 3 is comparable to Site Soil Level 4 and represents cellar hole fill dispersed around the cellar hole during construction. Consistent with observations made elsewhere on the site, the layer contained principally prehistoric artifacts, including 89 pieces of chipping debris.

Underlying Field Soil Level 3 were two bands of fill also representing cellar hole fill. The uppermost consisted of yellowish brown shale; the lower was composed of mottled yellowish brown clay loam, comparable to Site Soil Level 4.

Figure 33. Plan View of Back Kitchen grid units, N30 E0 and N30 E10.



Field Soil Level 4 consisted of compact shale and likely represents cellar hole fill. It is expected that the buried land surface (Site Soil Level 5) and subsoil (Site Soil Level 6) occur under Field Soil Level 4 in the Back Kitchen grid units. Since a fair sample of these soils was investigated elsewhere on the site and because other time-consuming tasks remained to be accomplished, excavation of soil layers surrounding the well head was halted after the removal of Field Soil Level 3.

The Well

Investigation of the Priestley House well, located in the Back Kitchen earthen floor was a remarkably labor-intensive, time-consuming, and dangerous activity. According to the historic structure report completed by Spiers and Associates in 1981, improvements on the grounds in 1935 included “eliminating the old cesspool and unsanitary condition under the kitchen” (2-35). In actuality the kitchen referenced is the Back Kitchen and the cesspool is the well reused as a

privy. Because well and privy shafts are often filled with every-day refuse after their useful life has expired, they frequently become time capsules filled with artifacts reflecting the lifeways of former site occupants. Although the 1935 reference indicated the shaft was in use throughout the early 20th century, it was anticipated that artifacts located near the bottom of the well might date to the Priestley period and include unusually preserved materials if maintained in an aqueous environment. Therefore, excavation of the well was considered a priority during the 1992 field season.

Scaffolding erected over the well head was bolted to the Back Kitchen outside wall and designed to carry a hoist for removing fill materials and a safety line for the excavator (Figure 34). Loose stones were removed from the well head prior to excavation and an unexcavated balk was maintained around the well head during investigation of the Back Kitchen earthen floor deposits. The excavator wore a full body harness and hard hat for protection (Figure 35).

Figure 34. 1992 field school student, John Wah, prepares to enter the well directly beneath scaffold.



Level 2 consisted of a light brownish gray loam mixed with large quantities of coal ash and cinders. Four hundred and twenty-eight artifacts were recovered from the level, including

structural materials (window glass, plaster, nails), buttons, leather shoe parts, dietary animal bone, egg shells, fruit pits, broken glasswares, radio tubes, paper, and a “Merry Widow” condom tin (Figure 37). [Surprisingly, reference to Merry Widow condoms has been preserved in literature, such as Gunter Grass’ *The Call of the Toad* (1992:33).]

Level 3 was demarcated by deposits of lime mixed with coal ash and other furnace waste. The layer was also characterized by an increase in artifacts, particularly whole bottles found near the perimeter of the shaft. Two thousand six hundred and sixty-five objects were found, including structural materials; 19th and 20th century ceramic sherds; glass and shell buttons; dietary animal bones; dietary shellfish; candleholders; Heinz ketchup bottles; milk bottles; formula (baby) bottles; a whiskey flask; a perfume bottle; clay, glass, and stone marbles; a toy car and airplane; a bicycle chain; condom tin fragments, and sixteen condoms.

Figure 35. Excavation of well in progress; depth at about twelve feet.



Level 4 was defined by an increase in dark brown organic waste. Otherwise, large quantities of cinder comprised the fill as did water. Noteworthy is the observation that water first

appeared in the shaft at the bottom of the sandstone lining (approximately 11'10" below datum set on the wood plate of the outside wall; actual elevation = 433.78'). Under the lining the shaft was cut into shale bedrock. Short diagonal gouges, running from top right to bottom left, were visible on the shaft's walls and created by the tool used to dig the well. The shale bedrock was obviously an aquifer, as water constantly entered the well at this depth, necessitating the rental and use of several different pumps to remove water.

Eight hundred and eighty-six artifacts were recovered from Level 4. Some of the items present in the assemblage include: structural materials; electric light fixtures; ceramic tea- and tableware sherds; dietary animal bone; medicine bottles; ketchup, soda, and milk bottles; a soap dish; a paint brush; paint cans; and four pieces of prehistoric chipping debris.

Level 5 was defined by a layer of roofing slates and cinder. Five hundred and one objects were recovered and include: structural materials; ceramic sherds; baby formula, milk, and soda bottles; crown, Hutchinson-style, and twist-off bottle caps; a condom tin; perfume bottle; paint brush; and lubricant.

Level 6 was demarcated by a concentration of wood scraps and cinder. Two hundred and fifty-two artifacts were recovered from the layer, including: a leather shoe fragment; a clay marble; milk glass mason jar inserts; a lead pencil; wood match sticks; medicine, condiment, and milk bottles, and glass jars.

Figure 36. South Profile of Back Kitchen deposits and well at N30 grid line.

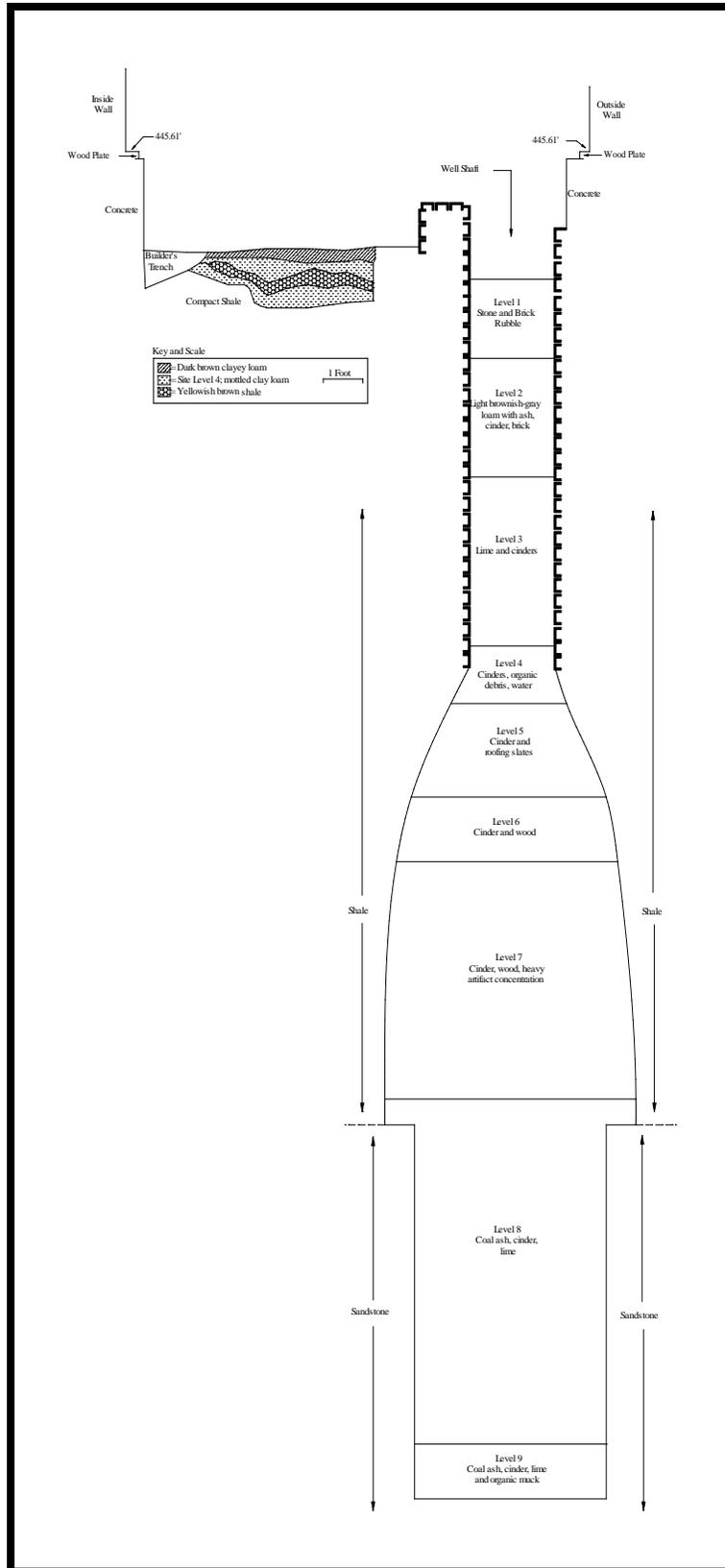


Figure 37. Obverse and reverse sides of condom tin.



Level 7 also contained a concentration of wood scraps and cinder, but was marked by an increased artifact concentration. Two thousand one hundred and sixty-six objects were recovered from the layer, including: structural materials; electrical and lighting equipment; ceramic tea- and tableware sherds; pins; buttons; leather footwear fragments; dietary animal bone; cherry pits; almond, hickory nut, pistachio nut, peanut, and walnut shells; melon and peach seeds; baby formula, bleach, milk, soda, and medicine bottles; glass jars; watchband fragments; thirty-three condoms; cosmetic and perfume containers; a hard rubber/plastic tobacco pipe stem; paint brushes; paint cans; wood match sticks; a piece of chalk; two modern test tubes with corks; and a miniature glass beaker.

Level 8 was marked by a concentration of lime mixed with coal ash and cinders. Approximately six inches below the top of this layer the architecture of the well shaft changed as illustrated in Figure 36. Reduction in the shaft's diameter coincides with a change in bedrock from shale to sandstone, a more difficult material to penetrate. The layer produced 2,628 artifacts, including: structural materials; glass light bulbs; ceramic sherds; porcelain and rubber

buttons; glass and plastic beads; leather footwear fragments; dietary animal bone; cherry, peach, and melon seeds; hazel nut, hickory nut, pistachio nut, peanut, and walnut hulls; egg shells; wood scraps; alcohol, bleach, milk, soda, and ketchup bottles; crown bottle caps; glass tumblers; cosmetic, medication, and perfume containers; shoe polish; an umbrella; a 33 RPM phonograph record; D-cell and B+ batteries; a porcelain doll; a rake and shovel; and a rubber inner tube.

Insertion of a soil auger at the bottom of Level 8 indicated approximately one foot of fill still laid on the base of the well shaft. Although no obvious soil change was evident, Level 9 was arbitrarily defined at this depth for the purpose of separating artifacts recovered within twelve inches of the bottom from other objects found in Level 8. Eight hundred and two objects were found in Level 9, including structural materials; electrical fuses; ceramic sherds; wood buttons; rubber galoshes; umbrella staves; a wax candle; bed frame parts; hand files; an adjustable wrench; paint brushes; wood match sticks; shaving cream container; perfume bottles; an iodine bottle; bicycle pedals, gears, and wicker seat; an ice skate; glass jars; soda and milk bottles; and an unidentified glass vessel marked with a patent date of December 22, 1903.

No Priestley Period Layer Was Found in the Well. In fact, the above-mentioned glass vessel, bearing a 1903 patent date and recovered from the bottom of the shaft, identifies the date after which refuse was discarded in the well. It appears that process continued while the well was used as a privy until about 1935 when the shaft was abandoned in favor of public sewer connection (see Spiers and Associates 1981: 2-35). Although characterized by varying densities of artifacts, lime, coal ash, and cinders, the arbitrarily defined layers of fill in the well contained redundant examples of artifact types dating to a relatively short period of the property's history. And, while of limited interest to archaeologists and historians attempting to interpret late 18th century Priestley House history, the artifact assemblage recovered from the well (10,523 objects, including hundreds of whole bottles and jars embossed with production dates and evidence of contents) provides an intimate view of the Priestley House's occupants' participation in local, regional, national, and international economies during the first quarter of the 20th century. It is a collection to be analyzed, understood, and appreciated by future scholars studying 20th century material culture.

Although assumed to be contemporary with the Priestley House, the date of the well's construction is unknown. In spite of incredible detail depicted on the 1800 Plan, the well is conspicuously absent – an oddity, since even the location of privies is shown. Shortly after the 1992 archaeological investigation, portions of the Back Kitchen stone foundation walls were removed and reset. At that time construction workers noted the “well housing functioned as a part of the footer” for the west foundation wall, therefore implying that the well and the footer were laid up at the same time (Richardson 1992:1). This evidence coupled with the discovery that a stone-lined drainage channel of the Priestley period lies on the opposite side of the west Back Kitchen foundation wall, recommends a late 18th century construction date for the well.

The absence of an 18th century refuse layer in the well might be attributed to several reasons. Certainly every effort was made to prevent contamination of the water source while it was in service. The shaft may have also been subject to periodic cleaning, effectively eliminating the deposits sought. Finally, it is conceivable that the well was dug deeper at some point in its history. If this was done, however, all removed soils were hauled from the site, for they were not detected in deposits surrounding the well.

Finally the well's position against the west foundation wall must be noted as peculiar. Why not center it in the room or position it closer to the Kitchen door? Is it possible that the seemingly awkward location of the well is the product of Back Kitchen renovation or reconstruction? As previously noted, the present placement of doors and windows is inconsistent with that depicted on the 1800 Plan.

SHOVEL TEST PITS

Twenty-eight shovel test pits (ST), approximately 18" in diameter, were excavated on the riverside of the house along the proposed drainage system trench alignment. The purpose of these tests was to determine if significant subsurface deposits existed in the construction right-of-way. Where unusual below-ground disturbances or artifact densities occurred, three-foot wide

test pits (the width of a backhoe trench required to lay drainage pipe) of varying lengths were dug to investigate anomalies. A brief summary of the contents of each follows.

ST1 and ST2

ST1 and ST2 were located in grid unit S10 E90. ST1 contained evidence of modern disturbance, including plastic conduit (presumably housing electrical wires) at a depth of 5" below grade and a coaxial cable at a depth of 32" below grade. Both utilities are believed to serve the small brick museum building located southeast of the main house. Although ST2 contained no utilities, it also was disturbed by installation of conduit and cable found in ST1.

ST3

ST3 was located in grid unit S10 E80. The soil profile of this test indicated a yellowish brown shaley fill layer extending from a depth of 3" to 16" below grade. The layer, Field Soil Level 2, contained twenty-six brick fragments, two plain creamware ceramic sherds, cloth fragments, and two glass vessel pieces. The layer is interpreted to be cellar hole fill dispersed on the ground around the house and is comparable to Site Soil Level 3. Underlying the soil layer was a mottled sandy, shaley loam also interpreted to be cellar hole fill and comparable to Site Soil Level 4. At a depth of 23½" below grade a slightly mottled dark grayish brown clayey loam interpreted to be the original land surface was discovered. The layer contained two pieces of prehistoric chipping debris. In sum, nearly two feet of fill covered the original land surface at this location and was intentionally placed to emphasize the setting of the house on the landscape, a trait consistent with Georgian architectural design.

ST4

ST4 was located in the S20 E80 grid unit. The same yellowish brown clayey fill layer found in ST3 appeared in this test. Designated Field Soil Level 2, it extended from a depth of 3½" to 16½" below grade and contained brick and window glass fragments. A yellowish brown clayey silt layer lying directly below it is also interpreted to be cellar hole fill. Field Soil Level 4, a very dark grayish brown clayey silt loam, was located at a depth of 22½"-25½" below grade. This soil level is the original land surface and contained five pieces of prehistoric chipping debris.

ST5

ST5 was located in the S20 E70 grid unit. Underlying Field Soil Level 1, sod and topsoil, yellowish brown, shaley cellar hole fill was encountered and extended from a depth of 4"-46" below grade. Designated Field Soil Level 2, the unusual depth of the layer at this location suggests the original landscape may have been marked by a gully. Excavations did not proceed beyond the shale layer since the proposed drainage system was not expected to exceed a depth of 46" below grade.

ST6 and Test Pit 19

ST6 was located in grid unit S20 E60, just east of where the riverside entry walk and concrete "carriage path" installed in 1970 join. Its soil profile was comparable to ST4, with a shaley layer lying at a depth of 3½"-9" below grade and the buried original land surface lying at a depth of 29" below grade. The two soil layers were designated Field Soil Levels 2 and 4 respectively. Because fourteen pieces of prehistoric chipping debris were found in the buried land surface and an additional thirty-nine pieces were recovered from the subsoil layer beneath it, Test Pit 19 was opened to determine the existence of prehistoric features.

Feature 15, a dark circular stain nearly 6" in diameter and 20" deep, was identified in Field Soil Level 5, the subsoil layer comparable to Site Soil Level 6, and interpreted to be a postmold. Three hundred and fifty-eight pieces of prehistoric chipping debris were recovered from Field Soil Level 5, indicating this spot was once a location of considerable prehistoric activity.

ST7, ST8 and Test Pit 20

ST7 and ST8 were located in grid unit S20 E40, just west of where the riverside entry walk and concrete carriage path join. Curiously, the shaley cellar hole fill layer was only detected in ST8. There was, however, evidence of modern disturbance in ST7 associated with construction of the walk and carriage path. At a depth of 34" below grade the buried land surface was located in both shovel tests. In ST7 the layer contained three pieces of prehistoric chipping debris and twenty-one pieces of fire-cracked rock, often an indicator of a prehistoric hearth. In

ST8 three pieces of chipping debris and twelve pieces of fire-cracked rock were found. Consequently, Test Pit 20 was excavated to determine the presence of prehistoric features.

Exposure of Level 6, a subsoil layer comparable to Site Soil Level 6, revealed a 5½” diameter dark circular stain, designated Feature 17 and interpreted to be a prehistoric postmold. Also discovered were more than 320 pieces of fire-cracked rock and a distinct ash- and charcoal-laden pit. The feature was designated Feature 18 and is interpreted to be a prehistoric hearth (Figure 38). Forty-one pieces of prehistoric chipping debris were recovered from the feature as were numerous pieces of charred wood. A Carbon-14 (C-14) analysis of charcoal samples recovered from the hearth by The University of Georgia Center for Applied Isotope Studies (UGA No. 6676) yielded a date of 3100 years before present (or approximately 1150 B.C.). The significance of this assay is discussed in the **Prehistoric Occupation** section of this report.

Figure 38. Thirty-one hundred year old hearth found in Test Pit 20.



ST9 and ST10 were both located in grid unit S20 E30. ST9 exhibited an abnormal soil profile, similar to ST5. Underlying a five inch thick layer of sod and topsoil, was a layer of yellowish brown clayey shale. The layer extended to a depth of 44" below grade, at which point excavation of the shovel test was terminated. As with ST5, it is believed that the unusually deep package of cellar hole fill indicates where a gully once marked the original land surface. It is also possible that both ST5 and ST9 are located at the site of former springs, although neither excavation unit was dug deep enough to test that hypothesis.

Excavation of ST10 revealed a soil profile which compares favorably with other shovel tests dug on the riverside of the house. A layer of brownish yellow shaley clay extended from a depth of 5" to 19" below grade and is comparable to Site Soil Level 3 soil. Two mottled clay loam layers comparable to Site Soil Level 4 extended from a depth of 19" to 23" and 23" to 40" below grade respectively. A buried electric cable, oriented on a N4°E axis, was revealed in the uppermost mottled clay loam layer.

The buried original land surface (Site Soil Level 5) was encountered at a depth of 40" below grade and contained twelve pieces of prehistoric chipping debris, one piece of cinder, and one piece of coal. At a depth of 42" below grade Site Soil Level 6, a yellowish brown clay loam subsoil, was recorded. No artifacts were recovered from it before excavation was halted at a depth of 46" below grade.

ST11 and ST12

ST11 and ST12 were located in grid unit S20 E20. Both revealed the same cellar hole fill soils (Site Soil Levels 3 and 4) extending to a depth of 41" and 36" below grade respectively. Underlying cellar hole fill layers was the buried land surface (Site Soil Level 5). No artifacts were found in the buried land surface in ST11; whereas, four pieces of fire-cracked rock and five pieces of chipping debris were recovered from the layer in ST12. The five-inch depth differential characterizing the buried land surface in these two tests further attests to the undulating nature of the original landscape.

ST13

ST13 was located in grid unit S20 E10. Again, cellar hole fill layers, Site Soil Levels 3 and 4, were found under the sod and topsoil layer. At a depth of 34" below grade the buried land surface (Site Soil Level 5) was recorded. It produced no artifacts.

ST 14, ST15, ST16, Test Pits 22 and 23

ST 14 and ST15 were located in grid unit S20 E0. ST16 was located in grid unit S20 W10. As previously discussed in the **Round-About Walk** section of this report, large quantities of prehistoric chipping debris and charcoal flecks were found in both the buried land surface and subsoil layers. Consequently, Test Pits 22 and 23 were excavated to further define prehistoric deposits. Upon excavation it was determined that the buried land surface was only preserved in Test Pit 22 and that historic period activity removed the original land surface in Test Pit 23 (see Figure 29).

Two rhyolite broadspear projectile points were recovered from Field Soil Level 6, the buried land surface, in Test Pit 22. Both are generally attributed to the so-called Transitional or Terminal Archaic period of Pennsylvania prehistory, ca. 1500-800 B.C. Underlying the buried land surface was the subsoil layer, Field Soil Level 7, in which historic period plow scars and prehistoric postmolds were identified. The plow scars ran from east to west, indicating the direction of cultivation on the terrace upon which the Priestley House was built. The postmolds, on the other hand, were round to conical in section and ranged between 6" to 12" in diameter.

The subsoil layer in Test Pit 23, designated Field Soil Level 5, also revealed plow scars, postmolds, and two projectile points. Both points, one a corner-notched variety made of jasper and the other a straight-stemmed type made of chert, likely date to the Early and Late Archaic periods of prehistory respectively.

ST17 and ST18

ST17 and ST18 were also located in grid unit S20 W10. Both ST17 and ST18 revealed disturbed soil profiles. No evidence of a buried land surface was detected in either, an observation consistent with soil profiles recorded in ST16 and Test Pit 23.

ST19 and ST20

ST19 and ST20 were located in grid unit S30 W10. Both shovel tests revealed disturbed soil profiles to a depth of 9" in ST19 and 22" in ST20. At those depths evidence of a buried historic period land surface, approximately 6" thick, was found in each. The land surface commonly produced a variety of historic period artifacts, including iron nails, brick fragments, coal, cinder, and mid-19th century ceramic sherds. It is therefore deduced that fill layers overlying the land surface were deposited after the Priestley period.

ST21

ST21 was located in grid unit S40 W10, just north of the concrete carriage path/walk installed in 1970. Considerable disturbance, associated with construction of the concrete walk, was found in the shovel test. However, intact portions of the north profile of the excavation unit revealed clay and shale loam layers overlying a buried historic land surface. The land surface was three inches thick and located at a depth of 28" below grade. Two brick fragments and six pearlware ceramic sherds were found in the layer, again suggesting that overlying clay and shale layers were introduced after the Priestley period.

ST22 and ST23

ST22 and ST23 were located in grid unit S50 W10. ST22 exhibited a soil profile comparable to ST21 with clay and shale fill layers overlying a buried historic land surface. The land surface, discovered at a depth of 23" below grade, contains Priestley period artifacts, such as creamware ceramic sherds, as well as ones which postdate the Priestley period. Again, soil layers above the buried land surface are interpreted to postdate the Priestley period.

The excavation of ST23 was abandoned at a depth of 17" below grade. Repeated attempts to penetrate a shale and limestone fill, encountered at a depth of 6" below grade and likely associated with the 1970 restoration project, were unsuccessful.

ST24 and ST25

ST24 and ST25 were located in grid unit S60 W10. ST24 revealed a more simplified soil profile than observed in other shovel tests. Underlying a 5½" layer of sod and topsoil, was a 9½" package of clayey shale fill which covered a buried historic land surface present at a depth of 15" below grade. Only one artifact, a piece of prehistoric chipping debris, was recovered from the layer.

ST25 was excavated to a depth of 25" below grade. Evidence of the buried land surface was not present, possibly due to the installation of a ceramic utility pipe discovered at a depth of 18" below grade. The pipe may be a section of the same waste line discovered and recorded in Test Pits 6 and 7A.

ST26

ST26 was located in grid unit S10 W10. Lying under a five inch package of sod and topsoil was a layer of coal ash, cinder, and loam. The large quantity of coal ash and cinder reflects the disposal of furnace waste at this location throughout the 19th and 20th centuries. At a depth of 7¾" below grade a historic period land surface was discovered. It contained thirty-three artifacts including structural debris (window glass, clay sewer pipe fragments), dietary waste (shellfish), late 18th through mid-19th century ceramic tea- and tableware sherds, bottle and vessel glass, and prehistoric chipping debris. The layer dates to the Priestley and post-Priestley periods of site occupation. A mottled interface separated the historic land surface from underlying subsoil, possibly indicating previous agricultural activity at this location prior to construction of the Priestley House.

The subsoil layer was encountered at a depth of 17½" below grade. Seven pieces of chipping debris were recovered from the yellowish brown clay loam subsoil before excavation was terminated.

ST27 and ST28

ST27 and ST28 were located in grid unit N0 W10. Both shovel tests were disturbed by utility installations and contained eight-inch diameter clay sewer pipes. The sewer pipe found in ST 27 was discovered at a depth of thirteen inches below grade in the northwest edge of the excavation unit and was oriented on a N60°E axis. Its location and alignment suggests it is a portion of the waste line discovered in Test Pits 6 and 7. The sewer pipe found in ST28 was discovered at a depth of ten inches below grade. It appeared in the northern edge of the shovel test and was oriented on a N90°E axis. Its origin is unknown.

No evidence of a historic land surface survived installation of these utilities.

Shovel Test Discussion

The excavation of shovel tests at six-foot intervals along the alignment of the proposed water drainage system on the riverside of the Priestley House proved to be an effective means for the discovery of significant prehistoric deposits and historic landscape evidence. Shovel tests 1-15 revealed that cellar hole fills, often more than two feet thick, were intentionally deposited on the riverside of the house to exaggerate the structure's prominence and command over surrounding landscape. Such landscape modification is typical of Georgian architectural style and is consistent with 18th century English world view emphasizing man's control over nature.

Tests also determined that soil layers, ranging in thickness from three to twenty-eight inches, have been deposited on the artificially created ground surface since the Priestley period. Greatest accumulations have occurred in the vicinity of Shovel Tests 17-25. Table 1 provides a summary of depths at which the historic period surface was discovered below present grade.

Table 1. Depth of historic period ground surface below present grade.

Shovel Test	Depth Below Grade	Actual Elevation	Comments
1	-	-	Evidence destroyed by utility installation
2	5"	447.10'	
3	3"	447.07'	
4	3½"	446.94'	
5	4"	446.94'	
6	3½"	447.08'	
7	4½"	447.06'	
8	4"	447.04'	
9	5"	446.81'	
10	5"	446.75'	
11	3"	446.97'	
12	9½"	445.80'	
13	7"	445.59'	
14	11"	444.56'	
15	12"	444.17'	
16	13½"	443.66'	
17	9"	444.03'	
18	12"	443.43'	
19	9"	443.38'	
20	22"	442.30'	
21	28"	438.71'	
22	23"	438.74'	
23	-	-	Evidence destroyed by modern disturbance
24	15"	437.15'	
25	-	-	Evidence destroyed by modern disturbance
26	7¾"	444.33'	
27	-	-	Evidence destroyed by modern disturbance
28	-	-	Evidence destroyed by modern disturbance

Where cellar hole fills were placed over the original land surface, prehistoric artifacts and features were encapsulated and preserved in the buried original land surface (not to be confused with the buried historic land surface) and underlying subsurface soil. The significance of prehistoric deposits found on the site is considered in the following section.

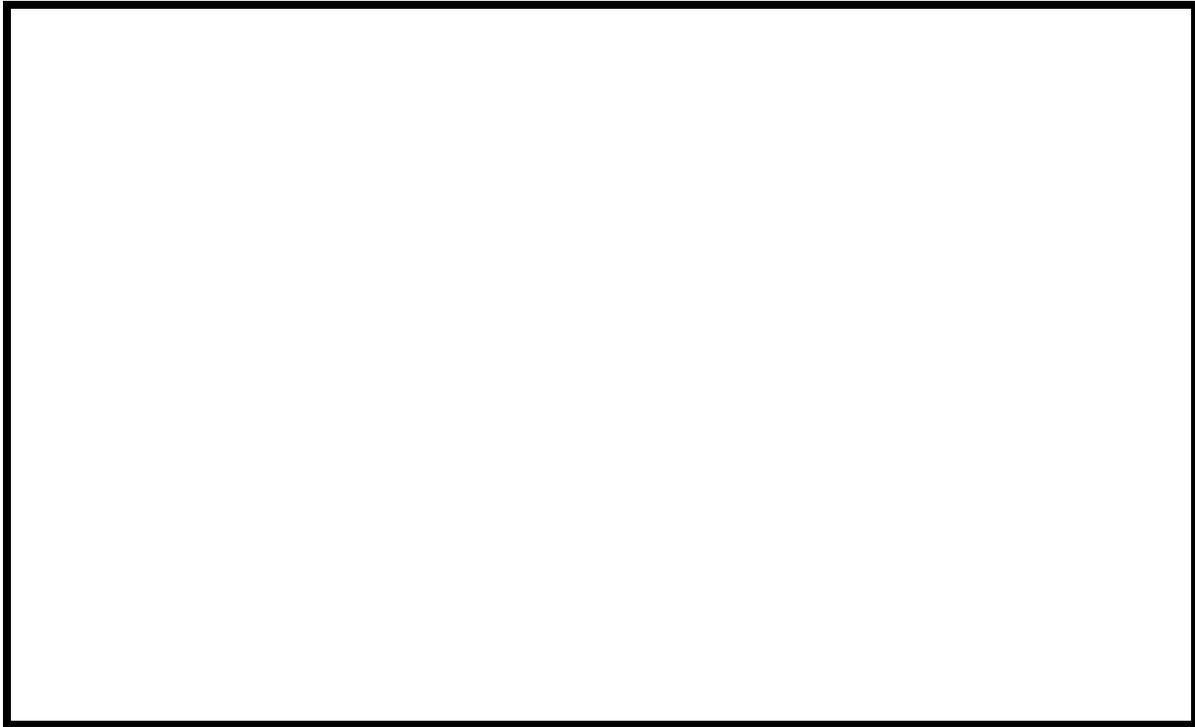
PREHISTORIC OCCUPATION

Ample evidence of prehistoric Native American occupation on the Joseph Priestley House and Laboratory site was found as a result of 1986 and 1992 archaeological investigations. Features and artifacts associated with the site's prehistory include: postmolds; hearths; stone projectile points; chipping debris (the byproduct of stone tool manufacture and maintenance); stone knives and scrapers; stone drills; stone net weights; hammerstones; milling stones; grinding slabs; and pottery sherds. Although prehistoric artifacts were found in cellar hole fill layers spread around the house, as well as historic and prehistoric feature fills, the following analysis is based only on artifacts recovered from the buried land surface (Site Soil Level 5) and subsoil (Site Soil Level 6). By excluding objects found in cellar hole and feature fills, potential biases associated with intrusive deposits are eliminated. Since it has been demonstrated that the buried land surface was subject to agricultural disturbance before the Priestley House was built, it is not possible, for example, to determine with absolute certainty if discovered postmolds and hearths are the product of occupation on the buried land surface (Site Soil Level 5) or, alternatively, habitation of the subsoil surface (Site Soil Level 6) which may have once been an exposed land surface.

As previously noted, the Priestley House site is located on a terrace of the North Branch of the Susquehanna River. Although situated at an elevation above the river which appears to be protected from flooding, archaeological deposits and historic observations indicate the Susquehanna's waters reached the site in prehistoric and modern times. As recently as the Winter of 1996, flood waters inundated the toe of the terrace upon which the house stands (William Richardson, personal communication 1996). The importance of this periodic, natural occurrence cannot be understated, for it provides a key to understanding the site's prehistoric record.

Early in the 1986 excavation project team members were intrigued by the quality, quantity, and density of prehistoric artifacts recovered from the subsoil layer (see Figure 39).

Figure 39. Milling stone and grinding slab found in subsoil layer.



How did they get there? Were they the product of drift or migration into the subsoil from the buried land surface above? Or, were they in place -- that is, was the present subsoil a former land surface which simply did not acquire humic accumulations sufficient to develop dark coloration typically associated with stable vegetative cover and warm-moist climatic conditions (see Vento and Rollins 1990: 20)? Artifact analyses were directed to answer these questions and identify prehistoric occupation periods represented at the site.

Archaeologists have long recognized that stone projectile points, used as spear and arrow tips, are the most diagnostic (datable, based on form/style) of all prehistoric artifacts, especially when ceramics are not present. Figure 40 illustrates several examples found in both buried land surface and subsoil layers. Table 2 identifies whole or nearly whole points found in both soil layers.

Figure 40. Select projectile points recovered from buried land surface (left) and subsoil layers (right).

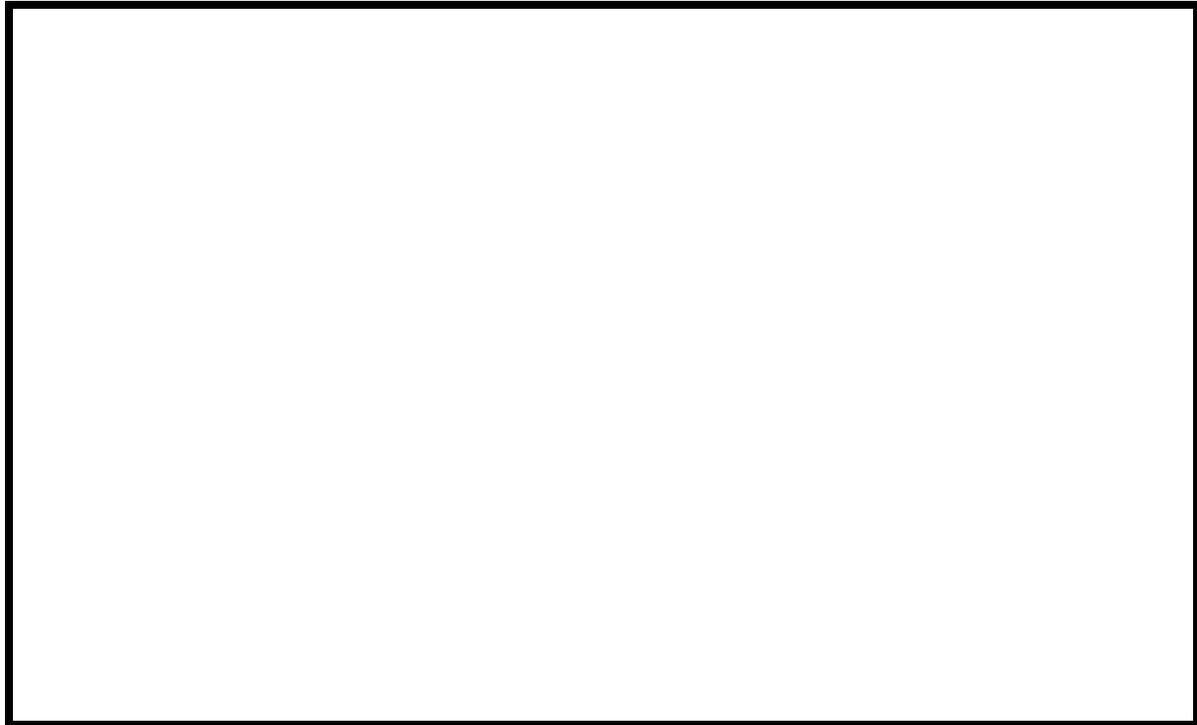


Table 2. Distribution of diagnostic projectile points.

Buried Land Surface	Subsoil
Late Woodland Levanna triangle (chert, Cat. #117)	Late Archaic Beekman triangle (chert, Cat. #118)
Terminal Archaic broadspear (rhyolite, Cat. #396)	Late Archaic stemmed variety (chert, Cat. #398)
Terminal Archaic broadspear (rhyolite, Cat. #386)	Late Archaic corner-notched variety (chert, Cat. #131)
Terminal Archaic broadspear preform (rhyolite, Cat. #386)	Middle Archaic Otter Creek-like variety (chert, Cat. #400)
untyped Early Woodland (?) corner-notched variety, reworked (chert, Cat. #330)	Middle Archaic Otter Creek-like variety (chert, Cat. #118)
	Middle Archaic Brewerton side-notched variety (rhyolite, Cat. #183)
	Early Archaic Kirk-like variety (jasper, Cat. #398)

The distribution of projectile points indicates they are sorted chronologically between the two soil layers. Middle and Late Archaic points, generally dating to the period ca. 4500-1800 B.C., lie in the subsoil layer; whereas, Terminal Archaic and Late Woodland points, dating to the

period 1500 B. C.-1000 A.D. lie in the buried land surface. Not surprisingly, the only prehistoric pottery sherd (Cat.#237) recovered from the site, a .46”-thick chert-tempered, interior/exterior cordmarked variety (Figure 41), was found in the buried land surface of Test Pit 1. This ceramic type is generally attributed to the Late Woodland period and similar to utilitarian pottery produced by Clemson Island/Owasco peoples (James Herbstritt, personal communication 1997).

Although it is apparent that earlier point types occur deeper in the site’s profile, viz., subsoil (Site Soil Level 6), and more recent styles appear closer to and at the top of the profile (Site Soil Level 5), it must be emphasized that there is no evidence for internal stratigraphic integrity in either layer. Historic cultivation jumbled buried land surface artifacts; whereas, natural processes, including bioturbation, mixed the subsoil assemblage.

Table 3 illustrates the quantitative distribution of all prehistoric artifacts found in the two soil layers. Ground and/or pecked stone tools include hammerstones, milling stones, and grinding slabs. The chipped stone tool category includes net weights, drills, knives, scrapers, bifaces, and utilized flakes.

Figure 41. Chert-tempered pottery sherd recovered from the buried land surface.



Table 3. Quantitative distribution of prehistoric artifact types.

Artifact Type	Buried Land Surface	Subsoil
---------------	---------------------	---------

Projectile points	5	7
Ground and/or pecked stone tools	7	4
Chipped stone tools	6	10
Pottery	1	0
Chipping debris	1340	2743
Totals	1359	2764

The quantity of recovered artifacts and variety of tool types are impressive, especially considering the minimal area of site investigated. These objects reflect the hunting, fishing, and nut-processing activities of Native Americans who seasonally camped on the river terrace over a very long period of time. Hearths and fire-pits, defined by concentrations of fire-cracked rock, charcoal flecks, and ash, were found on both north and south sides of the Priestley House.

One hearth designated Feature 18 in Test Pit 20 was determined by C-14 assay to date to ca. 1150 B.C. -- the same time period represented by Terminal Archaic broadspear points found on the site. Another hearth, designated Feature 40 and discovered at the subsoil surface in Test Pit 8, narrowly missed destruction when the Back Kitchen was built (see Figure 42). Scattered among the hearth's fire-cracked rock were pieces of rhyolite and chert chipping debris (some of which refit), suggesting a flintknapper sharpened stone tools while enjoying the heat and light of a fire.

Chipping debris recovered from the site indicates a distinct preference for locally available chert. Table 4 illustrates the percentage of lithic types found in the buried land surface and subsoil layer.

Figure 42. Prehistoric hearth discovered in Test Pit 8 next to Back Kitchen foundation.

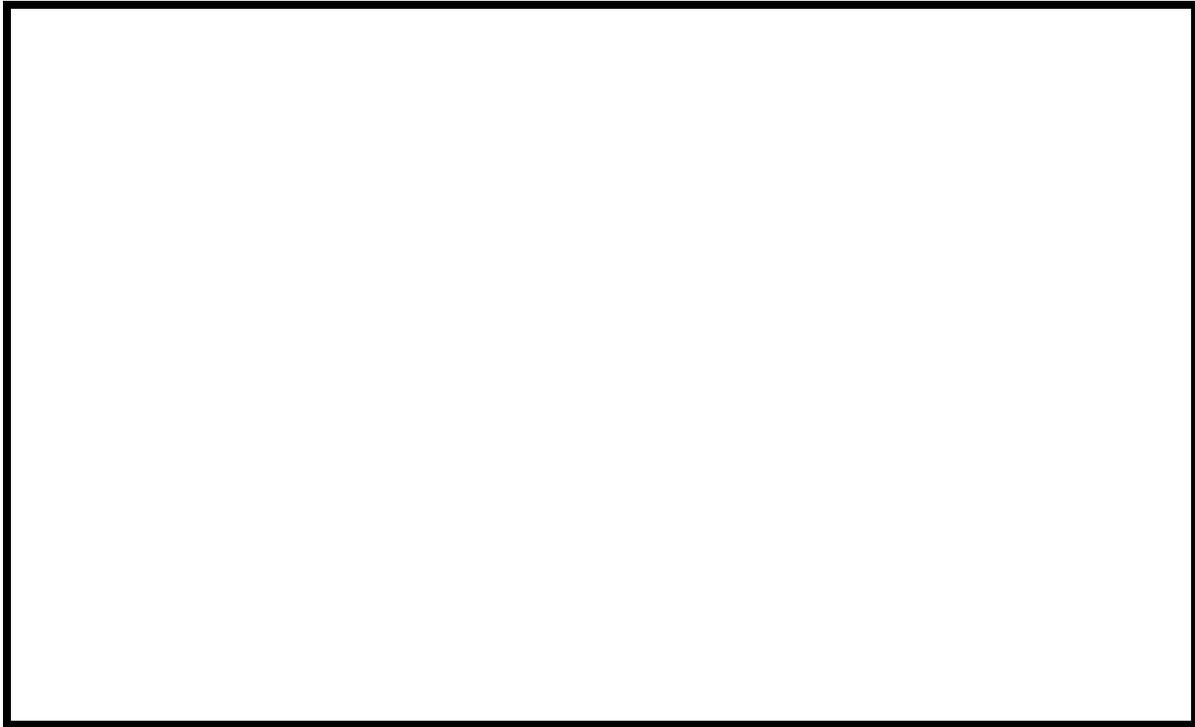


Table 4. Quantitative distribution of chipping debris lithic types.

Lithic Type	Buried Land Surface		Subsoil	
Chert	687	51.27%	1530	55.78%
Rhyolite	447	33.36%	907	33.07%
Siltstone	180	13.43%	256	9.33%
Jasper	12	.90%	10	.36%
Sandstone	10	.75%	23	.83%
Argillite	0	0.00%	9	.34%
Chalcedony	3	.22%	2	.07%
Quartz	1	.07%	2	.07%
Quartzite	0	0.00%	4	.15%
Totals	1340	100.00%	2743	100.00%

Percentages of lithic types found in both soil layers compare favorably, with the minor exception of argillite and quartzite which are absent in the buried land surface. The almost

identical occurrence of rhyolite, a lithic type not derived from local sources, in both layers is unexpected. Use of the mineral by Terminal Archaic cultures who principally occupied sites along major waterways, such as the Susquehanna River, has been well-documented (see Turnbaugh 1977: 151; Witthoft 1953: 13) and is consistent with the presence of broadspear points in the buried land surface. On the other hand, occasional use of rhyolite for stone tool manufacture during the Middle and Late Archaic periods has been recorded in the study area, but not to the extent characteristic of the Terminal Archaic period.

The large quantity of rhyolite found in the Priestley House site's subsurface, therefore, appears to be unusual. It might be explained as a product of sampling error, i.e., excavation units did not yield a representative sample of the subsoil's true lithic population. Alternatively, the site's location near the confluence of the North and West Branches of the Susquehanna River, may have made it a desirable resting place for travelers transporting the mineral from quarry sources in South-Central Pennsylvania.

Postmolds, found and recorded in many test pits on the site, Test Pits 1, 2, 6, 8, 9, 18, 19, 20, 22, and 23, suggest some visitors stayed long enough to erect temporary structures. Excavation units, however, did not expose a sufficiently large area to determine the shape and size of prehistoric architectural features.

In conclusion, *in situ* artifacts and features discovered in the Priestley House site's buried land surface and subsoil layers demonstrate general stratigraphic integrity. Early, Middle, and Late Archaic artifacts found in the subsoil layer identify it as a past land surface. Recent geoarchaeological studies have determined that climatic events coupled with periods of increased flooding and vertical accretion of overbank deposits affected vegetative cover and inhibited humic accumulations at different times throughout prehistory (Vento and Rollins 1990: 47). Site Soil Level 6, the subsoil layer, is the product of such processes and did not acquire the color and texture typical of a stable land surface. The artifact assemblage recovered from the layer is a direct product of native occupation during such times. The buried land surface, on the other hand, with its complement of broadspear and Woodland artifacts, developed during a period of climatic stability and less frequent flooding -- factors which favored vegetative growth and humic

accumulation, rendering its distinctive dark coloration and silt loam qualities. These types of artifact-laden soil packages may be expected to occur elsewhere along the North Branch of the Susquehanna River where similar geographic settings favor preservation.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Perhaps the most important result of 1986 and 1992 archaeological investigations at the Joseph Priestley House and Laboratory site is confirmation of structural and landscape architectural features depicted on the 1800 Plan. Often historic delineations, such as the 1800 Plan, document intentions for development rather than “as built” conditions. In this case the 1800 Plan has been tested and found to reflect “as built” conditions. It is so precise that it can and should be used as a blueprint for future site reconstruction and restoration.

Before commencing excavations in 1986, motives for conducting archaeological investigations in advance of the planned water drainage system and Back Kitchen foundation repairs were questioned. Many believed the site was too badly disturbed by post-Priestley period occupation and 1970 restoration to yield intact evidence. On the contrary, excavations have demonstrated the site’s integrity. Even though Joseph Priestley only lived on the property for seven years (1797-1804), numerous artifacts and refuse deposits associated with his occupancy survive under layers of fill introduced by those who followed him. The discovery of so many laboratory equipment fragments, many of which bear chemical residues, was certainly not anticipated. Future analyses of these unique artifacts by material science specialists hold tremendous potential for a more complete understanding of Dr. Priestley’s activities prior to his death. Importantly, this project has proven once again that we cannot assume significant archaeological deposits no longer survive on historic Commonwealth properties administered by the Pennsylvania Historical and Museum Commission. Indeed, the assumption should be that they **do** exist until proven otherwise!

One could argue that since such an accurate Priestley period plan exists for the site there is no future need for archaeological investigation prior to development. Yet, present research has

shown that many details regarding construction technique and landscape architecture do not appear on the Plan and await discovery. Who would have guessed, for example, that Garden Shed, Wood Shed, and cellar entrance fences were built on stone footings? Or, would it have been known that Wood Shed support posts rested on stone footings laid in subterranean pits? Archaeology identified the cause for Back Kitchen foundation failure -- the lack of spread footings and inadequate depth. And, excavations determined that tan shading shown on the 1800 Plan depicts a shaley fill and gravel layer, intentionally spread on the surface around the house and in the courtyard west of the house.

In sum, neither the 1800 Plan nor archaeological excavation **alone** can properly interpret this important historic site. Instead, a synthesis of the two is required. And, this is the essence of Historical Archaeology. All evidence of past lifeways and activities, whether they derive from documentary or archaeological data, must be sought and brought to bear on specific questions about the site if an accurate interpretation is to be realized.

Certainly the present project raises questions for future researchers. Why, for example, was the cellar hole over cut? What purpose was served by building wood fences with stone footings in addition to post-in-ground elements, especially when posts alone would provide adequate support? Why position the Back Kitchen well to serve as partial footing for the room's west, outside wall? Indeed, the results of this project only indicate how little we know about the history of this property and how much more there is to learn!

Recommendations

Areas disturbed by installation of the water drainage system and Back Kitchen foundation repairs have been sufficiently sampled by 1986 and 1992 investigations to mitigate all construction effects. At the time of this writing additional archaeological research has been conducted in the floor of the Laboratory (see Heberling Associates 1995) and in the courtyard where the 1800 Plan indicates outbuildings once stood. Both projects discovered significant structural evidence required to develop and execute sound restoration/reconstruction plans. Likewise, a historic landscape plan has been developed and will serve as the basis for landscape restoration at some future date.

Although it would be desirable to restore the site to its former Priestley period appearance, modern development on all sides of the property have forever compromised its setting. While conducting research on site and entertaining questions from the many visitors attracted to our excavation pits, it became quite clear that the Priestley House itself is the primary focus of their interests -- and understandably so. It is the largest surviving tangible artifact associated with the famous man to whom the site is dedicated. Consequently, accurate restoration of the Priestley House and adjoining Laboratory should be the highest site development priority, not the outbuildings or surrounding landscape.

The 1800 Plan indicates the Back Kitchen is not configured correctly. As noted earlier, the present placement of doors and windows is incorrect. Also, the Plan indicates the Store Room between Dr. Priestley's Laboratory and Library had an outside entry door which was not restored during the 1970 reconstruction project. These deficiencies affect the appearance of the Priestley House and Laboratory and require correction to achieve authenticity.

Perhaps the greatest interpretative void characterizing the site today is the laboratory where Dr. Priestley conducted his experiments. Many visitors travel to the property because of their knowledge of Priestley's scientific accomplishments. Many more eagerly anticipate a tour of his workplace. All are disappointed because there is little to see. Again, the 1800 Plan illustrates organization of the interior workspace; and, archaeological testing has determined the existence of associated "below-floor" structural remains (see Heberling Associates 1995). Complete excavation of the laboratory floor should be a top priority coupled with careful reconstruction of the lab, equipped with facsimile apparatus and/or original artifacts. Because the public's interest focuses on the House and Laboratory, the current prioritization of restoration activities should be re-evaluated and reordered.

It is recommended that site interpretation broaden to include prehistory and post-Priestley period occupations. Both are represented in the artifactual and/or architectural records of the site and permit visitors to better understand how the property changed through time. Neither would

detract from the “Priestley story” nor would they confuse the visitor, especially if presented in chronological order.

In closing, significant archaeological deposits remain on the Joseph Priestley House and Laboratory property -- deposits which promise to yield new information about the people who lived there before, during, and after the Priestley family. It is essential that they be identified and evaluated before future development occurs. The products of archaeological and documentary research must both be interwoven and form the fabric of site interpretation for the enjoyment and education of all who visit this special stop on Pennsylvania’s Trail of History.

REFERENCES CITED

Brown, Ira V.

- 1962 *Joseph Priestley: Selections from His Writings*. Penn State University Press, University Park.

Eckenrode, Joseph J.

- 1985 *Soil Survey of Northumberland County, Pennsylvania*. Soil Conservation Service, United States Department of Agriculture, Washington, D.C.

Favretti, Rudy J.

- 1992 Historic Landscape Report, Joseph Priestley House, Northumberland, Pennsylvania. Ms. on file, Joseph Priestley House, Northumberland, PA.

Gibbs, F.W.

- 1967 *Joseph Priestley: Revolutions in the Eighteenth Century*. Doubleday, Garden City.

Grass, Gunter

- 1992 *The Call of the Toad*. Translated by Ralph Manheim. Harcourt Brace Jovanovich, New York.

Heberling Associates

- 1995 *Archaeological Investigations at the Priestley Laboratory*. Submitted to the Commonwealth of Pennsylvania, Department of General Services and Pennsylvania Historical and Museum Commission. Copies available from the Museum Commission's Bureau of Historic Sites and Museums.

Hepburn, Joseph Samuel

- 1947 The Pennsylvania Associations of Joseph Priestley. *Journal of the Franklin Institute* 244(1-2):63-107.

Hershey, William D.

- 1979 36 Nb 70, Joseph Priestley House and Museum, Northumberland, Pennsylvania: Archaeological Season 1978. Ms. on file, Section of Archaeology, The State Museum of Pennsylvania, Pennsylvania Historical and Museum Commission, Harrisburg.

Holt, Anne

- 1931 *A Life of Joseph Priestley*. Oxford University Press, London.

- Kent, Barry C.
1983 More on Gunflints. *Historical Archaeology* 17(2):27-40.
- Kieft, Lester
n.d. *Joseph Priestley and the Priestley House*. Bucknell University, Lewisburg.
- Kieft, Lester and Bennett R. Willeford, Jr. (eds.)
1980 *Joseph Priestley: Scientist, Theologian, and Metaphysician*. Bucknell University Press, Lewisburg.
- Kracum, Vincent D.
1974 The American Home of Joseph Priestley, Discoverer of Oxygen. *Respiratory Care* 19(8):591-595.
- Lukehart, Peter M. (editor)
1994 *Joseph Priestley In America, 1794-1804*. Exhibition catalogue, The Trout Gallery, Dickinson College, Carlisle.
- Meachum, Standish
1962 Priestley In America. *History Today* 12(8):568-573.
- Olofson, Roy A, Robert A. Bernheim and Kenneth D. Lotts
1974 *Second "Centennial of Chemistry" Celebration*. Commemorative program, sponsored by Department of Chemistry, The Pennsylvania State University and Division of Chemical Education, The American Chemical Society.
- Richardson, William N.
1992 Site Narrative Memo, Re: Construction of Back Kitchen Foundation and its Relationship to Well in Back Kitchen at Joseph Priestley House, dated August 25, 1992. Copy on file, 36 Nb 70 County File, Section of Archaeology, The State Museum of Pennsylvania, Harrisburg.

1994 The Current Interpretation of the Joseph Priestley House. In *Joseph Priestley In America, 1794-1804*, edited by Peter M. Lukehart, pp. 20-29. The Trout Gallery, Dickinson College, Carlisle.
- Risser, John
1989 Joseph Priestley. *Susquehanna Monthly Magazine* 14(6):35-39.
- Scheetz, Barry E. And Deane K. Smith
1990 *Preliminary Characterization of Residual Deposits on Joseph Priestley's Laboratory Apparatus*. Prepared for The Friends of The State Museum. Copies available from the Section of Archaeology, The State Museum of Pennsylvania, Harrisburg.

- Schofield, Robert E.
 1966 *A Scientific Autobiography of Joseph Priestley (1733-1804)*. M.I.T. Press, Cambridge.
- Smith, Edgar Falls
 1920 *Priestley in America, 1794-1804*. P. Blakiston's Son, Philadelphia.
- Snyder, Charles Fisher
 1958 The Priestley House. *Proceedings of the Northumberland County Historical Society* 22:80-94.
- Soloveichik, Samuel
 1962 The Last Fight for Phlogiston and the Death of Priestley. *Journal of Chemical Education* 39:644-646.
- South, Stanley
 1977 *Method and Theory in Historical Archaeology*. Academic Press, New York.
- Spiers, Tomas and Associates
 1981 Joseph Priestley House, Northumberland, Pennsylvania: A Historic Structure Report. Ms. on file, Bureau of Historic Sites and Museums, Pennsylvania Historical and Museum Commission, Harrisburg.
- Turnbaugh, William H.
 1977 *Man, Land, and Time*. The Lycoming County Historical Society, Williamsport.
- Vento, Frank J. And Harold B. Rollins
 1990 *Genetic Stratigraphy, Paleosol Development and the Burial of Archaeological Sites in the Susquehanna, Delaware, and Upper Ohio Drainage Basins, Pennsylvania*. Submitted to the Bureau for Historic Preservation, Pennsylvania Historical and Museum Commission, Harrisburg. Copies available from the Bureau for Historic Preservation.
- Witthoft, John
 1953 Broad Spear Points and the Transitional Period Cultures in Pennsylvania. *Pennsylvania Archaeologist* 23(1):4-31.