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BRONSON MUSEUM
8 North Main Street
Attleboro, Massachusetts, 02703
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The Museum has extensive exhibits of stone implements, obtained for the most part from the Massachusetts area. They are arranged in culture periods identified in the Northeast, and cover a time extension of some 10,000 years.

The Museum is located on the fifth floor of the 8 North Main Street Building. No regular schedule is maintained and therefore it is wise to call before visiting.
EDITOR'S NOTE
Barbara E. Luedtke

We often think of archaeological research in terms of fieldwork, or the process of making new discoveries though survey or excavation, and we forget that a great deal of archaeological research actually consists of existing data and findings. For example, Russell Barber's new series "Treasures in the Peabody's Basement" which begins in this issue will be examining a number of New England artifacts of special interest which were excavated decades ago, but which sank into the oblivion of a large museum collection before they could be described and discussed in print.

There are also innumerable private collections in Massachusetts, the contents of which are generally known only to their owners. Over the last few years, the Massachusetts Historical Commission has been attempting to inventory, document, and study a number of these collections. Through their efforts, and also those of a number of Massachusetts Archaeological Society chapters and individuals, the results of years of work by dedicated amateur archaeologists are being made available to the whole archaeological community. The article by Johnson and Mahlstedt in this issue is one such report, on a collection of special interest and value because of the fine records and maps that Ben Smith kept along with the artifacts he recovered.

The article by Alfred Cammisa re-examines a body of data that has proved to be an almost inexhaustible source of ideas and findings for archaeologists: the early historic records for New England. These documents continue to shed fresh light on the Indians at the time of their first contacts with Europeans, on the early colonists themselves, and on the dynamic process through which these two very different groups adjusted to each other.

Finally, Curtiss Hoffman provides additional information on a site he discussed recently in these pages. These new findings help confirm and modify previous conclusions about this site.

Thus archaeological research includes two major processes for discovering information about the past. Fieldwork itself will always hold a place of special importance, and is probably essential for some purposes. However, archaeologists must always go back and re-examine existing collections and assemblages in the light of our new questions, interpretations, and theories. The latter process is as necessary and as fruitful as the finding and excavation of new sites.

**********

TREASURES IN THE PEABODY'S BASEMENT

Written by Russell J. Barber    Illustrated by Lisa M. Anderson

Every great museum has far more valuable specimens than it can display. This series discusses some of these treasures from the Massachusetts collections at Harvard University's Peabody Museum, focusing on exceptional items that have received little or no attention in print.

A BUTTON MOLD WITH AN EXTRAORDINARY INCISED FIGURE

Molds for making buttons and similar items are known from a number of historic and protohistoric Indian sites in Massachusetts and adjacent states. Willoughby (1935:243-244) illustrated and described several of these molds, but he overlooked what may be the most unusual such item known. It was found in an Indian grave in Lincoln, Massachusetts in 1924 along with glass beads and other artifacts suggesting that it dated to the first half of the seventeenth century.

Copyright 1984 by Russell J. Barber
The mold, illustrated at full size, (Fig. 19) was made from a small cobble of brown siltstone. The back maintains the rounded contour of the unmodified stone, but the front side is perfectly flat. The maker either took advantage of siltstone's tendency to break into flat pieces along bedding planes and broke the stone himself, or found a naturally broken piece; in either case, the surface was further smoothed by grinding.

Most of the depressions in the front side of the mold almost certainly were made with a wing auger, a standard piece of a colonial woodworking kit that survives in today's toolkits. It is a flaring drill bit that has a small screw in its center and two sharp wings extending from it, each with a sharp protruding tip at its outermost edges. (See Mercer 1929 for further description of these augers.) In use, the central screw bites first into the material being worked, followed by the outer tips and only lastly by the wings themselves. When starting a hole, one produces a narrow, deep central pit and an outer circle cut by the outer tips.

Precisely this pattern is shown in the ring mold in the upper right and, slightly more obscured, in the buckle mold in the lower left. The outer ring is visible in the button molds in the bottom middle and upper left, but the central portion has been removed by deep grinding or, more probably, a single cross piece, and a circular ring. The buttons and buckles presumably were for use on clothing; the ring may have been used on clothing or as a finger ring.

The unique aspect of this artifact, however, rests in its reverse side. There, boldly incised into the stone, is a man in European dress. He is shown with straight, shoulder-length hair and a round face with eyes, triangular nose, and mouth. One arm is cocked on a hip and the other is outstretched, terminating in feathery fronds that may represent a hand. A light scratch near the hand on the hip may indicate a cane or sword, but it is much less deep than the other marks and probably is natural. The legs are simple sticks with stick feet, both projecting to the figure's left. Atop the head is a deeply-cut straight line, perhaps the brim of a hat that never was completed.

But the most striking part of the figure is the coat. The figure is wearing a thigh-length frock coat of the sort fashionable in seventeenth-century Massachusetts.

Figure 19. Front and back views of incised button mold from Lincoln, MA. Full-scale.
Clearly cut into its front is a row of six buttons. Two other cuts at each side of the figure's waist may represent buckles.

A smaller figure lightly incised into one edge of the specimen is crudely executed and difficult to interpret. It consists of an oblong with small gashes along one side. It is vaguely reminiscent of an incomplete stylized turtle, a symbol sometimes used of clan identification.

Why was the representation of an Englishman placed on a button mold? It may have been mere a fitting decorative device, or it may have been a blueprint telling its owner how to use the buttons and buckles he made in the English manner. In any case, what resulted is a seventeenth-century representation of an Englishman made by a New England Indian, perhaps the only such representation that has survived to our day.

REFERENCES CITED

MERCER, Henry C.

WILLOUGHBY, Charles C.

**********

REPORT ON THE BENJAMIN SMITH ARCHAEOLOGICAL COLLECTION
CONCORD, MASSACHUSETTS

Eric S. Johnson
Thomas F. Mahlstedt

For the past two and one half years, the Massachusetts Historical Commission (MHC) has been involved in a statewide inventory survey of historic and prehistoric resources. The basic goal of the prehistoric survey is to provide a body of data upon which well-informed decisions concerning the management and preservation of our prehistoric cultural resources can be based. To this end, an effort is being made to consolidate and standardize the often uneven and disparate records contained in the MHC archaeological site files. The MHC files were originally based on the files of the Massachusetts Archaeological Society (MAS) and through the years have been expanded to include information from federal and state funded archaeological contract reports, other site records and information from private individuals who have reported sites on their own initiative. This information is used by the MHC in reviewing publicly funded projects for impacts to archaeological resources.

To date, the survey team has inventoried and catalogued onto computer tape the archaeological collections from the Bronson Museum (Attleboro), the Peabody Museum (Harvard University), the R. S. Peabody Foundation for Archaeology (Andover), and the Peabody Museum, Salem. In some cases, it has been found that valuable archaeological collections have been literally reburied in the storerooms of museums where they contribute nothing to our knowledge. Some assemblages represent the only record of sites which have since been destroyed, are presently threatened, or identify archaeologically sensitive areas. Thus far over 200 previously unrecorded sites have been identified and the quantity and quality of data on known sites has been substantially increased. As this article demonstrates, the MHC's survey is useful in increasing our knowledge of Massachusetts' prehistory by making accessible information.
on specific areas, and by indicating potential research questions and sources of archaeological data. Further, because the Benjamin Smith Collection itself represents a valuable cultural resource, not only for residents of Concord, but also to the public at large, the MHC survey team has made a number of specific recommendations concerning its future curation, display, and storage (Johnson and Mahlstedt 1982a).

The Ben Smith Collection is another valuable addition to the state survey, and we wish to express our appreciation to the staff of the Concord Antiquarian Museum who so graciously accommodated us during the analysis.

BACKGROUND TO THE SMITH ARCHAEOLOGICAL COLLECTION

Benjamin L. Smith (1900-1981) was a lifelong resident of Concord, Massachusetts, a town revered nationwide for its role in the American Revolution and known as a haven for renowned poets and authors. As an avocational archaeologist, Ben Smith added a new dimension to the cultural significance of this beautiful New England community: that of a rich prehistoric past which attracted extensive aboriginal occupation long before the first Europeans settled here.

Smith's interest in archaeology began as a child and was pursued throughout his life with an intensity seldom exhibited by professionals. He concentrated his activities primarily in the towns of Concord, Wayland, and Sudbury and a few nearby towns. In 1930 he assisted Warren King Moorehead on the Merrimack River Survey, taking charge of that project's efforts in Concord and directing excavations at a number of sites including the Davis Farm site (19-MD-160). Smith contributed the section on the Concord River in the only report published on the Merrimack River Survey (Moorehead 1931). A founding member of the Massachusetts Archaeological Society in 1939, he later served as its Vice-President and President.

Ben Smith was in many ways an extraordinary collector. Although the bulk of his collecting took place in plowed fields, he also inspected exposed river banks, eroded washouts and quarries, undertook limited subsurface testing at some sites and rather extensive excavations at others, and even participated in the salvage of a few aboriginal burials. Surface collecting in the plowed fields of Concord may have been assisted by the deep furrowing required for asparagus, once a major crop, which is likely to have exposed a number of sites. His notes on each site include useful topographical and locational information, often accompanied by photographs and sometimes site maps. Smith's notes formed the basis of the MAS and MHC prehistoric inventory file for the Concord and Sudbury areas.

No archaeological research project or collection is bias free. Smith's collection is no exception. One of the principal sources for bias was induced by Smith's own notion of prehistoric site location criteria which he developed over the years. He was particularly interested in small knolls and well-drained floodplain areas adjacent to the area's major waterways and their tributaries. He repeatedly returned to a promising area or site through the years. Because of this collecting strategy, the major river and tributary valleys are represented by dramatic site clusters, compared to other areas where few sites were recorded and artifact assemblages were small. As a collector, Smith was not only interested in beautifully made projectile points and ground stone axes; he also collected broken artifacts of all kinds as well as bifaces and preforms, atlatl, a full range of edge tools, plummet, gorgets, ulus, and considerable quantities of lithic waste. A few sites are in fact identified by the presence of only a few flakes; while at others, major concentrations of chipping waste from a single locus, possibly representing manufacturing workshops, were dutifully collected, bagged and labeled separately. He also collected bone fragments, shell, and steatite bowl fragments. Aboriginal ceramics, regardless of how small or fragmented, did not escape his interest, and he even noted the paucity of this type of artifact from the sites in his area.
Please refer to Ben Smith's Obituary, recently contributed to the Bulletin by Stephen Loring (1982), for further biographical information on this remarkable collector.

COLLECTION ANALYSIS: SUMMARY OF ARTIFACTS

The Ben Smith Collection contains well over 6,000 artifacts, of which 4,276 were analyzed and coded. This total does not include a considerable quantity of chipping waste, nor several hundred specimens from out-of-state and perhaps as many as 2,000 unprovenienced artifacts which were not coded.

The Collection documents perhaps as much as 12,000 years of human occupation in the Concord, Sudbury, and Assabet drainages. Nearly every class and type of artifact known to exist in New England can be found in the Smith Collection in some form, quantity or condition. The array of artifact classes represents a wide range of prehistoric activities such as food procurement, preparation and storage; woodworking and other related crafts; stone tool manufacture; and personal adornment.

Table 7 illustrates the totals and percentages of each of the general artifact categories. These categories are defined in a typology designed by the MHC's prehistoric survey team (Anthony, Carty, Towle 1980a). Projectile points comprise the most numerous category, excluding chipping waste. A total of 746 points were classifiable, while 344 specimens were untyped. Table 8 illustrates the range of projectile point types and their absolute quantities and assemblage percentages. Although projectile points comprise the single most common artifact, they make up only about 30% of the total assemblage, excluding chipping waste, compared to approximately 58% of the Bronson Museum Collection (MHC 1981:31). This indicates that Smith tended to collect the entire range of prehistoric materials including broken specimens and lithic waste, not just projectile points and finished tools.

The Chipped Stone Tool category consists of a number of subcategories including "Edge Tools" or scrapers, which totaled 468 specimens. Common among edge tools were steep edged unifacially flaked, ovate forms made from a variety of raw materials; quartz and felsite were the most frequently used. Large samples of edge tools were inventoried from Heard Pond (19-MD-207), Hosmer's Rocks (19-MD-103), and Davis Farm (19-MD-160). A total of 510 Bifacial Implement Blades were inventoried. These occurred in various stages of manufacture, and many were obviously broken and discarded. Only two typable Bifacial Implement Blade forms were coded; these were similar in form and manufacture to Mansion Inn-like blades of the Susquehanna Tradition (Dincauze 1968).

The majority of the ceramics inventoried were fragments of historic kaolin pipes. The large number of pipe fragments is probably due to their white color, which is easily seen against the ground. Although kaolin pipe fragments were found at a number of prehistoric sites, their association with Native populations is unknown. The number of prehistoric ceramics is small, especially given the fact that Smith, unlike some other collectors, was well aware of ceramics, and specifically searched for sherds (Smith 1940:24). At sites where ceramics were present, Smith usually recovered only one or two pieces. The only sites from which he collected more than three sherds are Mantatucket Rock (19-MD-105) in Concord, and the Call site (19-MD-37) in Billerica. Even at these sites, the number of ceramics in the assemblages was not large. The dearth of prehistoric ceramics echoes Smith's own observations concerning the general lack of ceramics in the Sudbury/Assabet/Concord drainage (Smith 1940:24). Most of the 69 sherds were highly fragmented body pieces with a few displaying cord-wrapped paddle and incised decorations.

Of the approximately 945 pieces of bone that were inventoried, only one showed signs of utilization; the remainder were unmodified faunal remains. Of these, an estimated 500 pieces came from the Clamshell Bluff site (19-MD-116, 19-MD-388). Included in
the Clamshell Bluff assemblage were many large bone fragments, easily identifiable by a faunal analyst. Smith's report on the site identifies turtle and porcupine (Smith 1940:22,25) and further analysis should add to that list. The remaining bone in the Smith Collection was mostly small calcined fragments whose numbers reflect their fragmented condition, rather than their absolute mass or significance.

Approximately 50 pieces of shell were coded. All these come from the Clamshell Bluff site (19-MD-116, 19-MD-388). Most are fresh water mussel (Unio sp.) (Smith 1940:14). In addition, there are several fragments of snail shell.

### TABLE 7

<table>
<thead>
<tr>
<th>ARTIFACT CLASS</th>
<th>QTY.</th>
<th>% OF COLL.</th>
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<td>PROJECTILE POINTS</td>
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<tr>
<td>Typed</td>
<td>746</td>
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<td>Untyped</td>
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<td>Point Tips</td>
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<td>Midsections</td>
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<td>Bifaces</td>
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<td>Edge Tools</td>
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<td>Pounding Stones</td>
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<td>Cores</td>
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<tr>
<td>Perforators</td>
<td>67</td>
<td>1,294 9.9</td>
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<td>CHIPPING WASTE</td>
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<td>GROUND STONE TOOLS</td>
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<td>STEATITE CONTAINERS</td>
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### TABLE 8

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<th>TYPE</th>
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<th>TOTAL PFS.</th>
<th>% TYPED PFS.</th>
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<td>EDEN-LIKE</td>
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<td>DALTON-LIKE</td>
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<tr>
<td>BIFURCATE BASE</td>
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<td>---</td>
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<td>42</td>
<td>3.0</td>
<td>5.6</td>
<td>18</td>
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</table>

TOTAL TYPED               | 746      | 53.8       | 100          | 68      |
TOTAL UNTYPED             | 344      | 24.8       |              |         |
TOTAL POINTS              | 1,387    | 100        |              |         |
TOTAL POINT TIPS          | 240      | 17.3       |              |         |
TOTAL POINT MIDSECTIONS   | 57       | 4.1        |              |         |
COLLECTION ANALYSIS: SUMMARY OF MAJOR SITES AND THEIR CULTURAL AFFILIATIONS

Of the 145 sites which Smith recorded, he actually collected specimens from only 107. Most of these sites are represented in his collection by small samples of artifacts. The bulk of the provenienced artifacts derive from only a few sites. Considering projectile points alone, over half of the provenienced points came from only seven sites, while 49 sites contained between one and five projectile points. This distribution may reflect patterns of prehistoric settlement as well as Smith's own collecting behavior. Figure 20 illustrates a number of the more significant sites which are discussed in this article.

All of the sites which Smith collected heavily are multi-component sites; in fact, every site from which five or more points were inventoried contained at least two distinct point types representing different cultural phases. In some cases, sites which Smith originally recorded as single large sites may include several single-component loci, but we are presently unable to separate these. Although Smith often subdivided large site areas into several loci, these probably reflected artificial boundaries such as stone walls and streets as often as they reflected actual patterns of artifact density.

The Ben Smith Collection contains artifacts from most, if not all, of the currently recognized phases of New England prehistory (Table 8). Three possible Eden, one Dalton-like, and an unprovenienced stubby lanceolate point manufactured on gray chert, which lacks a flute, hint at the presence of a people in the vicinity during the Paleo Indian Period (12,000–9,000 B.P.).

Although the Collection includes a number of Early Archaic Bifurcate Base points, regrettably only a single specimen comes from an identifiable site, Hosmer's Rocks (19-MD-103), which is located at the confluence of the Assabet, Sudbury, and Concord rivers. Smith's Collection also contains Middle and Late Archaic points from this site (see below) and Late Woodland point types were previously inventoried in other collections from this important site.

The Middle Archaic Period (8,000–6,000 B.P.), identified on the basis of Neville-like, Neville-Variant, and Stark-like points, is well represented by a sample of 124 specimens. Middle Archaic occupation is evidenced at a minimum of 32 sites, representing 47% of sites with diagnostic components included in the inventory. All but one of these are multi-component sites, having been occupied or otherwise frequented during succeeding cultural phases.

There are several sites at which the Middle Archaic is particularly well represented. Hosmer's Rocks, previously noted as containing an Early Archaic component, was also occupied during Middle Archaic times; five Neville-like, two Neville-Variant, and a single Stark-like point are contained in an assemblage of 24 typable points from this site.

The Asparagus Experimental Station (19-MD-86), located along the Concord River in Concord, contains the second largest assemblage of projectile points in the Collection, and features a well-defined Middle Archaic component. Twenty-one Middle Archaic points (5 Neville-like, 8 Neville-Variant, 8 Stark-like) from the site represents the largest Middle Archaic assemblage in the Collection. The Asparagus Experimental Station site covers a large area along the southern edge of Concord's Great Meadows, a wide expanse of open marsh bordering the Concord River. It is likely that this "site" is comprised of a number of discrete loci whose boundaries escaped recognition by surface collectors. Ben Smith was probably the first person to have collected from this site, as he was present in 1932 when the land was plowed for the first time in this century. Since
Figure 20. Major sites in the Smith Collection.
then, the Asparagus Experimental Station has been a well known collecting area, and over 300 points have already been coded from other collections, including two Fluted Points and a Bifurcate Base point inventoried by Shirley Blancke (Blancke 1981).

The Middle Archaic is also highly visible at two other sites. The Davis Farm site (19-MD-160) in Sudbury contains five Neville-like, three Neville-Variant, and a single Stark-like point. The Cold Brook Hill site (19-MD-158), also in Sudbury, includes five Neville-like and three Stark-like points in an assemblage of 52 typable points.

The Late Archaic (6,000-3,000 B.P.) is identified by the following ten projectile point types: Otter Creek, Broad Eared (Vosburg), Archaic Notched (Brewerton Notched), Small Stemmed, Small Triangle (Squibnocket Triangle), Normanskill, Atlantic-like, Susquehanna Broad-like, Wayland-Notched, and Orient Fishtail.

A total of 550 specimens, 73% of all the typable projectile points, are identified as Late Archaic forms. This period is quantitatively well represented in terms of sheer numbers of typable points, and perhaps more significantly, in the number of Late Archaic sites. Late Archaic activity is represented at almost all of the sites which contained diagnostic points and all of the sites from which Smith collected large samples. Among the sites with large quantities of Late Archaic point types are the previously mention Davis Farm (19-MD-160) and Cold Brook Hill (19-MD-158) sites.

The Davis Farm site, also known as Pantry Brook Village, is situated on land overlooking the extensive marshes of Pantry Brook, a tributary of the Sudbury River. This site contains more projectile points (128) than any other site in Smith's Collection. Over one half of these points are of the Small Stemmed variety, and the total Late Archaic component is considerable (98 points).

The Davis Farm site was partially excavated in 1940 under the direction of Professor H. L. Movius of Harvard University, who wrote a brief "interim report" on the site (Movius:1941:17). Ben Smith worked on the excavation, and his written and photographic records are being stored with the Davis Farm materials. These records greatly increase the research value of this part of the Collection.

Close to the Davis Farm site is the Cold Brook Hill site (19-MD-158), from which Smith collected a large number of artifacts, including 74 points. This sample was partially surface collected, and partially excavated, as 60 test pits were dug by Moorehead's Merrimack Survey Project in a fruitless search for a cemetery. No excavation notes exist; however, Smith's Collection, the only sizeable sample from Cold Brook Hill yet inventoried, contains almost exclusively Middle and Late Archaic point types. At another nearby site (19-MD-161), Smith collected 24 typable points, all of which were Late Archaic, including 22 Small Stemmed and two Small Triangles. The large number of Archaic point types (particularly Small Stemmed) and the apparent lack of Woodland materials appear to characterize all of the known sites along Pantry Brook, of which Davis Farm and Cold Brook Hill appear to be the largest.

There is growing belief, to date unproven, that some of the components generally considered Late Archaic are not as precisely fixed temporally as we would wish. Orient Fishtail, Small Stemmed points, and Small Triangles, traditionally identified as terminal Late Archaic, may be transitional to, or may actually be, Woodland forms. This confusion is particularly acute when assessing the Small Stemmed Tradition which exhibits a considerable degree of internal variability as a class; it may in fact contain several distinct though related forms. Considering that 274 specimens (37% of typed points) are varieties of Small Stemmed points and that they are present at 45 sites, this problem is potentially a major concern. Our present inability to conclusively resolve this question may severely distort our understanding of Late Archaic and Early Woodland occupation by increasing the former's apparent visibility, while the latter period appears remarkable for its relative paucity of sites. This phenomenon has often been interpreted as the direct result of a decrease in population (cf. Snow 1980:320; Dincauze 1975).
The Late Archaic Period is further complicated by the appearance of the distinctive Atlantic, Susquehanna Broad, and Wayland Notched projectile point forms. The sudden appearance of these point types has been interpreted as evidence of a slow infiltration of peoples into southeastern New England from the Middle Atlantic Coastal Plain and the Piedmont area (Dincauze 1972:58). The arrival of new groups which possessed different ceremonial practices and tool kits is not viewed as evidence of cultural displacement; rather it has been argued that three separate cultural traditions coexisted in New York and southeastern New England (Ritchie 1971; Dincauze 1975). Archaeologically this phenomenon is documented by the presence of the Susquehanna Tradition which includes Susquehanna Broad, Atlantic, and the later Wayland Notched projectile points, as well as several varieties of Biface Blades.

Evidence for the presence of peoples of the Susquehanna Tradition with the Concord, Sudbury, and Assabet River area comes from 27 sites which were discovered and collected by Ben Smith. While present at 40% of the total number of sites with diagnostic components, the Susquehanna Tradition is not a major component at any of them. A total of 21 Atlantic-like points (3%), 14 Susquehanna Broad-like (2%), and only one Wayland Notched-like point were coded from the Collection. The relatively low incidence of this cultural complex within the Concord/Sudbury drainage is curious given its proximity to the Mansion Inn and Vincent sites in Wayland and the Call site in Billerica, which appear to have been significant ceremonial complexes associated with the Susquehanna Tradition (Dincauze 1968). The low frequency was also noticed by the survey team after analyzing other local collections, particularly the large assemblage from the Heard Pond site (19-MD-207) contained in the Bronson Museum, Attleboro (MHC 1981).

Figure 21. Neville-like points from the Clamshell Bluff site, Concord, Massachusetts. Benjamin Smith Collection.
The Ben Smith Collection does include at least one site assemblage in which the Susquehanna Tradition is reasonably well represented. The Hartwell Farm site (19-MD-119) is located in Lincoln, just across the Lincoln and Concord town line. This site is a multi-component site; Smith's collection of 36 points (25 typable) includes Late Archaic through Late Woodland types. Included in this sample are four Atlantic-like and three Susquehanna Broad-like points, comprising 28% of the typed points: the largest percentage of this component for any site assemblage in the Smith Collection.

Hartwell Farm is also interesting because of its location; unlike most of the sites, it is not associated with a major river or lake. The site is situated along Elm Brook, a small tributary of the Shawsheen River. It is approximately four miles to the Shawsheen via Elm Brook, and almost a mile to Sandy Pond, the closest large water body. It is over two miles to the nearest point on one of the three major rivers.

The Early Woodland (3,000-1,500 B.P.) is a nebulous and poorly understood phase of New England prehistory. Undoubtedly, difficulties in our ability to properly identify cultural materials which can conclusively be dated to this period contribute to the problem. As noted above, the Late Archaic Small Stemmed points, Small Triangles, and Orient Fishtail forms may have been used during the Early Woodland. However, lacking well-demonstrated overlap, we must confine ourselves to utilizing the Meadowood and Rossville forms as indices of Early Woodland occupation. A total of four Meadowood and four Rossville points were identified at seven separate sites. Though ceramics made their appearance during this period, no diagnostic Early Woodland forms (e.g. Vinette I) were identified in the small ceramic assemblage of the Collection.

The Middle Woodland (1,500-1,100 B.P.) is also a poorly understood and probably underrepresented period of cultural development in New England. The low frequency of sites for this period is also echoed within the collection area represented by the Smith Collection. A total of seven points were identified as Middle Woodland forms; these include one Woodland Corner Notched (Jack's Reef), two Large Pentagonal (Jack's Reef Pentagonal) and four Woodland Lanceolate (Fox Creek). Although represented at six multi-component sites, the Middle Woodland components never appear to be quantitatively significant. An assemblage of ceramic sherds from the Call site, though highly fragmented, was identified as belonging to the Middle Woodland Ceramic Complex (V. Kenyon: personal communication).

Between 1,100 and 400 B.P., the time range generally ascribed to the Late Woodland, there appears to have been an increase in site frequency and density throughout New England. The hallmark of the Late Woodland, the Large Triangle (Levanna), numbering 42 specimens, is found at 18 different sites (26%) from the Collection, an increase from the Middle and Early Woodland periods that correlates with the apparent overall pattern in southern New England.

A particularly interesting Late Woodland component in the Smith Collection occurs at the Barthel's Farm site (19-MD-120), located not far from the previously mentioned Hartwell Farm site. Although Barthel's Farm produced point types from the Middle and Late Archaic periods, 13 of the 27 points inventoried from the site were Large Triangles. In addition, several "untyped" points from this site resembled Large Triangles in form and manufacturing technique, but were too narrow to be typed as such according to the MHC typology. This total represents by far the largest number and percentage of Late Woodland points from any site assemblage in the Smith Collection.

Only two other sites feature Large Triangles in quantities greater than one, two, or three specimens per site. At the large multi-component Dakin Farm site (19-MD-94, 19-MD-83), situated at the confluence of Dakin's Brook and the Assabet River in Concord, six Large Triangles are included in an assemblage containing 57 projectile points. The Call site in Billerica (19-MD-37), previously noted for its Susquehanna Tradition component, also contains five Large Triangles in a site assemblage of 47 projectile points.
The Call site has been investigated by a number of professional and amateur archaeologists (Moorehead 1931:24; Vossberg and Mansfield 1954; Brennan 1960), and Smith's collection of points from the site is small compared to the 75 points already inventoried. His Call site material, however, includes many pecked and ground stone artifacts, the largest sample of ceramics from any site in his collection, and several large bifaces that may have been burned. Smith's notes also include a sketch map of the site.

The Smith Collection contains no cultural materials which can readily be viewed as evidence of the Contact Period. There exist, however, ample historical references to the presence of Native Americans in Concord when the first settlers arrived in this frontier region in 1620. A Native village was reputedly located at Nashawtuc Hill adjacent to the Concord River (cf. MHC: Historic Survey Report 1980:A-F).

A number of the sites from which Smith collected large samples have not yet been mentioned and warrant discussion. The Clamshell Bluff site (19-MD-116, 19-MD-388), perhaps Concord's most unique prehistoric site, was collected from and reported on by Smith. Situated on the west bank of the Sudbury River near Route 2, the Clamshell Bluff site contained the only fresh water shell midden ever reported in Massachusetts; it also contained a habitation area nearby (Smith 1940:14-26). Shell heaps, unlike most prehistoric sites in the Northeast, often contain preserved bone. Alkaline minerals dissolved from the shells counteract the acidity of the typical New England soil, and bone tools and refuse, which decompose quickly under acidic conditions, may be preserved for millennia. Such preservation provides archaeologists with a rare opportunity to study prehistoric diet and bone tool technology. Since all other reported shell heaps in Massachusetts are situated on the coast, Clamshell Bluff's inland location would have made it ideal for comparing coastal and interior adaptations.

Unfortunately, Clamshell Bluff has been almost completely destroyed by the construction of Emerson Hospital, Route 2, and the former Xavier School, although small but potentially significant portions may yet remain. Smith's Collection, then, is one of the only existing sources of information concerning this interesting archaeological resource, and is by far the most important existing collection. Other collectors, including Henry David Thoreau, collected from the site, and their collections have been inventoried by the MHC survey team. However, Smith's sample is much larger and is the only one known that includes faunal remains. Numerous fragments of turtle carapace are easily identifiable in the site's assemblage. These specimens may yet provide additional information on subsistence and seasonality at the Clamshell Bluff site.

A short distance to the southwest of the Asparagus Experimental Station site is the Morse's Swamp site (19-MD-100), from which a total of 53 points were coded, including Middle and Late Archaic, and Early and Late Woodland types. Smith's collection from this site is apparently a small part of a very large earlier collection, much of which is lost. According to Smith's notes, subsurface testing by a group from Harvard University in the late 1960s revealed that the site was almost exhausted. Since previous inventories identified few materials from this site, it is likely that Smith's Collection contains the only records that will ever be available for the Morse's Swamp site.

Directly across the Concord River from the Asparagus Experimental Station site is the Punkatasset Fields site (19-MD-81), which, like the Asparagus Experimental Station site, covers a large area and includes a number of smaller loci containing points from several time periods. Although only three other sites contained more projectile points than this site (71), a total of 276 specimens inventoried from other collections also represented a much longer period of occupation than was suggested by the Smith Collection. Smith's collection from this site is significant, however, because many of his artifacts come from eight specific loci within the site, and his notes include descriptions of each locus and a sketch map of the site and the loci. Thus, although his collection represents only a fraction of the known sample from this site, Smith's notes and specific provenience data may give his collection greater research potential.
LITHIC RAW MATERIALS

The analysis of raw materials used during prehistoric times for the manufacture of stone tools remains in its formative stage. Neutron activation analysis has had success in the analysis of material composition and the identification of source deposits (Fitzhugh 1972; Luedtke 1980). Other highly sophisticated laboratory techniques such as atomic absorption spectrometry, x-ray diffraction, and thin section analysis have also been employed to systematize the description and sources of jaspers, cherts, and argillaceous rocks (Didier, et al. 1974; Luedtke 1978). In New York State and Ontario a degree of success has come from attempts to classify cherts macroscopically, primarily based on color (Dincauze 1976a:32).

In the Northeast, lithic sources vary greatly due to vagaries of deposition, the range of chemical compositions, and varying degrees of metamorphism in any major lithic source. Though detailed laboratory analysis is presently lacking, there is a level at which lithic raw materials can be appropriately discussed. A number of major lithic sources in eastern Massachusetts are well known, and many of these are known to have been quarried during prehistoric times. For general purposes, simple macroscopic analysis based on color, texture, and inclusions is often sufficient to identify general source areas such as the Lynn Volcanic, Mattapan, and Newbury complexes (cf. Shride 1976; Clifford Kay: personal communication). It is at the level of identifying specific quarries within these complexes that sophisticated petrological analysis is necessary.

A wide range of lithic materials are included in the Smith Collection. Quartz is ubiquitous and procurable nearly everywhere in New England. While there are occasional "exotic" cherts or jaspers from New York, such as the Onondaga and Normanskill varieties, as well as a few specimens of Kineo felsite from Maine, overwhelmingly the materials are locally or regionally derived. Recognizable are the black and maroon felsites containing readily visible white phenocrysts characteristic of the Lynn and Newbury volcanics (Clifford Kay: personal communication). Also readily identifiable are Red Saugus "jaspers". Red banded felsites probably from the Mattapan Volcanic complex are also present. The survey team visited the Mattapan Quarry site near the Neponset River and was impressed by the wide range of colors present in a single exposed wall. This source varies from a fine grained glassy reddish and pink felsite, similar to Saugus "jasper" (to which it is geologically related), to a light tan-like color. The high quality glassy texture which is void of visible phenocrysts and which develops a red and white banded patina is a distinguishing characteristic of this specific source (Clifford Kay: personal communication).

A fine grained glassy green felsite, which usually develops a white patina and is known to outcrop in Melrose, is another variety of the Lynn Volcanic Complex felsite which is present in the Collection. A fine grained blue-gray felsite with glassy phenocrysts characteristic of the southernmost extent of the Mattapan series is also well represented. This material outcrops in the vicinity of Wampatuck Hill, in the Blue Hills area. It can also be quarried from glacial cobbles and boulders at the Blue Hill River site (19-NF-40), a known prehistoric quarry and workshop area (Rowe 1941; Anthony, Carty, Towle 1980b:37-38).

Another variety of the Mattapan Volcanic Complex identified is a high quality felsite which is light cream colored with reddish rust stains when weathered, but is gray green when freshly fractured. This material is readily recognizable by the presence of clear crystal-like phenocrysts which vary greatly in size and visibility. This variety of felsite is tentatively known as Sally Rock felsite, and is known to outcrop on the Neponset River in Hyde Park (Bowman 1981; Anthony, Carty, Towle 1980b:38).

Also recognizable in terms of a general source area is a coarse grained red felsite
which contains phenocrysts of feldspar and volcanic glass. This material has been found to outcrop in Attleboro, near the new Attleboro High School, and is being called Attleboro felsite by the survey team. To date, no prehistoric quarry sites of this material are known (Anthony, Carty, Towle 1980b). A number of other felsite varieties are present but cannot yet be attributed to any single area.

Argillaceous rocks exhibit variability to a degree similar to the volcanic fel­sites. Though some work has been done on sources of the Black and Maroon Lockatong argillites in New Jersey, they are not as easily grouped, even on a rather gross level, as are felsites. The following types of argillite are present in the Smith Collection: banded argillites, which can be obtained from glacial drift in the North River basin; black argillites which are known to come from a source on the Delaware River and in New Jersey (Didier 1975) and may also have a more local source; blue-gray argillites which are part of the Cambridge slate series from the Boston Basin as well as from sources in Barrington, Rhode Island; varieties of tan and gray argillites, also from these two areas. A few specimens of coarse grained green argillite are present, and at least one outcrop of this material is known in Hull, Massachusetts. A fine grained green platy argillite, which is well represented, has had a source identified in Barrington, Rhode Island and possibly in the Taunton Basin, and is also available regionally in glacial drift. A few specimens were manufactured on a maroon argillite which was possibly available in the Chicopee Shale series and from as far away as New Jersey, where it is known as a Lockatong variety. (Anthony, Carty, Towle 1980b:44).

Varieties of quartzite are also present in the Collection. Dark brown, gray, and tan quartzites are all known to outcrop within the Sudbury/Assabet/Concord drainages (Anthony, Carty, Towle 1980b), the area which closely parallels the Smith Collection. Also present are two materials which appear closely related: whitish and light green fine grained platy quartzites called mylonite. These are known to outcrop in the general vicinity (Clifford Kay: personal communication).

The Smith Collection contains several hundred ground stone tools, including complete and fragmented specimens. This category contains such diverse artifacts as axes, gouges, adzes, plummets, ulus, pestles, atl atl weights, abrading stones, pendants, and gorgets. While there is obviously no single source for these specimens, there is at least one known outcrop which is identifiable. Based on the characteristic rust stain of a number of artifacts, particularly the ax, gouge, and adze series, it appears that the hornfels and slate quarries of the Blue Hills were favored sources for raw materials for these types of artifacts. The remainder of ground stone tool forms were manufactured on a variety of slates and shale. Hornfels was used on a number of Large Triangular points and on a few Woodland Corner Notched and Large Pentagonal forms.

The selective use of rhyolitic tuff, a coarse grained tan to orange volcanic mate­rial with reddish brown staining, for the manufacture of Small Stemmed points may be a locally significant phenomenon which is well reflected in the Smith Collection. Most often this specific raw material was used for varieties which were classified as Small Stemmed points I and II, which are similar to the Merrimack point first identified by Dincauze (1976b). Typically, these are well made, with narrow isosceles triangular to lanceolate blades and nearly square or straight bases which have been thinned and often ground and have a relatively wide stem relative to the maximum blade width.

The use of this material appears to be a localized phenomenon as it did not appear on sites inventoried to the south of the Concord/Sudbury drainage and was particularly obvious in its absence from the many collections of eastern Massachusetts at the Bronson Museum. Additionally, a small "workshop" of roughed-out blanks, preforms, and large flakes of rhyolitic tuff was collected together in at least one site.

This material was identified by Clifford Kay of the U. S. Geological Survey as a common rhyolitic tuff member of the Newbury Volcanic Complex. This series runs on a
northeasterly trend from just south of Rowley to Plum Island at Newbury. The southermost extent of this material is a small pocket south of Topsfield (Shride 1976:148). However, given the relative lack of knowledge concerning local geology, it is possible that this material may exhibit a wider distribution (Clifford Kay: personal communication).

The significance of the use of rhyolitic tuff for a specific variety of Small Stemmed points is not understood at this time. In fact, it has not yet been conclusively demonstrated that a relationship exists between the two. Research potential clearly exists to determine the presence of such a relationship.

In general, the wide range of lithic materials which are represented in the Smith Collection holds considerable potential for future study. Studies on raw materials and their sources have tremendous potential implications for research into prehistoric population movements, trade, and travel routes, cultural contacts, and an entire range of questions related to socio-economic processes during prehistoric times.

SETTLEMENT PATTERN

Any attempt at settlement pattern analysis must take into account the biases inherent in a collection of this sort. The search for prehistoric sites was more intensive in some areas than in others, and the sites themselves were collected with varying intensity. Also, site boundaries were not systematically defined; therefore comparisons between sites are problematic. However, the Smith Collection does contain 68 sites with diagnostic artifacts, representing an unusually high density. It was initially felt that such a sample could be used to suggest some characteristics of settlement pattern, such as locational criteria, visibility of cultural/temporal components, and changes in these characteristics over time. However, because of the limited scope of the project, we are able to offer only preliminary observations at present.

Observations on site location indicate that sites of almost every period are distributed more or less evenly between locations along the three major rivers and locations along tributary streams, without any readily apparent clustering along one type of water course. The only exceptions are sites containing Early Archaic components, which were found only at multi-component sites along the major waterways. It is certainly possible that more detailed analysis using more specific environmental variables might indicate some interesting patterns and changes in site locational criteria.

Observations concerning settlement patterns in the Concord/Assabet/Sudbury drainage can be tentatively offered at another level of discussion. Upon completing analysis of the Smith Collection, the MHC survey team analyzed the Roy Athearn Collection, which was derived from the Fall River area of the Lower Taunton River Basin, and which has been reported on in a previous issue of the Bulletin (Johnson and Mahlstedt 1984:3-9).

One of the most striking differences between the two areas as represented by these fine collections is the evidence for Woodland Period occupations. As this report indicates, the Concord/Assabet/Sudbury drainage appears to have been extensively, if not intensively, occupied during the Middle and Late Archaic Periods. The ensuing Early and Middle Woodland were poorly represented in terms of the number of sites and quantities of diagnostic artifacts, suggesting a decrease in occupation during these periods. The Late Woodland is considerably more visible than the preceding Woodland periods in terms of sites and artifacts, though much less visible than Archaic periods.

In contrast, all of the Woodland periods are considerably more visible in the lower Taunton Basin. Here too, there are strong Middle and Late Archaic components which tend to dominate the assemblages quantitatively, but the quantities of diagnostic artifacts from the Early, Middle, and Late Woodland are far greater from the Taunton Basin than from the Concord/Assabet/Sudbury drainage. The significance of sheer quantities of
materials has yet to be conclusively demonstrated. Generally however, we feel that the higher visibility of all of the Woodland periods tends to support those aspects of previously formulated models which postulate a settlement shift during the Woodland from interior sites to a coastal environment (cf. Dincauze 1974).

The Ben Smith Collection dramatically documents extensive prehistoric occupation in the Concord/Sudbury area, and in some cases represents the only evidence for such occupation at a number of sites which have since been destroyed. Moreover, the quality and size of this outstanding private collection distinguish it as a research tool of great potential value.

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A COMPARISON OF SETTLEMENT PATTERNS AND GENERAL LAND USE BETWEEN THE NATIVE AMERICANS AND THE ENGLISH SETTLERS IN SOUTHERN NEW ENGLAND IN THE SEVENTEENTH CENTURY

Alfred Cammisa

INTRODUCTION

The immigration of the Puritans from England to New England began in 1620 and ceased for the most part in 1640. When Cromwell defeated the Stuarts in England, persecution against the Puritan sect ceased and so did virtually any immigration to New England for nearly two centuries (Adams et al. 1933:2,5; McManis 1975:25,39).

Although trade and commerce were becoming important in seventeenth century England, agriculture was still the major occupation there. New England soon became an agricultural society too, with over 75% of the population making a living by farming (McManis 1975:88).

THE ENGLISH IN ENGLAND

Agricultural life in seventeenth century England consisted of the raising of crops and the keeping and breeding of domestic animals for their meat, milk, wool and hides, and to act as draft animals (Campbell 1942:204-385; Thomas 1976:2).

Field systems and their associated settlement patterns varied in different districts. The most commonly used was the "open-field" or "champion" system, which was practiced in central England. In eastern England, a "closed-field" or "woodland" system was used. In western districts, a Celtic system was practiced, which was a combination of both open and closed systems (Ackerman 1976:107-110).

"The landscape of the open-field system was one of great open stretches of arable land, broken only here and there by stands of trees and by the buildings of the village -- around which, spread out in a ring, were the fields." (Ackerman 1976:106). Three fields, one for spring grain, one for winter grain, and one field lying fallow, were the usual rule. A family's fields would most often be scattered, here and there, in narrow strips, among the rest of the fields held by other villagers. With this type of field system, land inheritance was commonly by the oldest son only. The inherited land could not be subdivided or sold, and only an inheritor might marry.

In a closed-field system, the settlement pattern was a dispersed one; each family's fields were in a compact area surrounding the homestead and fenced off from a neighbor's fields. People using this system did not live in villages as did those using the open-field system. All sons would inherit equally in this closed-field system, and the inherited land could be subdivided among heirs or sold. All sons might marry. In this type of system, population would and could easily grow. However, in open-fields districts, population remained stable (Ackerman 1976:106).

The poorest yeoman farmer had a two to three room dwelling, while an eight to ten room dwelling was typical of the well-to-do yeoman. The majority had, however, five to nine room dwellings (including outbuildings such as milkhouses, malthouses, etc.) (Campbell 1942:230-231).

Throughout the seventeenth century in England, much was being written about farming practices, and new innovations were tried. It was the gentry who were the first to try new ideas and innovations. Many yeoman couldn't read and were more steeped in tradition; however, they too followed the gentry when they saw that bigger profits were made on land that was better cared for (Campbell 1942:169-170).

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The yeomen, who owned small farms, were something like the country middle class. A yeoman might own anywhere from 25 to 200 acres in arable regions, with up to 500 or 600 acres being held by wealthy yeoman in grazing regions. Above the yeomen were the landed gentry, who were usually wealthier and owned more land. Below yeomen were the tenant farmers and laborers, who worked the land for the gentry and wealthy yeoman without owning any themselves (Campbell 1942:102, 229-230).

During the Middle Ages, the agricultural life was a self-supporting one. During the seventeenth century, with a rising population in towns and cities, more food was being produced in the country. Farming, as a result, became more intensive and surpluses were produced for trade. As a result of this commercialism, land assumed a market value. An increase in personal freedom among former tenant farmers enabled them to take advantage of the situation to buy up land and become yeomen. Although land had always been important since the Middle Ages and was a sign of social prestige, it now became scarce (Campbell 1942:65-68).

English immigrants to New England came from all social and economic brackets, except the poorest. Although English from various sections of England were represented in the immigration, the Puritan sect had been especially strong in the eastern districts, and the largest representation was from there. It was here in the eastern districts where a closed-field system of agriculture was practiced. Emigrants from open-field areas were almost totally unrepresented in New England at this time. This had an effect on the type of settlement pattern preferred in southern New England (McManis 1975:36-37; Ackerson 1976:114).

**THE NATIVE AMERICANS OF SOUTHERN NEW ENGLAND BEFORE ENGLISH CONTACT**

**SETTLEMENT PATTERN AND SUBSISTENCE**

The Native Americans of southern New England were of the Algonkian language family. The tribes living in this area include the Massachusett, the Pawtucket, the Wampanoag (or Pokanoket), the Nausett, the Naragansett, the Peguat-Mohegan, the eastern and western Niantic, the River Tribes (Podunk, Womgunk, Siciaog, etc.), the Nipmuck, the Pocumtuck, and the Quirpi (Snow 1980:33, 73-87; Salwen 1978:168-173; Vaughn 1965:52-57).

The Indians here had been growing corn and other produce, such as beans and squash, since prehistoric times. For the most part, the growing season near the coast is a month longer than it is 50 miles inland, on the uplands. The growing season in the Connecticut River Valley also averages about one month longer than it does 30 miles to the east or west. It was here in these coastal and interior lowland zones (covered primarily by hardwood forest, good for cultivation) that the population of the Native Americans was the most dense (Adams et al. 1933:19-20, 35; Snow 1980:34-41; Byers 1947:30-31).

From Early Horticultural times (700 B.C. to AD 1000) through Late Horticultural times (AD 1000 to 1600), settlement tended to be centered on main streams, with many villages at the heads of estuaries. Population was on the rise at this time also, with sites (especially on estuaries) becoming larger during Late Horticultural times. Whereas most of the prehistoric population lived on the coast, the exception was the large Connecticut River Valley (Snow 1980: 278-290, 319-335).

Towards the end of the Late Horticultural period, however, and up until Contact, this river drainage settlement pattern seems to have been changing. Horticulture was now becoming a prime factor in subsistence and as a result, main villages were becoming more often situated inland, away from rivers and coast, and spaced more according to where other major villages were. The Nipmucks, Pocumtucks and other interior tribes were an exception because their agricultural lands were limited to narrow river valleys.
and fresh water ponds due to climate and fertility. The vast interior between rivers and large streams, largely covered by coniferous forest, was virtually unused except perhaps for hunting (Snow 1980:76; Williams 1643:46-47; Thomas 1976:8-9; Connole 1976:14-19; Byers 1947:30-31).

The southern New England peoples did not live year round in a main village, but only in the winter. Beginning in the early spring, families used to gather at special-purpose fishing sites to catch migratory fish such as alewife, shad, and salmon. These fishing stations were especially important to the interior tribes. On the Connecticut River at least, these stations were at waterfalls. They provided an annual gathering for many villages and were probably looked forward to as a major social event. In the summer, the coastal Indians fished in the salt water by and off shore, but in the winter, fishing was usually done in fresh water ponds and streams, and anglers sometimes had to cut through the ice to get to the water. Winter fishing was a smaller, individual project, unlike the spring fish runs (Williams 1643:47; Snow 1980:75-76; Thomas 1976:9; Salwen 1978:162,165).

The planting fields were adjacent to the main inland villages, and starting in spring, the planting of such crops as corn, squash, beans and Jerusalem artichokes began. Beans and corn were grown together, and probably in equal amounts, with three or four seeds of each to a hill. The nitrogen-fixing beans slowed down the depletion of the soil's fertility, and the corn stalks supported the bean tendrils. Well-spaced hills and the bean-corn chemistry depleted the soil less than the English practices in New England. Although beans may have been planted as much as corn, corn had a very high ratio of harvest-to-seed while beans did not (Bennett 1955:389-391; Axtell 1981:293; Rutman 1967:9).

During the summer families were more dispersed, living in nuclear units or possibly in small extended families. The family moved out to the fields with its portable wigwam and set it up in the middle of the field. They would plant a field, then pack up and move on, wigwam and all, to the next field (perhaps a mile or so away) until all was accomplished (Salwen 1978:164; Williams 1643:14,37,46; Snow 1980:76).

Although it is difficult to know accurately the size of an individual or family field, some approximation is possible. Based on early English records, a number of Pequots who were removed from Causatuck had owned fields ranging mostly from around an eighth of an acre per family or individual. One person owned a much higher amount: two and a half acres. It is very probable that the sachem generally had more land under cultivation, since chiefs were generally relied on to provide for guests in the village, to assist families in need, and to contribute generously to feasts (Thomas 1976:11; Butler 1948:12-13).

During the summer, after the fields were planted, most of the families in coastal tribes would pack up and move (probably leaving wigwams behind) to special sites by the shore for the collecting of shellfish. Men might now be fishing, hunting, or fowling individually or in small groups (Snow 1980:76; Salwen 1978:164-165; Williams 1643:89; Thomas 1976:10).

Indians had a long-term fallow system, in which a field would be used for eight to ten years and then allowed to lie fallow. Such a field would need from 25 to 50 years to recuperate (Thomas 1976:12). They would then move to a new field nearby the fallowed ones. When all the fields near the village were used up, the whole village would move to another spot, clear new fields, and set a new village. After 25 to 50 years, old sites were resettled and old fields would be burned over.

However, Snow (1980:76) feels that the local depletion of firewood may have been a more compelling reason than the infertility of the soil to relocate the main village. Some Narragansetts thought that the reason the English left Europe to move to New England...
land was because "they must've burned all their firewood in their previous country" (Vaughn 1965:61-62).

The interior Indians, such as those along the Connecticut River, were probably less able to move their villages to new planting grounds because of limited arable land and a short number of frost-free days. As a result, planting fields may have been located nearer the village. Fields would have also been larger, stretching out for several miles around a hamlet in order for the Indians to keep reopening more fields and fallowing others for 25 to 50 years without moving the main village (Thomas 1976:13).

Thomas (ibid.) also shows that a village of 400 people needed about 900 to 2240 acres of agricultural land over a 50 year period if a cyclical rotation of fields was in operation. This would make these interior peoples more sedentary and their villages more permanent than their coastal neighbors.

Besides the sites by the shore, there were other special-purpose sites where women collected nuts, berries and root tubers, as well as materials for baskets, mats, etc. Berries and nuts were usually gathered when they ripened in summer or fall (Snow 1980:76; Salwen 1978:164).

The harvest began in late summer and lasted through early fall. Most of the harvest, including nuts and berries, was dried and stored for the winter (Thomas 1976:10).

Roger Williams (1643:102) states that a Narragansett woman could commonly gather 24 to 60 bushels of corn for her family, and even more if aided by friends. The minimum was probably gathered on long-used fields, soon to be fallowed, while the maximum was probably attainable on newly-opened fields of good quality soil. The Indian population density was not such that they would have been forced to farm poor quality land. Daniel Gookin (1674:81) remarks on a harvest of 40 bushels per acre of corn at a newly opened Nipmuck village. Interior tribes who inhabited river valleys had less land available for agriculture and grew lower total amounts of corn per family than their coastal neighbors. However, since the river valleys had more fertile soil, the amount of corn raised per acre was probably higher much of the time for interior tribes.

After the harvest was in, families relocated again for the big fall hunt. It was, for the most part, a deer hunt, with about 90% deer and 10% other varieties of game being captured. Usually whole families (but sometimes just males) moved into hunting lodges, which were small wigwams of the same portable type used during the summer. Here they stayed and hunted until the heavy snows came, placing a minimum of pressure on resources, while storing meat for the winter. During the winter, from December until the March fish runs, families lived together in the main settlement. They lived for the most part on stored goods, with probably some fresh meat brought in occasionally to supplement the dried and smoked food (Williams 1643:33 46; Thomas 1976:10; Salwen 1978:160-161; Snow 1980:76).

As we have seen, there was a marked seasonality to the diet of the native Americans. It is difficult to estimate how much the Indians relied on a particular resource or how much of a particular food was eaten. However, the list below (taken from Bennett 1955:392) is an attempt to show the relative percentages of food intake for the southern New England peoples, from 1605 to 1675: corn was 65% of the total diet, game (animal and bird carcasses) was 10%, fish and shellfish were 9%, nuts and leguminous seeds (including beans) were 8%, vegetables were 4%, grain alternatives (e.g. seeds) were 2%, visible vegetable fats were 1% and eggs were 1% of the total diet.

Interior tribes might have had less fish, and definitely less shellfish in their diets than coastal tribes, but possibly more meat. The level of grain consumption for the Pocomctuck and Squakheag, both inland tribes, was probably closer to 50% or 60% (instead of 65%) of the total diet. Late winter was a period when the food supply was
lowest; however, famine was probably not a common occurrence (Bennett 1955:378,391,395; Thomas 1976:12).

TECHNOLOGY

House types usually reflect the degree of sedentariness or lack of it in a group of people. Large, multi-roomed houses, for example, like many found in England during the seventeenth century, reflect a high degree of sedentariness, while the small, portable wigwams used part of the year by the southern New England Indians, indicate a lack of sedentariness and a high degree of mobility.

In the main winter villages, extended families lived in large wigwams, up to 30 meters in length and nine meters in width. Each of these could house 40 to 50 people, and each village might contain ten or 20 such dwellings. These large wigwams were more permanent than the smaller variety (Snow 1980:76).

The smaller, portable wigwams were about four to five meters in diameter. The mats covering them usually were removed and carried to the new site while the sapling framework was left behind (Salwen 1978:164; Mourt 1622:17).

LAND POLICY

Land was held in common by the tribe, and the sachem insured that everyone had access to it. It had been a normal custom of many Native Americans to allow portions of their traditional territory to be occupied and used by refugees from other tribes, or other displaced peoples (Hallett 1959:34; Synderman 1951:21). This had repercussions when the Puritan refugees landed on the shores of native America.

SUMMARY AND CONCLUSIONS

The English in England lived in permanent dwellings and settlements as a result of a subsistence base that was controlled and kept at hand. Domesticated animals enabled the Englishman to obtain protein and calories, in the form of meat and dairy products, without having to leave his homestead. These same animals supplied materials with which members of the farmer's family could clothe themselves. Crops grown on nearby fields furnished most of the food the family needed, and fruits and vegetables were also grown nearby.

The natives of southern New England also obtained most of their food from nearby crop fields, but their villages were only seasonally occupied. This was due to a mobile, uncontrolled protein base in the form of deer, fish, birds, and other wild animals. The Indians were thus required to travel far from the main village to hunting and fishing sites to obtain not only their protein and extra calories but materials for clothing as well.

Indians were also forced to move their main village whenever the surrounding farmland lost its productivity. In England, because of a more intensive agricultural system, farmers could stay in the same village or farmstead without ever moving. Although the Indians were farming extensively, the amount of land a family used at any one time was quite small, definitely less than even the smallest yeoman's farm. Even over a long period of time, the Indian family farmed no more land, and probably even less land, than a wealthier English family practicing a two or three field fallowing system. This was due to the fact that the Indians were farming on a subsistence level, while the English farmer was farming on a commercial level for a large English population, many of whom lived in cities.
The first English settlers arrived in 1620 and settled at Plymouth, Massachusetts. By 1629, the Plymouth area was the most densely populated area, containing more colonists than the rest of New England combined. However, by 1630 that situation changed with the arrival of about 1000 settlers to the Massachusetts Bay colony. Colonists kept arriving at the rate of 1000 to 3000 a year for the next ten years (Rutman 1967:13-14; Vaughn 1965:90-93; Chitwood 1931:132).

At the same time, the native population was dropping sharply, due mainly to European diseases. By mid century the native mortality rate was as high as 95% in some areas (Snow 1980:34,39-41).

The average birth rate for English settlers was about five births per marriage. The average birth rate for Indian families after English contact was about three births per marriage (Greven 1970:23-25; Gookin 1674:65-84).

The death rate was also lower for the English in New England than it had been in Old England. There were about 27 per 1000 in New England compared to the 30 to 40 or more deaths per 1000 in Old England. This was due to fewer and less destructive epidemics for settlers in the New World (Lockridge 1970:66-69).

Because of New England's topography, only small tracts of land were agriculturally productive. This is so even today. Native Americans had selected prime areas for cultivation and the English immigrants were attracted to the same areas. As a result, English settlements sprang up adjacent to Indian settlements. An unfortunate outcome of this is that few of the prehistoric sites have survived historic and modern resettlement (Adams et al. 1933:4; Snow 1980:320).

The earliest of these settlements were on the coast (Mourt 1622:22-25; Adams et al. 1933:2-35). Besides defensive reasons, this may be due to the fact that before crops and livestock were productive enough, the settlers depended heavily on fishing and also trading.

During the early stages of most southern New England settlements, settlers farmed and grazed communally, due to the conditions set by financial backers in England. During this time, farming was on a subsistence level (Rutman 1967:4-6). Living together in villages as opposed to a more dispersed settlement pattern also happened to be much better for defensive reasons.

Plowing began in March as the ground was thawing. Harrowing followed, and by mid May the fields were planted. The English settlers planted both native and English crops. However, they planted in neither strict native tradition nor in strict English tradition. Instead they combined traditions, but used only the fastest and easiest methods. Fallowing was not practiced, neither was cross plowing, crop rotation, or gleaning, as in England. The broadcast method of planting seed was used instead of the drill method even though the latter was more economical. Also, there was no draining, trenching, or ridging as in England. Fields planted with Indian crops were only partially plowed, and the strict weeding practices of the Indian women were overlooked (Rutman 1967:50-56,59; McManis 1975:89-90,92; Walcott 1936:224).

In July and August the hay was collected at a rate of about an acre a day. August and September were harvest months. Crops were harvested also at a rate of about an acre a day (Rutman 1967:51-52).
Harvest yields were very low in southern New England; in fact, the yield of English grain was as low as in the medieval days of England. New Englanders were harvesting six to ten bushels per acre while back in England, something between 16 to 48 bushels per acre was usual. Harvest yields for Indian corn grown on an English settler's field was about 18 bushels per acre; as mentioned earlier, the Indians grew a minimum of 24 bushels per acre on their own fields. However, the English settlers, like the Indians, harvested much higher amounts on newly cleared fields. Part of the reason for the low yields was that the fertility of the soil was not as good as had been expected and was less than that of soils in England. Much of the blame, however, was due the fast and easy farming methods used by the settlers. This was partly because the longer, colder winters in New England forced settlers to compress all their work into shorter summers, and encouraged them to use shortcut methods. Also, because lands were plentiful and cheap, the settlers considered it more profitable to clear new ground than to repair old ground (Rutman 1967:44-54, 59; Chitwood 1931:435; Higginson 1630:239-267).

Livestock herds, imported from England, were only slowly built up. In the beginning of a new settlement they would not be eaten at all, as venison was more plentiful. Swine, as well as sheep and "dry" cattle, were often left to graze semi-wild in the remote, uncleared tracts of the town. Swine dug up and ate the Indian's winter stores of food. The semi-wild cattle often "grazed" on Indian corn. The wildlife of the forests, which Indians depended on, were now competing for food with the settler's semi-wild livestock. Indians reacted either by driving off the livestock or, more probably, by "hunting" the semi-wild herds of the settlers to compensate for the decrease in deer, etc. In winter some of the livestock was allowed to roam in the empty fields, where their manure was used as fertilizer (Gookin 1674:126-127; Thomas 1976:2-5; Williams 1972:48-49; Rutman 1967:17-18,32; Osgood 1904:438,454; Dow 1935:41; Ceci 1977:61).

The communal system of farming and grazing did not usually last for long. Settlers were never satisfied working for someone else, as they saw it. Communal fields were gradually divided up among the original settlers of the town. People were still living in villages, but now a family's fields were scattered in strips among other families' fields, to insure against its future need for various types of land, a situation reminiscent of the open-field system in England (Osgood 1904:449; Rutman 1967:6,17-19; McManis 1975:58-59; Greven 1970:62).

Gradually more land would be utilized, forest being cleared to make way for fields. Original inhabitants of a town, or those who had lived there for many years, were granted huge tracts of land. Families now began to move out of the village to build their farmsteads out among their own fields on this newly acquired land. This closed-field system gradually became popular as settlers reverted to the tradition they had practiced in England. By the close of the century, the open-field system was rarely found in the new towns and was fast disappearing from the old ones (Rutman:1967:18,42; Greven 1970:57-58; McManis 1975:59-60). Farming now progressed from the subsistence level to a commercial level as farmers opened new fields to grow and sell more crops.

Different villages in southern New England were in different stages of development, with the newer settlements being smaller and cruder in appearance, using a more communal system of agriculture and herding, and copying Indian traditions more and English traditions less. Older villages were more English in appearance all around (Rutman 1967:19).

In many cases, as a town grew older and more populated, smaller amounts of land were granted to settlers. New villages were formed by groups of people leaving the original settlement to set up a new settlement for this reason. It was not only a question of more land but especially of more "desirable" land. Plymouth, for example, had a shortage of desirable land by 1630 (McManis 1975:42,71-72; Greven 1970:62-64; Osgood 1904:439; Rutman 1967:42).
As in England, farmers were reluctant to hand over control of their land to their sons. As a result, sons had to wait a long time for even a "partial" inheritance of land and many married relatively late in life — in their late 20's or early 30's. However, unlike young Englishmen, sons could inherit land, whether the family lived in an open or closed field system (Greven 1970:57-97, 81-83,118-119). This was so because there was still enough land to go around in New England.

Variations in the environment of southern New England resulted in variation in the layout of the settlements. Planting fields and homelots were located in the uplands, and hay, thatch and pasture were taken from the meadows, swamps, and marshes. Roads between villages and towns were usually built over old Indian paths (Osgood 1904:437; Weeden 1890:110).

An example of how much acreage was devoted to different crops can be found in records of the Hicks farm, ca. 1649 (Rutman 1976:45-46). Hicks planted five and a half acres of Indian corn, along with other Indian produce, two and a half acres of rye (of all English crops, rye grows the best in New England), two and a half acres of wheat, and one acre of peas. These proportions were probably the average of the day. Corn, as one can see, was the staple crop.

Compared to the size of planting fields of the Indians, which were less than an acre, the planting fields of the English settlers were much larger. The Hicks farm (considered smaller than average) was about 33 to 35 acres. In Andover, Massachusetts, settlers were given 45 to 53 acres per family when the settlement first opened up, and much more later on. Even though the settlers cultivated only a third of their holdings, and up to two thirds by the end of the century, this was still much more land than the Indians had needed (Rutman 1967:46,60;Greven 1970:47-58).

Not all of a settler's land was cultivated or used as pasture. Besides any untouched land he might be saving for his sons, the settler also needed large amounts of firewood, about 15 cords per winter, which the forest provided. On common land, conservation of firewood was a primary concern, but on individually owned land, settlers usually cut indiscriminately and left the timber to rot or to be burnt on the spot. After a while, firewood had to be shipped into places like Charleston and Boston (Walcott 1936:225-226; Dow 1935:144; Rutman 1967:41). These wasteful techniques were beginning to cause problems as the English population grew.

Thomas (1976:4) shows that a New England town of 50 families (250 to 400 people) needed about 1700 to 2400 acres of farmland. This amount was not much different from the amount required by the Indians of the surrounding area, because native and English populations were farming extensively.

As a town grew older and population increased, the settlement pattern took on a straggled appearance due to the different field systems used. "Neighborhoods" might be no larger than a few houses roughly grouped together, each surrounded by its barns and outbuildings. Larger villages embraced a few more houses, one usually being a "public house" which sold beer and wine. The village from which the town took its name contained the meeting house, as well as a few more houses and public houses than the surrounding villages. Outside the villages and neighborhoods were scattered the individual farmhouses, each with its barns, outbuildings and fields (Rutman 1967:24).

TECHNOLOGY

Most families, unless they were wealthy, lived in a one room, clapboard house with a garret above. Additions, such as a second room or a lean-to, were added as the family grew (Rutman 1967:30-31; Dow 1935:14-20, 35).

The use of English technology had a direct affect on the resources on which the
Native Americans depended. Guns, for example, were an important factor in the dwindling of wild game. Deer could be killed from a greater distance and with more accuracy. Also, natives were now competing with large numbers of settlers for game. This strain on the game resources forced the Indians to rely on domesticated animals. Near the end of the seventeenth century deer must have been quite rare, because Massachusetts passed a law restricting the hunting of deer (Elliott 1954:135; Williams 1972:222). The deer population in the rest of southern New England was probably also low.

The earliest settlers had no plows and had to plant corn in Indian fashion, with a hoe. Even later on, much of the farming equipment was crude and scarce. Many tools were "home-made". This was probably another crucial factor in the low productivity of the early fields (Walcott 1936:229; Chitwood 1931:425-436; Rutman 1967:33-34).

TRADE

Although natives traded among themselves prehistorically, it was a small scale trade between neighboring tribes, and had no real effect on settlement patterns or land use (Salwen 1978:166; Snow 1980:76). It was only after the Indians entered the large scale trade network of the English that settlement patterns and land use were affected.

The fur trade in southern New England, although of small economic import itself, did have some significance in the expansion of New England. Traders pushed into the wilderness and sent back information to the settlers on the surrounding terrain and also struck up friendships with the natives there (McManis 1975:45; Adams et al. 1933:5).

Wampum was used as a medium of exchange between Indians and English settlers. In order to obtain valuable European trade goods, Indians began to make more of it. Some settlements of these wampum producing tribes of Long Island, Rhode Island, and coastal Connecticut became year-round establishments based on trade, facilitated by iron wampum drills. The Indians who before had been drawing away from a riverine pattern, now began to reverse and locate themselves back near waterways, which were important for English trade (Williams 1972:218-225; Thomas 1976:14).

One major area of difference between native and English settlement patterns was the establishment of large English urban centers, based on large scale trade. Some small scale trade between Indians had created no large urban centers.

LAND POLICY

England had been moving more and more towards intensive agriculture. Although the highest level of production would come from an intensive cultivation, early New England farmers chose to farm extensively, obtaining more land instead of putting more labor into smaller holdings (McManis 1975:71-72; Weinstein: personal communication; Rutman 1967:60-62; Chitwood 1931:435).

It was mentioned earlier that a native, prehistoric custom of sharing land with refugees from other tribes existed. A distorted version of this custom seems to have been practiced when the English settlers landed. Although the English were the newcomers and might have been considered refugees, the Indians who occupied the land looked to them for protection. In return for protection, the Indian sachems allowed the English to use their land. Many times the English treated the early land deeds as releasing, and not just conveying an interest in, the soil. However, settlers living in the interior, away from the large and numerous coastal settlements, were probably more obliging (Connole 1976:16; Hallett 1959:35). Connole (1976:16) states that when an Indian sachem died, the settlers would obtain confirmation of an existing deed from the next sachem, with payments in money and goods.
SUMMARY AND CONCLUSIONS

The English settlers brought traditional settlement patterns and methods of land use to New England. However, New England was not transformed into a replica of England. The environment of southern New England, although similar to that of England, was different in some important respects, and the colonists came to depend, at least for a while, on the native's techniques of environmental adaptation. Settlers were growing more native corn, using native planting traditions, than they were growing English crops, and using English planting traditions. As a result, corn became the staple crop of the settlers and the basis of most of their meals.

Indians were now competing with the English for the same resources and land. The extensive protein base of the Indians, provided originally by deer, etc., was greatly diminished, and as a result, the natives came to depend more on the English domestic animals for the same need.

Both Indians and colonists farmed extensively, but for different reasons. The natives lacked the technology to farm more intensively. The settlers' acquisition of land was hastened by the commercial and symbolic values they assigned to the land. Settlers also wanted enough land to leave as inheritance to their sons.

The Indians had been willing to share their traditional territory with the settlers. However, because of the natives' migratory settlement pattern, colonists were able to appropriate Indian farm land, usually the most fertile, during a season or year the Indians were away. This was probably especially the case as the English population outgrew the native population.

Because of the Indians' desire to obtain English trade goods, they became strongly dependent on the settlers to supply the trade items. This further hastened the takeover of land and resources by the English settlers and led to the acculturation of the native inhabitants of New England into colonial society.

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In the spring of 1980, a new area was tested at the Charlestown Meadows site, Westborough, Massachusetts. This area, a large, flat terrace, was located considerably to the south and west of areas previously investigated and lay on the west edge of the ancient shoreline of the Assabet River. It is designated Area III in published reports of the site (Hoffman 1980, 1982, 1983a, 1984). The plowed field, which is closest to the Luuko house, has seen repeated plowing, and each year numerous artifacts are recovered from its surface. These include Laurentian, Neville, and Small Stemmed points of local quartzites, Boston basin felsites, and quartz, as well as a small number of large rough and ground-stone tools of local schist and basalt: mullers, spades, "corn planters", and one pestle.

The goal of the investigation was to test whether prehistoric use of the terrace was similar in intensity and function to that found in Area II, to the north of the ancient shoreline. A north-south transect of eight 1.6 meter test pits was excavated at 4.8-meter intervals along the W34 line, from S37W34 to S58W34. Two of the units, S46W34 and S55W34, were extended into the adjacent square eastward or westward, respectively, to pursue features that appeared in them. The method of excavation consisted of
using hand tools, at 1 cm arbitrary levels within natural soil horizons. All soils were screened through 1/4 inch hardware cloth. The crew consisted of students in the "Fifth Module" program at Clark University.

The results of this transect, in terms of material remains, were rather modest. Forty-nine artifacts and 231 flakes were recovered. The only diagnostic artifact was a felsite Jack's Reef Corner Notched point. Thirty-one flakes of honey-brown to red chert were found, all in the plow zone. All but one of the ten squares contained flakes of this material. Seven of these flakes, along with a red jasper core that had been surface-collected in the same field years ago, were submitted to Dr. Barbara Luedtke at the University of Massachusetts, Boston for neutron activation analysis. The results (Luedtke, 1982) suggest that the source of this material was somewhere in the Veracruz, Pennsylvania area, although the exact locus could not be specified. Trading of exotic chert from Pennsylvania is emerging as a feature of Middle Woodland components in southern New England (Barber, 1982). This attribution is supported by the surface-finds of implements which could have been used for intensive seed- or cultigen-processing, as well as the Jack's Reef Corner Notched point, a Middle Woodland diagnostic.

Feature recovery was fairly high. Only two squares lacked features; and as noted above two features were pursued into adjacent squares. Most of the features were shallow bowl-shaped depressions filled with bright red earth. The largest of these was 135 x 100 cm in dimension, and had a surviving depth of 27 cm. These features were almost totally devoid of both debitage and flotated organic remains (Largy, 1984). They had been severely truncated by the intensive plowing that has taken place in this field. It was therefore impossible to ascertain whether they were associated with the above Middle Woodland component or whether they belonged to a Late Archaic component contemporary with the other areas tested at the site. Surface-found projectiles could support either interpretation.

Accordingly, a second transect was opened after the end of the field school, north of the edge of the plowed field and running east-west along the S29 line. Crew consisted of members of the W. Elmer Ekblaw Chapter, Massachusetts Archaeological Society. The sampling interval was eight meters. Four 1.6-meter squares were opened, from S29W24 to S29W39. The last square was not completed by the close of the 1980 season and was finished in 1981, along with an additional square at S29W54. In S29W29, a large red-earth feature, Feature #51, was found, and was pursued into S29W30 (Figures 22 and 23). It is this feature which is the focus of the remainder of this report.

The total size of Feature #51 was never determined, since it encompassed the entire north-south extent of S29W29 and S30W29. It also extended east of these two squares. The western edge appears to have been about 70 cm west of the eastern edge of these squares, although an irregular arm of the feature extends westwards from this beyond the western edge of S30W29. Soil cores taken between S29W29 and S29W24 showed normal orange aeolian soil to be present, so the eastern extent was probably no greater than 4 meters. The maximum depth below junction was 15 cm; unfortunately, this feature too had been truncated by the plow, even though it lies today beyond the edge of the plowed field.

Still, this is a very large feature, probably similar in area to Feature #20 in Area II, which I have interpreted as a smoking pit for aquatic resources (turtle carapace/plastron bones have emerged from flotation analysis of soil from that feature). Feature #20 also contained within it 5 post molds arranged in two parallel rows, and two firepits. While no post molds were recovered from any square in Area III, a firepit was found within Feature #51, in S30W29. It had a maximal diameter of 35 cm, and a depth of 12 cm. A charcoal sample was submitted for radiocarbon analysis; the date received was 5100+/-250 radiocarbon years (GX-10094). The date was funded by a match between Ekblaw Chapter and the Chronological Dating Fund of the Massachusetts Archaeological Society, to both of which the author is very grateful.

The red earth feature, which is presumed to have resulted from heat-alteration of
soil surrounding the firepit, contained 63 flakes and 11 artifacts. Additionally, 117 flakes and 11 artifacts were recovered from the topsoil; and three additional artifacts were recovered from the subsoil but outside the feature. It should first be noted that this is a much denser recovery than in the first transect; flakes per square averaged 90 as opposed to 23.1; artifacts per square averaged 12.5 as opposed to 4.9. Material preferences differed most strongly for quartz, felsite, and chert. In the first transect, quartz was slightly less common than felsite (30.3% versus 31.1% of the assemblage), while chert was only slightly less common than quartzite (13.4% versus 17.3% of the assemblage). In the two squares under discussion, quartz was almost twice as common as in the first transect (60.1%), while felsite was less than one-third as common (9.4%) and chert was almost absent (1.0%, 2 flakes, neither within the feature).

The artifacts found within Feature #51 were an argillite Vosburg point, a dark grey felsite flake scraper, a crystal quartz flake knife, a crystal quartz flake scraper, a quartz steepedge scraper, a quartz stemless knife base, a quartz drill stem fragment, a quartz core, a quartz biface fragment, a granite hammerstone, and a granite slab polished smooth on one face. Artifacts found outside the feature but within the subsoil included a utilized flake, a plain drill, and a steepedge scraper, all of quartz. Artifacts found in the topsoil of the two squares included a dark grey felsite stemless knife base, a schist discoidal scraper, two quartz stemmed knife bases, a quartz knife midsection, a quartz thumbnail scraper, a quartz utilized flake, a quartz burin, and three quartz biface fragments.

Flotation samples taken from the fill of Feature #51 were analyzed by Tonya Largy
Figure 24 - ARTIFACTS, FEATURE 51

a, e, i: flake scrapers; b, h: drill fragments; c, m: knife bases; d: flake knife; g: utilized flake; j: chopper; k: hammerstone; l: Vosburg point; n: smoothing stone.

Materials: a - j, quartz; k, n: granite; l: argillite; m: felsite.
While plant recoveries were not as abundant as in samples from Areas I and II, they included 3 charred fragments of *Carya sp.* (hickory) and a charred seed of *Polygonaceae* (buckwheat family). A fragment of calcined mammal bone, unidentifiable, was also recovered. Hickory fragments were also found in two other features in Area III (#42 in S46W33 and #48 in S29W34). They were also found in seven features elsewhere on the site. Hickory nuts are available in late summer to fall; while buckwheat family plants (sorrel, etc.) could be obtained from spring to fall.

The date of 5100+/-250 is significant. It substantially confirms the 5225+/-225 retrieved from Feature #63 in Area Ib (Hoffman, 1983a). Its association with the Vosburg point is, moreover, much tighter than the Laurentian associations of the latter feature, since the point was found at junction within the red earth fill. The fairly high percentage of quartz debitage was not expected, since most dated sites of the period 6000-4500 B.P. in southern New England contain lower quartz percentages; the average is about 30% (Hoffman, 1983b). Of course, the recoveries from a single pit may be skewed due to a localized event, such as a single flaking sequence with a quartz cobbles (and a quartz core was found in the feature). The combined percentage of quartz for all Area III squares is 35.0% (227/648), which is more in line with the average.

It should be recalled, however, that Area III contained a Middle Woodland component, whose cultural remains (excepting the chert) it is impossible to separate from the Late Archaic component, so this figure itself cannot be considered reliable. Nor can the presence of hickory in the features be used to conclude that they belong to the Late Archaic component, since hickory is reported to have been growing in the area of Charlestown Meadows within 50 years of the present time by Mrs. Lillian Harding. Thus, while Feature #51 clearly indicates a Late Archaic summer-fall occupation, focused on tool manufacture and preparation of gathered foods, this evidence cannot be generalized to the rest of Area III. Both activities, moreover, are far less pronounced than in Areas I and II, where debitage recoveries are from one to two orders of magnitude greater.

The most enigmatic item recovered from Feature #51 is the granite slab. Roughly in the shape of a rectangle and measuring 134x43x27 mm, it was closely associated with the hammerstone (8 cm apart). One long face had been ground smooth, while the other faces remained rough. It was provisionally typed as a "smoothing stone"; any suggestions others may have as to its function would be most welcome.

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