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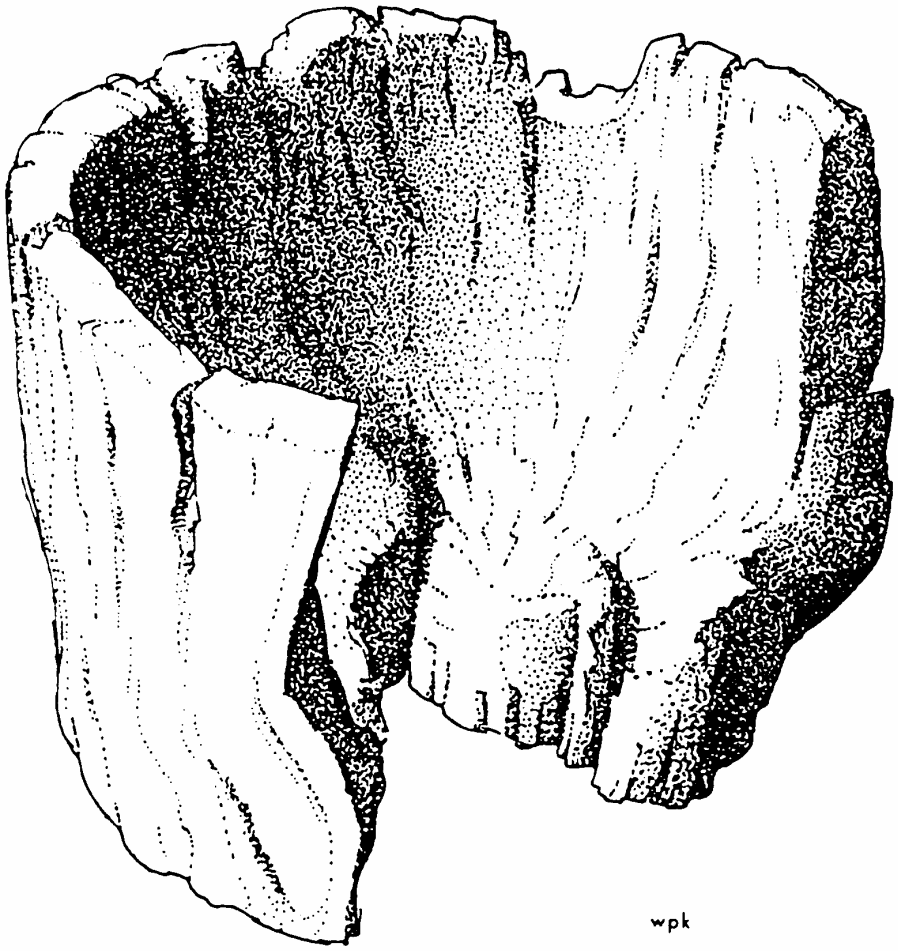

Wooden Mortar from the Fort Massapeag Site

Number 108 Fall 1994

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Archaeological and Documentary Investigations of a Mysterious Underground Chamber Found at John Jay Homestead State Historic Site, Westchester County, New York

Lois M. Feister, NYSOPRHP, Bureau of Historic Sites, Peebles Island, Waterford, New York

Archaeological excavations, documentary research, and informant interviews were used to study and interpret the remains of a buried vaulted chamber and stairway discovered at John Jay Homestead State Historic Site. The vault is seen as the location of a heating system for the greenhouse(s) that were built about 1833 and were in use until the mid-twentieth century. Originally intended to service one greenhouse, the vault was enlarged about 1890 in order to service a second house. Other such chambers may be found archaeologically in New York State as all greenhouses in the Northeast had a year-round need to be heated, and New York in the nineteenth and early twentieth centuries led the nation in flower and plant production.

Introduction

A mysterious underground room and a set of stone stairs leading down into the chamber were discovered on the property once owned by famous eighteenth-century patriot, diplomat, and Supreme Court Justice John Jay by New York State Bureau of Historic Sites archaeologists (Figure 1). The buried and forgotten room dated to the nineteenth century, and it was an artifact of the Jay family who lived on the property until the 1960s. Extensive research was conducted in order to identify this feature. The existence of ruins of twentieth-century greenhouses in the immediate vicinity suggested that the mysterious chamber might relate somehow to gardening. It became clear that starting as early as 1833, the buried room was used as a heating chamber for the greenhouses. Because some of New York State's leading industries in the nineteenth and twentieth centuries were related to greenhouse production and use, there may well be more of these "mystery chambers" buried elsewhere in the state, waiting to be discovered by archaeologists.

Historical Background

John Jay II was in the forefront of a new industry then developing in the United States when he built a greenhouse about 1860 at the John Jay farm and began to commercialize his garden production.

> Floriculture was largely reserved for the wealthy in the United States prior to the middle of the nineteenth century, especially if flowers were grown out of season ... [there were] three [commercial greenhouses] prior to 1820, and only 178 in 1860. Of these 178 commercial operations, most were growers who conducted retail trade directly from their green houses, fields, or glass-covered beds (hot or cold frames). In some of the large city centers, strictly retail businesses were beginning to appear by the 1860s. In these early flowershops, the owners had to go out searching for their stock among surrounding growers ... often ... from estate greenhouses in outlying areas [Auwaerter 1992:10, 14].

Demand was weak during and after the Civil War, but by 1893, "floriculture was expanding more rapidly than any other field of agriculture." Between 1865 and 1890, 80% of the industry developed (Auwaerter 1992:14, 16). Located only 50 mi north of New York City and near rail lines, the Jay farm was well situated for participation in this new enterprise (Doell and Doell 1989a:28). After 1890, the industry boomed, and "by 1929, New York State led the nation in flower and plan production" (Auwaerter 1992:18).

In order for the flower (and vegetable) industry to flourish in the Northeast, greenhouses were essential, and these greenhouses had to be heated as much as nine months out of the year. Companies that specialized in meeting the demand for heated greenhouses, such as Lord & Burnham, Hitchings, and King, grew up in the Northeast.

The first known reference to hot beds at the John Jay farm was in March 1832; the first hot house was built in 1833. At the end of that year, Eliza Jay wrote that William Jay "has made a hot-house in the garden for the plants" (Doell and Doell 1989b:A, 30, 31). The hot bed was probably heated by the use of manure, a common eighteenth-century practice and a method that continued to be used in the nineteenth century at the John Jay farm. In 1891, the gardener had two frames filled with horse manure for the hotbed and planned to fill four more the next week (Doell and Doell 1989b:A, 64). The hot house built in 1833, however, undoubtedly was a heated glass building. It may have still been standing in 1860 when the first reference was made to a greenhouse at the site in a memoran-

Figure 1. Location of John Jay Homestead State Historic Site.

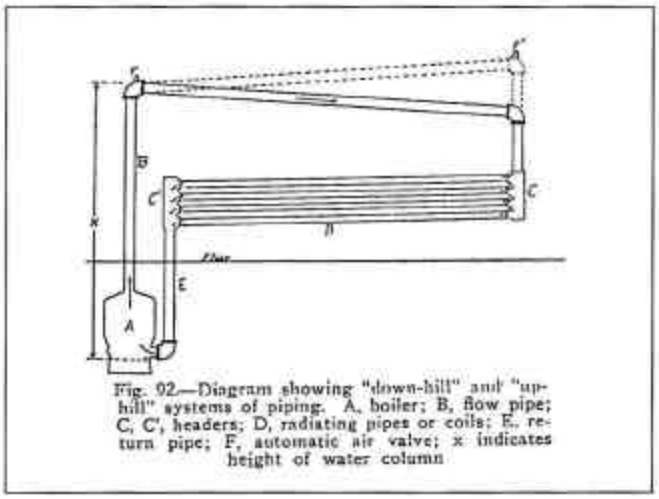

Figure 2. Schematic of assimple heating system. Note that the boiler is placed under the floor (Wright 1928:170).

dum of agreement between Mr. Clift and John Jay **I**. The agreement was signed on April 1. In 1860, John Jay II built a greenhouse. It is unlikely that one had been built between January and April; this new one was probably constructed sometime later that year. The new one probably replaced the first one.

By early summer, produce and flowers were being provided to Mr. Cranston, perhaps an agent for the New York Hotel in New York City. The Jay farm already was supplying dairy products to the hotel which was operated by a Jay relation (Doell and Doell 1989a:28; Mclean 1993). The demand apparently was strong as gardener Robert Johnston complained to John Jay II in October 1861 that he did not have flowers to send down twice a week, and "it can not be expected that flowers is plenty in the greenhouse so early" (Doell and Doell 1989b:A, 43, 44, 47, 48).

It is unknown how the hot house of 1833 was heated, but use of hot water was common at that early date. The Romans used circulating hot water; the French reintroduced it in 1777 (Taft 1926:91). "For thirty years previous to 1880, the usual method of heating greenhouses [used] closed cast-iron heaters ... from which cast-iron pipes carried the water about the houses, ending in large open expansion tanks or distributing systems" (Taft 1926:92).

The greenhouse built in 1860 and those that followed (a new forcing house built in 1890, often called the little house, and a new greenhouse in 1918) were heated by coal which generated steam heat. Mrs. Eleanor Iselin Wade who was born at the John Jay farm in 1910 states that her great grandfather, John Jay II (b. 1817, d. 1894) built the potting sheds when he decided to commercialize the operation. The room under the north shed was used to house a boiler that heated the greenhouse. Her grandfather, Colonel William Jay (b. 1841, d. 1915), built a second greenhouse (the small house), and at that time a larger heating system was installed. This larger heating system required the raising of the ceiling of the room under the north potting shed in order to accommodate the boiler and piping (Wade 1993a). Mrs. Wade's recollection of family tradition seems very accurate. If the vaulted ceiling was built about 1890, then the current potting shed also dates to that same time period, and there were probably earlier structures on the same spot. There is some architectural evidence for their being earlier than the twentieth century (Flagg 1992:2, 3; Goldenberg 1985:1).

Greenhouse operations need working space for setting seeds and working with cuttings, such work spaces traditionally are placed over the heating chamber for the greenhouse complex. Because the heating system is a circulating one, the boiler needs to be placed lower than the level of the greenhouse (Figure 2). In this way, the steam or hot water can travel from the top of the boiler around its route and return to the bottom of the boiler to be reheated and reused. Use of gravity as a secondary force makes such a system easy and efficient. Traditionally, the boiler was placed in a chamber in the ground (Auwaerter 1992:66; Lord & Burnham 1929:71; Taft 1926:92, 100-103, 105, 124; Wright 1928:170), and a workhouse was built over it.

Evidence of the heating system for the greenhouses at the John Jay farm is provided by several references in the record and by Mrs. Wade's recollections (Wade 1993a). When the greenhouse was broken into in the fall of 1891, gardener Moosemeyer was asked "is the steam shut off from the rest of the house," and Katonah florist Tharp, called to assist, suggested that heating the large greenhouse be discontinued and that only the little house be heated. Gardener Rodin complained to John Jay II that he used one ton of coal in three weeks to heat just the small house; usually this was enough for four weeks, but the days had been colder than average. By

Figure 3. Not a promising archaeology site! The potting sheds as they appeared in the 1960s. The north potting shed is on the right. The outline of one of the former greenhouses can be seen on the side of the south potting shed.

December 5, Rodin had gotten more coal and was in need of pots of different sizes for the process of forcing both flowers and vegetables (Doell and Doell 1989b:A, 61, 63, 64). The 1912 Inventory of the Country Residence of Colonel William Jay noted that the two greenhouses were "heated by Lord and Burnham system complete."

The layout included one full-span house (75 ft by 18 ft), one 3/4-span greenhouse, one 16-sash cold frame, one mushroom cellar, and a tool house and potting room. The average amount of coal stored at one time was about 25 tons (Doell and Doell 1989b:A, 70). In 1918, Arthur Iselin built a new greenhouse, 62 1/2 ft long by 18 ft wide, replacing an older one. This time, glass was provided by Lord & Burnham, and other materials came from other companies (Doell and Doell 1989b:A, 70). The heating system apparently was not changed. The new greenhouse was to be built "following the same roof lines as your present greenhouse, excepting that the concrete wall is to be removed down to 27" of the concrete walk and a line of side sash substituted" (Brown 1974:50). Since the 62-ft long greenhouse was the one south of the potting sheds, the 72-ft long greenhouse was the one west of the potting shed as shown on the 1917 map (Doell and Doell 1989b:B, 7). The 1918 greenhouse, then, replaced the small house built in 1890. The larger 72-ft long greenhouse was probably that built in 1860.

Eleanor Iselin Wade recalled details about the greenhouse operation. The steam pipes ran around the greenhouses on top of the foundation walls. The coal was stored in the cellar of the north shed and was fed into the furnace there. The furnace occupied most of the north wall of the underground chamber and was "tall." It was covered with white asbestos material for insulation.

Because the system was so large, the furnace simply needed to be banked at night and stoked up again by the gardener when he arrived at 7 o'clock in the morning. Mrs. Wade noted that the greenhouse heating system ran very well; her mother had fresh flowers and fresh vegetables all winter long. She also was proud of how clean they kept the heating chamber under the north shed. The coal ash was removed regularly, loaded onto wagons, and spread in the fields. Mrs. Wade thought the chamber and its stairway were filled in about 1953 when her mother, Eleanor Jay Iselin, died, and the property was being readied for sale (Wade 1993a).

Archaeological Discoveries, 1992 and 1993

In August 1992, the Bureau of Historic Sites' archaeology unit field crew organized a limited testing project at the north potting shed. The north potting shed was quite deteriorated. Its entire structural system was scheduled for replacement since it was of "irregularly sized dimensional (umber, and essentially consists of only two walls and a roof (Flagg 1992:2; Figure 3).

It was not known what type of floor originally had been in the structure since only soil now remained. The combina-

Figure 4. The curved top of the once-buried chamber can be seen on the right. The wall supporting the end of the chamber is to the left. The cast-iron pipes can be seen standing vertically in the background; they are directly over what was the location of the coal furnace.

Figure 5. View looking down the newly excavated steps into the underground chamber. The doorway to the interior is visible to the left; the curve of the chamber roof can be seen above behind the sign board.

tion stone and brick foundation walls on the east and west sides were collapsing in some areas. To the north was a high stone wall; an opening through that wall appeared to have once been a window. Its large stone lintel lay at an angle across the opening, and now the space was filled with hundreds of glass panes, probably from the dismantled greenhouses.

Three test units, each 2 ft by 2 ft in size, were opened in the interior of the building. The test units established that a wood floor once had existed there. One of these test units, located on the northeast side, revealed the top of an arched brick vault that was parged with a thin layer of cement 8 in under the floor level of the potting shed. A few other test units were excavated, enough to establish that the vault filled much of the floor space under the building. A ruler inserted through a small opening into the feature along the east wall dropped to a depth of at least 6 ft. Test-unit excavations were halted, and a full-scale excavation was planned for the 1993 field season. It seemed likely then that the feature was a large cistern, perhaps part of a forgotten water system for the gardens.

Returning to the site in July 1993, after the structural members of the north potting shed and the piles of glass panes had been removed and stored, the archaeological crew ex posed the entire top surface of the brick vault (Figure 4). In the process, they discovered two cast-iron pipes protruding from the top of the vault as well as an opening for what could have been a chimney. The top of the structure was established as being 10 ft long north to south and 8 ft wide east to west. The north wall of the structure was supported by the large stone wall described previously. Part of an opening in that wall had been bricked in, thus changing a doorway into a window.

The west side of the chamber was supported by a second stone wall that lay perpendicular to the first. On the south side, the base of the arched vault was supported by a low stone wall. A rectangular brick feature lay outside the east foundation of the potting shed. Puzzled as to its function, the archaeologists excavated there. Almost immediately a set of stone steps was revealed. When cleared of mid-twentieth century debris, the steps (eight in number) led down to a brick landing. To the right of the landing was a 6-ft high doorway that led into the interior of the chamber (Figure 5).

This was no cistern! Careful examination of this interior established the following (Figure 6):

1. At the top of the chamber ceiling, to the left of the doorway, was another blocked opening. Excavations conducted on the outside, above the location of that opening, revealed a large stone slab set over a coal chute.
2. Sockets in the ceiling of the chamber formed a pattern for uprights that were once part of a wood partition that retained the coal kept in the south side of the chamber.
3. Openings in the north wall of the underground chamber suggested a stove pipe had once been present. The cast-iron pipes the archaeologists had uncovered that protruded through the top of the vault were directly overhead. Apparently a stove once had been installed inside the chamber along the north wall.
4. Excavations through the soil of the chamber floor revealed a brick floor underneath. Removal of a small section of the brick floor revealed a broken red clay drain tile running under the floor. The tile apparently connected with another larger red clay drain tile that could be seen at the base of the eight steps outside the chamber. This larger tile ran out the east wall. Another ceramic pipe could be seen exiting the chamber at floor level through its south wall. The underground chamber, then, was well drained.

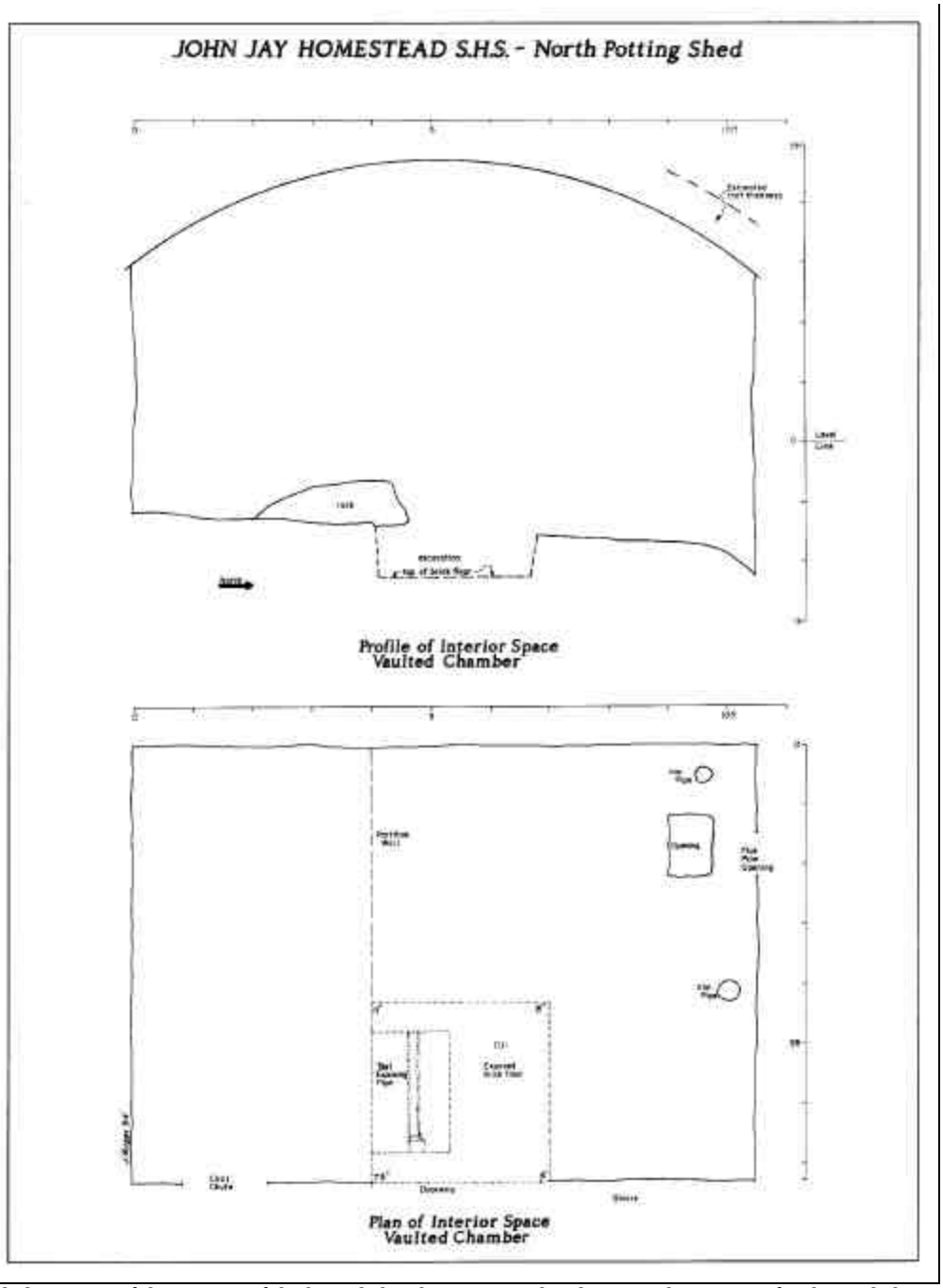

Figure 6. Profile and plan views of the interior of the buried chamber. Note in the plan view the opening for the coal chute to the left, the drainage pipe exposed in Test Unit l directly inside the doorway, and the location of the iron pipes where the coal furnace once sat.

5. Even before Mrs. Wade's statement was received about the ceiling of the chamber being raised in order to accommodate a larger heating system, evidence of that could be seen in the stone walls. The chamber once had had a flat roof that would have provided an interior space of less than 6 ft. With the addition of more courses of stone and brick, the doorway was raised to 6 ft; by the substitution of the brick vault roof over the space, anew interior height of 7 ft was achieved. One more step at the top may have been added and the other steps leveled by the use of brick pushed under them. According to Mrs. Wade, the new vaulted roof was installed in 1890 when the addition of the second, smaller greenhouse (the forcing house) made a new heating system necessary.

Further Excavations at the North Potting Shed

In addition to uncovering the vaulted brick roof of the underground heating chamber, the archaeologists excavated more of the floor levels of the potting shed south and west of the vault. They also examined the relationship between the west wall of the vault and the north wall that supported both the chamber and the potting shed (Figure 7).

An orange-colored ceramic tile uncovered under the wooden potting shed floor was particularly interesting. Each segment was marked "GREENWICH POTTERY-STEAM PRESSED IRONSTONE DRAIN PIPE-28 WEST 18TH STREET-NEW YORK." The letters were stamped into the pipe clay and were enclosed within a shield-like outline. Research into the Greenwich Pottery Company revealed that it had been started in 1833 in New York City (Ketchum 1987:59), Its address in the city directories (New York City Directories 1830-1890) at that time was 32 to 34 18th Street. By 1840, the address had become 259 to 261 West 18th Street. Later it was number 273; by 1860, the address was listed as 415 to 429 West 18th Street. The factory, in fact, did not move; the city was busy renumbering streets every few years (Stokes 1926:1675, 1676, 1682, 1759, 1812. 1937). The street address on the pipe, Number 28, therefore, had to relate to the earliest numbering system, which was in use before 1840. Even if the company continued to use the older molds for stamping its work for a while, the ceramic pipe in the subsoil under the potting shed was probably laid between 1833 and 1840. The first hot house, moreover, was built in 1833; a drainage system was probably installed shortly thereafter. The drainage pipe was broken off by the installation of an iron water pipe, which dates probably to the 1890 or the 1918 greenhouse construction as it so closely parallels the walls. The relationship of the ceramic pipe to the walls of the underground heating unit is more difficult to determine. The pipe appears to have been laid over the top of the south wall of the unit (Figure 4). This would indicate that the heating unit, in its rectangular form, existed earlier than the c. 1840 pipe and thus may date to the 1833 construction of the first greenhouse.

Excavation along the south and west walls of the potting shed foundation revealed that the west foundation wall consisted of brick laid over stone. Some of the weight of the shed had been supported on brick piers built inside the stone foundation walls in the southeast corner. This suggests the present potting shed was moved here and fit inside a previously existing foundation. The stone foundations, then, may be the remains of an earlier workshed. The use of brick to build the piers and parts of the walls is reminiscent of the use of brick to build the vaulted ceiling. This suggests that the present-day potting shed was placed here at the same time the roof on the chamber was raised, that is, in 1890.

Excavations also were conducted outside the west wall supporting the chamber vault. This buried stone wall runs perpendicular to the large stone wall that runs along the north side of the potting shed. Excavations into the soil layers outside the west supporting wall for the vaulted chamber revealed three strata and a wall trench for the earlier north stone wall.

The top layer in the excavation was a mixture of loams and displaced dark yellow silty subsoils. The layer was topped with rock chips. The west brick foundation wall of the potting shed sat over this layer of rock chips, indicating the soil layer predated the c.1890 work at the potting shed. Below this rock chip and mixed soil layer was a 4-in thick stratum of dark buried soil. This layer was culturally sterile but had been deposited after the north stone wall was built. Site manager Linda McLean suggested this dark loam may have been soil from potting activities, especially since it was so rich and dark. Subsoil was found under this buried dark soil. Intrusive from the top of the subsoil layer was the wall trench for the north stone wall. The wall trench was 22 in wide, north to south, and was filled with large rocks that protruded from the north wall. These rocks appeared to be spread footers for the large wall.

Although there were few artifacts associated with these soil layers, the positioning of the walls in relation to the soil strata revealed that the north stone wall pre-dates the current potting shed recently removed. It probably was built to help support an earlier structure which sheltered the smaller earlier heating plant. When the underground chamber was enlarged, the former doorway into the older structure was bricked in to form a window, and the current potting shed was supported on brick walls and piers built against the older foundation walls on the south, east, and west sides. Thus, the north stone wall, the stone walls of the underground heating chamber, and the stairs leading down into the chamber may date as early as the 1830s when the heating of a greenhouse on the Jay property began. All documentary evidence points to the greenhouses always having been in this same area, and incorporated with them would have been the underground chamber for the heating system, of whatever size.

Further evidence that the brick parts of the structure were all part of the c. 1890 work is offered by the finding of coal under the brick floor of the chamber. The brick floor, which was fairly intact where exposed by archaeological excavation, would have acted as a barrier to the deposition of coal after the floor's installation. Therefore, the coal found under the brick was deposited prior to the building of the brick floor, probably during use of the chamber prior to c. 1890.

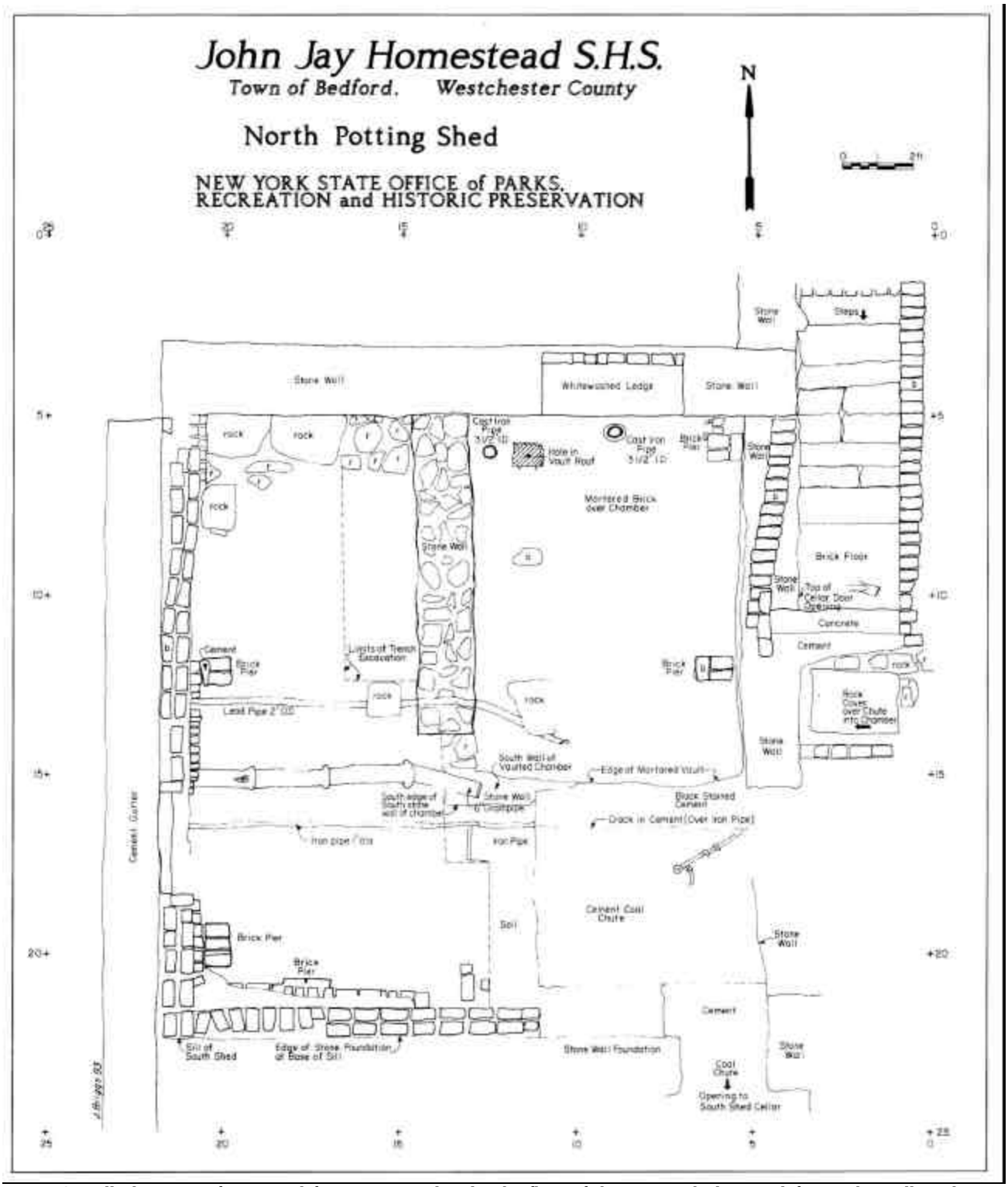

Figure 7. Overall plan view of excavated features exposed under the floor of the potting shed. From left to right, walls and piers for supporting the shed; test trench next to the stone wall that was the rear wall oft he buried chamber; roof of the chamber; east wall that supported the potting shed; stairway and coal chute into the underground chamber. A more recent cement coal chute also exists toward the bottom which fed coal into a small stove used in recent years to heat the south potting shed.

Other Artifacts Found

The artifacts excavated in 1992 and 1993 at the north potting shed are summarized in Table 1. Because of the nature of mixed soils so typical under a deteriorated wooden floor (especially one like that at the north potting shed), dating the deposits proved impossible. The artifacts are grouped in the table by type and by context.

The fill in the stairway was the most recent deposit as it contained large amounts of asbestos tile and some plastic. Below the wooden floor of the potting shed and above the vault roof was a mixture of material dating from the late eighteenth or first quarter of the nineteenth centuries (Chinese export porcelain) to the twentieth century (part of a plastic comb). Inside the chamber above the brick floor was found coal, flower pot fragments, round wire nails, and a lead glass base possibly from a cruet bottle or stand dating to the first half of the nineteenth century. Under the brick floor inside the chamber were fragments of a flower pot, coal, red brick, and red ceramic tile, all of which are dateable after c. 1850 when coal came into widespread use.

The artifact assemblage, then, can only be seen as indicative of a range of dates for the use of the potting shed area. Although it could be argued that all of the artifacts could have been deposited there as recently as July 1993 (since the floor of the potting shed was so deteriorated) or as recently as the 1950s (when the stairway was probably filled in), it is more likely they represent a gradual accumulation through time. As a gradual deposition, the material supports dating the heating plant-greenhouse area as functioning from the 1830s to the mid-twentieth century.

Summary of the Heating System Information

Archaeological, documentary, and informant information were used to understand and interpret the underground heating system for the greenhouses at John Jay Homestead State Historic Site. The heating system appears to have been located in the same place since the construction of the first greenhouse in 1833. Originally intended to service one greenhouse, probably the one located to the west, the system about 1890 was enlarged in order to service a second house added at that time. Although few traces remain, some type of structure probably existed over the heating chamber at an early date; the current potting sheds probably replaced it.

To build the greenhouse complex, the Jay family purchased materials from the leading businesses of the day. The Greenwich Pottery Company, makers of the marked ceramic pipe found buried under the north potting shed floor, was a New York City firm that did extensive business both in the city and in Westchester County. In 1860, the Westchester County Directory contained a two-page ad for the Greenwich Company (Hutchinson 1860). Lord & Burnham, which furnished the last coal furnace and probably other items, was one of the leading greenhouse manufacturers in the country and was located nearby in Irvington, New York.

Interpretation of the Heating Chamber/Greenhouse Complex

The John Jay farm greenhouse complex was used for a period of over 100 years both for personal and commercial purposes. In order to make the greenhouses viable, a heating system was needed for as much as nine months of the year. Because such a system depended on gravity for the return flow of the cooled water produced by the steam system, the source of heat was installed at a lower level than the greenhouses themselves. The underground system probably was begun in 1833 when the first hot house was built, a structure replaced in 1860. The heating system was enlarged about 1890 when a second greenhouse was added and functioned until dismantled and the cellar was filled in, sometime in the 1950s. The vaulted chamber has remained intact as evidence of these past activities. Plans are being made for these features to be included in the interpretation for the visiting public of gardening activities in the past at John Jay Homestead State Historic Site.

Acknowledgments

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Table 1. Artifacts Excavated at John Jay North Potting Shed 1992 and 1993.

Material	No. Fragments	Location
Shell	1 clam fragment	stairway fill
Bone	6 mammal	below floor, above vault
Clear Glass	3 bottle; 1 cruet 1 jar	below floor, above vault above chamber brick floor
Stopper	1 Hutchinson, fits clear bottle above	below floor, above vault
Colored Glass	2 bottle	below floor above vault; above chamber brick floor
Redware	2 lead-glazed	below floor, above vault
Creamware	3 hollowware type, plain	below floor, above vault
Pearlware	3 transfer-print; 3 plain; 2 hand-painted, annular	below floor, above vault; stairway fill
Whiteware	7 plain; 1 shell-edge, all plates	below floor, above vault
Porcelain	13 Chinese export; 1 modern; 1 applied design, nineteenth century	below floor, above vault
Flower Pot	63 unglazed rims, bases, body: 62 red, 1 green-brown in color	below floor, above vault; above chamber brick floor; below chamber brick floor
Window Glass	43 greenhouse glass	below floor, above vault; above chamber brick floor
Red Brick	54 red: 3 whole	below floor, above vault; above chamber brick floor; under chamber brick floor
Round Nails	30, some with wood fibers	below floor, above vault; above chamber brick floor
M-cut Nails	3, all rusted	below floor, above vault
Plaster	14 small pieces	below floor, above vault
Cement	13 nodules	below floor, above vault
Drain Tile	31 red ceramic; 6 salt-glazed	above chamber brick floor; below chamber brick floor
Asbestos Tile	4 fragments, some nail holes	below floor, above vault; stairway fill
Tarpaper	2 fragments, black	stairway fill
Metal Mesh	2 reinforcing cement	stairway fill
Clay Pipes	1 eighteenth-century bowl; 3 stems	below floor, above vault
Coal	35 hard coal	below floor, above vault; above chamber brick floor; below chamber brick floor
Wood	33 pieces	above chamber brick floor
Iron Rakes	2 sets metal teeth	below floor, above vault
Metal Fragments	12 scrap; 1 paint can	below floor, above vault
Hardware	14 bolts, hanger, washer, spigot	below floor, above vault
Plastic	6 strips, pieces; 1 comb	below floor, above vault; stairway fill

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Archaeological Testing for an Electrical Line at Ganondagan State Historic Site, July 12, 1994

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A series of 13 shovel tests excavated on a proposed electrical line route extending nearly 75 ft north from the site manager's brick Italianate house at Ganondagan State Historic Site revealed no evidence of seventeenth-century Seneca Indian occupation in this area of the site. Instead, a sample of artifacts representing late eighteenth- and nineteenth-century occupation at this location was recovered. The archaeological evidence indicates that the Italianate house, built in the 1850s by the Green family shortly after Orsamus Marshall had first correlated Seneca tradition and historical records to determine the correct historical identity and significance of the nearby Seneca village site, stands on the location of an earlier house, built probably by Jared Boughton in 1790. In 1977, the survey by the Rochester Museum & Science Center farther north identified the site of the cabin built by Jared Boughton in 1792, after the construction of which Jared's sister Abigail and her husband may have occupied the first house built in 1790. Because of debt, Jared was forced to move temporarily to North Carolina in 1798. The ceramic samples from these sites make possible some preliminary comparisons with other western New York sites and indicate directions for further research.

Summary

On July 12, 1994, 13 archaeological shovel tests were excavated for a distance of 74 ft northward from the north wall of the site manager's brick house at Ganondagan State Historic Site in the Town of Victor, Ontario County. These tests were excavated in response to a proposal to install an underground electrical line in this location. It was necessary to identify, record, and protect from adverse impact any evidence of the seventeenth-century Seneca Indian occupation at Ganondagan or any significant features associated with the later historic non-Indian occupation at or near the extant nineteenth-century brick Italianate house. The shovel tests revealed a layer of fill deposited around the brick house which resulted from the mid-nineteenth-century excavation of the house cellar. This lens of mixed fill extended at least 10 ft from the house. Below this lens of cellar excavation spoil was an earlier, more extensive brown topsoil stratum containing much older artifacts. These artifacts include green-tinted window glass, hand-decorated pearlware, and creamware which indicate an occupation of the site possibly as early as the 1790s. Excavations to subsoil, however, did not reveal any other features, and no seventeenth-century Seneca artifacts were found. It is unlikely that the seventeenth-century Seneca occupation of Ganondagan included this particular area and also unlikely that the excavation for the electrical conduit would disturb any Seneca burial remains.

Project Background

The Ganondagan State Historic Site manager, Peter Jemison, called the archaeology unit of the Bureau of the Historic Sites on June 29 and explained the need to install a new power line underground from the brick Italianate house northward under the paved driveway to the edge of an open field. At the end of the line, a permanent power outlet was to be built. It was necessary to install the line prior to the special event, a pow wow, scheduled for July 30. The trench that was required, he thought, would be about 2 ft deep. Further discussion with Joseph Keeler of the Finger Lakes regional office indicated that the power line could be installed instead within a conduit at less depth, perhaps 12 in. Also the line would be put through the cellar wall of the house by means of a single hole drilled from the inside rather than from the outside, thereby eliminating any need for a large work hole to be dug adjacent to the house foundation at the beginning of the trench.

It was arranged for the author to travel to Ganondagan on July 12 to monitor the digging of the trench, which was to be dug by regional staff with a mechanical Ditch-Witch trenching machine. This method of trench-digging would minimize disturbance, and by careful archaeological monitoring and observation during the work the digging could be immediately stopped if any evidence of an Indian burial or other historic feature was encountered. However, an emergency in a state park elsewhere on July 12 required the trenching machine, and it was not available for Ganondagan. Consequently, 13 shovel tests were dug by hand.

There is no known record of any previous archaeological testing of this immediate area. Peter Jemison had, however, found a piece of brass sheet in a nearby garden area; such brass fragments, mostly from brass kettles, are typical artifacts at

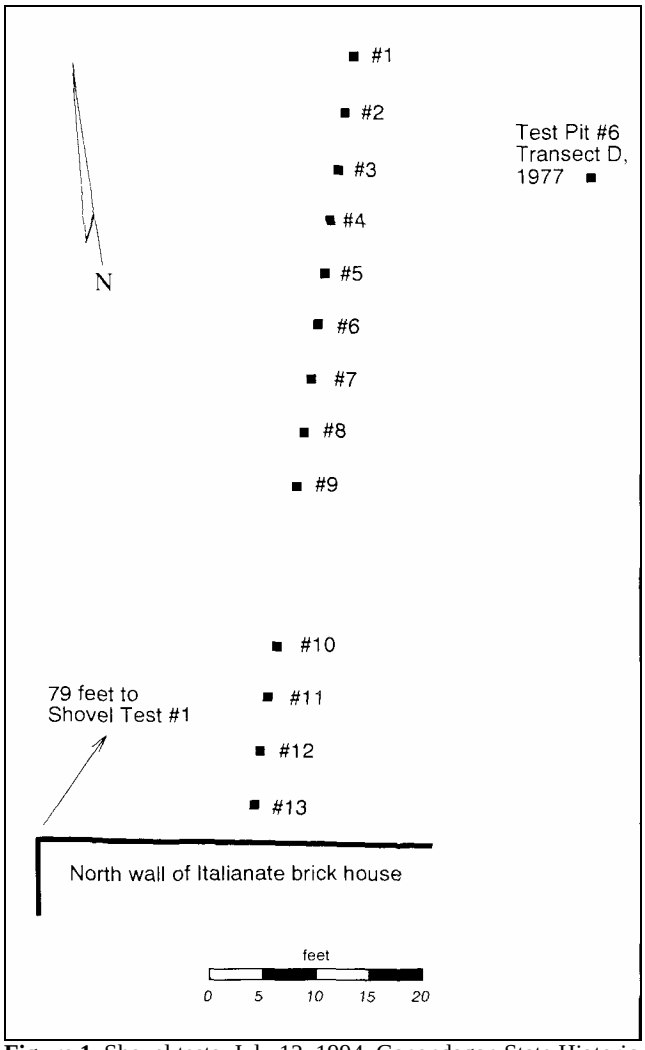

Figure 1. Shovel tests, July 12, 1994. Ganondagan State Historic Site, Victor, New York.

seventeenth-century Seneca village sites. The seventeenth-century village site itself, clearly identified by the Rochester Museum & Science Center survey conducted in 1977 as a 9.1acre oval area, begins about 950 ft north-northwest of the existing brick Italianate house and is at a slightly lower elevation than the house, which stands in the northwest corner of the intersection of Boughton Hill Road and the Victor-Holcomb Road. The test unit excavated closest to the north side of the brick house in the 1977 survey was Test Pit 6 of Transect D, located between 65 and 70 ft north-northeast of the northeast corner of the house (Figure 1). This test pit revealed only a plowzone (A.GA.1977.343) containing small brick fragments, a machine-cut nail, a piece of coal, a piece of green-tinted window glass, and ceramics. The ceramics consisted of three pieces of red earthenware and three pieces of pearlware, including a rim sherd from a blue shell-edge plate. Similar material, including more red earthenware, brick fragments, another machine-cut nail, and another piece of green-tinted window glass, was found in Test Pit 7 located 25 ft farther north. Still more similar material was found in Test Pit 8 located another 25 ft north (A.GA.1977.344). Beyond Test Pit 8, however, very little was found in test pits at 25-ft intervals along Transect D for more than 1000 ft until the test pits encountered bone refuse and a fragment of a native smoking pipe from the seventeenth-century village occupation (Hayes, Barber, and Hamell 1978:12, 121-123).

Other testing in the vicinity of the brick Italianate house occurred in 1986, when 7 test units were excavated on the south and southeast sides of the house in the location of a proposed pathway. No features were encountered, and the artifacts found date to the nineteenth-century occupation of the house (Wentworth 1986).

Site History

The family of Hezekiah Boughton, who had moved from Connecticut to the Town of Salem, Westchester County, New York, and subsequently to Stockbridge, Massachusetts, be came interested in stories of the fertile Genesee Country in 1788. Hezekiah Boughton purchased about one-quarter of the present Town of Victor in the fall of 1788 (Boughton 1890:262, 279). Jared Boughton and his brother Enos, sons of Hezekiah, visited this new territory in 1789 and came to the present Town of Victor. Soon they were joined by a third brother, Hezekiah Boughton, Jr., and in 1790, a fourth brother, Seymour Boughton, arrived. Jared Boughton built a log house, apparently in 1790, which in 1844 was "nearly opposite the new house on the flat, now [1844] Joseph Rawson's" (Boughton 1890:179; Smith 1870:44). In 1833, Joseph Rawson in fact purchased from Thomas Beach the land northwest of the intersection of Boughton Hill Road and the Victor-Holcomb Road, but the location of Rawson's "new house" in 1844 is not known precisely (Huey 1984:5). Subsequently, it is said, Jared Boughton in 1792 built a "cabin" at Boughton Hill where "the Indians had been ...and in the vicinity had built their fires. The ashes still remained. Under the oak tree were numbers of their graves" (Smith 1870:4245). In this house the family "passed a number of happy years" (Boughton 1890:280).

The description of the site of the cabin built in 1792 by Jared Boughton fits the location of a separate site defined in 1977 during the Rochester Museum & Science Center survey. It is located west of the Victor-Holcomb Road near the east side of the seventeenth-century Seneca village site not far from an Indian burial ground. However, it apparently became the home of Huldah (Wilson) Boughton, the widow of Hezekiah Boughton, Jr., who died in February 1793 (Boughton

1890:263). She may have moved there shortly after 1798, when Jared Boughton was forced to sell his possessions to pay a debt and move temporarily to coastal North Carolina (Boughton 1890:280-281). Huldah, as a widow, married Dr. Reuben Hart, who was living there in 1803 when Nicholas Smith sold the parcel of 31.25 acres to Abijah Williams (Huey 1984:2). Nicholas Smith had married Abigail Boughton, a sister of Jared and Hezekiah, Jr., and had moved to Victor by 1790 (Boughton 1890:262). Nicholas and Abigail may in fact have occupied Jared's first house built in 1790. On June 9, 1804, Nicholas Smith sold land on both sides of Boughton Hill Road west of the Victor-Holcomb Road to Uri Beach (Huey 1984:2-3). This included the present site of the brick Italianate house and probably the site of Jared Boughton's first house built in 1790.

As noted above, Dr. Thomas Beach sold this land northwest of the road intersection in 1833 to Joseph Rawson. Rawson died in 1845 or 1846, and in 1846, Hiram A. Rawson sold the property to Clarington Mayo. In 1850, Mayo sold the property to Henry Brown. It is quite possible that Clarington Mayo built the brick Italianate house about 1846 on the site of the previous Boughton House, although he sold the property in 1850 for only $354 more than what he paid for it. By 1855, H.H. Brown was living in a brick house worth $2,500, and the 1859 county map shows "H. Brown" in a house at the northwest corner of the intersection (Dawson 1859; Huey 1984:5-6). It seems clear that the present house was built, or completed, between 1850 and 1855. It is similar to many brick Italianate houses built in western New York in the 1840s and 1850s such as the Widmer house at Naples, New York, built about 1840 and purchased by the Widmer family in 1911 (Kramer 1983:8).

The brick Italianate house at Ganondagan was constructed at a time when the true historical significance of the nearby Seneca Indian village site was first becoming recognized. It was in the fall of 1847 that a young 34-year-old Buffalo lawyer named Orsamus Marshall was completing his historical research on the French expedition led by Denonville against the Seneca in 1687. Noting the unresolved question as to the location of Denonville's battle with the Seneca, Marshall interviewed elderly men living on the Cattaraugus and Tonawanda Reservations, and a chief named John Blacksmith identified the location of the battle as a place near Victor. It became clear that the Seneca village of Ganondagan (Gannagaro, or "Tegarondies") destroyed in 1687 was the already well-known Indian site on Boughton Hill. Marshall published the result of his research at New York in 1848, the same year that Ephraim G. Squier visited Boughton Hill and identified the site of Fort Hill west of the Seneca village site. The Smithsonian published the result of Squier's discoveries in October 1849, and his research again appeared in his book published in 1851. These important discoveries soon became accepted and used by other historians (Huey 1991; Shea 1880:76n.).

The 1875 census shows Baldwin Green living in the brick Italianate house, then worth $4,000. Baldwin Green, born in Herkimer County in 1821 or 1822, had moved to Victor from Montgomery County after 1864. Baldwin Green was a son of Peter Green, who was born in Schodack, Rensselaer County, in 1794. His great grandfather, Ambrose Green, was born in 1746 on Long Island, moved to Amenia, Dutchess County, and then to Schodack between 1770 and 1775. The Ambrose Green house in Schodack burned in the early twentieth century, but the unprotected and unexcavated site still exists on the north side of Route 20 in Schodack. The brick Italianate house at Victor has been owned by the State of New York since 1970 as a part of Ganondagan State Historic Site.

Methodology

From the mid-point of the north wall of the brick Italianate house, a line 74 ft in length was laid out to the location of the proposed electrical outlet box. Shovel Test #1 was a square 20-in by 20-in test unit at the location of the outlet box. The other test units were excavated along the line toward the house at 5-ft intervals and were numbered #2 through #13 (Figure 1). These tests units were only small, round shovel tests excavated to subsoil. Shovel Test #9 was 40 ft south of the outlet toward the house and was at the edge of the paved driveway. Because of the width of the driveway, the 5-ft interval could not be maintained, and Shovel Test #10 was 55 ft south, beyond the driveway; however, because of a very large tree root, Shovel Test #10 could not be excavated more than 12 in in depth. The 5-ft interval between shovel tests was then resumed with Shovel Test #11 60 ft toward the house.

Because of the nature of the excavation, artifacts could not be separated precisely as to stratigraphic context within each shovel test, although as shown in Table 1, most of the artifacts do have a stratigraphic association. Strata were measured and recorded upon completion of each shovel test. The catalogue numbers for the project are A.GA.1994.1815 through 1830. The complete artifact inventory is presented in Table 1.

Results and Conclusions

A rich, brown topsoil extending from the ground surface to the natural clay subsoil was encountered in the northernmost portion of the line and varied from 9 to 12 in in thickness. About 35 ft north of the house, however, the upper 11 in of soil consists of pebbles and gravel fill clearly associated with the construction of the paved driveway. Below this deposit of gravel is a brown sandy or silty loam that apparently extends southward to the brick house.

Between 10 and 15 ft north of the house is the edge of a lens of mottled clay fill that extends to the house and overlies

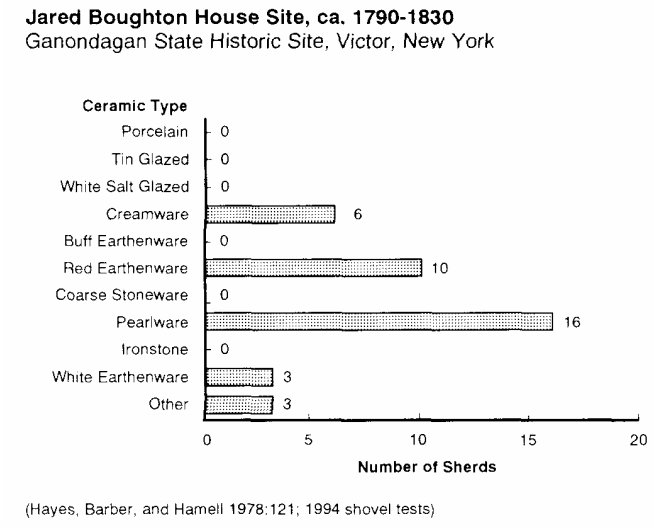

Figure 2. Ceramic types at Jared Boughton Site.

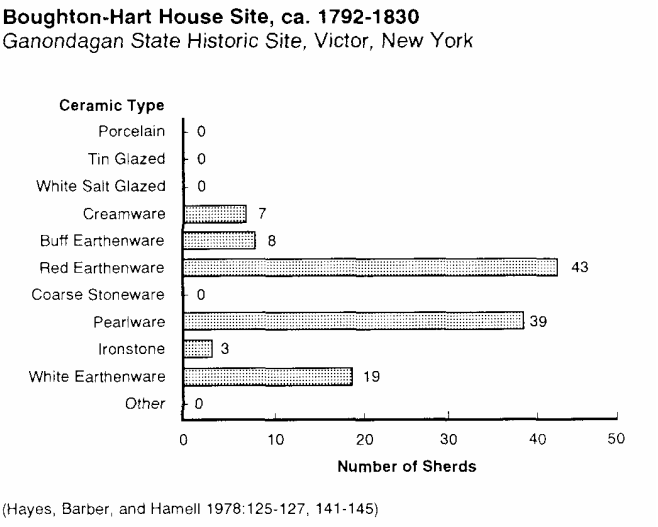

Figure 3. Ceramic types at Boughton-Hart Site.

the silty brown loam. The area is shaded by trees, and the barren ground surface is free of sod. This mottled clay fill forms the ground surface and is evidently the spoil that was spread around the site from the excavation of the cellar of the brick house about 1850. It contained no artifacts. However, numerous artifacts were found in the brown silty loam extending below it and evidently constitute evidence of an earlier pre-1850 occupation of the site. Such evidence was also found in the brown topsoil farther to the north.

The brown topsoil loam in the northernmost shovel tests produced several pieces of green-tinted window glass that could date from the late eighteenth or early nineteenth centuries. Besides coal, cinders, pieces of red brick, whiteware sherds, and a round wire nail (postdating 1890), there were earlier objects, including a hand-wrought iron nail, lime mortar, creamware sherds (predating 1820), blue and polychrome hand-decorated pearlware (also predating 1820), and red earthenware sherds. A deeper yellow creamware sherd may date from the 1780s. A piece of red brick is from a brick that was originally 1.75 in thick. Most of the bricks in the wall of the present house are more than 1.75 in thick and are most commonly 2 in thick by 7.75 or 8 in long. The thinner brick, therefore, may also be from the earlier occupation of this site.

Closer to the present brick house (Shovel Tests #10 through #13), where it is covered by the mottled clay fill, the brown silty loam contains more creamware, pearlware, and whiteware as well as some refuse bone, but no nails or window glass. It is possible that these and other pre-1850 artifacts represent evidence of Jared Boughton's first house built in 1790. Application of the South Mean Ceramic Date Formula to the small number of dateable sherds yields a mean date of 1805.6. Because of the small number of sherds (n=23) used in this calculation, this date could easily apply to an occupation extending from about 1790 to a termination at some time after 1830. The material found nearby in the 1977 survey in Transect D, Test Pits 6 through 8, also probably relates to this occupation (Hayes, Barber, and Hamell 1978:121). When the pearlware ceramics from these test pits are added to the shovel-test ceramics in recalculating the South Mean Ceramic Date, the 1805.6 mean ceramic date remains unchanged because 1805 is also the median date for pearlware.

Of the total of all ceramic sherds (n=26) from the shovel tests, exactly half (13) are pearlware. The second most common ceramic type is creamware (6 sherds), while red earthenware (4 sherds) is third most common. If the total ceramics from the 1977 test pits on Transect D are added to those from the shovel tests, pearlware (16 sherds) is still predominant. while red earthenware is second (10 sherds, or 26%). This distribution (Figure 2) is remarkably different from the distribution of ceramics from the site of the Boughton-Hart house recovered during the 1977 survey farther to the north (Figure 3). At that site red earthenware was predominant with 43 sherds, and pearlware was second most common with 39 sherds.

While these ceramic samples are admittedly small in size, perhaps too small for meaningful comparisons, they are probably somewhat indicative of the ceramic distributions that more extensive testing would produce. When the electrical conduit trench was finally dug, the staff at Ganondagan picked up the unassociated artifacts that resulted. These added 3 sherds of porcelain, 3 sherds of creamware, 5 sherds of red earthenware, 2 sherds of coarse stoneware, 4 sherds of pearlware, and 38 sherds of white earthenware to the sample. However, 36 sherds of the white earthenware are probably from a single red transfer-printed plate. The predominance of red earthenware at the

Table 1. Inventory of Artifacts by Shovel Test and Stratum.

Shovel Test No.	Distance from North End of Line (ft)	Stratum Description and Depth (in)	Catalogue Number	Objects
1	0-2	Brown topsoil, 0-11	1815	1 cinder 2 red brick chips 1 piece of coal 1 piece of clear window glass 1 piece of green-tinted window glass 1 glazed red earthenware sherd
2	5	Brown topsoil, 0-10	1816	Red brick chips not saved
3	10	Brown topsoil, 0-11	1817	1 piece of green-tinted window glass 1 unglazed red earthenware sherd
4	14.5	Brown topsoil, 0-9	1818	1 cinder 1 piece of coal 1 pale creamware sherd 1 blue hand-decorated pearlware sherd
5	20	Brown topsoil, 0-9	1819	2 cinders 2 red brick chips 1 piece of green-tinted window glass 1 round wire nail, bent 1 polychrome hand-decorated whiteware sherd
6	25	Brown topsoil, 0-12	1820	1 piece of coal 1 blue transfer-printed whiteware basal sherd 1 dark creamware sherd
7	30	Brown topsoil, 0-10	1821	1 pale creamware sherd
8	35	Brown topsoil, 0-17	1822	1 piece of red brick 1 piece of green-tinted window glass 1 blue hand-decorated pearlware rim sherd 3 blue banded pearlware sherds 1 polychrome hand-decorated pearlware sherd 1 plain pearlware sherd 1 black-glazed red earthenware sherd
9	40	Pebbles, gravel, dark topsoil, 0-11	1823	No artifacts
		Brown sandy topsoil, 11-26	1824	1 hand-wrought nail, 2.25 in in length 1 piece of lime mortar 2 red brick chips 1 red brick fragment, originally 1.75 in thick
10	55	Brown topsoil, 0-12 at tree root	1825	No artifacts
11	60	Dry, thin silty topsoil, 0-18	1826	1 red brick chip 1 plain pearlware sherd 2 pale creamware sherds 1 glazed red earthenware sherd
12	65	Mottled clay fill, 0-11	1827	No artifacts
		Brown silty loam, 11-22	1828	1 dark creamware sherd 1 green transfer-printed whiteware sherd
13	70	Mottled clay fill, 0-15	1829	No artifacts
		Brown silty loam, 15-24	1830	2 pieces of bone 3 plain pearlware sherds 1 polychrome hand-decorated pearlware sherd 1 burned pearlware sherd

Boughton-Hart Site is typical of the distinctive ceramic distribution patterns at most sites in both New England and Pennsylvania, New Jersey, and Delaware, but not so often in the Hudson Valley and eastern New York State. The red earthenware predominance at the Boughton-Hart Site as well as in other sites in western New York such as the Baumgartner cabin site (c. 1810) in the Town of Rush, Monroe County, and the Centre House Tavern Site (c.1830) in Amherst, Erie County, might be attributed to the effect of population migration(s) westward from New England and northward from Pennsylvania if not the arrival of foreign immigrants of German origin (Hamell 1976; Herold and Cowan 1991).

Other sites in western New York, however, have lesser amounts of red earthenware and greater amounts of creamware, pearlware, and/or whiteware. Deposits at Fort Niagara dating after c. 1790, for example, have very little red earthenware (Scott 1982). There was none at the Taylor-Graves-Pier miller's house site (c.1827-1880) in the Town of Maine, Broome County, and very little at either the site of the Caleb Wright house (c. 1791-1883) in the Town of Nichols, Tioga County, or at the Scovell Mansion Site (1834) at Lewiston, Niagara County (Huey 1974; Rutsch and Gimigliano 1979:81-88; Semowich 1980:23). The amounts of creamware, pearlware, and whiteware were each considerably greater than the amount of red earthenware recovered from around the Pickering-Beach house, built in 1817 in the village of Sackets Harbor, Jefferson County (Rush and Galizia 1994: Appendix C). There is more pear)ware than red earthenware in one of the earliest levels (V) dating c. 1830 at the Centre House Tavern Site, but in later levels red earthenware is predominant at that site (Herold and Cowan 1991:39, 72). On the other hand, red earthenware was predominant in the original surface level of c. 1810 to 1814 at the Baumgartner cabin site. There was a substantial amount (37%r) of red earthenware, but a greater amount of pearlware, at the Ingerson-Kanady farm site in the Town of Leray, Jefferson County, now in the Fort Drum Military Reservation, in a midden dating about 1825 to 1840 (Berger 1992:5-28 and 5-42). There was also a substantial amount of red earthenware (26%), but even more whiteware, at the Rowe Site in Dansville, Steuben County, in the components representing an unidentified occupation from about 1820 to 1850 and probably predating the subsequent occupation by the family of John Rau, a Pennsylvania German farmer (Black, et al. 1988; Hakes 1896:423).

It is possible that a larger sample from further testing of the Jared Boughton house site at Ganondagan will produce a predominance of red earthenware similar to the distribution at the neighboring Boughton-Hart Site. It is also possible, however, that the Jared Boughton Site assemblage represents an earlier occupation than the Boughton-Hart collection, because at the Jared Boughton Site there appears to be relatively more creamware and less whiteware than at the Boughton-Hart Site (Figures 2 and 3). The stratigraphic sequence at the Centre House Tavern Site with increased red earthenware amounts only in later levels may indicate that a more general predominance of red earthenware in western New York is a phenomenon that developed after 1830. Geographic patterns of predominant red earthenware consumption, if such patterns can be identified, may be functions of economic status, the availability of locally made red earthenware, and localized economic systems (Bulgrin 1989) as well as the choices and preferences brought by settlers. Further clarification of these cultural patterns must await further field work, more testing, and larger sized ceramic samples.

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The Fort Massapeag Archaeological Site National Historic Landmark

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Fort Massapeag, a small archaeological site in Oyster Bay, Nassau County, New York, was designated as a National Historic Landmark in 1993, based in large part upon excavations undertaken there in the late 1930s. Both well preserved and well documented, Fort Massapeag deposits have been deemed especially important to the study of social, political, and economic relations between Indian people and colonists in the easternmost reaches of Munsee Country during the mid-seventeenth century. Documentary and archaeological research utilized in the Fort Massapeag Archeological Site National Historic Landmark Nomination Form are summarized here.

Background and Overview

The Secretary of the Interior designated Fort Massapeag as a National Historic Landmark on April 19, 1993. Fort Massapeag is a small (less than one-quarter acre) archaeological site in the town of Oyster Bay, Nassau County, New York. Ralph S. Solecki, who has maintained an active interest in the site since first conducting excavations there during the late 1930s, provided the documentation that served as the basis for the nomination. He also reviewed drafts of the form prepared by Robert S. Grumet, coordinator of the National Park Service's Historic Contact Theme Study through which Fort Massapeag was nominated as a National Historic Landmark (Grumet 1992).

Fort Massapeag was one of seventeen properties in the Northeast designated for their associations with the Historic Contact Period as National Historic Landmarks through the theme study. Fourteen of these properties were designated as new National Historic Landmarks. Three others - Camden, in Port Royal, Virginia; Old Fort Niagara, in Youngstown, New York; and St. Mary's City, Maryland - were previously designated landmarks associated with other themes whose nomination forms were upgraded to include documentation chronicling historic contact between Indians and colonists. Utilizing data and review comments provided by State Historic Preservation Offices and nearly 200 members of professional, avocational, and tribal communities in the region, the theme study contrasted Fort Massapeag with nearly 1000 other known contemporary sites in the region. Study findings showed that the locale has "yielded or may be likely to yield information of major scientific importance." In so doing, Fort Massapeag deposits were found to fulfill significance criterion six of the National Historic Landmark program regulations as cited in 36 CFR 65.4(a)[6].

Theme study investigations showed that archaeological resources preserved at Fort Massapeag contained information of national significance capable of shedding light upon Historic Contact Period occupations in Munsee Country. As defined in the theme study, Munsee Country is an area of interaction between Munsee-speaking people, other Indians, and colonists (both European and African). It stretches from central and western Long Island across southern New York and northern New Jersey to northeastern Pennsylvania. Fort Massapeag was one of 52 Historic Contact Period properties inventoried in Munsee Country during the project. Theme study research established Fort Massapeag as one of the most intact and best recorded Historic Contact Period archaeological deposits in the central Long Island section of this area. Project investigations further showed that contributing resources preserved at Fort Massapeag comprise an exemplary assemblage of deposits chronicling social, political, and economic relations between Indian people and colonists in the easternmost reaches of Munsee Country during the middle decades of the seventeenth century.

Analysis of archaeological evidence found at the site indicates that Fort Massapeag was built, occupied, and abandoned at a time when overwhelming demographic, social, and political changes were forcing most Indian people to sell their last lands at Massapequa and move elsewhere. Fort Massapeag is located approximately 2000 ft to the southwest of the since destroyed and much larger Harbor Green archaeological site. The fort's size, shape, and method of construction - a European-style quadrangular earthwork measuring 100 ft on each side, flanked at its northwestern and southeastern corners by bastions, surrounded by a ditch, and surmounted by an earth-fast stockade consisting of a single line of sharply pointed wooden palisade posts evidently cut by metal axes - suggests the fortified trading post and frontier refuge ordered built at Oyster Bay by Dutch authorities in 1656 (Figures 1 and 2).

Terminal Late Woodland ceramics and lithics were found alongside seventeenth-century European artifacts in a shell midden consisting almost entirely of cut or broken quahog and periwinkle shells. Located just beyond what appears to have been the fort's southern entrance, these findings indicate that Indian

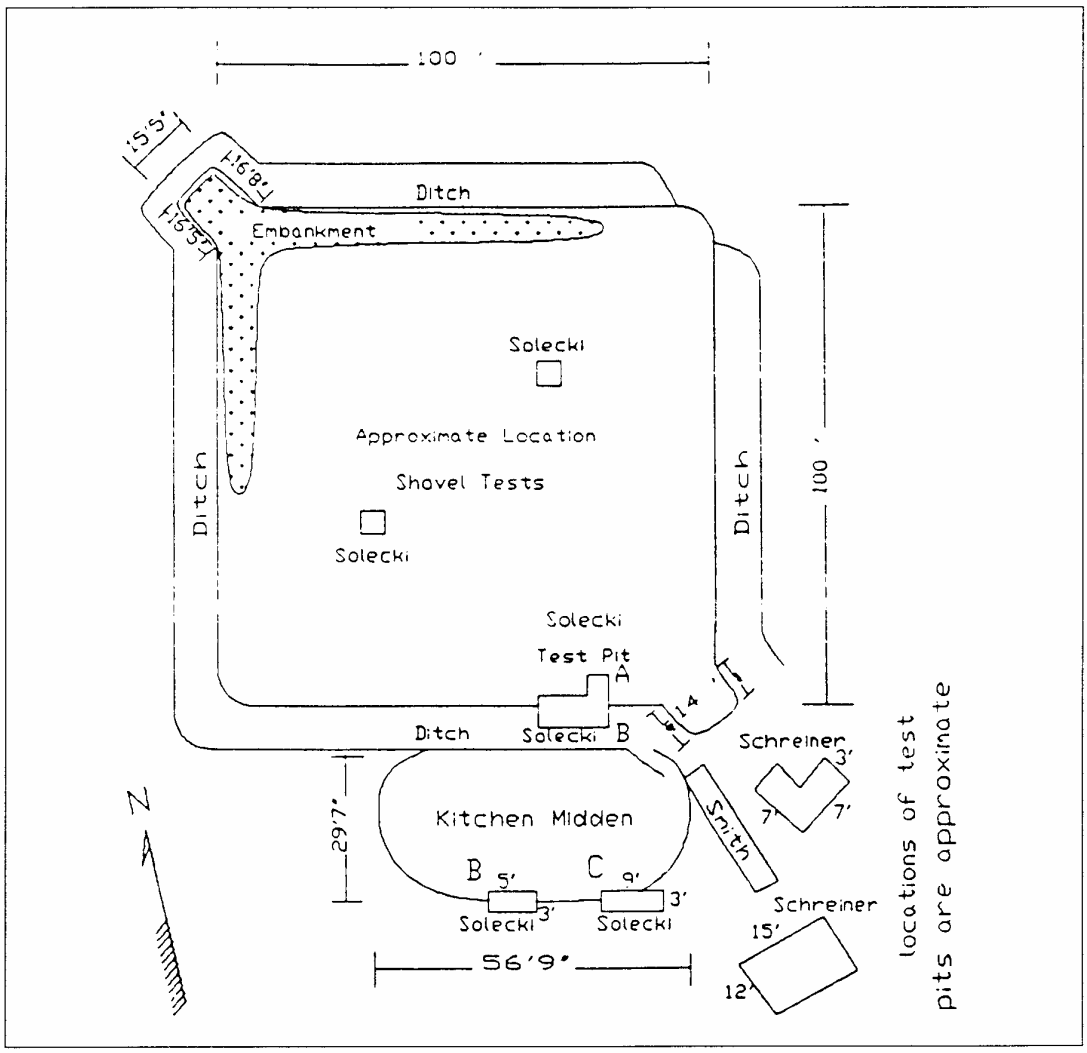

Figure 1. Fort Massapeag Site map showing excavations conducted by Schreiner, Smith, and Solecki. Map compiled by Ralph S. Solecki, appearing as Figure 5 in Solecki n.d.

people living at Harbor Green used the locale as a fortified refuge and a place for manufacturing wampum shell beads at various times between the 1630s and 1670s.

The Fort Massapeag Site is presently preserved within an undeveloped passive-use area in Fort Neck Park, a municipal recreational facility located within a suburban residential neighborhood in the town of Oyster Bay. Fort Neck, a level expanse of sandy glacial outwash plain lying from 8 to 10 ft above mean sea level, is one of several lobes of land on the southern shore of Long Island jutting into South Oyster Bay. South Oyster Bay lies at the western end of the Great South Bay, a shallow 35-mile-long salt-water lagoon separated from the Atlantic Ocean by narrow sandy barrier islands.

Fort Massapeag National Historic Landmark deposits lie in upper levels of sandy silt loams first deposited atop fine

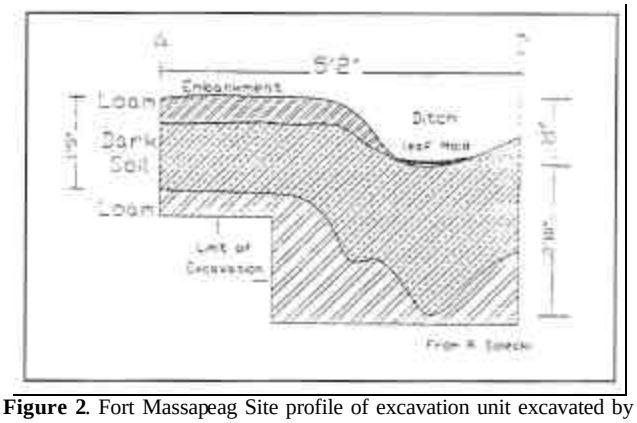

Figure 2. Fort Massapeag Site profile of excavation unit excavated by Ralph S. Solecki along the southern embankment and ditch, 1938 (Figure 6 in Solecki n.d.).

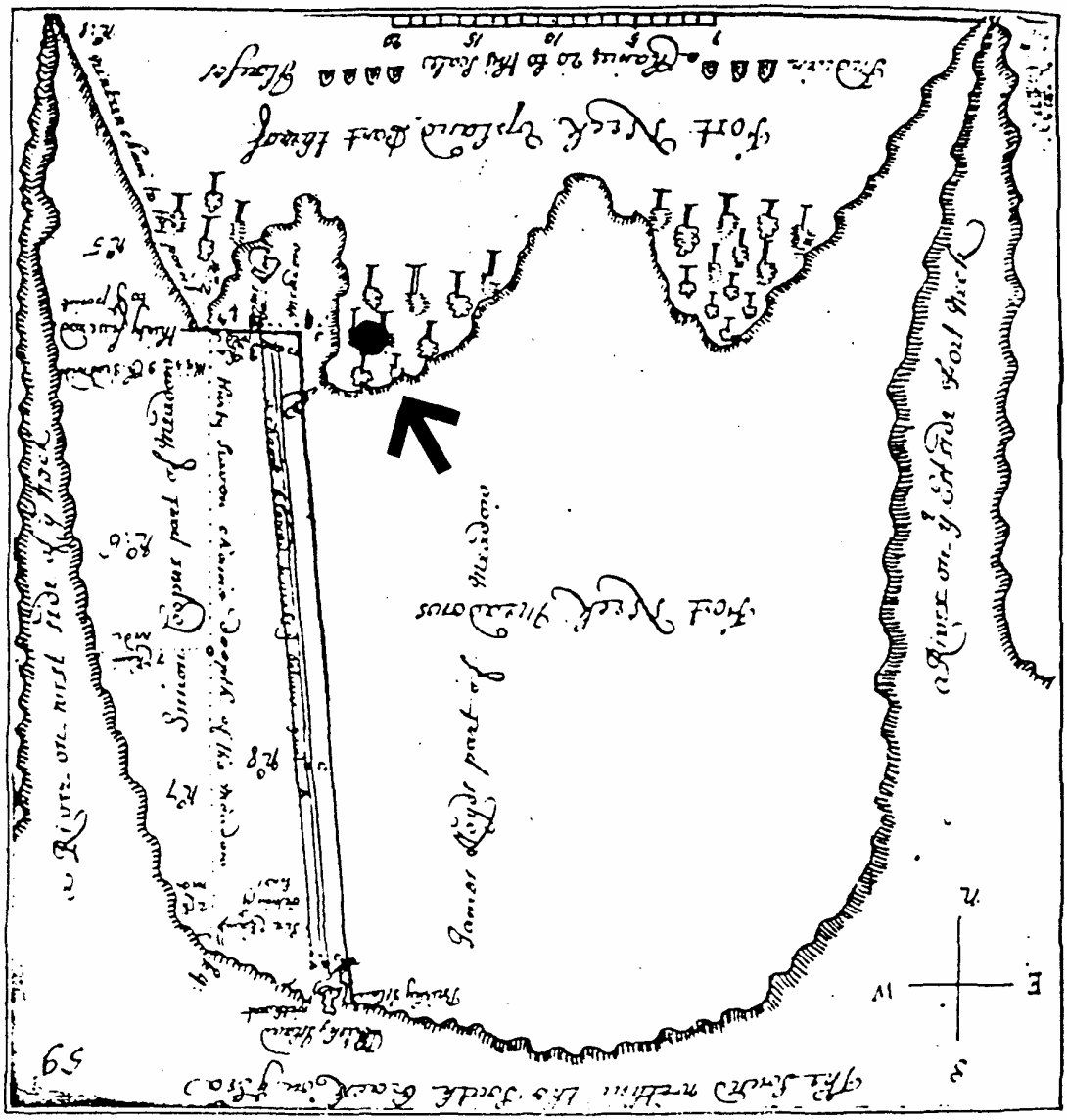

Figure 3. 1687 Surveyor's map of Fort Neck. Direction reversed to show actual orientation. Note Indian houses at the north end of the neck. The arrow points to the dot marking the site of Fort Massapeag (in Barck 1926-1927 [1]:92).

gravel subsoils during the Ronkonkoma stage of the Wisconsin glaciation some 12,000 years ago. A small fresh-water stream named Massapequa Creek runs along Fort Neck's western border. Flowing into South Oyster Bay at this spot, the stream originates 8 mi farther north on the Ronkonkoma Moraine, a low height of land stretching lengthwise across the middle of Long Island. A smaller stream named Jones Creek runs along the neck's eastern boundary. Tidal meadows extended as much as 2000 ft from the southern tip of Fort Neck into South Oyster Bay until landfill covered over much of the marsh land in the area during the 1930s.

Fort Massapeag is situated just above what was the high water mark at the edge of the tidal marsh on the southern tip of Fort Neck in Historic Contact Period times. Archaeological evidence found in and around the site indicates that Indian people had been living on Fort Neck intermittently for at least 6000 years before Europeans began moving to Long Island during the middle decades of the 1600s. No known colonial record unequivocally directly documents an Indian fortification at or near the locale. Despite this fact, information in several documents suggests that such a structure may have stood on Fort Neck at sometime during the seventeenth century.

One of these documents, a deed to land in Fort Neck signed on July 13, 1696 by "Maomy & Will Chippy, Indians & Chief proprietors of ye Indians Lands upon Massipeague or ffort Neck at ye south of Oysterbay," mentions "ye Old

ffort...[at]...ye Head of ye Meadows on sad. Neck" (Cox 1916-1940(2):289-290). Two other records dated 40 years earlier document Dutch intentions to construct a fort at or near Oyster Bay. The earliest of these, a transcript of treaty minutes dated March 12, 1656, affirms Massapequa sachem Tackapousha acceptance of New Netherland Governor Peter Stuyvesant's offer "to build a house or fort upon such place as they [the Indians] shall show upon the north-side" of Long Island (Hicks 1896-1904(1):43-45). This document further notes that the establishment should be "furnished with Indian trade goods or commodities" to facilitate commerce with the native inhabitants. Another document, dated May 13, 1656, emphasizes the more defensive purposes of a fort ordered built to shelter local colonists at Oyster Bay by Dutch West India Company officials (Brodhead 1859-1871(1):622).

Although no known document records its actual construction, both of the abovementioned documents suggest that the fort's intended location was near the center of Oyster Bay town settlement on the north shore of Long Island. No fort dating to this time period, however, has thus far been found within town limits on or near the banks of Long Island Sound. Located in the southernmost portion of the town, Fort Massapeag is the only datable seventeenth-century central Long Island archaeological site possessing attributes of the type alluded to in the 1656 references.

Fort Neck was first mentioned by name in Oyster Bay town records in 1659 (Cox 1916-1940(1):350). The locale was subsequently identified as the site of an Indian community in a series of deeds that conveyed or confirmed conveyance of native title and land-use rights to the place to English purchasers between 1686 and 1697 (Cox 1916-1940(1):370371; (2):3-5. 140-141, 260-261, 274-277, 281-285, 287, 289290). Analysis of identities of individuals putting their marks onto these deeds shows that most were prominent Massapequa and Matinecock people well known to local colonists (Grumet in Solecki n.d.). Although no document unequivocally locates the residences of these people, a 1687 surveyor's map plotting property boundaries at Fort Neck schematically depicts a line of seven dome-shaped Indian houses at the head of the neck (Figure 3).

Local folk traditions identify Fort Massapeag as the site of a European massacre of Indian people in 1643 or 1653. Colonial documents chronicle armed assaults upon Long Island Indian communities in both years. None of these accounts, however, specifies Fort Neck as the scene of these attacks. Several writers (see below) have suggested that Fort Massapeag is the site of Maltese, the Indian town attacked by Dutch and English troops led by Captain John Underhill at the height of Governor Kieft's War in 1643. Descriptions of Underhill's line of march, however, indicate that Maspeth (within the present-day bounds of Queens County) or another Indian community located much farther west was the object of the colonial assault (Anonymous in Jameson 1909:282). The 1653 incident, for its part, involved a Montauk community near the eastern tip of Long Island attacked by Niantic warriors from Connecticut and Rhode Island (Shuttle and Pulpier 1854-1861(10):88, 99).

The disappearance of Indians from colonial records documenting the Fort Neck locale after 1700 indicates that most Indian people moved away from the area shortly after selling their last landholdings there to English settlers in 1697. One of these purchasers, a ship captain named Thomas Jones, gradually acquired most land on the neck by the time of his death in 1713. Preserving the shoreline at and around Fort Massapeag as an uncultivated woodlot, his descendants maintained Fort Neck as a family estate until selling most of it to real estate developers during the 1930s (Solecki n.d.).

One of these family members, a local judge and amateur historian named Samuel Jones, penned the first account identifying Fort Neck as the site of an Indian town in a paper presented by De Witt Clinton at a meeting of the New-York Historical Society in 1811(Clinton 1821). Jones claimed that colonists led by Captain John Underhill visited the place while investigating reports of an alleged Indian conspiracy to massacre local settlers. Stating that Underhill found no evidence of a plot at Fort Neck, Jones went on to write that Underhill's men shortly thereafter attacked and destroyed an unarmed group of Indian people at Whale Neck some four miles farther west.

Another local historian named Gabriel Furman changed two parts of Jones's story when he published his own version of the alleged incident (Furman 1824). Identifying Fort Neck as the site of Underhill's attack, Furman asserted that the attack occurred in 1653. As mentioned earlier, neither Jones' nor Furman's claims have been corroborated in other documentation. Despite this fact, their writings have since become integral elements in local folklore traditions associated with Fort Neck.

Local historians and archaeologists had long been familiar with these traditions when reporters published articles describing discoveries of human burials and other features during construction of new homes at Fort Neck during the 1930s (Pantaloon 1991:51-53). After much effort, local preservationists were able to save the small Fort Massapeag Site. Similar efforts, however, could not stop destruction of deposits preserved at the much larger Harbor Green locale.

Another group of concerned citizens led by Massapequa Planning Committee Chairman John MacLean and Oyster Bay Deputy Commissioner of Public Works George Peters banded together to preserve Fort Massapeag when another developer threatened to destroy the site in 1953 (Pantaloon 1991:54). Although they were unable to stop bulldozers from pushing much of the fort embankment into the surrounding ditch, this consortium of local residents and organizations helped per

suede the Town of Oyster Bay to purchase the property on which the Fort Massapeag Site was situated in 1958. Since that time, the town has maintained the site area as a small undeveloped passive-use area within a larger municipal recreational facility known as Fort Neck Park.

Archaeological Research and Resources

Long Island historian Silas Wood published the first description of earthworks at Fort Neck in 1824 (Wood 1824). Identifying the site as an historic Indian fort, he described it as a rectangular 3-ft-tall earthwork measuring 165 ft on one side and 99 ft on the other. Noting that the embankment was surrounded on all sides by a 3-ft-deep ditch, he further identified the 12-ft-wide opening at the embankment's southeastern corner as the fort's entrance. Furman (1824) more accurately described the site as an earthen embankment "nearly, if not exactly a square, each side of which is about 30 yards in length [surrounded] by a ditch on the outside which appears to have been six feet wide." Furman also was the first writer to suggest in print that a no-longer-visible line of wooden posts situated on a low hummock rising from the marsh at the southernmost end of Fort Neck's now filled-in tidal meadow was part of another Indian fort palisade.

Fort Neck first appeared in archaeological literature in New York State Archaeologist Arthur C. Parker's site survey (Parker 1922). In a brief synopsis of central Long Island sites, Parker cited Long Island Algonkians William Wallace Tooker's identification of the Fort Neck locale as the site of a "stronghold 1/2 miles west of Amityville" (Tooker in Parker 1922(2):625). Expanding on Tooker's work, Parker listed Sites 9 and 10 in his inventory as the Massapequa forts (Parker 1922(2):635, p1.191). Parker located these sites and Site 1, an earthwork conforming to Fort Massapeag's configuration, on the north-shore at Oyster Bay. Evidently erroneously located in Parker's report, Site 1 probably was the locale of Tooker's Fort Neck stronghold.

Known since the 1920s as a good place to collect arrowheads by local enthusiasts like Charles Gottert, Fort Neck first came to wider public attention in 1933 when newspaper reports publicized the accidental discovery of several Indian graves during house-foundation excavations at the Harbor Green Development. Mobilizing Long Island preservationists, local historian Charles E. Herrold managed to convince developers to preserve the small nearby fort site. Fairfax Road, a paved right-of-way originally planned to cut through the westernmost portion of Fort Massapeag's deposits, was re-routed around the site. Trees planted along the top of the embankment stabilized the earthwork. Although the developer continued to mark the site by periodically mowing the ditch area, dense undergrowth obscuring other exposed site

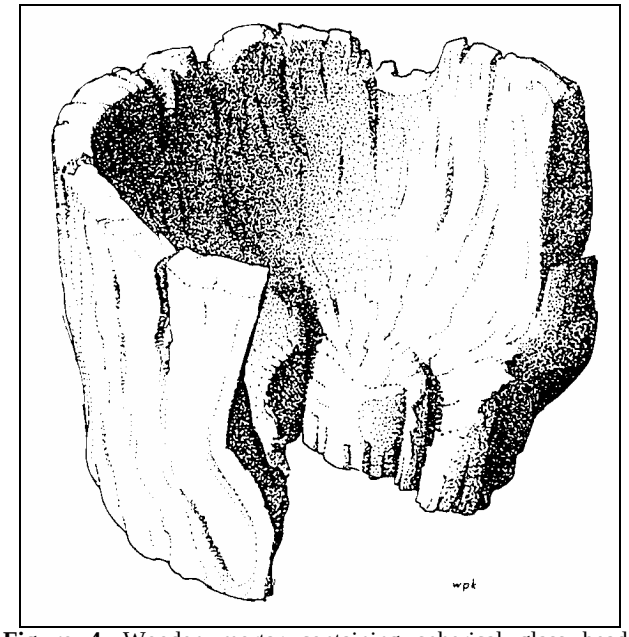

Figure 4. Wooden mortar containing spherical glass beads illustrated in Figure 4 and curated in the Nassau County Museum, Garvies Point. New York. Found at the Fort Massapeag Site by William Claude in 1934 or 1935 (Figure 20 in Solecki n.d.).

surface areas helped discourage depredations by souvenir hunters and other casual collectors.

Neither Herrold nor anyone else was able to prevent destruction of nearby Harbor Green archaeological deposits. Drawn by reports describing discoveries of Indian graves and artifacts at the locale, avocational archaeologist William Claude conducted extensive excavations at this locale from 1934 to his death in 1935 (Solecki n.d.). Struggling to keep ahead of both bulldozers and local collectors clandestinely vandalizing open excavations, Claude managed to uncover and document 24 human interments and a number of pits, hearths, and midden features. Working at Fort Massapeag. Claude also found a wooden mortar in or near he fort embankment (Figure 4). One blue and two white small spherical glass beads later discovered with one corn kernel in crevices within the mortar bowl have since established that it was used during Historic Contact Period times.

Claude was soon followed by other investigators. A local collector named Kenneth Robinson found a well-preserved sharply pointed wooden post fragment. This artifact is currently curated with Claude's wooden mortar in the Nassau County Museum at Garvies Point. Another investigator reportedly uncovered a line of posts along the southwest corner of the fort embankment in 1933.

The late James Burgraff, a native Long Islander who later became one of New York's most respected avocational archaeologists, examined shelf heaps south and west of the Fort

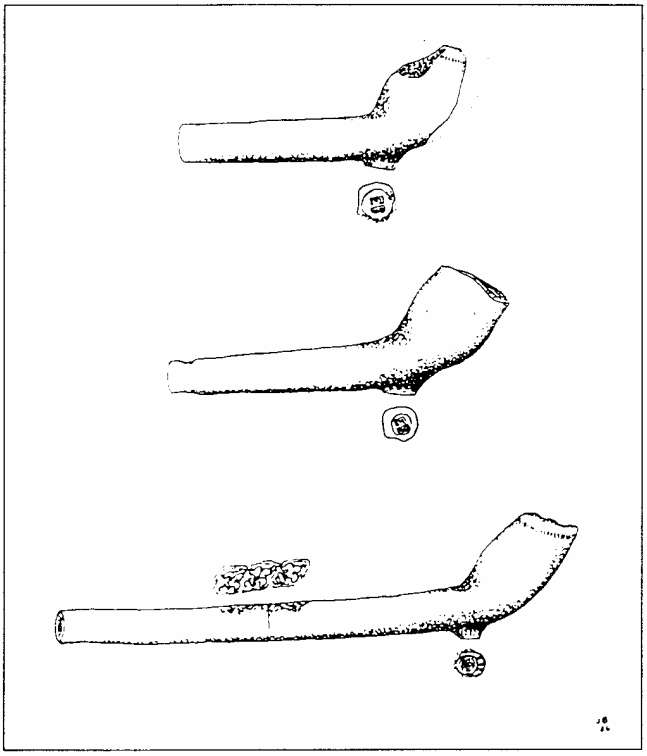

Figure 5. "EB" European white-clay smoking pipes found at the Fort Massapeag Site (1936 illustration by James Burgraff appearing as Figure 18 in Solecki n.d.).

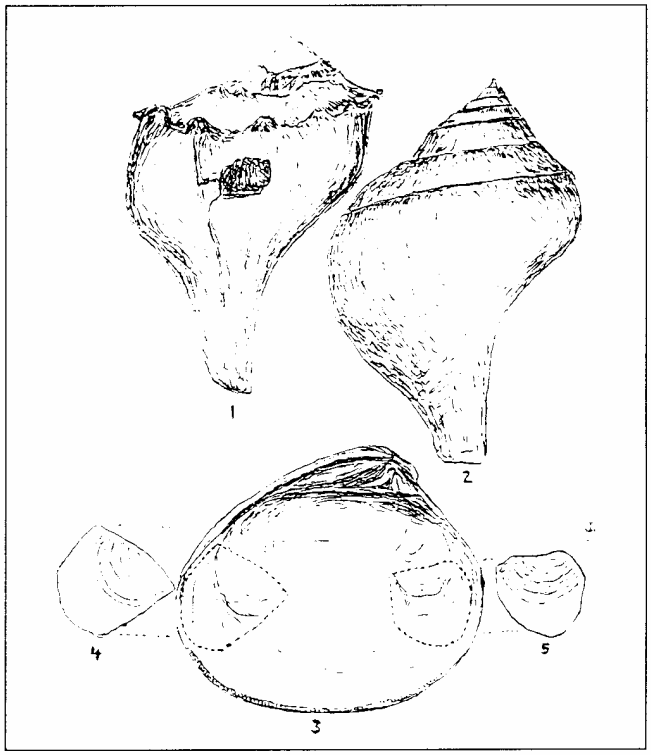

Figure 6. Whelk and quahog shells showing breakage indicative of initial stages of wampum shell-bead manufacture, Fort Massapeag Site (1936 illustration by James Burgraff appearing as Figure 14 in Solecki n.d.).

Massapeag's earthworks on three or four occasions between 1936 and 1938. His excavations uncovered sandstone abraders, quartz and chert flakes, cut iron nails, glazed European stoneware sherds. European white-clay smoking pipes (Figure 5), and thousands of pieces of broken or cut quahog and whelk shell. The absence of animal bones, the paucity of oyster and soft clam shells favored as food sources, and the identification of quahog and whelk shells at various phases of reduction (Figures 6-9) led Burgraff to suggest that the site contained remains of wampum shell-bead production. Believing that Indian people used the stone tools to cut and grind the shells, Burgraff thought that the nails may have been used as drills to perforate the beads. He further speculated that wampum producers working at the site relieved the tedium of their labor by smoking tobacco in white-clay pipes and drinking alcohol from stoneware vessels. Burgraff's brief article reporting these findings represents the first publication of Fort Massapeag Site excavation results in a scientific journal (Burgraff 1938; also see Burgraff in Solecki n.d.).

Flushing Archaeological Society members Ralph S. Solecki, Matt Schreiner, and Robert A. Kusy made three one-day visits to Fort Massapeag in 1938. Carlyle S. Smith joined the group on one of these expeditions. Solecki excavated two small 25-sq-ft test pits in the center of the earthwork enclosure. He further placed several slightly larger *sondages* along the periphery of the shell midden at the southeastern end of the

embankment. Schreiner made a 3-ft-wide L-shaped excavation measuring 7 ft in length on each side and another rectangular excavation measuring 12 ft by 15 ft to the east of Solecki's test units. Both Solecki's and Schriener's excavations were carried to depths ranging from 1 to 2 ft below the site surface. Ground-water seepage prohibited deeper excavations beneath the site's water table.

Solecki's excavations around the shell heap uncovered large numbers of broken or cut quahog and whelk shells, small amounts of Late Woodland pottery, and quantities of lithic debitage. Test excavations along the southern embankment recovered several "EB" white-clay pipe stems, a piece of green glass, an iron fragment, a sandstone abrader, pieces of whelk and quahog shell, several sherds of Late Woodland pottery, and a number of sturgeon and deer bones. Although the two small test excavations placed in the center of the fort area failed to encounter anything, a *sondage* excavated along the edge of the southeastern bastion revealed a small 2-in-wide post mold.

Digging farther to the south and east, Schreiner recovered two brass mouth harps stamped with the initial "R," some white-clay "EB" smoking pipes, quantities of Late Woodland pottery, numerous quartz and chert flakes, a white quartz triangular chipped projectile point (Figure 10), and a grooved stone axe. Like most other artifacts found at the site, the majority of these

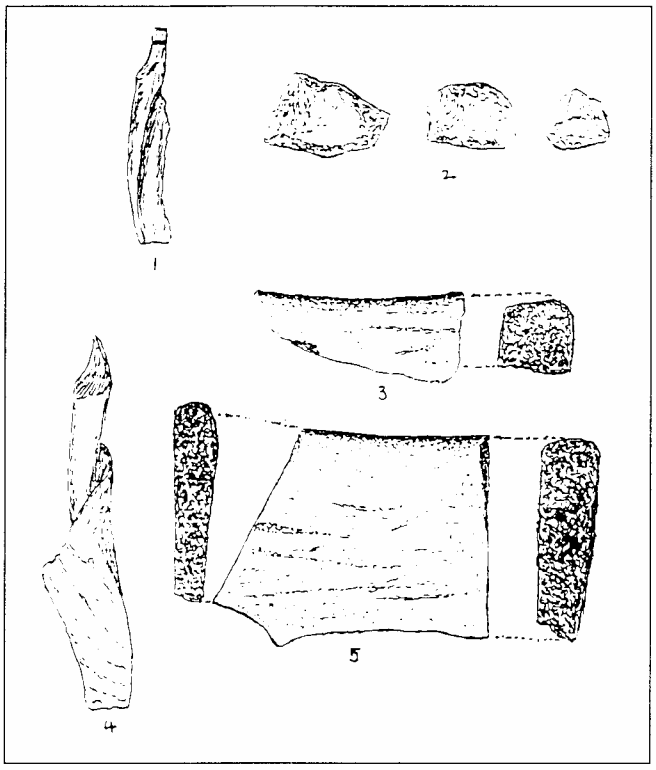

Figure 7. Whelk (nos. 1 and 4) and quahog (nos. 2, 3, and 5) shells showing breakage indicative of intermediate stages of wampum shell-bead manufacture, Fort Massapeag Site (1936 illustration by James Burgraff appearing as Figure 16 in Solecki n.d.).

artifacts were recovered within the first foot of the humus layer. None was found in clearly discernible concentrations.

Working with Carlyle S. Smith, who excavated a 16-ft long trench to a depth of 20 in just east of the shell midden, Solecki. Schreiner, and Kusy collected the only body of systematically recovered data thus far recovered from Fort Massapeag. Both Solecki and Smith drafted meticulous site plan maps and stratigraphic profile views (Figures 1 and 2). Their survey maps show that the site consisted of a quadrangular 18 to 25-inchhigh narrow earthwork embankment measuring 100 ft on each side during the 1930s. Their work further identified bastions at the fort's northwestern and southeastern corners, a surrounding 8-in-deep ditch, and a shell midden located at what was believed to have been the post's entrance at the southeastern bastion.

Both Solecki and Smith also interviewed local collectors and examined artifacts collected from the site. Smith went on to publish a brief article on Fort Massapeag (Smith 1954). He also used data from the site to help develop the first cultural historical framework for coastal New York (Smith 1950). Long regarded as a benchmark in Northeast archaeology, Smith's framework continues to serve as a baseline for all scholarly inquiries into the region's more distant past.

Both Smith and Solecki continued to maintain interest in the site after the 1930s. Solecki's compilation and analysis of

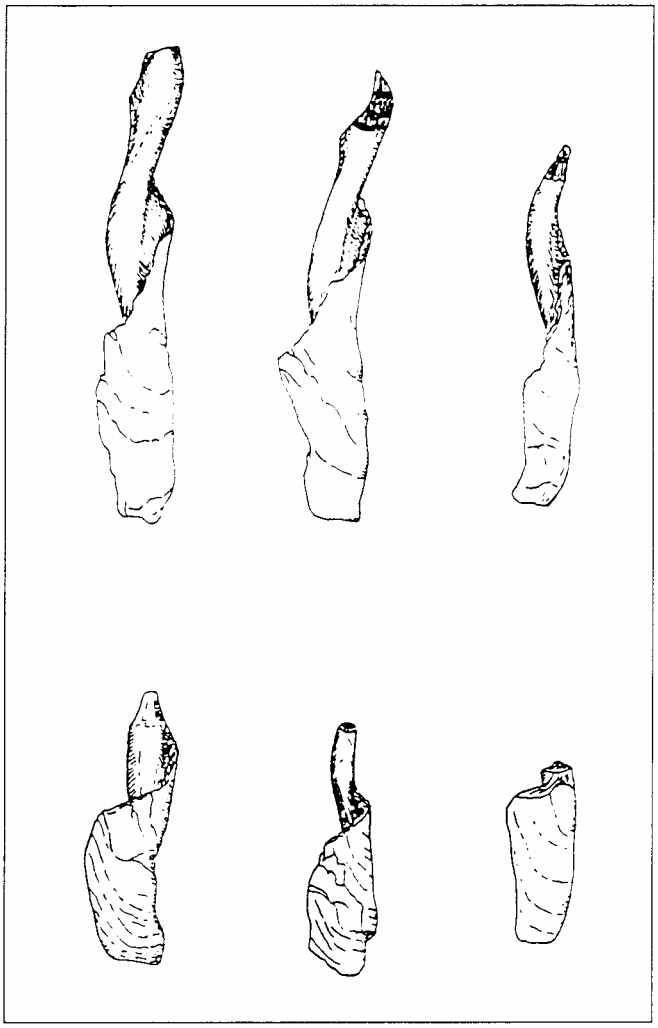

Figure 8. Whelk columella showing breakage indicative of later stages of wampum shell-bead manufacture, Fort Massapeag Site (1936 illustration by James Burgraff appearing as Figure IS in Solecki n.d.).

all known archaeological and archival information bearing upon Fort Massapeag constitutes the database used to support the nomination of the site as a National Historic Landmark (Solecki 1985 and n.d.). Smith, for his part, continued to work with Solecki to more effectively locate, analyze, and document site materials until his death in 1993.

As a result of their efforts, Fort Massapeag is the best documented and most extensively analyzed deposit of its type in Munsee Country. Studying aboriginal ceramics recovered from the site, Solecki and Smith have shown that terminal Late Woodland Bowman's Brook and Overpeck stamped or cordmarked pottery and Munsee series incised and cordmarked collared wares overwhelmingly dominate the Fort Massapeag ceramic assemblage. They also have identified small numbers of Shantok series ceramics in existing collections. Examining Late Woodland Period triangular chipped quartz and chert projectile points found alongside these wares

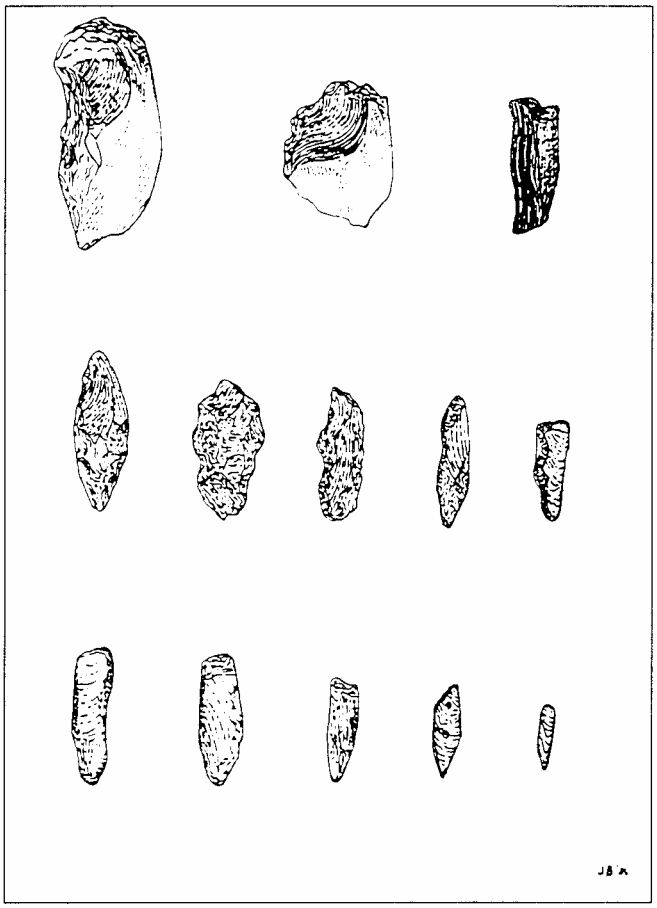

Figure 9. Quahog pieces (top) and whelk columella (lower rows) showing breakage indicative of final stages of wampum shell-bead manufacture, Fort Massapeag Site (1936 illustration by James [3urgraff appearing as Figure 17 in Solecki n.d.).

in shell-midden deposits also containing copper arrow points, brass mouth harps, metal scraps, and European glazed stoneware sherds and white-clay smoking pipes, Solecki and Smith have found evidence indicating that Fort Massapeag was most intensively occupied during the Historic Contact Period.

Identification of a number of particularly sensitive chronological marker artifacts suggests more specific dates of occupation. Collared Shantok series wares found at the site, for example, were produced by Indian women from eastern Connecticut and Long Island during the middle decades of the seventeenth century. Nearly all European white-clay smoking-pipe bowls recovered from site deposits were bulbous varieties stamped with "EB" heelmarks. Attributed to Edward Bird, an Amsterdam pipemaker active from 1630 to 1683, they are similar to others found at the contemporary Fort Orange Site in Albany, New York (Huey 1988), and the Isaac Allerton Site, a Manhattan warehouse built sometime before 1651 (Grossman et al. 1985).

The two brass mouth harps bearing distinctive "R" trademarks found in site shell-midden deposits, for their part,

Figure 10. Fort Massapeag Site artifacts: (top) shell gorget, (lower left) chipped quartz triangular projectile point, (lower right) spherical glass beads. Photograph by Robert S. Grumet.

resemble others found at the Power House Site, a Seneca Indian town in western New York occupied between 1640 and 1655 (Wray and Schoff 1953). The absence of artifactual evidence post-dating 1700 in Fort Massapeag collections further corroborates written sources indicating that most Indian people moved elsewhere after putting their marks onto the last deed to land at Fort Neck in 1697.

Site Integrity

Surface and subsurface investigations indicate that significant portions of Fort Massapeag archaeological site deposits retain high integrity. Much of the digging at the site has been undertaken in midden areas beyond the fort earthwork. Because of this fact, most of the 10,000-sq-ft area within the fort embankment has not been impacted by either random or systematic excavations. Although bulldozers grading the site surface in 1953 probably truncated upper portions of surviving deposits in this area, more deeply buried resources most likely remain in relatively undisturbed context and condition.

A low embankment comprising the remains of the fort's southern wall was visible during a site visit conducted by Robert Grumet, Oyster Bay Town Historian Dorothy H. McGee, and Oyster Bay Town Deputy Commissioner of Parks Kevin P. Conologue on August 28, 1992. Lower portions of the eastern and western walls leveled in 1953 also may lie preserved beneath the present site surface. Mown lawns currently stabilize all site surfaces at Fort Massapeag. Soil pushed into the ditch surrounding fort embankments during grading operations, moreover, has both buried and preserved the fort's original moat configuration.

Significant information also may be preserved within the shell midden extending for 57 ft along the southern end of the site embankment. Still visible on the surface at the time of the

1992 site visit and documented in site excavation reports as extending from 2 to 3 ft below ground level, this 30-ft-wide shell midden contains most artifacts recovered at Fort Massapeag. Reportedly disturbed by collectors using potato or clam rakes during the 1930s and truncated by graders leveling the site in 1953, midden deposits at this locale nevertheless have yielded and retain the ability to yield significant information on wampum production and other aspects of Indian life along coastal areas of Munsee Country during Historic Contact Period times.

Although much of the site survives intact, portions have been destroyed. The northern ditch and sections of earthwork embankment presently lie under Fairfax Road. Workers grading Gloucester Road to the west of the fort additionally probably destroyed most of the 2-ft-thick shell midden noted by Burgraff along the 75-ft-long road cut exposed in 1936.

Present Appearance

Fort Massapeag Site deposits currently are preserved by the Town of Oyster Bay's Department of Parks in a regularly patrolled undeveloped passive-use area within Fort Neck Park. The site area is covered by a regularly mown grass lawn. A few small trees grow along portions of the fort embankment and along the site's eastern and southern perimeters. A wooden sign erected by Oyster Bay Town officials at the north end of the site near Fairfax Road bears the following inscription:

> Massapequa Indian Fort
> c. 1640
> Sachem Tackapausha sold meadows to Oyster Bay Townsmen 1658/59. Area named Fort Neck by Colonists. Major share later owned by Thomas & Freelove Jones, first resident colonists c. 1697.

Synthesis and Conclusions

Fort Massapeag is only one of several fortifications known to have been built on or near the North Atlantic coast during Historic Contact Period times. Some, like Fort Pentagoet in the Pentagoet Archeological District National Historic Landmark in Castine, Maine, nominated through the Historic Contact theme study, were imposing stone battlements clearly constructed and used by Europeans. Others, like the wooden fortifications surrounding the Fort Shantok National Historic Landmark in Montville, Connecticut, also nominated through the theme study, protected large residential Indian communities. A smaller group, which includes Fort Massapeag and Fort Corchaug-a property at the eastern end of Long Island currently listed in the National Register of Historic Places - appear to have been small places of refuge used only during emergencies or for special purposes.

Although no evidence corroborating oral traditions of massacres of Indian people by Europeans at the site has yet been found, Fort Massapeag's earthen embankments and bastions evidently answered needs for defense and security. Discoveries of triangular brass and chipped stone projectile points in site midden deposits indicates that fort occupants relied upon the bow and arrow to defend their lands and lives. The absence of gunflints, musket balls, lead bars, gun parts, and associated artifacts mutely affirms the effectiveness of documented Dutch and English efforts to limit the trade of firearms and munitions to Munsee people living near European settlements on and around Long Island during the seventeenth century.

Fort Massapeag Site deposits also contain the one of the most extensive surviving assemblages of archaeological materials documenting trade relationships in Munsee Country during the mid- to late seventeenth century. Analyses of aboriginal ceramics and lithics found at the site illuminate regional patterns of contact between Indian people living in this area. Shell-midden deposits at the site preserve a particularly extensive body of archaeological evidence documenting wampum shell-bead production during the time it assumed critically important dimensions in the regional economy. "EB" white-clay smoking pipes, brass mouth harps, glazed stonewares, and other imported goods, for their part, provide evidence documenting the types of European wares used in commercial relations with Munsee people as most aboriginal inhabitants of Fort Neck sold their last lands at the locale and moved elsewhere by 1700.

The site's strategic position on the banks of a shallow sheltered bay astride important coastal and interior transportation routes had long drawn people to the locale. Travelers journeying to and from Fort Massapeag enjoyed unimpeded access to Great South Bay, a 35-mi-long water route connecting communities along Long Island's southern shore. Carrying canoes across short portages separating southern Long Island's sheltered sounds and bays or passing through inlets between narrow sandy outer barrier islands to the open waters of the Atlantic Ocean, travelers could travel to west to New York Harbor or east to Block Island Sound. Trails linked Fort Massapeag to other parts of Long Island. Traveling these routes, people living at Fort Massapeag had the opportunity to exchange raw materials, goods, ideas, and visits with other Indian people and Europeans first sailing to North Atlantic shores during the 1500s.

Although quartz pebbles left behind by retreating Pleistocene ice sheets provided Fort Massapeag's occupants with some locally available lithics, most stones for tools and implements had to be imported. Argillaceous shales used to craft triangular chipped-stone projectile points and other

tools, for example, originated in mid-Delaware Valley quarries. Tools made from Normanskill or Onondaga cherts found at the site suggest contacts with Indian people living farther north along the Hudson River.

Aboriginal ceramics found at Fort Massapeag further document contacts with Indian people living elsewhere. Discoveries of Bowman's Brook and Overpeck stamped or cordmarked pottery suggest contacts with Munsee-speaking people living near argillite quarries in central and northern New Jersey. Findings of Munsee series incised and cordmarked collared wares indicate connections with Munsee people living farther north and west along the Hudson and Delaware valleys. Discoveries of Shantok wares made during the middle decades of the seventeenth century furnish evidence of contacts with Indian people from eastern portions of Long Island and Connecticut.

Recoveries of substantial quantities of whelk and quahog shells used to produce wampum beads with brass triangular projectile points, European white-clay smoking pipes, glass beads, and other objects of European origin in site deposits affirm that Fort Massapeag's occupants conducted extensive trade relationships with Dutch and English settlers moving to central Long Island during the third quarter of the seventeenth century. Discoveries of mixed assemblages of aboriginal and imported artifacts in Fort Massapeag midden deposits represent the best preserved and most extensively documented body of material documenting transfer of European technology to native people in Munsee Country at this time. Metal projectile points, European white-clay smoking pipes, and other imported wares found with aboriginal lithics and ceramics in these deposits have the potential to yield new insights into changing processes of technology transfer during the final phases of early historic contact in Munsee Country.

Devastated by epidemic contagion, defeated in wars, and overwhelmed by successive waves of European colonists, central Long Island Indian people were compelled to sell increasingly larger portions of their ancestral estate during these years. Archaeological evidence found at Fort Massapeag corroborates written records showing that most Massapequa and Matinecock people refusing to leave Long Island after selling their lands gradually moved to small communities at Cow Neck and Matinecock Point on the north shore and Fort Neck on the banks of the Great South Bay. Discoveries of diagnostic European artifacts at Fort Massapeag indicate that the native inhabitants of Fort Neck either built or occupied the Fort Massapeag earthwork sometime during the middle decades of the seventeenth century. Like Indian people living near Fort Corchaug on eastern Long Island, native people living elsewhere on Fort Neck used Fort Massapeag as a workshop and temporary place of refuge. The disappearance of deposits clearly post-dating 1700 at Fort Massapeag represents an otherwise unavailable body of data capable of corroborating statements of writers asserting that most Massapequa and Matinecock people moved away from Fort Neck after selling their last lands at the locale in 1697.

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The Cromwell Site (NYSM 1121) [1]
Including a Brief Treatise on Early Seventeenth-Century Mohawk Pottery Trends

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A description of a small artifact assemblage from the Cromwell Site is presented. The Cromwell Site is a large, early seventeenth-century Mohawk village that was partially tested by avocational archaeologist Donald Lenig and others in 1949 and 1950. The collection from the excavations was curated at the Mohawk-Caughnawaga Museum in Fonda, New York and is currently on temporary loan at the University at Albany, SUNY. The description presented provides a concise published record of the contents of the collection and a brief discussion of trends in Mohawk potter .v design during the early seventeenth century as evidenced by the Cromwell Site ceramics.

Introduction

The Cromwell Site is an early seventeenth-century Mohawk occupation located in the town of Glen, Montgomery County, New York. The site is situated south of the Mohawk River and east of Stone Ridge on a knoll overlooking the Van Wie Creek. This locale has been known and explored on numerous occasions by both avocational and professional archaeologists. The site has been dated to the 1620s and 1630s based on the types of glass trade beads and other European goods that have been collected there (Rumrill 1985:9, 1991:16; Snow 1991:36). Rumrill (1991:16) believes that Cromwell may be the site of Onekahoncka, a Mohawk village with 36 longhouses that was visited by the Dutchman Harmen Meyndertsz van den Bogaert in 1634-1635 (Gehring and Starna 1988:2-5).

The Cromwell Site collection in the Mohawk-Caughnawaga Museum at Fonda derives from a single midden deposit identified by the collectors as Side Hill Dump #l. The midden was surface collected by Donald Lenig on March 11, 1949, and excavated in April of 1950 by Don Lenig, Earl Casler, John, Hazel, and Jan Swart, and Thomas Grassman for the museum. The museum's collection is currently on loan to the University at Albany, SUNY, where it was examined in its entirety by the author. A description of the Cromwell Site collection is presented in this report.

[1] The Cromwell Site is referred to as site FDA-12 in the notes accompanying the Mohawk-Caughnawaga Museum collection. The unique site number in the Office of Parks, Recreation and Historic Preservation state-wide inventory is A05705.000003.

Artifacts

The Cromwell Site collection includes a total of 2,353 artifacts. The collection is dominated by ceramics which make up approximately 89% of the remains. Chipped stone artifacts comprise another 10% of the collection. Ground stone tools, bone, and shell artifacts are represented in small proportions. European trade goods make up less than 1% of the collection but are probably underrepresented given the nature of the collecting activities at the site. Table 1 provides a trait list for the Cromwell Site.

Ceramics

A typological analysis and attribute analysis of the ninety-one complete rim sherds in the Cromwell Site collection was conducted using the Mohawk pottery types defined by Lenig (1965:5-8) and the attribute list for Iroquoian ceramics created by Engelbrecht (1971:116-125). Both researchers have analyzed this same collection of ceramics from the Cromwell Site (Lenig:1965:65; Engelbrecht 1971:114), but the assemblage was reanalyzed by this author as part of a larger study of Mohawk pottery (Kuhn and Bamann 1987).

Typological Analysis of Pottery

The results of the typological analysis are presented in Table 2. The sample employed is smaller than that used by Lenig (1965:65) since this study was restricted to the analysis of complete rim sherds. It is possible to fit many rim sherd fragments into Mohawk pottery types based on the presence of key attributes on certain areas of the collar, and this may explain Lenig's larger sample size; however, as this approach may create a sampling bias, it was decided to limit the present study to complete rim sherds. Nevertheless, the type frequencies presented below are generally comparable to those presented by Lenig (1965:84).

Examples of the four dominant Mohawk collared pottery types present in the Cromwell Site ceramic assemblage are illustrated in Figure 1. The relative frequency of these four types can provide a general indication of the site's period of occupation based on a comparison with Lenig's (1965:66-67)

Table 1. Cromwell Site Trait List.

Ceramics	
Pottery	
complete rim sherds	91
incomplete rim sherds	358
decorated neck and shoulder sherds	2
undecorated neck and shoulder sherds	198
plain body sherds	1,411
juvenile pottery fragments	19
other	1
Pipes	
stem fragments	2
bowl fragments	1
juvenile pipe fragments	1
Lithics	
Projectile Points	
complete projectile points	15
projectile point fragments	8
Other Chipped Stone	
lanceolate knives	6
combination tools	5
bifaces	4
spokeshave	1
drill	1
cores and blocks	44
utilized flakes	125
debitage	14
Ground Stone	
hammerstone	1
chopper	1
celt	1
pestle	1
mortar	1
net weights	12
other	2
Other	
chunks of feldspar	3
Bone and Antler Artifacts	
awls	2
tooth pendants	2
antler tine flakers	7
Shell Artifacts	
worked shell	2
European Goods	
brass scrap	5
glass trade beads	3
lead scrap	1
cut nails (intrusive)	2

Table 2 Cromwell Site Complete Rim Sherds Listed By Type.

	N	%
Collared		
Chance Incised	1	1.1
Garoga Incised	26	28.6
Martin Horizontal	7	7.7
Wagoner Incised	12	13.2
Cromwell Incised	18	19.7
Not typeable	5	5.5
Thickened Lip		
Otstungo Notched	7	7.7
Rice Diagonal	12	13.2
Plain	3	3.3
Total	91	100.0

seriation of Mohawk pottery. The ceramic assemblage is clearly indicative of the first half of the seventeenth century. This period is characterized by a decline in the frequency of the late prehistoric Garoga Incised type, combined with increased frequencies of types associated with the historic Mohawk including Wagoner Incised, Martin Horizontal, and Cromwell Incised. The Cromwell Site assemblage typifies these early Historic Period trends.

Attribute Analysis of Pottery

Attribute analysis can provide more detailed information on the pottery design trends that characterized the Mohawk ceramic tradition during the early Historic Period. To aid in this discussion the early seventeenth-century Cromwell Site assemblage will be compared to the sixteenth-century Mohawk Klock and Smith sites. The Klock and Smith sites are two professionally excavated Mohawk village sites with large ceramic assemblages that typify the Mohawk design tradition during the protohistoric period (Ritchie and Funk 1973;327). This discussion will be limited to a number of apparently key attribute changes, focusing on their chronological significance and importance to understanding regional interaction. Figures 1 and 2 illustrate representative examples of complete rim sherds from the Cromwell Site that display one or more of the attributes to be discussed. A complete statistical analysis of Mohawk ceramic attributes is envisioned (Kuhn and Bamann 1987) but is outside the scope of this brief presentation.

The number of decorative fields on the surface of the collars of rim sherds is one attribute that was recorded for these sites. Some sherds have only a single decorative field

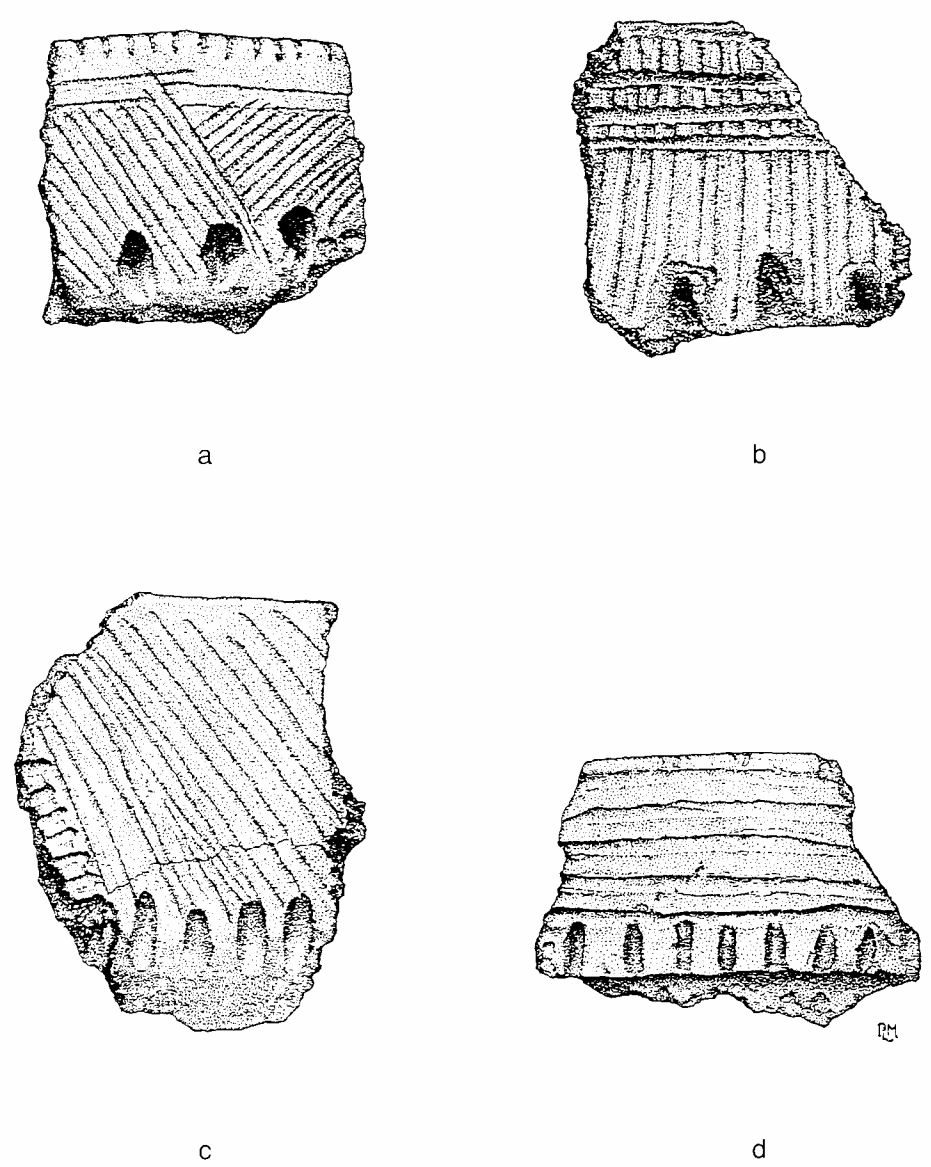

Figure 1 . Examples from the Cromwell Site of the principal early Historic Period Mohawk collared pottery types. a. Garoga Incised; b. Cromwell Incised; c. Wagoner Incised; d. Martin Horizontal. Type definitions can b e found in Lenig (1965:6-8).

such as incised horizontal lines (e.g.. Figure Id) or incised oblique lines (e.g., Figure 2c), others can have two, three or more decorative fields such as short incised vertical lines over horizontal lines over filled-triangles (e.g., Figure la). Collar motifs with two or more design fields can be categorized as complex (Kuhn 1986:86; Ramsden 1977:109).

Seventy-two per cent of the Cromwell Site collared rim motifs were complex, as defined by the presence of two or more decorative fields. In contrast, 91% of the combined Klock and Smith site collared rim sherds have complex motifs. The comparison suggests that the frequency of complex design motifs began to decline during the early Historic Period.

The largest decorative field on the vast majority of Mohawk pottery is the field directly above the collar base, which is usually decorated with filled triangles (e.g., similar to Figure la), vertical (Figure 1B) or oblique lines (e.g., Figure 2a), or more rarely horizontal lines (e.g., Figure ld). Throughout the late prehistoric and protohistoric periods the most common design in this field was the quintessential filled triangle element. For example, 44% of the collared rim sherds in the assemblages from the Klock and Smith sites were decorated with filled triangles with the remainder made up of lesser frequencies of vertical, oblique, or horizontal line elements. In contrast, only 14r/e of the collared pottery from

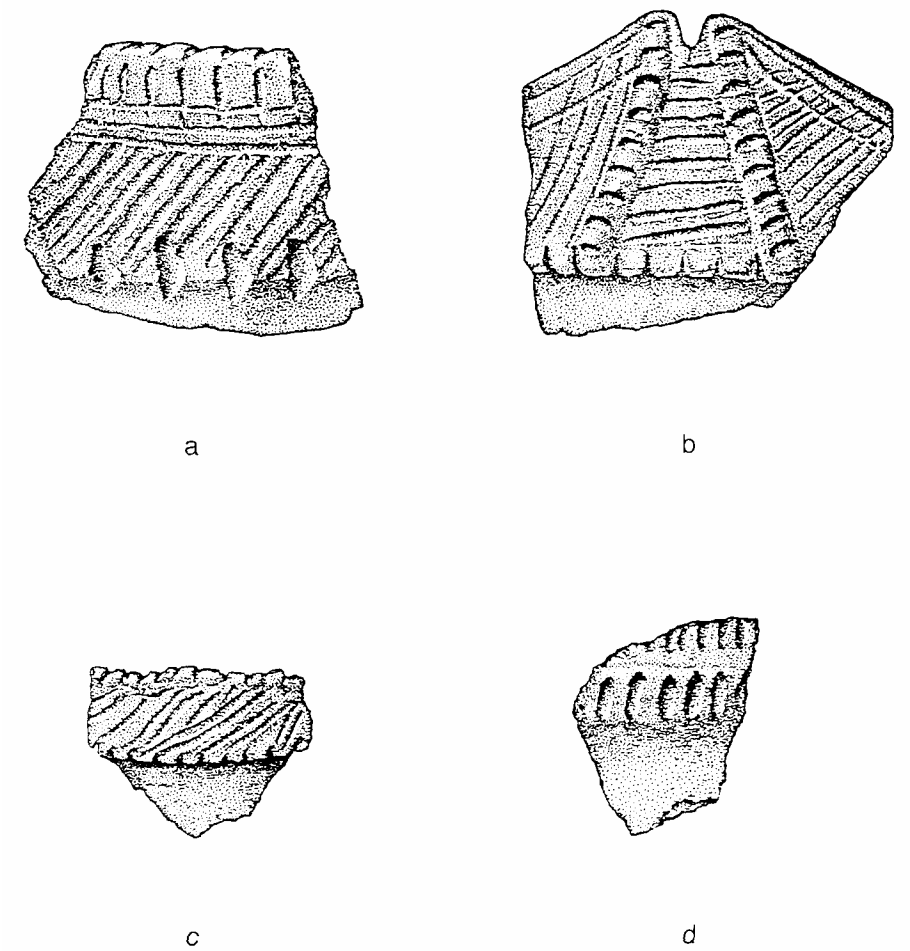

Figure 2. Examples from the Cromwell Site of pottery that illustrate key early Historic Period ceramic attributes. a. deeply incised lip surface decoration: b. bifurcated castellation; c. tow-collared sherd with deeply incised lip surface decoration; d. low-collared sherd.[2]

the Cromwell Site displays the characteristic filled-triangle motif. The majority of the rim sherds are decorated with vertical, oblique or horizontal lines above the base. It would appear that the filled-triangle motif, which had been so common on prehistoric and protohistoric Mohawk wares, was chosen less frequently as the design of choice by Mohawk potters during the early seventeenth century.

In addition to the collar surface, which provides the principal field for decoration, the lip surface provides a secondary field for artistic expression on Iroquoian ceramics. Twenty-six per cent of the Cromwell Site collared rim sherds have a bold lip surface decoration of deeply incised vertical lines (Figure 2a and 2e). Occasionally these incisions are so deep that they create an almost scalloped edge. This decoration represents a relatively new attribute added to the Mohawk design repertoire during the early Historic Period. Sixteenth-century Mohawk potters almost never decorated the lip surface area. Over 99% of the collared rim sherds from the Klock and Smith sites have plain, undecorated lip surfaces.

Seventy-four per cent of the pottery from the Cromwell Site has basal notching (Figure I, all four examples) compared with 79% from the Klock and Smith sites, suggesting a modest decline. Thirteen per cent of the Cromwell pottery is castellated

[2] Typologically these sherds would be described as follows. a: a typical Mohawk Garoga Incised type rim sherd accept for the addition of deeply incised lip surface decoration; b: a Cromwell Incised type rim sherd with a bifurcated castellation; c and d: not typeable. These two rim sherds are representative of four of the five rim sherds listed as "Not Typeable" in Table 2. They do not correspond to any defined Mohawk types. Specimen c has attributes (low collar, simple oblique lines, notched lip) typical of the Huron Sidey Notched type (MacNeish 1952:33), with the addition of basal notching and a well-defined collar-neck juncture (both typical Mohawk traits). Rim sherds like this one could be termed Sidey Notched variants. Specimen d has attributes (low collar, gashes at top and bottom of collar, poorly defined collar-neck juncture) typical of the Huron Seed Incised type (MacNeish 1952:35), and could be termed a Seed Incised variant. The fifth rim sherd not typed (and not illustrated in this report) is a singular example of a generic type often descriptively referred to as low-collar stamped.

compared with 31% from the sixteenth-century sites, indicating a more dramatic decline in this attribute during the early seventeenth century. In addition, a new type of castellation occurs in the Cromwell Site assemblage that was uncommon in earlier Mohawk assemblages. Two bifurcated castellations (Figure 2b) were recorded in the small assemblage of twelve castellated rim sherds from the Cromwell Site, representing over 16% of the sample. In contrast, only one bifurcated castellation is recorded in the sample of 271 castellated rim sherds from the Klock and Smith sites. Pointed and rounded forms were the most common types of castellations on prehistoric and protohistoric period Mohawk pottery, and bifurcated castellations are almost completely unknown until the early Historic Period, when they appear with some frequency and regularity.

There are eight reconstructed rims in the Cromwell Site pottery assemblage. The reconstructions range in extent from approximately one-quarter to three-quarters of the entire vessel rim circumference. These specimens provide an indication of vessel rim shape. Seven of the examples are indicative of round vessels. The eighth is a square-rimmed pot with castellations at the corners. Based on the projected circumferences of the rims, all these vessels were extremely large.

In the Klock and Smith site assemblages there were only four complete rims, three of which were square in shape and the fourth round. Although the sample is too small to make any conclusive statements the low frequency of square rims in the Cromwell assemblage is worth noting. A proposed decline in the frequency of square rimmed pots during the early Historic Period will need to be confirmed through the analysis of a larger sample of complete Mohawk vessels: however, if this suggested decline is valid it may also explain the decline in castellated pottery noted above. Among the Mohawk, square-rimmed pots almost always have castellations at all four corners.

Collar heights for the Cromwell Site pottery range from 12 to 78 mm with an average of 35.9 mm. The collar height distribution is bimodal with nodes in the 19-23 mm and 32-38 mm ranges. Rim sherds less than 30 mm in height (e.g., Figures 2c and 2d) are often categorized as low collar. Thirty-seven per cent of the Cromwell Site rim sherds had collar heights of 30 mm or less. In contrast, only 27%, of the Klock and Smith site rim sherds have collar heights of 30 mm or less. This comparison appears to indicate that there is an increase in the number of low collar rim sherds in early Historic Period Mohawk assemblages.

A Brief Treatise on Early Seventeenth-Century Mohawk Pottery Trends

The Cromwell Site pottery assemblage provides evidence of important changes in the Mohawk ceramic tradition during the early seventeenth century. The changes include the introduction of new ceramic attributes such as bifurcated castellations and bold vertically incised lip surface decoration; a decline in the frequency of complex motifs, filled triangle motifs, basal notching, and castellations; and an increase in the frequency of low-collared wares. These changes will be useful for refining the early Historic Period Mohawk chronology. Certainly, other trends may also be identified when a more comprehensive statistical analysis of Mohawk ceramic attributes is completed.

The causes for many of the changes in the Mohawk ceramic tradition that take place during the early Historic Period remain to be discussed. The standard seriation model is predicated on the assumption that styles change gradually over time within a single cultural tradition. Preferences and practices wholly within Mohawk culture certainly played a part in determining ceramic trends during the early Historic Period, as they had done for centuries before. But culture change can also be effected through contact with external forces. It is argued here that extemal factors may have had an important impact on the Mohawk pottery tradition during the early Historic Period.

The seventeenth-century history of Mohawk intertribal relations can be generally inferred through the writings of Champlain, Van den Bogaert, the Jesuits, and others. The primary source literature documents extensive intertribal wars. The Mohawk and the other tribes of the Five Nations Iroquois were in conflict with the Huron confederacy of southeast Ontario throughout this period and eventually dispersed the Huron villages in 1649 and other northern and western tribes in the 1650s.

War captives were routinely incorporated into Iroquois communities. These foreigners assimilated to Iroquois ways and in the process may have also influenced Iroquois cultural traditions. As warfare and the number of captives were increasing, native Mohawk populations were decreasing in response to periodic seventeenth-century epidemics. The impact of external influences may have become greater under such conditions.

The seventeenth-century history of Iroquois warfare and the practice of adopting captives have been extensively discussed in the literature, as has the idea that female war captives may have continued to make pottery in their native styles and even influenced the pottery-making traditions of their captors (see Bradley 1987:55-60; Engelbrecht 1984:335; Kuhn 1985:30-42, 1986; Trigger 1976:826-840, for example). Probably the best archaeological evidence of this process comes from excavations conducted at the late seventeenth-century Mohawk Jackson-Everson Site. Jesuits in the Mohawk valley at the time the site was probably occupied recorded that Mohawk villages had more foreign captives than Mohawk. Tellingly, 80% of the ceramics recovered during excavations at the site were decorated with traditional Huron styles (Kuhn 1986).

The number of captives taken into Mohawk villages during the early seventeenth century was probably much less

than after the great dispersals of 1649 and the 1650s. Nevertheless, the documentary record indicates that the Huron and Iroquois were in conflict throughout this period, and it seems likely that captive adoption was being practiced. A comparison of Mohawk ceramics and the pottery traits of southeast Ontario suggests that these captives may have had a strong influence on the Mohawk ceramic tradition.

Table 3 presents a comparison of a small set of key attributes for which data are available for the Mohawk and southeast Ontario. Mohawk is represented by the combined assemblages of the Klock and Smith sites. Southeast Ontario is represented by Ramsden's (1977:168) MacMurchy group of sites except for the two castellation categories, which are taken from Ramsden's (1989:29-30) study of the Kirche Site, since Ramsden (1977) did not include data on castellations.

The ceramic traditions for the two regions are quite distinct, and this is reflected in the dramatic differences in the frequencies of these traits. When the Cromwell Site assemblage is compared to these two samples, it is clear that in almost all instances the attribute frequencies from that site are intermediary between those of the two samples. If Mohawk potters were being influenced by the traditional practices of captives from southeast Ontario in their villages, this is exactly the product that would be expected.

Rather than being the product of stylistic drift or internal cultural change, it seems likely that many of the trends in early Historic Period Mohawk ceramics can be related to external influences. Traditional warfare practices brought captives into Mohawk villages, and many of them were from southeast Ontario as the Five Nations struggled with the Huron for control of the fur trade. From the preliminary attribute comparisons presented here, it can be inferred that the new outsiders had a discernible impact on Mohawk traditions at least within the realm of material culture. They contributed new traits to the Mohawk design vocabulary and influenced changes in Mohawk pottery-manufacturing traditions.

Table 3. Comparison of Southeast Ontario and Mohawk Ceramics.[3]

Attribute	Southeast Ontario (%)	Cromwell Site (%)	Mohawk (%)
Complex motifs	1.7	72.5	91.0
Filled-Triangle Motif	11.6	14.5	44.5
Lip Decoration	51.8	26.4	0.3
Basal Notching	6.2	73.6	79.2
Castellations	5.7	13.2	31.3
Bifurcated Castellations	10.0	16.7	0.4
Low Collars	94.3	37.3	27.2

The Cromwell site is intermediary between the two samples for most attributes, suggesting that early historic period Mohawk ceramics display an admixture of ceramic traits from southeast Ontario.

[3] No exact data on the frequency of the filled-triangle motif are provided by Ramsden (1977); however, as this motif only occurs on opposed or complex collar motifs, combining the percentages of those categories establishes a maximum possible frequency, for the filled-triangle motif in the southeast Ontario assemblages.

Other Pottery

Two rim sherds in the Cromwell Site collection have human effigies. Both appear under rounded castellations on high (over 50 mm) rims. The designs are quite similar, with punctations forming eyes and an open mouth over a body of raised arms and torso crossed by a series of hold incisions. The first example, which is not complete to the base, is modeled from the surface clay of the vessel and has a wide lip surface decorated with bold vertical incisions. The second example is an appliqué attached to the surface of the vessel. A portion of the torso has been broken away.

The ceramic specimen listed in the "Other" category ("Ceramics," "Pottery") of the trait list in Table 1 is an unusual fragment that may have been a pipe or pot appliqué, a gaming disc, or a decorative ornament. Its precise function cannot be determined from the fragment that remains. The artifact is small, measuring 36 mm by 26 mm by 11 mm. It has no tempering and was poorly fired but has been decorated with long oblique incisions across its entire surface, including the sides and back. One end of the specimen is divided, and the other end has been broken away.

The ceramic collection also includes 19 small, poorly made and poorly fired sherds that are representative of juvenile pottery. Thirteen of these are decorated rims, five are undecorated rims, and one is a body sherd. Two of the juvenile rim sherds have castellations. Thus, castellations appear in about the same frequency in the juvenile assemblage (11%) as they do in the larger site assemblage of rim sherds (12%). Three of the decorated rims are quite advanced with recognizable motifs. One is a Wagoners Incised, one is a Cromwell Incised, and one has bold vertical incisions and an everted lip suggestive of motifs and collar profiles common in southeast Ontario. The juvenile pottery has not been included in the type or attribute analysis reported above.

Of 198 neck and shoulder sherds identified in the pottery collection, only two (1% of the sample) display decorative motifs. One has a single row of short vertical incisions encircling the vessel at the shoulder, and the other has a band of opposed filled triangles around the shoulder.

One Garoga Incised and one Wagoner Incised rim sherd in the collection are complete to well below the shoulder of the vessel. The neck and shoulder areas of these sherds are undecorated.

All the body sherds in the collection were plain; there were no cordmarked or check-stamped sherds in the ceramic assemblage from the site. Eleven sherds displayed drip marks indicative of liquid spillage over the rim (Wray et al. 1987:80) and two of the complete rim sherds had heavy organic encrustation in quantities that could provide an organic sample suitable for study. One body sherd and one neck sherd in the assemblage were marked with black paint but it is not known if this was original to the sherds or added after they were collected. Painted pottery is not known for the Mohawk.

Pipes

The sample of ceramic pipes from the Cromwell Site is very small. The only definite pipe specimens are two undecorated pipe stem fragments. There is one decorated rim fragment with an unusual incised motif that may be from a pipe bowl or from a very small advanced juvenile pot. There is also a linear piece of poorly fired clay that may be a juvenile attempt to mimic a pipe.

Projectile Points

All the projectile points in the Cromwell Site collection were manufactured from local cherts except for one broken example that is quartz. Descriptive statistics for the complete projectile points in the Cromwell Site collection are provided in Tables 4 and 5. It has been noted that stone projectile points from Historic Period Iroquois sites are generally smaller in size than points from earlier periods and that they occur in lower frequencies (Bradley 1987:123, 125). The Cromwell Site collection of points is consistent with both of these observations.

Other Chipped Stone Artifacts

The collection of chipped stone tools from the Cromwell Site is small and probably most notable for the high percentage of combination tools that have been identified. These include one combination drill and biface, and one drill and three projectile points that have been reworked into scrapers. Other tools include lanceolate knives and very crude bifaces, one drill, and one spokeshave.

Evidence of the lithic reduction process is indicated by the numerous cores, blocks, utilized flakes, and debitage in the collection. All these are of chert except for two utilized flakes of quartzite. The assemblage is intriguing because of the high number of cores and blocks and for the fact that 73% of these items display evidence of cortex. In addition, cortex was also evident on 16% of the utilized flakes. This suggests that the occupants may have been relying heavily on local till deposits of chert cobbles rather than traveling to the quarry sources some distance to the south. With the increasing prevalence of European tools during this period the need for lithic tools was certainly on the decline among the Mohawk (Cushman 1986:67). Avoidance of the traditional but time-consuming travel and procurement process, with reliance on local cobble cherts as needed, may represent a stage in the eventual abandonment of lithic tools altogether.

Table 5. Base Shape and Side Shape Attributes for the Cromwell Site Projectile Points.

Base Shape	%	Side Shape	%
Concave	67	Straight	20
Straight	27	Excurvate	33
Convex	6	Incurvate	27
		Irregular	20

Table 4. Descriptive Statistics for the Cromwell Site Projectile Points.

Attribute	N	X	Range	SD	CV
Max. Length	15	28.7	21.0-40.0	5.12	17.82
Max. Width	15	20.8	15.0-28.0	4.25	20.43
Max. Thickness	15	6.5	4.0-9.0	1.36	21.02

All measurements in millimeters
X = mean
SD = standard deviation
CV = coefficient of variation

Ground Stone Artifacts

Ground stone artifacts from the Cromwell Site include a variety of types. There is one small broken stone pestle in the collection that is 20 mm in diameter and 57 mm long up to its broken end. A related item is a single broken sandstone chopper with a heavily battered end. There is also a singular example of a broken stone celt. This celt is squarish in cross-section and measures 48 mm wide by 31 mm thick. The tapered tip of the celt shows some evidence of battering and use wear. The collection also contains one flat, round hammerstone/nutting stone that is 96 mm in diameter and 46 mm thick. The artifact has modest evidence of battering around the circumference and a single pit in the center of one flat side. A broken mortar, similar in size to the nutting stone, is 108 mm in diameter and 40 mm thick. Two unusual specimens in the collection are one complete and one broken piece of sandstone, both with evidence of surface abrasion. The complete example measures 53 mm by 16 mm by 4 mm. The function of these items is unclear, but they may have served as potter's tools used for wiping or polishing the surface of finished pots. Finally, the collection of ground stone items from the Cromwell Site includes 12 very typical side-notched net weights.

Other Stone Materials

Included in the Cromwell Site collection were three chunks of feldspar. These items represent raw material that would have been ground up for use as a tempering agent in the production of pottery or clay pipes (Gutierrez 1985:60). Feldspar was the most commonly used tempering agent in all Mohawk ceramics.

Shell and Bone Artifacts

The collection of shell and bone artifacts from the Cromwell Site is very small. Shell artifacts include a single small fragment of worked marine shell and one large marine shell with a broken edge. Neither of these is a finished artifact of an identifiable type although the smaller piece may be a pendant-in-process.

Bone artifacts include 2 awls manufactured from long bones, 7 small bone or antler punches with blunt ends probably used for pressure flaking chert tools during the lithic reduction process, and 2 ground, drilled, and very highly polished tooth pendants.

European Trade Goods

The trade goods in the Cromwell Site collection include five scraps of brass, which were undoubtedly recycled from a brass kettle (see Bradley 1987:131). These items include one kettle lug; one rectangular piece of brass with ground edges, which may be a blank for a tubular bead; one rectangular piece of brass with sharp, utilized edges, which may have been used as a knife; and one tubular rolled brass bead measuring 9.5 mm long by 4 mm in diameter.

Three glass beads are included in the collection. One of these is a small round redwood bead (I Ia 1), and the other two are medium round star or chevron beads (IVk3) layered with brite navy blue, white, redwood, and white glass (Kidd and Kidd 1970).

Redwood beads type IIal first appear in Iroquoia during the last quarter of the sixteenth century and are found on village sites throughout the seventeenth century. Star or layered chevron beads are most common during the 1600 to 1635 period (Wray 1983).

Other materials of European origin in the Cromwell Site collection include a single chunk of lead and two cut nails. The t" o nails, one of which has a square head, would appear to be intrusive.

Subsistence Remains

The Cromwell Site collection included shell and faunal remains indicative of Historic Period Mohawk subsistence patterns. These materials included eight pieces of freshwater shell and 319 pieces of animal bone. Only 16%, of the collection of mostly small bone fragments could be identified (Table 6). The assemblage is similar to other Iroquois sites with respect to the prevalence of White-tailed Deer, which was always the focal point of Iroquois hunting activities (Ritchie and Fu nk 1973:331). The faunal materials in protohistoric and Historic

Table 6. Faunal List for the Cromwell Site.

		N	%
Deer	*Odocoileus virginianus*	27	51
Beaver	*Castor* canadensis	8	15
Bear	*Ursus americanus*	5	10
Turkey	*Meleagris gallopavo*	3	6
Turtle	Testudines	3	6
Rodent	Cricetidae	3	6
Elk	*Cervus elaphus*	1	2
Duck	Anatidae	1	2
Bird	Aves	1	2
Total		52	100

Period Mohawk assemblages usually contrast with prehistoric assemblages in two ways, and the Cromwell Site is no exception. First, there is a higher frequency of beaver remains indicative of the burgeoning fur trade (Lenig 1977:74). Second, there is a higher frequency of bear, suggesting perhaps an improved hunting technology after the advent of the European trade, or an increase in the documented practice of raising bear cubs for use in ceremonial feasts (Junker-Andersen 1986:118).

Approximately 5% of the bone materials were heavily burned or calcined. and many of the pieces also exhibited cut or butchering marks. Three pieces, including one identifiable fragment of a deer phalange, revealed the pitting and decomposition indicative of passage through the digestive tract. The identification of such remains is often used to suggest the presence of domesticated species at the habitation. The fact that the Iroquois kept domesticated dog is well documented (Junker-Andersen 1986:120).

Conclusions

The Cromwell Site collection is a representative artifact assemblage from a major early Historic Period Mohawk village site. The assemblage shows many continuities with late prehistoric and protohistoric period site assemblages; however, significant changes in Mohawk material culture are evident as well. These changes include new trends in Mohawk pottery traditions, lithic procurement strategies, and subsistence practices.

Many of the new trends in pottery decoration suggest that external influences from southeast Ontario may have had an impact on the Mohawk design tradition during the early Historic Period. There are dramatic contrasts between Mohawk and southeast Ontario pottery on numerous key ceramic attributes. Yet the Cromwell Site pottery is intermediary between the two groups on many of these traits, suggesting a mixture of the two regional traditions. Given the documented intertribal wars and captive adoption practices of the Iroquois, it seems likely that this is the result of foreign captives living in Mohawk communities at this time.

It is hoped that the trait list, artifact descriptions, and hypotheses presented in this paper will contribute to material culture studies in Iroquois research.

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