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BRONSON MUSEUM

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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.

INTRODUCTION

John Rosser

The Green Hill site (M35-W-11) was occupied chiefly during the Middle and Late Archaic periods. This interdisciplinary report includes studies on the geology, recent wild fauna, paleoethnobotany, lithic and other cultural remains at Green Hill, presented in such a way as to emphasize the role of the site within the context of the Blue Hills locale. The series of reports appears in two parts, with combined bibliography, occupying both issues of Volume 41 of the *Bulletin*. It is concluded that the site was used for the manufacturing of stone tools, and perhaps for the procurement and processing of game. The site is presently being nominated to the National Register of Historic Places as part of a Blue Hills conservation district.

SITE LOCATION AND LAND USE

The site is located on the Milton-Canton line in Massachusetts, on the fringes of the Blue Hills Reservation near the Neponset River (Fig. 1). The site encompasses all of the Metropolitan District Commission's purchase of 78.44 acres from the Augustus Hemenway estate in 1940.

In 1883 Augustus Hemenway purchased several acres of the site from a family of horse fanciers whose stables then graced the neighborhood. By about 1900 the Hemenways had purchased the remainder of the site and had situated their "South Farm" a few hundred yards south of the present area of the excavation. The gentle slopes around the site's kame hill, which had been used for occasional tillage prior to 1883, reverted back to grazing land. The Hemenway's cow pasture was situated just east of the hill. On the site partridge and quail were hunted and on the hill itself, virtually treeless until about forty years ago, strawberries could be picked in season amid a scraggly undergrowth which discouraged all but the most intrepid (Hemenway 1976; Homans 1976). Quite possibly the hill has been little disturbed by human activity since prehistoric times. In any case the present mixed pine and hardwood cover resembles the hill's prehistoric appearance (Kaplan, this issue). For several years in the 1960s part of the lower west field was turned into a truck garden.

HISTORY OF THE EXCAVATION

In the furrows of that truck garden, Robert Martin and Bernard Cochrane picked up over 200 stone tools in the early spring of 1966. Because of a serious threat of highway construction, some excavation was undertaken immediately (the irregular areas in Fig. 2) and in May of 1966 a quadrant grid was established at the western base of the hill (Figs. 2, 3).

From 1966-1970 Dana Seavers, Robert Martin, Bernard Cochrane, soon joined by Guy Mellfren, Al Lowry, Richard Parker and several occasional excavators, worked at the site (then called "Green Street") during the summer months. From 1970-1972 work ceased, partly because of the more important salvage excavation at the Brook Meadow site (Parker 1973). In the summer of 1972, work resumed under the direction of Richard Parker, Ross McCurdy, Kenneth Menzies and Al Lowry. The site was renamed "Green Hill" and a grid of a different type was laid out (Figs. 2, 3; see Robbins 1973:86-97 for the grid type), though unfortunately it did not mesh precisely with the 1966 grid. In 1972 Richard Parker introduced flotation procedures for selected feature samples.

The tempo of the excavation increased considerably from 1974-1976 when classes from the Cambridge Center for Adult Education (directed by Curtiss Hoffman) and from Boston College (directed by John Rosser) excavated at the site. Trial probes were opened in 1975 on top of the kame hill and in the west lower field (Fig. 2). From 1976-1978 excavation at the site ceased in order to clear up an increasing backlog of laboratory

analysis. The latter was done by chapter members at the University of Massachusetts (Harbor Campus) under the direction of Professor Charles Nelson. In 1978, excavation resumed again under new guidelines proposed by Professor Nelson.

EVALUATION OF THIS STUDY

The Blue Hills have long been known as an important source of aboriginal lithic materials (Dincauze 1974:56), a fact dramatically affirmed in recent years by the discovery of a major quarry site (Bowman and Zeoli 1977). There is certainly evidence that sites in the Blue Hills were used for tool manufacture (e.g. Cote 1958:24; Bowman and Zeoli 1977:43; Martin 1977:58) and one wonders if Green Hill may have been a "transit camp" for making stone tools. It has been suggested that preform cores and blanks were taken from the previously mentioned quarry site to yet other sites in the Blue Hills, sites which offered living areas where tool manufacture could be completed (Bowman and Zeoli:43-45). Was Green Hill such a site?

There is some evidence that it was. DeNatale (this issue) demonstrates that at least one rock type used to manufacture tools at Green Hill came from a small, nearby quarry. It seems likely that when such analysis is completed, other Green Hill rock types will be shown to have originated from the Blue Hills' major quarry site. However Green Hill was no mere transit camp for tool manufacture, since Roberts (Vol 41 (2)) shows that the site's full tool inventory was being *used*. Moreover, it seems reasonable to infer that Green Hill's projectile points, and its cutting and scraping tools, were used for hunting and processing game, probably the turkey and deer known to have existed in large numbers in Late Archaic southern New England (Dincauze 1974:47). That Green Hill might have been attractive in this regard is suggested by the variety of wild fauna which flourished at the site in recent times (Stanhope, this issue). Autumn would be the obvious time to hunt deer and there is some evidence for an autumn occupation (Kaplan, this issue).

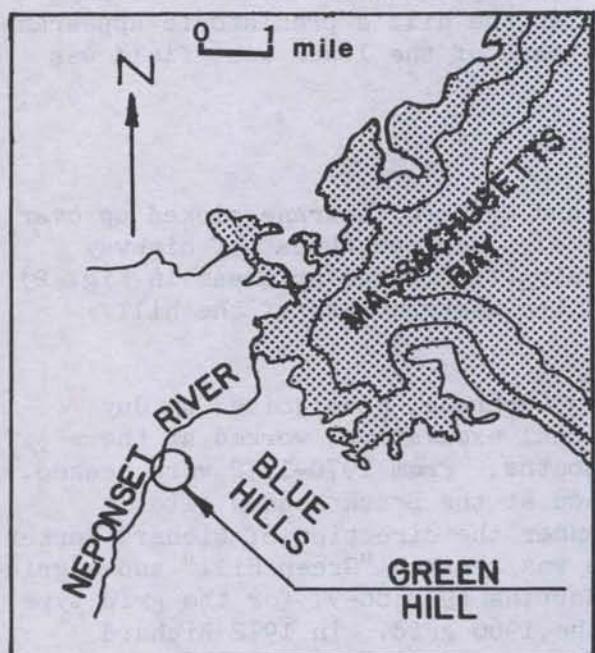


Figure 1. BOSTON BASIN AREA, showing the general location of the Green Hill site (M-35-NW-11) in the Blue Hills.

Thus one can envision an autumn camp site along the Neponset River, a site which offered easy access to felsite quarries in the Blue Hills, which provided living areas for tool manufacture, and from which game could be hunted. Some of the chopping tools at Green Hill might have been used to make temporary shelters, such as the one conjectured from Feature 66 (Vol. 41 (2), Fig. 9) with its radiocarbon date of 4390 ± 70 B.P. - 2440 B.C. (UGa-1236).

The above activities can best be inferred for the Late Archaic period at Green Hill. Indeed, the Middle Archaic component at the site is still relatively unexplored. It obviously does exist, and is in fact of potentially great importance for our understanding of the "Atlantic Slope macrotradition" (Dincauze 1976:139-142) in southern New England. The earliest Green Hill radiocarbon dates (UGa-500: 7875 ± 230 B.P. - 5925 B.C., and UGa-580: 7950 ± 95 B.P. - 6000 B.C.) from a refuse dump in Section A (Vol. 41 (2), Fig. 8) are roughly contemporary with the important Neville site (Dincauze 1876:103, Table 8). In fact Green Hill has some distinction at

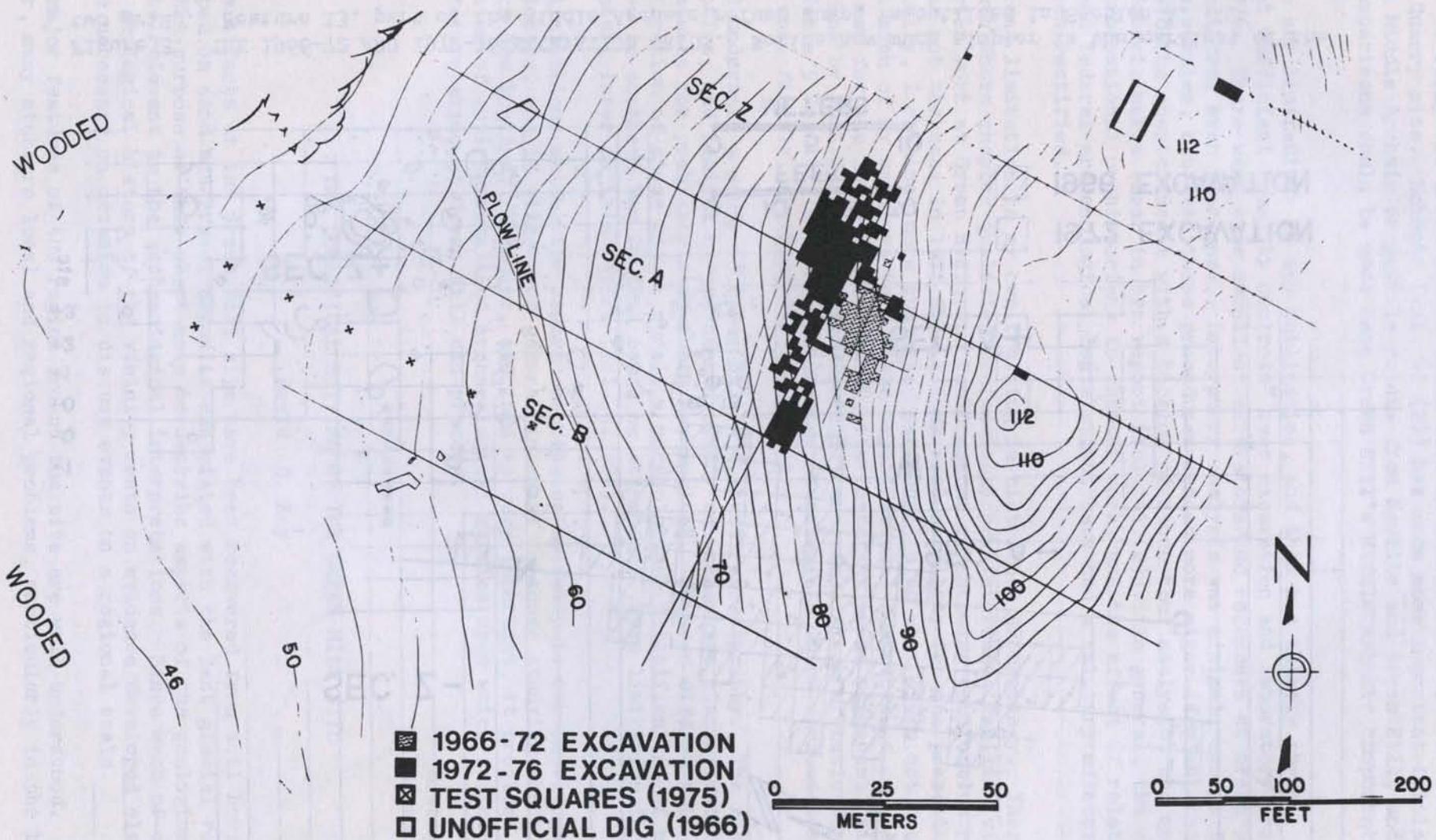


Figure 2. TOPOGRAPHICAL MAP OF THE GREEN HILL SITE. Over 90% of all excavation at Green Hill is from two major grid areas (1966-72 and 1972-76) at the base of Green Hill. The 1975 test squares were placed at 50 foot intervals in the lower field, where irregularly shaped "unofficial dig" areas can also be seen.

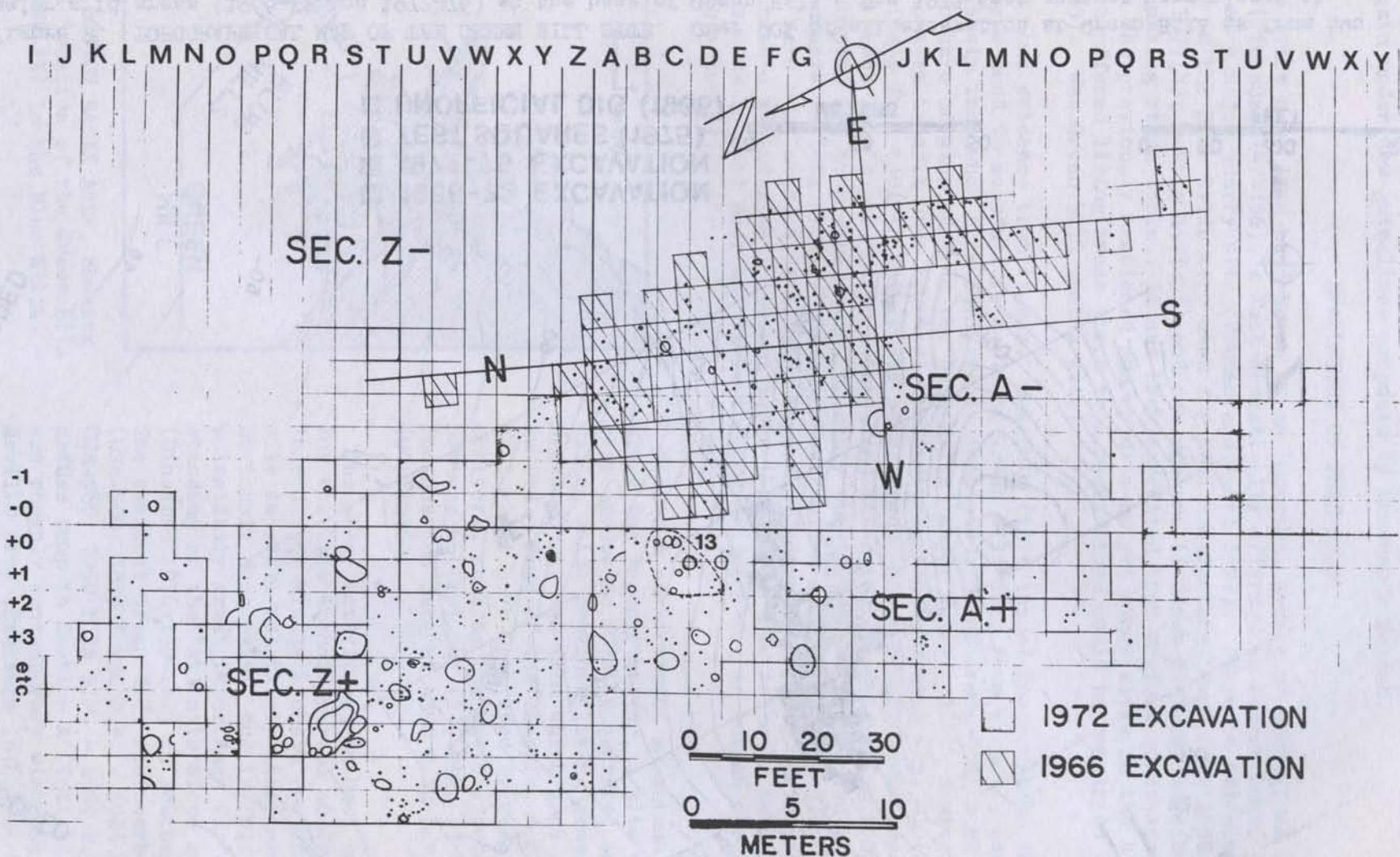


Figure 3. THE 1966-72 AND 1972-76 EXCAVATION GRIDS. Notice how much simpler is the earliest of the two grids. Feature 13, part of the Middle Archaic refuse dump, is outlined in Section A.

present in being the third oldest dated site in Massachusetts, after Bull Brook and the Saugus Quarry site. Roberts (Vol. 41 (2)) has made some important initial comparisons between Middle Archaic projectile points from Neville and Green Hill, and presumably more such comparisons could be made once Green Hill's Middle Archaic component is better defined.

There are limitations to any publication, and this has chiefly three. First, there were not sufficient "quality controls" over excavation and laboratory procedures from 1966-1976. There were some excellent excavators and recorders at Green Hill, but also some mediocre, even poor ones. Laboratory analysis was minimal, except for selected feature samples, but even these procedures needed more rigor (Kaplan, this issue). From 1976-1978 the chapter dealt with a backlog of stone tool analysis, the necessity of which Roberts makes clear in his report (Vol. 41 (2)). In general, the commitment of a few professional prehistorians to chapter work, and the effect of relatively recent state and federal archaeological legislation, have had a salutary effect. Old mistakes have been rectified.

A second limitation is my own training in historical archaeology. There are now in the South Shore chapter qualified professional prehistorians, familiar with and committed to chapter work at Green Hill, who could assume forthcoming publication responsibilities. Such was not the case in 1975 when I took responsibility for the present report. Essentially, I obtained more qualified personnel to do what I was not trained to do. In fact much of my work was very basic organizational spadework, *e.g.* the creation of a grid map for the 1972-76 excavations, the installation of permanent datum points in 1976 (done by Paul Ryll and Ronald Haskell), the compilation of basic feature information (*e.g.* Table 5 Vol. 41 (2)), the collection of materials which various contributors needed and, finally, synthesis of the results.

I did undertake a study of Green Hill's cultural stratigraphy. The results are mostly descriptive, and limited by the dearth of any comprehensive classification of artifacts and features for prehistoric southern New England. However difficult is the morphological classification of stone tools, surely a morphological classification of prehistoric features in southern New England could be attempted. This limitation is discussed in some detail later in this report (Vol. 41 (2)).

Its limitations aside, the report contributes usefully to our knowledge of the Blue Hills locale, and it will be of general interest to those studying the prehistory of southern New England. Moreover, and this is very important, it provides a reasonable foundation of environmental and archaeological studies upon which further investigation and interpretation at Green Hill can proceed.

Boston College
December 1979

THE GEOLOGICAL SETTING OF THE GREEN HILL SITE

David C. Roy

The artifacts at the Green Hill site have been recovered from soil horizons that developed on sand and gravel deposits associated with the last glacial retreat (Figs. 1, 4). It is the purpose of this short note to describe aspects of the geological context of the site relevant to the archaeological interpretations. Since much of our understanding of the geological history of the vicinity rests on evidence developed elsewhere, it will be necessary on occasion to discuss events on a regional scale.

The major features of the region around the site are well understood. There are, however, many stubborn local and regional problems, particularly in the bedrock geology,

that have not been satisfactorily solved. The bedrock and surficial geology of the Norwood Quadrangle have been mapped and described by Chute (1966) who provides a suitable bibliography. Chute (1969) also mapped the bedrock of the Blue Hills Quadrangle adjacent to the east. Billings (1976) provides an overview of the bedrock geology of the Boston area which includes the area of the site. Excellent presentations by Flint (1953) and Schafer and Hartshorn (1965) of the Pleistocene and Recent history of New England are also readily available.

The geology of the Green Hill site is relevant to the archaeology in several ways. First, the most recent geological deposits, both locally and on a regional scale, define temporal limits for the period of habitation. Second, erosion and redeposition of the deposits may have caused the shifting and burial of artifacts and thereby influenced the cultural chronology. Third, the types and distribution of bedrock may have constrained local tool making and other activities. Finally, the possibility of misinterpretation of naturally shaped rock fragments having the appearance of tools must be considered where tools are found in soils developed on glacial or glacially-related deposits.

To the archaeology of the site, the geological history of the Pleistocene and Recent Epochs is most important and will be treated first. The bedrock geology is important to the third consideration cited above; this is treated further by DeNatale (this issue).

PLEISTOCENE AND RECENT GEOLOGIC EVENTS

Four major periods ("stages") of glacial advance are traditionally recognized in North America: the Nebraskan, Kansan, Illinoian, and Wisconsinian. These stages were separated

by significant periods of retreat of the ice sheets during which glacial deposits (till) and glacially derived stream deposits (outwash, kames, and eskers) and wind-transported deposits (loess) were laid down. In New England, most of the glacial deposits are considered to be of the Wisconsinian stage; only in a few places have multiple tills been observed (Kaye 1961, 1964a, 1964b; Flint 1961). The Wisconsinian deposits are the only ones that can be dated by the C^{14} method and their generally little-weathered character permits, in many areas, the subdivision of the Wisconsinian stage into deposits representing numerous minor advances and retreats of the ice mass. The southernmost terminal

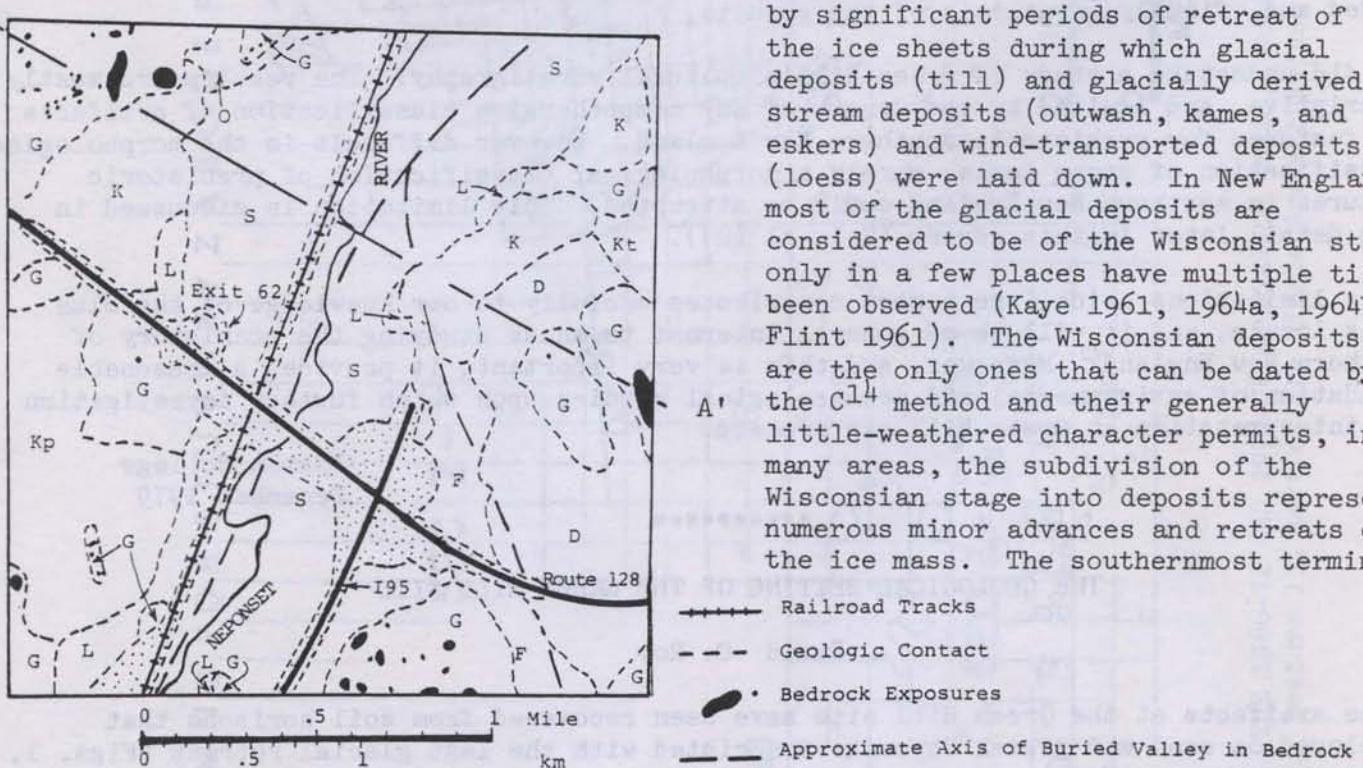


Figure 4. SURFICIAL GEOLOGICAL MAP OF THE REGION AROUND THE GREEN HILL SITE (MODIFIED FROM CHUTE 1966). The surficial deposits are designated as follows: K, kame fields; Kt, kame terraces; S, swamp deposits; G, ground moraine; Kp, Kame plains; O, outwash plain deposits; D, delta deposits; F, alluvial fan deposits; L, lake deposits (?). Stippled areas along highway and railroad rights-of-way are land-fill deposits. Section A-A' is shown in Figure 5.

Wisconsinian moraines on Long Island, Martha's Vineyard, and Nantucket are thought to have been formed between 15,000 and 20,000 years ago (Schafer and Hartshorn 1965). The retreat of the ice began between 14,000 and 15,000 years ago (B.P.).

Around 12,500 to 13,800 B.P., the active ice margin was in the vicinity of Boston where local morainal deposits were formed (Kaye and Barghoorn 1964; Kaye 1961). Most recent investigators of the Wisconsinian glacial deposits believe that, south of the active ice margin during the retreat, a zone of stagnant or inactive ice was present. This inactive ice melted in place, leaving complicated deposits of poorly sorted debris (ablation till) and better-sorted and stratified deposits (stratified drift) formed by streams and in lakes located around and in the melting ice blocks. Both ablation till and stratified drift characterize the immediate vicinity of the Green Hill site. It is probable, though not well established, that the Neponset River valley was ice-free by at least 12,000 B.P.

The unconsolidated glacial deposits of the Neponset River valley fill a deep valley in the bedrock (Fig. 5) that was partially excavated by the glaciers, but was also probably a pre-glacial valley as well (Chute 1966; Crosby 1939; Upson and Spencer 1961). Bedrock valleys tributary to the main Neponset Valley are also present, but are less well expressed by the surface topography. The inferred axis of one of these is shown by Chute (1966) to underlie the Green Hill site and to extend southward beneath the present course of Ponkapoag Brook (Fig. 4). Bore-hole data, cited by Chute (1966) suggest that the Neponset River bedrock valley floor is at least 80 feet (24 m) below the Green Hill site as illustrated in Figure 5, but it is exposed on Little Blue Hill about 4,200 feet (1,300 m) to the southeast (Fig. 4).

In the vicinity of the Green Hill site the bedrock is covered by glacial till of variable thickness. The till consists of a poorly-sorted heterogeneous mixture of pebble-, cobble-, and boulder-size pieces of rock, locally derived and usually angular, scattered in a sandy matrix. Generally, no stratification or layering is seen in what appears to be an ablation till. The substrate for the site is stratified sand and gravel interpreted by Chute (1966) to be kame deposits. Kame sands and gravels are deposited in streams, channels, or in lakes along the margins of, or within, ice masses; the deposits are therefore completely or partially deposited against ice ("ice-contact deposits"). As the ice wastes away these stratified deposits slump and become deformed to varying degrees. Chute found kame deposits along valley margins in this area to be patchy and discontinuous. The kame deposits at the site probably overlie till.

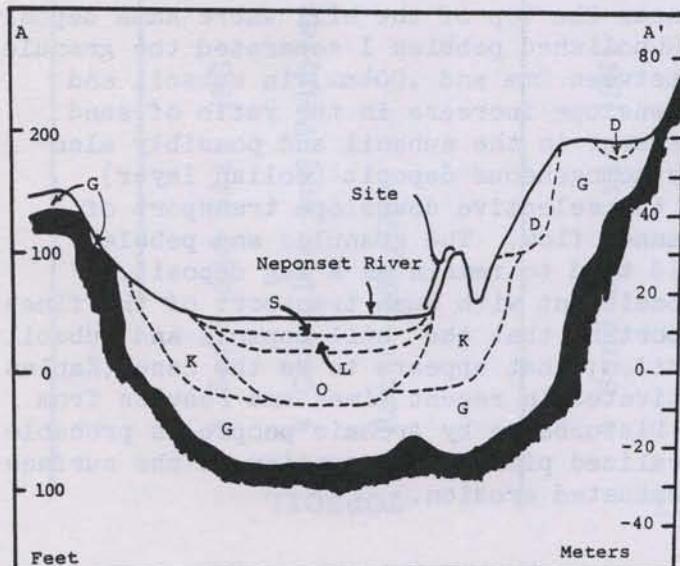


Figure 5. CROSS SECTION PROFILE ALONG A-A' OF FIGURE 4, showing in schematic fashion the vertical relationships of the surficial deposits shown in Figure 4. Bedrock is shown in black. Symbols for the surficial deposits are given in Figure 4. Vertical exaggeration is x19.

Overlying till and probably lapping onto the kame deposits in the near vicinity of the site are non-deformed sands and gravels that Chute (1966) has mapped as a delta deposit (Fig. 4). The delta formed along the eastern edge of a lake, of uncertain dimensions, at the mouth of a stream that flowed west along the southern margin of the Blue Hills. The upper surface of the delta is flat but the western edge of the deposit has an appreciable slope toward the Neponset River flood plain. After the lake drained, the steep delta front slope was eroded producing alluvial fan deposits (sand and gravel) at the base of the slope.

The glacial sequence beneath the Neponset River flood plain is of course not well understood. Bore-hole and map data provided by Chute (1966) suggest the possibility of the sequence of deposits shown in Figure 5. Lake deposits are not well documented in the region and may not be so thick or so laterally persistent as indicated in Figure 5; however, the presence of the delta deposits on the eastern side of the Neponset River Valley suggests some sort of impoundment in the valley which permitted the delta to form.

Though varying in thickness over the area of the site itself, the topsoil and subsoil materials are easily differentiated and remarkably uniform (Table 1), considering the much more variable kame deposits beneath. The subsoil resembles the wind-blown silt and fine sand (usually with scattered pebbles) commonly seen overlying glacial deposits in southeastern New England and reported to be common in the Norwood Quadrangle by Chute (1966). I am inclined to believe that the subsoil was originally deposited as part of the glacial sequence. This conclusion is based on: (1) the presence of the subsoil on top of the hill as well as on its slopes; (2) the similarity of the deposit to eolian deposits elsewhere; (3) the sharp boundary between the subsoil and the underlying kame gravels and sands; and (4) the absence of evidence that it is an *in situ* alteration product of the underlying kame deposits. The topsoil is texturally very similar to the subsoil and appears to have developed by minor weathering alteration of the subsoil combined with organic enrichment. Downslope reworking of both topsoil and subsoil materials is probable as described below; the reworking, together with chemical breakdown, may account for the sand-plus-silt to granule-plus-pebble ratio being systematically higher in the topsoil than in the subsoil as shown by the data of Table 1.

The subsoil is archaeologically the most important layer since most of the prehistoric cultural remains are found within it. Two observations suggest that downhill movement of subsoil material has occurred since the original material was deposited. First, the subsoil is thicker at the base of the hill and in the meadow than at the top of the hill and along its upper slopes (see the balk profiles in Fig. 7, Vol. 41 (2)); indeed, the subsoil (and topsoil) are absent locally near the top of the hill where kame deposits are exposed. Second, during my search for wind-polished pebbles I separated the granule and pebble fraction (material with grainsize between 2mm and .004mm) in subsoil and topsoil samples. An interesting systematic downslope increase in the ratio of sand and silt to pebbles and granules is clearly present in the subsoil and possibly also in the topsoil. If one imagines an originally homogeneous deposit (eolian layer), this increase in the ratio is consistent with the selective downslope transport of sand and silt by sheet run-off and rivulet channel flow. The granules and pebbles would be less mobile during transport and would tend to remain as a lag deposit. Downslope thickening of the subsoil is also consistent with such transport of the fines. For the support of these conclusions it is important that the hill topsoil and subsoil be little mixed or moved by historical cultivation; that appears to be the case (Kaplan, this issue). The meadow has clearly been cultivated in recent times and results from those samples may be significantly affected. Disturbance by Archaic people is probable on the hill, but was presumably limited to localized pits and disruption of the surface vegetation cover, all of which would have accentuated erosion.

	Hill Crest (-N24, Sec Y)	Hill Base (+P6, Sec Z)	Middle Meadow (+O40, Sec B)	Far Meadow (+X80, Sec B)
TOPSOIL	% Sand and Silt (SS)	59.7	95.6	95.3
	% Granules and Pebbles (GP)	40.2	4.4	4.7
	Ratio (SS/GP)	1.48	21.7	20.7
SUBSOIL	% Sand and Silt (SS)	53.1	89.6	93.1
	% Granules and Pebbles (GP)	46.9	10.4	6.9
	Ratio (SS/GP)	1.1	8.6	13.5
KAME DEPOSITS	% Sand and Silt (SS)	17.7	64.2	53.0
	% Granules and Pebbles (GP)	82.3	35.8	47.0
	Ratio (SS/GP)	.22	1.8	1.1

Table 1. Grainsize Subdivisions of Topsoil, Subsoil, and Kame Deposits at the Green Hill Site. Samples were split using a 10-mesh sieve (2mm).

On one hand, the downslope transport of the archaeological matrix is troublesome since it reduces the chances for an unaltered tool chronology. However, in the geological environment of the site it is probably a major mechanism by which tools or other cultural features were buried. It is certainly important in the preservation of the bowl-shaped features ("charcoal refuse pits") which appear to retain some modicum of stratigraphic superposition.

No unequivocal wind-polished pebbles ("ventifacts") have been observed in the subsoil or topsoil, although they are fairly common in eolian material elsewhere in the region (Schafer and Hartshorn 1965). Faceted ventifacts, though rare in the eolian deposits, can be mistaken for artifacts, especially rubbing stones. My fruitless search for ventifacts in the excavated portions of the site may have been frustrated by diligent excavators.

The present topsoil apparently post-dates the formation of Feature 66 in late Archaic times (C-14 date of 4390 ± 70 B.P.; Rosser Vol. 41 (2)); this observation provides an interesting limit on the time it takes for a soil profile to develop in this type of setting and climate. No buried early soil horizons were observed during the excavations. Soils older than Feature 66 may have been thin and thus destroyed by downslope reworking and subsurface leaching.

THE BEDROCK GEOLOGY

The glacial and post-glacial deposits almost completely cover the bedrock of the region. Chute's (1966; 1969) maps of the Norwood and Blue Hills quadrangles are excellent and his discussions should be consulted for details. Here I shall simply summarize the known and inferred bedrock geology of the immediate vicinity of the Green Hill site.

I. COARSE-GRAINED GRANITE COMPLEX. A variety of slightly altered "pink"-to-gray granites (or allied rocks) of Late Precambrian age (about 600 million years old) are exposed in the hilly terrain across the Neponset River in Dedham. These rocks are inferred by Chute to be beneath the Green Hill site itself.

II. ALTERED SEDIMENTARY ROCKS OF LATE CAMBRIAN(?) AGE. Small exposures of quartzite and slate reported to contain poorly preserved brachiopods (Rhodes and Graves 1931) have been found just west of the site near Interchange 62 on Route 128 (Fig. 4)

III. QUINCY GRANITE. Northeast of the site in Milton are the westernmost exposures of the well-known Quincy Granite. Though highly debated, the age of Quincy granite is probably Silurian (Sayer 1974)

IV. BLUE HILLS GRANITE PORPHYRY. Southeast of the Green Hill site, on Little Blue Hill, are exposures of a fine-grained gray granite and felsite which are part of the Blue Hills Granite Porphyry that forms the high hills of the Blue Hills Reservation. Although the rock unit is compositionally uniform and in the granite family of igneous rocks, it varies considerably in grain-size. The coarser phases are nearly true granites, but most of the exposures show visible quartz and feldspar grains scattered in a very fine-grained matrix producing a rock more properly called a rhyolite (Crosby 1900; Chute 1940, 1969; Sayer 1974).

V. MATTAPAN VOLCANIC ROCKS. Layered fine-grained rhyolitic tuff (solidified volcanic ash) assigned by Chute (1969) to the Mattapan Volcanic complex is widespread in the eastern part of the Blue Hills Reservation and may be seen outcropping on Wampatuck and Pine Hills. Similar rocks are also found in the western part of the reservation on Great Blue Hill and Breakneck Ledge (Kaktins 1976). The age of the Mattapan Volcanic rocks is not well understood, they are considered to be of Devonian or Mississippian age (Billings 1976), but may be much older.

VI. SEDIMENTARY ROCKS OF PENNSYLVANIAN AGE. South of the Green Hill Site and Route 128 are exposures of the Pondville Conglomerate and the stratigraphically younger Wamsutta Formation (Fig. 4). The Pondville Conglomerate is a spectacular boulder conglomerate with boulders up to a meter in greatest dimension. The overlying Wamsutta Formation consists of inter-layered gray or reddish sandstone and red shale. Both of these formations are clearly younger than all of the previously described rock units since pebbles and boulders representing most of the older units are found in the Pondville Conglomerate.

The abundance of fine-grained, quartz-rich, "flinty" rhyolitic rocks in the Blue Hills area may well have influenced the persistent use of the Green Hill site by native peoples. These rocks, abundant in groups IV and V described above, are especially useful for tools with sharp cutting edges. Since these rock types are more resistant to erosion, they are conspicuous hill-formers wherever they occur. At present, these hills are used as platforms for observation and signalling; it seems quite likely that prehistoric peoples may have used them for the same purposes.

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Boston College

PETROGRAPHY, X-RAY DIFFRACTOMETER ANALYSIS AND QUARRY SITES

Douglas NeNatale

In the spring of 1975, I attempted to trace rock materials from Green Hill to their respective quarry sites. An extensive collection of flaking debris was made at the site in which visual examination distinguished nine probable rock types. In order to check these tentative identifications, I made a thin section for each of these nine classes, as well as a powder of each for x-ray diffractometer analysis. A thin section is a slice of rock, mounted on a glass slide and then ground to a thickness of 0.03mm, which is then observed microscopically to determine its petrography (i.e. the mineralogical and textural description and classification). The x-ray diffractometer is an instrument which determines the distances between crystal lattices - the "d-spacings" - of minerals. Every mineral has a distinctive set of d-spacings which have been catalogued for reference. The x-ray diffractometer was used primarily to confirm petrographic data.

After petrographic and x-ray data had been obtained, it was clear that there were only five rock types, the others being duplicates. The geological literature of both the Norwood and Blue Hills quadrangles was then consulted, after which correlation of the petrographic and x-ray diffractometer data with the rock descriptions in the literature was attempted. Subsequently, I made a field search for the quarry sites of these five rock types.

The search naturally began in the area of Green Hill itself. The immediate area around the site, however, is barren of bedrock outcroppings and nearly void of glacial erratics (Roy, this issue). The few glacial erratics which are present, along with the cobbles and boulders from the glacial deposits and stream deposits of the Neponset River, are possible sources of workable stone. The sparse representation among artifacts of two of the lithic types studied, namely RR-D&E and RR-C, may indicate that artifacts of these lithic types were in fact from these very sources. Some confirmation of this is seen in the hammerstones from the site, which are stream-rounded cobbles. These probably came from the Neponset River and the surrounding glacial deposits.

Attention turned to the felsitic rocks of the Mattapan Volcanic Complex. The rocks of this complex were observed on Great Blue Hill in the Blue Hills Reservation, on Hemenway Hill near the Blue Hills Reservoir at Wampatuck Hill, in the Broken Hills which lie just south of Wampatuck Hill on the opposite side of Chickatawbut Road, and on Fox Hill. Within this territory, the felsites of the Mattapan Volcanics Complex vary greatly in texture and color, and somewhat in composition. On Great Blue Hill the volcanic rocks have a pinkish-grey color on a fresh surface, and the phenocrysts (definitions on Table 2) are quartz grains up to about 1 mm in diameter. On Wampatuck Hill and in the Broken Hills the volcanic rocks are grey to black in color, the phenocrysts being either brown or white feldspar (up to 2 mm in length), or quartz, with the matrix having a fine-grained "sugary" texture. Locally, this felsite is layered, displaying the texture of volcanic ash.

The felsites of the Mattapan Volcanic Complex were also observed in the Norwood quadrangle on a hill off Canton Street, Norwood, 3/4 mile (about 1.3 km) west of the Neponset River. Here the felsite is grey and there are phenocrysts mostly of feldspar up to 2 mm in length. Volcanic rocks were also observed in the northwest corner of the Norwood quadrangle, just north of Hartford Street at the Dover-Westwood boundary. Here, the felsite weathers to a tan, and has a fine-grained grey or pink matrix with large phenocrysts of white feldspar. Chute (1966) has recognized this as a separate map unit which he describes as "mvp", a pink porphyritic rhyolite.

Other rocks observed included small outcrops of Mattapan Volcanics in the Norwood quadrangle, extensive areas of the Blue Hills porphyry in the Blue Hills Reservation, and outcroppings of the Salem gabbro-diorite. Examination of both the Blue Hills porphyry and the Salem gabbro-diorite failed to advance the purposes of this study, since none of the artifact flakes bears any great similarity to either of these lithic types.

Only one quarry site for felsitic material from Green Hill was discovered during this study. (NOTE: After this survey was concluded, the discovery of a major aboriginal lithic source in the Blue Hills was reported (Bowman and Zeoli 1977) in an area not canvassed by DeNatale. (J.R.)). The lithic type is RR-F,G,H (Tables 2 and 3 give the description and petrography of each type in the RR collection). The quarry site is in the Blue Hills Reservation near the Broken Hills. Here the felsite is black with a "sugary", aphanitic matrix. Phenocrysts of brown feldspar (probably potassium feldspar) are visible, along with smaller and less abundant quartz phenocrysts. To the south of the Broken Hills this black felsite varies in texture to that of a volcanic ash (ash textured rocks are also represented among the artifacts at Green Hill). This lithic type (RR-F,G,H) is best represented at Green Hill by the ten broken bifaces (G.H 136-145) and 640 flakes which were found in Feature 17, a workshop refuse pit in Section Z at the base of Green Hill (Figure 9).

It is possible that some of the felsite from this quarry site was not actually quarried as such, but rather simply gathered from talus slopes. The slopes are littered today with sharp, angular blocks of rock type RR-F,G,H, which have fallen from cliff facings. These talus slopes, if they existed in prehistoric times, would have greatly facilitated the extraction of felsite.

There are two likely routes for travel from Green Hill to the RR-F,G,H quarry site. The southern route is mostly by water along the Neponset River, then Ponkapoag Brook and finally the Blue Hills River. One disadvantage of the southern route, at least at present, is that at one point the waterway has a slope of nearly five degrees. The northern route is overland and requires walking, but it has the advantage of being shorter.

Rock type RR-A,B is a purplish to pink rhyolite, visual examination of which reveals some quartz and feldspar phenocrysts. Microscopic examination showed that the rock

	Texture	Color	Rock Name
RR-A, B	aphanitic porphyry; feldspar & quartz phenocrysts; micro-crystalline matrix	pink to purple; weathers to tan with "blondish" tinge	Rhyolite Porphyry
RR-C	aphanitic porphyry; phenocrysts of epidote & magnetite	grey-green; weathers to dark tan	altered Rhyodacite Porphyry
RR-D, I	uniformly aphanitic	dark grey; weathers to tan	devitrified glass
RR-E	bedding & flow cleavage	grey; weathers to tan	argillite
RR-F, G, & H	aphanitic porphyry; feldspar & quartz phenocrysts	dark to black	Rhyolite Porphyry

Definitions of some technical terms:

PORPHYRY is a textural term describing igneous rocks which have large crystals set in a distinctly finer-grained matrix.

APHANITIC is a textural term describing igneous rocks whose grains cannot be viewed without the use of a magnifying lens.

PHENOCRYSTS are large crystals set in a distinctly finer-grained matrix; for igneous rocks.

MICROCRYSTALLINE is a textural term describing igneous rocks whose grains can only be viewed with the use of a microscope.

FLOW CLEAVAGE in sedimentary rocks, is the realignment of mica flakes parallel to the axis of a fold.

RHYOLITES are aphanites whose primary constituents are quartz and feldspar; the fine-grained equivalents of granites.

Table 2. Rock Descriptions of the RR Collection.

also contains magnetite, epidote, even a few anhedral (not bounded by crystal faces) quartz grains. A precise location for this rhyolite was not determined, but it may be stated that the rocks in the northwest corner of the Norwood quadrangle bear great similarity to RR-A,B. Time did not permit a complete canvassing of this area, but one might expect to find rocks of type RR-A,B in the area of these outcrops. The "mvp", a pink porphyritic rhyolite described by Chute (1966), is several miles from Green Hill. There are conceivably accessible routes from the site to this lithic unit.

The dissimilarities which have been found between the outcroppings of "mvp" and rock types RR-A,B are the following. The "mvp" has a greater percentage of phenocrysts (26%-30%) than the rocks of the RR collection (5%-10%). The "mvp" weathers less thoroughly than the rocks of type RR-A,B and they have different weathering tinges. The rocks among the RR collection are tan with a "blondish" tinge, yet those in the field observed at "mvp" outcroppings have a bleached appearance. The fact that the Mattapan Volcanic Rocks laterally show great textural and color variation in the Blue Hills leads one to believe that variation occurs as well in the Norwood quadrangle. For this reason, it is reasonable to expect that the felsites observed near the Westwood-Dover boundary are variations on a theme, similar to felsites in the Blue Hills.

The argillite, RR-E, was not traced. Possibly it was derived from the Braintree argillite.

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	RR-A,B	RR-C	RR-D,I	RR-E	RR-F,G,H
Quartz	25%		30-40%		35%
Plagioclase Feldspar	10%		7%	60-70%	30%
Potassium Feldspar	30%		—	—	10%
Muscovite	—	—	10-30%	30-35%	—
Sericite	25%	15%	—	—	5%
Epidote	5%	35%	—	—	—
Chlorite	—	—	5-20%	5%	—
Magnetite	5%	2%	10-15%	—	13%
Actinolite	—	17%	—	—	—
Sphene	—	1%	8%	—	1%
Zircon	—	—	trace	1%	trace
Calcite	—	—	—	—	2%
Limonite	—	—	—	—	4%

Table 3. Petrography of the RR Collection.

THE PALEOETHNOBOTANY OF GREEN HILL

Lawrence Kaplan

PRESENT VEGETATION

The present vegetation of Green Hill is best described as a secondary, mixed deciduous-coniferous woodland. The largest trees are white pine of about 22 inches (55.9 cm) in diameter at 4.5 feet (1.37 m) above ground surface. The pines have large lower branches indicating that the woods 100 years ago were more open than they are now. An aunt of the present owner and life-long resident of the area, now in her eighties, recalls, in conversation with Dr. Rosser, that the hill was never cultivated or grazed in her lifetime. It was an open area known as "strawberry hill" for the wild fruit that was gathered there.

The south eastern slope is dominated by a mixture of white pine (*Pinus strobus* L.), white oak, (*Quercus alba* L.), black oak (*Q. velutina* Lam.), choke cherry (*Prunus virginiana* L.), red maple (*Acer Rubrum* L.), tamarack (*Larix laricina* (du Roi) K. Koch) with occasional hickory (*Carya* sp.) and red cedar (*Juniperus virginiana* L.). The red cedars are in poor condition, no doubt as a result of competition and shading which has increased since the period when the vegetation of the hill was more open. Seedlings encountered are primarily oak and cherry. The northwest slope is vegetated similarly to the preceding but with a higher proportion of white pine in the mixture. Pine seedlings are not encountered. The eighteenth and nineteenth century management of surrounding lands, particularly the meadow below and to the north, resulted in fire which, combined with wood cutting, denuded the ridge of its original mixed forest growth. The present vegetation is probably more like that of the hilltop forest of Archaic periods than was the open, primarily herbaceous, growth of the nineteenth century.

According to Dr. Rosser's informant, the meadow, with its probable long history of mowing and recent use as a plowed vegetable garden has had a vegetation history very different from that of the ridge.

PLANT REMAINS

Seven separate samples of excavated features were processed to extract plant remains by a combination of flotation, frothing, and water sieving. The plant remains recovered and identified are presented in Table 4. The quantities of carbonized materials are small and some unidentified materials are not reported.

A major problem in the interpretation of archaeological plant remains lies in the difficulty with which culturally related materials and naturally occurring contaminants are distinguished. Ideally, archaeologically sterile soils that replicate the geological stratigraphy should be excavated adjacent to occupied sites. Such offsite soils should be extracted for plant remains identically with onsite soils in order to provide adequate controls. Attention should be given to sampling technique to ensure that the volume of control soil excavated and the number of pits and their dispersion is adequate. The offsite excavation represents an additional expense and effort, but the recognition that large numbers of seeds of putative early cultigens such as *Chenopodium* spp., *Amaranthus retroflexus* L. (pig weed) and *Mollugo verticillata* L. (carpet weed) occur in some archaeologically sterile soils makes the application of these control procedures imperative. The enormous investment of time required for the analysis of plant remains may well be time lost if controls are not employed.

The seed population of nonarchaeological soils is highest in the plow zone (Paatela and Leila-Riita 1971) where levels reach as much as 220,000/ cubic meter. Up to 50,000 of these are likely to be *Chenopodium album* L. seeds. At Green Hill extractions of

seeds were made from control soils which proved to be free of carbonized wood, nut shell, and seeds. The controls, however, were taken from a bank that probably had a somewhat different depositional history from that of the hill or meadow sites. If the controls are considered reliable then the presence of *Chenopodium* seeds in cultural features would still be difficult to interpret in terms of their significance since their numbers are low, their identity may be questioned, the time of deposition (ancient or recent) is questionable, and the number of features excavated is small.

Chenopodium album and other chenopod species are among the most common of temperate flora weeds. The common goosefoot, sometimes called lambsquarter or pig weed (a name also applied to *Amaranthus retroflexus*), has long been regarded by botanists as *Chenopodium album*. This species is taxonomically complex and is thought by botanists to comprise both native North American and introduced races. This difficult and most interesting situation is of the greatest importance to the paleoethnobotany of North America and is fortunately receiving the attention of skilled botanists: Hugh Wilson of Indiana University and Nancy B. Asch of Northwestern University. Chenopods of the *album* group and other species less closely related have long and universally been used for pot herbs or greens, and the seeds have been widely used as a grain food (Simmonds 1965).

The chenopod seeds present in the Green Hill Site are glossy, faintly reticulate and without embryos. Their size, 1.2 ± 0.2 mm, is within the range of *Chenopodium album* or *C. bushianum*, but they lack the sculptured seed coat of the latter and consequently are identified as *C. album*. Their glossy coats, and in most of the seeds, the absence of distortions or burst areas means that the seeds are not charred. Two of the seventeen seeds (Feature 20) have openings at the radicle indicating that germination had taken place in the soil. Embryos are absent from all of the seeds, having no doubt decayed during dormancy or subsequent to germination.

At Green Hill the occurrence of chenopod seeds is limited to meadow excavations. *Chenopodium* was not observed growing when the site was visited in May 1976. However, since plants of this group germinate late and grow little before mid-summer its absence may have been merely seasonal. Additionally, since there is a history of plowing and cultivation in the meadow and in view of the well known affinity of *Chenopodium album* for disturbed soils and its weediness in arable lands there can be little doubt concerning its probable abundance during the truck gardening period. Furthermore, the abundance (Paatela and Leila-Riila 1971) of chenopod seeds and their persistence in the soil where the seed coats resist decay for decades (Darlington and Steinbauer 1961) all point to the presence of *C. album* seeds in this site as an historic soil contaminant. Their absence in the long undisturbed hill soils support the contention that the chenopod seeds reported in Square 0 +70 and 0 +80 of Section B do not date from the Archaic but are recent contaminants. Feature 20 is in unplowed soil, but is adjacent to the dirt road where soil disturbance is likely.

Noteworthy for their absence are evidence of hickory, walnut, and acorn.

PALEOETHNOBOTANICAL EVIDENCE

Dincauze (1974:47) has emphasized the probable importance of forest mast, particularly oak and hickory, to human subsistence during the late Archaic period in southern New England. The widely reported, and in some cases (Asch et al. 1972) fully validated by botanical analysis, occurrence of mast remains in Archaic sites support this view for those parts of the eastern deciduous forest that Braun (1972) calls the (historic) Oak-Hickory Forest Region. The paleoethnobotanical and palynological evidence for forest mast dependence in southern New England is as yet less compelling. Dincauze (1974) views the Late Archaic as a period in which increasing population density could be accommodated by the oak-hickory forest that had been well established during the long-term

warming period from 8000 to 3000 years ago (Davis 1965). For the Middle Archaic period those sites that have not since been covered by rising sea level indicate a preference for riverine and lacustrine locations probably occupied seasonally in order to exploit bird migration routes and spawning runs of anadromous fish. Small game abundantly supported by the forest mast, seed grinding, and direct consumption of the acorns and hickory nuts that comprised the mast appear to characterize subsistence in the Late Archaic. This forest based subsistence of the Late Archaic, Dincauze suggests, gradually ended as the warm, dry ("hypsithermal") period came to a close about 3000 years ago and brought about a decline in the hickory component of the forest. The terminal Archaic populations moved more of their subsistence activity out of the uplands to valleys and to the seacoasts where they made increasing use of shellfish. This was the beginning of the Woodland Period. That this economic shift took place is amply documented (Braun 1974), but the degree to which intrinsic factors were responsible is not clear. That is, to what extent did the shift take place because forest dependency was no longer so feasible as it had been for the preceding millennia of the Late Archaic?

The absence of stone mortars or other implements at Green Hill that might be employed in the preparation of hardshell nuts or acorns suggests that this was a seasonal camp at which nut processing was not a prominent activity.

A single carbonized oak twig in Feature 24 is sufficiently well preserved anatomically to show that it was cut or otherwise killed during the spring of its 3rd year of growth. This would suggest spring occupation if it is assumed that the structure were severed from the tree during the season of occupation. This is likely since the spring growth season is the time at which branches are least likely to be separated from trees as a result of natural self-pruning or storm damage.

Few sites in the northeastern United States have yielded plant remains that have been identified and reported. One such record in New York State as reported by Ritchie (1969) is the Scaccia Site, an early Woodland occupation radiocarbon dated at 870 B.C. \pm 60 containing reliably identified hickory nut shells, acorn meats, a grape seed, and, perhaps a *Viburnum* seed. The older Neville site in New Hampshire contained charred hickory nuts according to Dincauze (1976). Indirect evidence including the absence of "plant processing" tools points to a springtime occupation of the Neville site. The carbonized hickory nuts may represent a cache of pignut or bitternut hickory stored over the winter in order to improve their flavor. The absence of crushing stones in the Neville site may mean that the nuts were a minor dietary supplement that were casually opened without an activity center being established for their processing. The charcoal "granules" from the Bull Brook Paleo-Indian site on the Ipswich River (Byers 1954) as from many others that were used for dating, will always provoke curiosity since apparently the entire vegetal sample was used for dating.

PALYNOLOGICAL EVIDENCE

Bartlett's (n.d.) palynological analyses of Ponkapoag peat cores do not include radiocarbon dates, but do have age estimates based on comparison with other southern New England pollen profiles. In the Ponkapoag analysis hickory pollen never exceeds 6% of the total, and this is in a period when oak and pine decline. Since these, especially oak, are the most abundant producers of arboreal pollen they effectively control the percentage composition of the profile. The peak in hickory distribution appearing in sample 5 at 3 meters below surface, approximately 5000-5500 years before present, could be the result of an oak decline and perhaps a small decline in the arboreal to nonarboreal pollen ratio without an accompanying increase in hickory as a vegetation component. The subsequent decline in hickory as a component of the pollen diagram is again no certain evidence for a decline in hickory as a vegetation component, given the mathematics of percentage diagrams.

EXCAVATION UNIT	SEEDS	FRUIT or NUT "SHELL"	WOOD	OTHER
Section B, 0 +70 Lower field	Chenopodium (album?) 7-10 seeds 1 <i>Vitis</i> sp*	Several fragments*?		Several nodules*
Section B, 0 +80 Lower field	Chenopodium (album)	Several fragments*		Nodules
Section Y, L -24 Ridge top at junction with glacial till 19 3/3" - 25"		CONTROL SAMPLE about two litres from bank 100 yards from present entrance to site. Sterile subsoil, fine grey-yellow soil. Contains intrusive recent roots and recent, uncharred grass seed. No wood, "shell" or other seed. Flotated and sieved.		Nodules
Section A, B -4 Feature 4 Ground midden. Gravel				Intrusive roots Insect parts* Nodules*
Section A. A +3/A +4 Feature 20 Base of ridge, adjacent dirt road	Chenopodium (album?) Several 1 <i>Mollugo</i> <i>verticillata</i>		Wood, ring-porous* about 20 gm	Nodules* Intrusive fibrous roots
Section A, Feature 24, no grid location. Flotated and sieved				
<0.5 mm			Fragments*	Nodules
0.5-1.0 mm	1 <i>scirpus</i> sp (Bulrush)?		Fragments*	Nodules* Insect parts
1.0-2.0 mm		Fragments*	Fragments*	Rodent droppings?
>2.0 mm			Diffuse porous* (Birch or maple) and ring porous* (oak?) 4.2 gm. Oak twig*, cut and burned in spring of 3rd year growth.	Nodules

* Carbonized.

Table 4. Green Hill Plant Remains.

The Ponkapoag analysis does, however, confirm the expected. That is that the Middle Archaic in southeastern Massachusetts was a period of mixed pine-deciduous forest. The forest predominated over open herbaceous-grassland to a far greater extent than exists at the present time. The Bartlett analysis shows that the contemporary ratio of non-arboreal (herbaceous) to arboreal pollen is 45:55% as compared to 6.6:93.4% at the level of sample 9 (estimated to be 7500 years before present). As Bartlett points out, the present (surface) nonarboreal:arboreal pollen ratio is the highest in the entire post-glacial period. During the greater part of the postglacial period from 9000 years ago to colonial times, forest has predominated over nonforest vegetation, oaks have been abundant and hickories have been present. There is no indication of any striking vegetation change, say of the magnitude of the arboreal:nonarboreal ratio, that would suggest an alteration in forest resources that could be used to explain any detectable transition in human settlement pattern or population size. If the pollen profile is to be interpreted as indicative of a compensating vegetation structure in which declining oak is replaced by expanding hickory and in which this pattern is reversible, then a subsistence shift from one mast species to another within the forest environment is probably more likely than is a substantial movement out from the forest environment. In the presence of pine which is an abundant pollen producer, hickory is probably underrepresented in the pollen diagram with respect to its occurrence as a vegetation component. However, were coefficients available to correct the pollen data it is doubtful that the figure for hickory in the vegetation would be raised perceptibly above the 6% maximum appearing in Bartlett's study. This representation should be compared with the 19.6% in the lower Illinois River Valley upland forest (Zawacki and Hausfater 1969) where the importance in human subsistence of hickory (and walnut) is well documented in the Archaic (Asch et al. 1972).

CONCLUSIONS

The Green Hill site is located in a region that has supported a mixed deciduous-coniferous forest from early Archaic times to the present. The hickory component of this forest has probably varied somewhat, but has probably never exceeded more than 6 - 10% of the total number of forest tree individuals. Although hickory nuts and other forest mast have been assumed to have constituted a major proportion of the subsistence of Archaic cultures in southern New England, there is little direct paleoethnobotanical evidence to support this view. Green Hill plant remains include no hickory or acorn. The absence of such remains at Green Hill, despite the presence of hickory and oak in the vegetation, may mean that this was a seasonal site occupied when other foods were being sought, or that these species were not so heavily exploited for food as has been suggested. If the exploitation of hickory, in particular, were not heavy, then a decline in hickory at the close of the Archaic, even if convincingly demonstrated, could not be held as a major cause for the population redistribution that took place at this time.

Chenopodium album seeds and the seeds of related species have been much used as a food resource by food gatherers and agriculturists. The *C. album* seed remains found at Green Hill are probably historic contaminants since they were found only in features located in the meadow where chenopod weeds would have been abundant in recent years. The hill-side features located where there has been little disturbance for at least the last 80 years produced no chenopod remains.

Charred wood is all derived from broadleaf deciduous trees such as oak and birch. Some unidentified materials are present, but these do not represent any species known to be important in subsistence.

RECENT WILD FAUNA

Robert Stanhope

The location of the Green Hill site at the edge of the Neponset River floodplain and the foot of the rolling Blue Hills uplands is favorable to a great diversity of wildlife. This diversity still exists, just ten miles from the center of Boston, due to the establishment of the Fowl Meadow and Blue Hills Reservations. The most marked change in species has been the extirpation of all the large animals and the extinction of two species. This loss has occurred over the last three hundred years due to the pressures of hunting and habitat destruction caused by a large predatory species that was overpopulated in Europe and thus sought to expand its range to this continent, namely technological man. Since successful species are always striving to expand their range we now have several new species living in the present man-changed habitat. The following is a brief study of the losses and the new arrivals in species of birds, mammals and fish.

During the past fifty years there have been 158 species of birds seen in the Green Hill area, of which 69 species are known to be breeding there (Ward n.d.). Three formerly common species that were prized as human food - turkeys, heath hens and passenger pigeons - were eliminated by the 1950's. The last native Massachusetts turkey was shot on Mt. Tom in 1851 (Clancy 1976:8). Heath hens were so abundant in early Boston that laborers and servants are said to have stipulated with their masters not to have it upon the table more than a few times a week (Forbush 1936a:26). The infamous Thomas Morton of nearby Merrymount described "millions of Turtle-doves one the greene boughe" in 1626 (Sweetser 1889:96. 176). Indians slaughtered these passenger pigeons in great quantities, preserving the breast meat for future consumption by drying and smoking. They even obtained oil by frying the fat squabs (Forbush 1936b: 41). Market hunters, motivated by money more than survival, used their guns and nets to supply markets with barrels of birds. Today turkeys from Virginia are being restocked in two Massachusetts state forests. Heath hens and passenger pigeons, however, are extinct.

Of the predatory birds that formerly lived along the Neponset River, there are the osprey and bald eagle. Although no precise documentation exists, no doubt the peregrine falcon once nested on rocky cliffs in the Blue Hills. Red-tailed hawks, broad-winged hawks and American kestrels presently nest near Green Hill, as do three species of owls. Several species of waterfowl nest in Fowl Meadow. Bobwhite quail, ruffed grouse and ring-necked pheasant are successful permanent residents. The pheasants, English sparrows, starlings and pigeons are species that have been introduced to the area by man. By changing the forests into backyards with lawns bordered by hedges and fruiting shrubs, people have made their habitat attractive to certain southern species. Three recent newcomers are the cardinal, tufted-titmouse and mockingbird. Bird life is still diverse and abundant at Green Hill, but the large predators and edible species have suffered badly.

During the past 300 years, 15 out of 50 species of mammals native to Green Hill have been extirpated. Fortunately, none of these species have become extinct, at least not yet. Formerly common species which are now missing from the Green Hill area include black bear, grey wolf, mountain lion, lynx, bobcat, otter, fisher, marten, whitetail deer, beaver and porcupine. In September, 1726, twenty bears were killed within two miles of Boston (Boston Transportation Planning Review 1971-1972). Today, with the bears gone, the native garbage collectors in the Green Hill area are dogs, raccoons, skunks, opossums, rats and mice. Opossums are the newest mammal to Green Hill. They have come up from the south to this area within the last ten years, benefitting from man-made shelters, abundant food resources, and a lack of large predators. House mice and Norway rats were probably introduced with the arrival of the Mayflower. Other mammals present at Green Hill are red and gray fox, mink, longtail weasel, cottontail rabbit, woodchuck, muskrat, red squirrels, gray squirrels and flying squirrels, eastern

chipmunk, and various mice, shrews, moles and bats. The whitetail deer was the last large mammal to succumb to the "progress" of man. Deer that used to approach from the Neponset floodplain are now stopped by a paved barrier patrolled by high speed vehicles, namely Route 128. At the southern end of Fowl Meadow, south of Route 128 and in the Sharon hills, fawns are still produced every spring.

The Neponset once held a great diversity of fish, the most important being the shad and salmon that ran upstream in great numbers. A recent fisheries survey produced only three species: carp, pickerel and suckers. The pickerel were a surprise, considering how badly polluted by industrial and domestic wastes the Neponset has become in recent times

Trailside Museum

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NOTES TO CONTRIBUTORS

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