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EDITOR'S NOTE
Elizabeth A. Little

The Bulletin has a new editor, and readers will notice changes. The shoes of the previous editor, Barbara Luedtke, are not easy to fill, and I hope you will bear with me while I learn the ropes. With the typing, layout and printing procedures established by the Board of Trustees with OFFICE AID and FASPRINT, publishing costs have been brought under sufficient control to allow additions to the Bulletin. Thus, one change is a more generous use of photographs than in the past. Also, as a help to authors, I have updated the Notes to Contributors by providing a reference to the Style Guide of American Antiquity and a copy of this style guide at the Bronson Museum.

Archaeological information, clarity of expression, and interest to the reader are editorial goals which are well represented in this issue. The articles by Jim Petersen, Tonya Largy, Bob Carlson, John Pretola and Phil Brady illustrate the benefits to be gained from photographs. The article on backfilled features by Curt Hoffman demonstrates the value of figures generated from field data by computer. In a brief essay Dave Dimmick describes his experience as he discovered his first prehistoric artifact in the field.

I urge Massachusetts archaeologists, both professionals and amateurs, to contribute to your Bulletin interesting, clear (even simple), jargon-free archaeological reports. These could include studies of Massachusetts site excavations, surface collections, single artifacts, or regional comparisons. In light of the MAS's upcoming fiftieth anniversary, an increasing focus of interest will be the history of the society, its chapters, and its archaeologists. Photographs of Society members, such as Figure 1, are solicited. And finally, advice and suggestions are always welcome.

Figure 1. Maurice Robbins in the field at Assawompsett (Wap. 8) about 1972 (Bronson Museum Collection). Dr. Robbins, the first president of the Society, 1939-1942, has published extensively in the Bulletin, and is currently Bronson Museum Director emeritus.
AN ABORIGINAL BASKETRY FRAGMENT FROM LAKE COCHITUATE, NATICK, MASSACHUSETTS

James B. Petersen, Tonya Largy and Robert W. Carlson

INTRODUCTION

Many important prehistoric finds have been recovered by avocational archaeologists. The basketry fragment described in this article is an extremely important find because examples of aboriginal woven fibers usually are not often preserved in the acidic soils of New England. This particular specimen would not be available for study had it not been for one such quick thinking avocational archaeologist (Carlson) who recognized the importance of the artifact, preserved it from further deterioration and then brought it to the attention of Largy and Petersen. He has recently donated it to the Peabody Museum of Archaeology and Ethnology, Harvard University (see Figure 1). The artifact find spot has since been altered and destroyed by development.

The basketry fragment, a surface find in the late 1960's was found eroding from the shore of Lake Cochituate, Natick, Massachusetts. Lake Cochituate is located within the Sudbury River drainage in Middlesex County, approximately 30 kilometers west of Boston. It is bordered by the towns of Wayland, Natick and Framingham, Middlesex County. The elevation of the find spot is approximately 46 meters above sea level (see Figure 2).

When found, the original size of the specimen was at least four times its present size. Its fragile state presented considerable difficulties in recovery and preservation since it crumbled to the touch. Consequently, it was placed immediately in a container with wet leaves which preserved it until it was placed on a piece of plastic and sprayed with acrylic.

The site was on an embankment approximately 1.5 meters in height with a two meter wide beach sloping to the water line. Stratification on the eroded profile of the embankment showed 25 cm to 30 cm of loamy topsoil above a sand to gravel subsoil. A darkened area interpreted as a pit feature was clearly visible in the soil profile. Even though a large portion had eroded, it was apparent that the top of the basin-shaped feature began in the topsoil, perhaps 20 cm below the ground surface, and intruded into the sandy subsoil, reaching a depth of about 40 cm below the ground surface. The basketry fragment is assumed to have eroded from the feature, since it was found approximately 20 cm below this darkened area on the bank.

Other artifacts recovered in association with the specimen included two chipped stone artifact fragments of Saugus "jasper". One was a biface fragment and the second piece showed similar workmanship. Other indications of aboriginal occupation were noted, such as burned rock, numerous flakes and other darkened areas of soil. Even though the site where the fragment was found has been totally destroyed, more flakes were recently recovered from the adjacent area.

The basketry fragment is likely assignable to the Middle, or more likely, the Late Woodland period, based on its state of preservation and apparent lack of European materials in association, as well as its context and depth of the top of
Figure 1. Aboriginal basketry fragment from Lake Cochituate, now at Peabody Museum of Archaeology and Ethnology, Harvard University (Peabody Museum Catalogue #986-17-10/60032). Specimen is about 10 cm in length. Photography by Hillel Burger.
the feature from which the fragment probably eroded. Other sites in nearby Wayland and Framingham have produced ceramic sherds from comparable levels (e.g., Carlson 1964; Largy 1983:104). Thus, it is reasonable to assume that the basketry fragment can be placed roughly in the Middle Woodland or Late Woodland period in the absence of more concrete archaeological data.

ANALYTICAL PROCEDURES

This specimen was analyzed using a systematic structural classification as well developed in a number of recent studies (e.g., Adovasio and Andrews [with Carlisle] 1980; Andrews and Adovasio 1980; Doyle et al. 1982; Hurley 1979; Petersen and Power 1983). Although detailed definitions of various technical terms can be found in these references, a few bear some mention here due to their relative unfamiliarity to most archaeologists.

Following Adovasio and Andrews (1980:33-34), cordage is "a class of elongate fiber constructions, the components of which are generally subsumed under the common terms 'string' and 'rope'." Basketry is a diverse class of perishables woven without a frame or loom, and commonly includes three major subclasses: coiling, plaiting and twining. Of these three, only twining is represented here. Twining is
a form of basketry manufactured by passing moving (active) horizontal elements called wefts around stationary (passive) vertical elements or warps. Twining has been traditionally employed in the production of containers, mats, bags, fish traps, cradles, hats, clothing and less typical items. Since twining is woven, it can be technically classified as a textile form, although that term is sometimes restricted to cloth fabrics (Adovasio 1977; Adovasio and Andrews 1980).

Other pertinent technical terms include ply, spin and twist. Ply is used to describe a strand or bunch of fibers that is usually twisted to form single ply cordage when used alone, or multiple ply cordage when used in groups of two or more single plies. Spin is used to note the initial twist of a ply, whereas twist is the final direction in which plies are twisted together to form a completed piece of compound cordage. The direction of spin or twist can be only S or Z, that is, twisted to the right, or left, respectively (Doyle et al. 1982; Petersen and Hamilton 1984; see Hurley 1979:6).

DESCRIPTION

The extant basketry specimen, measuring 10 cm by 3 cm in maximum dimension, is quite fragmentary and was difficult to study due to its current condition as mounted on a thin sheet of opaque hard plastic and sprayed with acrylic. It does not appear charred or stained with metal salts and thus its preservation is quite remarkable.

This specimen clearly represents some structural class of twining, possibly a form of open twining where the weft rows are spaced at intervals, or even more likely, close twining where the warps are concealed or nearly so by closely spaced wefts. It may represent either simple twining, where one warp is engaged at each weft crossing or diagonal twining, where a pair or warps is engaged at each weft crossing (Adovasio 1977: 16). This assignment must be tentatively made in the present case, however, due to the incomplete condition of the specimen, possible warping or decay and other confounding factors. In any case, the dominant elements, most probably wefts, clearly exhibit an initial Z spin a final S twist and are apparently two ply cordage; the weft diameter is approximately 2.10 mm. Each ply consists of a very fine Z spun fibers, which are clearly vegetal in origin from some unknown plant source, quite possibly milkweed (Asclepias, sp.), Indian hemp or dogbane (Apocynum, sp.) (see Whitford 1941).

The single ply, Z spun elements, which apparently represent warps, are much more difficult to detail because of their near complete concealment by the wefts (?) and decayed organics (leaves?), which appear between each weft row. In any case, the probable warps are clearly single ply, Z spun cordage elements composed of fine vegetal strands like the wefts, but only 0.50 mm in maximum diameter. Needless to say, the final form and function of this small specimen can not be specified. The temporal and cultural placement of this fragment is likewise problematical, although it is definitely aboriginal on the basis of raw material, construction technique and context at the time of discovery. Furthermore, it likely is attributable to the later portions of the Woodland period, quite possibly the Late Woodland period, using the reasoning that such an uncharred specimen of any greater antiquity would not preserve.
EXTERNAL CORRELATIONS

Although fragmentary and incompletely known, the Lake Cochituate twined basketry fragment is not without apparent parallels among known samples of northeastern prehistoric and ethnographic perishables. In the broad area of eastern North America, fiber perishables are attributable to much, if not all of the span of aboriginal prehistory, but specimens predating the Woodland period remain little known (Petersen et al. 1984a). However, specimens of generally similar construction (both cordage and twining) to the Lake Cochituate fragment are known from various Early Woodland contexts (e.g., Adovasio and Andrews [with Carlisle] 1980; Dincauze 1975; Kraft 1976; Petersen and Hamilton 1984) and those attributable to the Middle Woodland and Late Woodland periods across the Northeast (e.g., Michels and Smith 1967; Petersen and Power 1983; Petersen et al. 1984b). Likewise, a variety of roughly comparable aboriginal specimens are known from ethnographic Contact period contexts in the broad region (e.g., Bower 1980; Fowler 1966:66-67; Harper 1956:49-51; Whitehead 1980; Willoughby 1905).

Through the kindness of Una McDowell and other personnel of the Peabody Museum at Harvard University, Petersen recently analyzed various contact period aboriginal cordage and basketry specimens from Massachusetts and Maine, some of which were first reported by Willoughby (1935:244-247). Several of these specimens, particularly several from Manchester, Massachusetts, closely resemble the Lake Cochituate specimen, although none revealed such fine warps. Of greater interest, the Lake Cochituate specimen is distinctive for its final S weft twist in comparison with the small sample of other known specimens from prehistoric and historic aboriginal contexts in nearby Massachusetts and Rhode Island. The other known specimens from this area typically exhibit final Z weft twist (e.g., Bower 1980; Fowler 1966:66-67; Jeppson 1964; Petersen and Burt 1985:4; Willoughby 1935). The one other readily observable exception to this general pattern is the Clap's Landing site in the Charles River drainage, where Early Woodland ceramics preserve S twist cordage impressions (Dincauze 1975). The significance of this distinction remains to be investigated.

ACKNOWLEDGEMENTS

We would like to thank Dr. Ronald C. Carlisle, Department of Anthropology, University of Pittsburgh, who commented on the Lake Cochituate specimen while Petersen was studying it at the fiftieth annual meeting of the Eastern States Archaeological Federation, Salem, Massachusetts. Likewise, we would like to thank Elizabeth Goeselt, Curator of the Wayland Historical Society, who prepared the map. Lewis Bowker, Town Surveyor of Wayland and Charles Sikora, Town Engineer of Natick, both provided maps and information pertinent to the site's location. Hillel Burger of the Peabody Museum, Harvard University, photographed the artifact. Beyond these debts of gratitude, the authors accept all responsibility for any errors or omissions contained herein.
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THE GRANFIELD SITE

John P. Pretola

INTRODUCTION

In August 1983, the Reverend Patrick Granfield and his brother reported a small collection of Indian artifacts to the Springfield Science Museum. Representing three generations of collecting on the family farm, it contained objects indicative of several time periods and traditions. The assemblage included two bifurcated base points (Fig. 1), Brewerton forms and small triangles (Fig. 2), Susquehanna Tradition points (Fig. 3), a Mansion Inn blade cache (Fig. 4), and Small Stemmed and triangular points (Fig. 5).

The Granfield farm is located (Fig. 6) on the rim of the first terrace of the Connecticut River in Agawam, Massachusetts, adjacent to a small brook. From this location, resources from the dry first terrace as well as river and flood plain wetlands are accessible. The soil is recorded as Agawam Fine Sandy Loam which is among the most fertile in the world making the site desirable for horticulture as well. Additionally, the Granfield property is located along the southern margin of the "Grasso Locus", an area known to local collectors as especially rich. "Grasso Locus" material from the Charles W. Hull Collection, for example, includes Middle Archaic through Late Woodland diagnostic artifact forms (Pretola 1985).

Generally, site preservation is to be preferred when reports of this type are made. The strong suspicion that a site exists in a particular location is not a satisfactory reason to excavate. Costs in staff, equipment and laboratory analysis combined with the time and effort required to excavate properly precludes much of this type of exploration. It is less destructive to try to understand the contents of a site from surface collections and use careful sampling procedures only when warranted. Archaeological sites however are being destroyed at an alarming rate. This is especially true in Agawam which is undergoing an amazing building spurt and this is a prime development area. The Reverend Granfield indicated that the property would be offered for sale. Since the property owner's attitude toward excavation was favorable, the Science Museum decided to sample the site using a crew of five volunteers.

RESEARCH GOALS

An important part of this project was to enhance museum collections interpretation through the study of a river terrace site situation. Surface collections from the Connecticut Valley contain numerous projectile point forms indicative of the Late Archaic through Late Woodland periods. Only rarely do Middle and Early Archaic forms appear. It is commonly supposed that these earlier components lie beneath the plow zone and so are less likely to be brought to the surface. The Granfield and Hull collections, however, demonstrate that there are occasions when these early points can be surface collected. An additional problem in dealing with surface collections is that collecting loci tend to be poorly defined. When several time periods are represented in one locus it is often unclear if one is dealing with a single site or a number of small contiguous sites. It was hoped that a careful study of the Granfield Site might lead to a better understanding of this problem.

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Figure 1: Granfield collection: Early and Middle Archaic points.
Left: Bifurcated base point.
Right: Neville point.

Figure 2: Granfield collection: Late Archaic points.
Top row: Brewerton Complex Points, left to right: quartzite, quartzite, chert, chert, and red felsite.
Bottom row: Brewerton eared notched quartzite point; three untyped small triangular points, two quartz and one quartzite; and a small pentagonal quartz point.
Figure 3 (top): Granfield collection: Susquehanna Tradition points. Top row: broken base, probably Orient Fishtail point; Normanskill point; Susquehanna Broad point; Wayland Notched point. Bottom row: broken base point, probably expanding stem point; Wayland Notched point; Susquehanna Broad point; Wayland Notched point; Orient Fishtail point.

Figure 4 (left): Granfield collection: Susquehanna Tradition bifaces. Broad Spear or Mansion Inn blade cache found by Reverend Granfield.
Figure 5: Granfield collection: Small Stemmed and triangular points of quartz.

Figure 6: Granfield site location on Connecticut River.
A second and more immediate question was to define the time periods of occupations on the parcel being offered for sale. Over the years, the family had not recorded specific find locations for the artifacts in their collection. However, the Reverend Granfield had found a Broad Spear cache as a boy and was able to pinpoint the exact location in the brook west of the farm house (see Figs. 4 & 7). There was a distinct possibility that a mortuary complex as defined by Dincauze (1968) and Pfeiffer (1984) might exist on the parcel. Further, the presence of Brewerton material suggested that an earlier Late Archaic component might also exist in close proximity as was the case with the Griffin, Bliss and Bliss-Howard sites in southern Connecticut (Pfeiffer 1984).

The problem was then to define the area involved and attempt to note different components, looking at lateral and vertical distributions. A sketch map (Fig. 7) was prepared of the site. Ground cover consisted of lawn (where we could not excavate) and abandoned pasture. Three fences defined the approximate margins of the property. Traces of a 19th century split rail and post fence were to be seen especially along the northwest section. A later square post and drilled mortise rail fence was also in evidence. A very recent steel post electric and barbed wire fence was also noted. This had been used as pasture up until 1983. There was a board horse fence and sections of a living shrub fence associated with the barn immediately north of the farm house. A partially enclosed area west of the present barn was identified in a 1912 map as the site of a barn. An old shed existed on the extreme northeast section of the property. A brook on the east side at the base of the terrace is an intermittent stream that appears to flow at the contact point between the Agawam series soil of the terrace and the Melrose series soil in the flood plain. The brook on the west side is a permanent stream with some velocity in the spring but sluggish in summer and obscured by vegetation, especially skunk cabbage.

SAMPLING METHODOLOGY

For the field project in 1984, sampling strategy consisted of 40 cm shovel test pit transects at 20 m intervals along the terrace adjacent to the stream in a north-south direction. This was followed by a series of east-west shovel test pits along a base line through the pasture (Fig. 8). North-south transects were then resumed off of that baseline until no artifacts were recovered. On the basis of these shovel test pits (Fig. 9) it appeared that all artifacts were restricted to the plow zone and that the site occupied an estimated 7500 sq. m. A series of 10 contiguous 1 m square test pits, Datum A, were excavated adjacent to shovel test pit D-5 (Fig. 10) after a feature was observed at the junction with the subsoil approximately 30 cm from the surface. A second feature was observed adjacent to the first. Careful excavation demonstrated that feature 1 was a burned tree tap root and feature 2, a rodent burrow. At the 35 cm level (Fig. 11), two more features designated 3 (Fig. 12) and 4 were uncovered. These yielded quartz and quartzite flakes, charcoal and charred nut fragments. A single 1 m square test pit (Datum B) was excavated in the flood plain east of the first terrace. It yielded evidence of a historic dump in the plow zone and flakes of quartz and quartzite with mammal bones beneath.
Figure 7. Granfield Site Sketch Map.

Figure 8. Looking east along base line, Granfield Site.
Figure 9. Shovel test pit C-6, Granfield Site.

Figure 10. Excavation of Datum A, Granfield Site, looking northwest.
Figure 11: Plan of Datum A excavated area at 35 cm depth, Granfield Site. Square number is shown in lower left corner of each square.

Figure 12: Feature 3, Datum A, Granfield Site.
FEATURES AND RADIOCARBON DATE

When first uncovered feature 3 appeared as a poorly defined trash pit complete with discarded fire cracked rock, the tip of a pestle, seven quartzite and three quartz flakes. Flotation analysis revealed seven additional quartzite and five additional quartz flakes from the non-floating fraction. A charcoal radiocarbon sample was saved as were several charred nut shells. Feature 4 was identified as a small circular hearth containing fire cracked stone, charcoal and one quartz flake. An additional four quartz flakes were recovered from the flotation sample. A charcoal radiocarbon sample was saved as well. These features identified at 33 centimeters were poorly defined and may have extended upward into the plow zone and been truncated through plowing. No artifacts were recovered from the subsoil outside of the features. The charcoal radiocarbon sample from feature 3 was submitted for dating and returned a date of 4340±90 B.P. (Beta-12049).

ARTIFACT ANALYSIS

Artifacts recovered in 1984 are illustrated in figure 13. Chipped stone objects included a single Levanna triangular point which was recovered in the plow zone. It was made of Leyden Argillite, a local valley material which outcrops approximately 30 kilometers north of Agawam. Two scrapers were recovered in the plow zone also. One, manufactured from a quartzite cobble, was prismatic in cross section with evidence of the weathered cortex on one face. The second scraper was a brown chert utilized flake. Chipped stone artifact fragments included a quartzite edged tool fragment, a possible point tip of quartzite and a tool fragment of red-brown quartzite. All except the latter were recovered from the plow zone. The red-brown quartzite fragment was recovered just below juncture. In general, the chipped stone objects suggest that hunting and skin working took place on the site.

Figure 13. Artifact assemblage, 1984 excavation. Top row, left to right: Levanna Triangle; cord-marked pottery sherd; utilized flake; scraper. Bottom row: small hammerstone; pestle tip.
Ground stone tool artifacts included a gneiss pestle tip, a small quartzite hammerstone and a basalt pick tip. Found in the plow zone, the hammerstone attests to the manufacture, but more likely, to the retouch of chipped stone tools. The pick tip, also found in the plow zone, is a type of tool commonly associated with steatite bowl manufacture during the Terminal Archaic period but it is no certain horizon indicator (Fowler 1947). The pestle tip was found in the fill of feature 3 which also yielded the material used for the radiocarbon date.

FLAKE COUNT AND LITHICS

<table>
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<th>Flake Materials</th>
<th>Quartz</th>
<th>Quartzite</th>
<th>Chert</th>
<th>Argillite</th>
<th>Felsite</th>
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<th>Percent</th>
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<td></td>
<td></td>
<td></td>
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<td>0</td>
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<td></td>
<td></td>
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<tr>
<td>Datum B:</td>
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<td>12</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>16</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 1 presents lithic analysis and flake count by level. Stratum I represents the plow zone (0-30 cm). Analysis indicates emphasis upon local materials such as cobble quartz and quartzite as well as the Leyden Argillite. A second argillite, a maroon ledite often ascribed to the Lockatong formation of eastern Pennsylvania and New Jersey appears similar to the "indurated slate" identified by Fowler (1950:29) as coming from local outcrops of the Chicopee Shale and is here considered a local material. It appears that 57% of the sample is local material. Non-local eastern New York cherts and eastern Massachusetts felsites account for the remaining 43% of the sample from Stratum I. Stratum II represents artifacts recovered from the features and would appear to suggest a total reliance upon local materials balanced evenly between quartz and quartzite. Material from Datum B also indicates a heavy reliance upon local quartz and quartzites at that location.

POTTERY ANALYSIS

In addition to stone artifacts, a single pottery sherd was discovered in the plow zone. Approximately 2 cm square and 7 mm thick, it is cord marked, and reddish brown in color. The temper consists of very finely crushed white feldspar and mica. In general, it is suggestive of the Late Woodland Windsor pottery series as described by Rouse (1947).
FLORAL AND FAUNAL REMAINS

Analysis of floral remains from features 3 and 4 as well as from shovel test pits proceeded on the basis of a very small sample. Feature 4 produced charcoal of both coniferous and deciduous trees. In addition to charcoal, feature 3 yielded an uncarbonized Polygonium seed and a charred cotyledon of acorn (Quercus sp.). A sample from the plow zone of shovel test pit B-3 was identified as charred butternut shell (Juglans cinerea L.). Although the sample is very small, both nuts can be acquired from late summer into the fall. The Polygonium seed was considered intrusive because it was not carbonized (Largy 1985). The evidence suggests very weakly a fall habitation for both the plow zone sample and feature 3. Although faunal remains from the plow zone cannot be considered in clear association with the other aboriginal remains, some do appear to have been split to extract marrow. Twenty-nine calcined bone fragments from Datum B are clearly aboriginal in nature and strongly suggest the hunting of mammals at that locus.

In general, the floral and faunal remains indicate both hunting and gathering activities on the dry, first terrace environment about the site. Although exploitation of the nearby wetlands of the flood plain and river must have taken place, there is no archaeological evidence for it from our small sample. Similarly, there is no evidence of cultigens in our sample even though the Agawam Series soils could have been relatively easily worked by Stone Age horticulturists.

HISTORICAL MATERIALS

Samples of glass, ceramics, wood, metal and even an 1895 Indian Head cent provide material evidence for the landowner's family tradition that the site served as a middle to late 19th and early 20th century farm. All of the material was recovered from the plow zone in a disturbed context. The test pit at Datum B, adjacent to a small shed, was excavated into a small historic dump mound rising approximately 30 cm above the surrounding land surface, and suggests an historic activity center. Concentrations of soft coal and burned slag were noted in the plow zone of every pit at Datum A. There is a possibility that this represents farm activities such as the curing of tobacco which was carried out on the farm. It may also reflect the use of steam powered farm machinery.

INTERPRETATIONS

On the basis of diagnostic artifacts, the Granfield surface collection and the radiocarbon date, the Granfield Site represents a plow zone site consisting of activity centers from at least two different time periods. Stratum I includes a diffuse Late Woodland component disturbed by plowing. Horizontal and vertical distributions suggest recurrent occupation by small groups leaving a thin but widely dispersed refuse layer. Botanical remains suggest a late summer, early fall occupation. This is in keeping with our present state of understanding about Late Woodland settlement and subsistence patterns. This Late Woodland component was not clearly indicated in the Granfield family collection and constituted a surprise. Stratum II represents a cluster of two truncated Late Archaic features as determined by the radiocarbon date of 4340 ± 90 B.P. Botanical analysis suggests a fall utilization. Artifacts in the features consist of cobble quartz and quartzite flakes along with the tip of a pestle. No diagnostic artifacts were found in the features.
Two alternative inferences can be drawn from these data. Pfeiffer (1984) maintains that heavy reliance upon quartz and quartzite is indicative of Brewerton components in Southeastern Connecticut, where quartzite Brewerton series projectile points, especially Brewerton Eared-Notched Triangles are especially common. Published radiocarbon dates for Brewerton components range between 5300 B.P. and 4180 T.P., with dates from Old Lyme at 4240 and 4290 B.P., and a date of 4340 ± 120 B.P. reported by Thompson (1969) at the Binette Site in western Connecticut. A fall utilization of a terrace site overlooking the Connecticut River is in many ways reminiscent of the Bliss and Bliss-Howard sites in the southern Connecticut Valley (Pfeiffer 1984). The contention that features 3 and 4 may represent a Brewerton component is further supported by the presence of quartzite Brewerton points in the Granfield collection. The alternative possibility is that these features represent a Late Archaic Small Stemmed point or Small Triangle component, for which the earliest radiocarbon dates in New England extend to 4300 B.P. Indeed, Wading River as well as Bare Island and untyped small triangular points made of quartz or quartzite are present in the Granfield collection.

These Late Archaic alternatives are commonly found in association with Brewerton components (Pfeiffer 1984:77; Hoffman 1983:44-45), and we lack the data required to associate Granfield features 3 and 4 with any one of those Late Archaic artifact styles.

The Granfield collection also includes Susquehanna Tradition points and a cache of Mansion Inn blades (Figs. 3, 4), again suggesting a situation similar to the Griffin, Bliss, and Bliss-Howard sites. Pfeiffer (1984) has proposed that the New England Brewerton Complex and Susquehanna Tradition form a continuum or tradition from approximately 4300 to 2400 B.P. Both manifestations share certain traits, especially adaptation to a river plain environment, a cremation burial mortuary system and the use of exotic lithics. Evidence from surface collections in Agawam, the Granfield collection and field testing suggests that Pfeiffer's hypothesis can be extended geographically to include the central Connecticut River Valley.

CONCLUSION

Several objectives of the Granfield Site sampling project were met. Among these were the definition and site boundaries for a Late Woodland plow zone component. A second component, identified as a Late Archaic Brewerton, Small Triangle, or Small Stemmed manifestation, was radiocarbon dated at 4340 ± 90 B.P. The horizontal boundaries of this component were not determined due to incomplete sampling. The inability to locate the Susquehanna component suggested by the Granfield collection proved to be a disappointment and must be the result of the small excavation sample.

It was observed that first terrace sites are not usually subject to flooding, and the concomitant problems or erosion, secondary deposition and deep burial may not be encountered on such sites. However, the probability of site disturbance due to plowing is high for the upper 30 cm of a river terrace site, and only deeply buried sites and those on poor agricultural land have the potential to be undisturbed. The accelerated erosion resulting from intensive farming can destroy sites along small brooks, as well as uncover sites buried beneath the plow zone.
ACKNOWLEDGEMENTS

I wish to thank the Springfield Science Museum who provided funds for field equipment and laboratory analysis, the Reverend Patrick Granfield and his brother Michael, who generously gave permission to excavate; University of Massachusetts graduate students, Carol Piacentini and Richard Holmes; Massachusetts Archaeological Society Norwattuck Chapter members Jael Raymond and Joan Prescott; Museum volunteers, Anita Pinatti, Dick Zapert, Jeanne Hall, Cheryl Danis and Ellen Greer. Thanks must also be extended to Andrew Pfeiffer and Rick Todzia of the Archaeological Society of Southeastern Connecticut as well as John Pfeiffer, Ph.D. candidate at SUNY/Albany for insights and inspiration as usual. Botanical analysis was performed by Tanya Largy, and I also wish to thank Eric Johnson of the Massachusetts Historical Commission. Any errors or omissions are my responsibility.

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ARTIFACT, PURPOSE UNKNOWN, NATICK, MASS.

Philip Brady

This unusual item from Bronson Museum, M.A.S., was collected by the late Lawrence Gahan, Worcester, Mass., from an Indian site on the shores of Lake Cochituate, Natick, Massachusetts, approximately where the present-day U.S. Army Natick Research and Development Center is located.

The large picture (Fig. 1) is actual size, shows the artifact's right side, and clearly reveals an inclusion in the small depression, upper right. The inclusion, 3 mm in diameter, is depressed approximately 2 mm. There are at least eight other similar depressions which may have contained inclusions.

Figure 1. Right side, actual size, of artifact collected from Indian site in Natick, Massachusetts, by Lawrence Gahan.

The artifact, of fine-grained sandstone, is light tan in color, value 8, chroma 6 (Munsell Color Chart 10 YR, Soil Colors, 1975 edition) and is badly stained, perhaps from water and soil immersion. The sandstone may be unusually light in weight for this area, is quite porous, and the grains are not too well cemented together (personal communication, Leonard Weaver, professional geologist). Weight is 355 grams, dry.
Dimensions, right side: (Fig. 1) Length, 10 cm; height, left, 5.7 cm; height, right, 5 cm. Length of large groove 5.5 cm, plus .5 cm undercut at rear; height of large groove, left, 15 mm, center, 19 mm, right, 17 mm with measurements made close to inner wall. Depth of groove from front of rock: approximately 2 cm.

Dimensions, left side: (Fig. 2) Length, 10.2 cm; height, left, 5 cm; approximate height, right, 6.5 cm; length of large groove 7 cm to extreme rear; height of large groove, left, 16 mm, center, 16 mm, right, 16 mm. Hole (goes completely through stone): 6 mm high, 2 mm wide.

Small grooves, rear view (Fig. 2): depth varies from 1 to 5 mm, tapering from top width of approximately 4 mm to sharp V-groove bottom of approximately .5 mm.

The back wall of the large groove, on both sides, is lightly grooved with the grooving most pronounced at the rear, close to the hole.

The artifact is available for examination at Bronson Museum. Any information on similar artifacts, or possible use, will be most welcome.

Figure 2. Three views, left to right, showing front, left side, and rear of Gahan artifact.
CULTURE'S PITFILLS: 
THE EVIDENCE FOR PREHISTORIC BACKFILLING

Curtiss Hoffman


Humans are the only members of the Primate order which regularly engage in the digging of holes. This activity is documented in the archaeological record well back into the mid-Pleistocene; and many paleoanthropologists (e.g. Isaac 1978:104; Campbell 1985:217) suggest that along with the flaked pebble, the digging stick may have been one of humankind's earliest tools. The repertoire of cultural uses for holes is vast. It includes the gathering of vegetable foods, of lithic and mineral materials; trapping of animals; production of food through planting and plowing; protection from wind for cooking fires or temporary shelters; construction of permanent dwellings, walls, and ceremonial structures; undermining of the above in instances of demolition, looting, or certain types of organized warfare; burial of the dead and ceremonial offering; memorials; disposal of wastes; diversion and retention of water; acquiring soil for use as fill in land-alteration; storage or concealment of food or valuable material items for future use; creation of oxygen-free environments for special types of cooking or manufacture; and finally the peculiarly rectilinear holes used by archaeologists investigating all of the above activities.

All human cultures with access to tractable ground surface include some of these activities, although environmental, technological, and even ideological factors may limit the range a particular culture uses. For example, the 19th Century Wanapum (Idaho) Indian prophet Smohalla voiced objections to the attempt of Anglo-Americans to settle his tribe into farming thus: "You ask me to plow the ground! Shall I take a knife and tear my mother's bosom? Then when I die, she will not take me to her bosom to rest. You ask me to dig for stone! Shall I dig under her skin for her bones? Then when I die I cannot enter her body to be born again." (Mooney 1896:721).

Each type of hole-digging can leave traces to be discovered by archaeological investigation. Much of our interpretation of site function is based upon study of the structure, content, and organization of features of this type. It has been suggested by several authors (e.g. Binford 1964:37; Ritchie and Funk 1973; Barnes 1980) that we need to pay more attention to features for this reason. However, our ability to recognize and accurately interpret the holes dug by previous cultures is limited by a factor which has not received much attention in the literature: the ways in which these holes were filled up. We often recognize features because their contents are of a color, consistency, or chemical composition different from the surrounding soil matrix. A feature which did not intrude into different soil strata and which was filled in with the identical unaltered contents that had been removed from it might well be indistinguishable from its matrix. We might be able
to infer its presence from the distribution of cultural remains; but as Strauss (1978) has shown, treefalls can create identical but quite natural clusters of cultural material. If a feature contains not one but several types of different soil, its identification as a feature may be easier, but its interpretation becomes considerably more difficult.

The remainder of this article documents several cases which the author has encountered in which features appear to display intentional backfilling. These cases seemed bizarre at the time of excavation, until the hypothesis was advanced that when filling up a casually-dug hole, non-archaeologists are not necessarily likely to backfill so as to restore the original soil profile. Instead, following the Law of Least Effort (Luedtke 1980:101), they are likely to unload earth into the hole by the most convenient means. The initial model for this behavior came from the description of the Kolomoki mounds in the Southeast (Figure 1; Sears 1951,1956). There, heaps of soil of different colors constituting the mound fill have been interpreted as basketloads of earth dumped on the site by its builders. Presumably, each load derived from a different soil type, creating a characteristic profile. While the construction of such a mound involves the deposition of basketloads above the existing land surface, the present paper suggests that pits were filled by the unloading of baskets of earth below the surface. Similarities will exist between the remains left by the two activities, but the action of gravity will result in some noticeable differences as well. As a final cautionary point, it should be noted that the soils used to backfill pits need not have derived from the pits at all, and may have contained cultural material unknowingly unearthed from previous site components. This has obvious implications for interpreting the age, function, and relationship to general settlement pattern of a feature.

Figure 1: Profile of Kolomoki Mound E, Georgia (reproduced from Sears [1956] with express consent of the publisher).
The first example, and the most obvious, derives from the A7-8HR site in Hanover (Hoffman 1986). Here, a series of industrial enterprises from the mid-18th century created significant land disturbances (Briggs 1889:6-12). The final factory, a rubber mill, burnt to the ground in 1939, and local residents report that during cleanup operations many open pits were backfilled for safety reasons. The pit shown in Figure 2 was filled with alternating sloping lenses of subsoil and rubble made up of coke, cinder, and ash. The lenses run parallel to the pit sides, and are fairly thin. Mixed within the pit fill are quartz tools and flakes most likely derived from an underlying prehistoric site. Their context is decidedly secondary, as proved by the presence of modern coke and cinder both above and below them. Outside the perimeter of the pit, more quartz debitage was found in undisturbed context. It appears that the fillers of the pit filled it using shovel-loads of soil from the immediate area, including both historic cinder heaps, topsoil, and subsoil.

Key to Figures 2, 3, 4, 5, 6, 7a, 8, 9, 10.

- Topsoil
- Normal Subsoil
- Feature Soil
- Gravel & Sand
- Charcoal Concentration
- Fireburnt Rock

Figure 2: North Profile of Unit A8HR N59E79, A7-8HR Site, Hanover, Massachusetts. The vertical scale is identical to the horizontal scale, as shown here, also in Figures 3, 4, 5, 6, 7a, 8, 9 and 10, where the vertical scale has been omitted.

A second example of historic pitfilling derives from the F29-30PE site in Pembroke, excavated during the 1986 field season of the North River Archaeological Project. A former landowner, whom I interviewed, cleared trees from a part of the property during the 1950's and buried the stumps. In so doing, he dug a pit which intruded into a large prehistoric feature. The resulting profile (Figure 3) shows large patches of various soils to a depth of 76 centimeters below the present surface; modern wire nails were found in the disturbed area to that depth. The darker patches probably resulted from the decay of the stumps; the lighter patches represent soil dumped into the pit to cover them.

The next set of examples derives from the Cedar Swamp-3 site in Westborough (Warfield 1986). During the Early Woodland occupation of the site, the inhabitants constructed several deep pit features lined with large quartzite slabs. The predominant soil type in these features is a distinctly reddish earth; however, other lenses appeared at various levels. Feature #1 (Figure 4), a bowl-shaped depression 1.8 meters in diameter and at its deepest point 75 centimeters deep, includes several bowl-shaped lenses of a yellowish-grey sand ordinarily found underlying the level of cultural
Figure 3 (left): North Profile of Unit F30PE S60E74, F29-30PE Site, Pembroke, Massachusetts.

Figure 4 (below): West Profile of Feature #1, Units S88-89W1, Cedar Swamp-3 Site, Westborough, Massachusetts (after Warfield, 1986).

Figure 5 (left): East Profile of Feature #2, Units S99-100E1, Cedar Swamp-3 Site, Westborough, Massachusetts (after Warfield, 1986).
deposition. There are also two lenses of similar size and shape containing in one case flecks of charcoal and in the other, a charcoal stain overlain by a large, flat rock. Carbon from the latter stain was dated to 2655±155 B.P. (GX-10096). The sparse recoveries from feature #1 included an Orient Fishtail and eight sherds of Vinette I pottery. Few remains were retrieved from the sand lenses; however, a large blonde felsite end-scraper did come from a lens of greyish sand underlain by red earth.

Feature #2 (Figure 5) consisted of a burnt rock platform 1.3 by 1.7 meters in diameter, within a larger bowl-shaped red earth feature at least two meters in diameter. Beneath the burnt rock platform was a dense charcoal stain dated to 2200±85 B.P. (GX-10923). The red earth continued beneath this to a depth of 109 cm below surface. Within it were two lenses of the yellowish-grey sand described above. To the southwest of the feature, a large area of the same sandy soil was found just below the junction of the topsoil and subsoil, suggesting that it had been removed from the bottom of the pit of feature #2 in the course of its construction. These sand lenses were mostly devoid of cultural remains, but flakes and artifacts were found both above and below them.

Feature #9, a large red earth pit, extended to a depth of 107 cm, and was very difficult to interpret due to its complexity. It appeared to have contained Feature #5, a small red earth pit extending to 75 cm in depth and containing a charcoal lens dated to 2130±70 B.P. (Beta-15196). Within Feature #9, on the west wall, were several diagonal zones of alternating yellowish grey sand and a brownish yellow soil, the normal subsoil at the site. On the south wall (Figure 6), a strange funnel-shaped area of reddish soil appeared. Once again, the reddish soils contained the cultural material, including a scatter of felsite debitage, a hammerstone, and several tools. The layers of unusual soil were nearly devoid of cultural material even though it was found around, above, and below them.

Our interpretation of these deep features at Cedar Swamp-3 is that they have seen multiple reuse, with episodes of backfilling between uses. The lens-shaped zones in Features #1 and #2 are considered to be the result of dumping uniform volumes of earth, possibly from baskets, directly into the feature. Probably the red earth was deposited in the same manner, but because it is of such uniform consistency it is not usually possible to distinguish individual basket loads. Features #5 and #9 appear to represent a similar activity, but the earth was unloaded by pouring it down the side of the feature, producing diagonally tipped lenses similar in orientation to those at the A7-8HR site. The greater thickness of these lenses suggests that a larger volume of earth than a shovelful was dumped at a time; hence, we again hypothesize the use of baskets.
The final set of examples is from the Charlestown Meadows site, also in Westborough. In Area II of this site, Feature #20, a large, shallow red earth pit, was excavated (Hoffman 1982). Its shape appears on the basis of soil cores to be elliptical, with axes of five and four meters, and a maximum depth of 20 centimeters below junction with the plow zone (Figure 7a). Within this feature were found two lenses of sand and pea-sized gravel derived from the underlying glacial deposits, two charcoal stains, a zone of a moderate amount of mammal and turtle bone, and a dense area of quartz flaking debris, including over 2000 flakes and 34 artifacts. Across the pit and extending to the northwest and southeast beyond it marched a double line of post molds about one meter apart (Figure 7b). Organic remains from the feature indicate a late summer encampment (Largy 1984:9). The quartz tools include small stemmed and small triangular points, and numerous small flake scrapers. One would expect that this would be an assemblage of the Late Archaic period, and indeed a feature just to the south yielded a date of 4290±280 B.P. (BS-227). However, a charcoal sample submitted from one of the lenses in Feature #20 returned the surprising date of 9120±280 B.P. (GX-10925). Funding for the date was generously provided by a matching grant from the M.A.S. Chronological Dating Committee. The laboratory assures me that the sample was uncontaminated and that the processing was normal. This leaves only two possibilities: either to accept that the quartz cobble industry dates back to Late Paleo times or to posit some other explanation as to how such early charcoal got into a Late Archaic feature.

The presence of the various lenses and scatters in Feature #20 allows for the latter interpretation. Apparently, in the course of backfilling the feature, various soils were dumped in -- the size of the lenses again suggests basket loads. These included some early postglacial sand and gravel; they may also have included the charcoal from a Paleo-Indian hearth. The only known Paleo-like point from Westborough derives from a site less than one kilometer away (Hoffman 1984); and the famous Northborough Mastodon (Hartwell 1979a,b) was found only two kilometers from Charlestown Meadows. Thus, it is entirely possible that Paleo hunters foraged in the area. I regard the charcoal from their fires found in association with tool-making debris from a Late Archaic occupation as entirely fortuitous, deriving from the backfilling operations of the later people.

Features from Area Ib at Charlestown Meadows, dated to 5225±195 B.P. (GX-8614), show none of the lenses seen in Area II (Hoffman 1983). These pits
average one meter in diameter and 70 cm in depth; they are filled with flakes and broken tools, mostly of quartzite. Unlike the situation in Area II and at Cedar Swamp-3, there are extensive scatters of debitage on what appear to be habitation surfaces outside the features as well. This area is interpreted as a temporary fall campsite (Largy 1984:6) in which there was no particular necessity to dispose of debitage neatly by depositing it in pits.

It is possible to read some social history out of this series of dated features. As Filios (1983) has suggested, pit size and complexity is an indication of greater communal effort or "equity", requiring more investment by a population in a particular place. One should observe an increase in this factor over time. The early pits from Charlestown Meadows probably represent a small group of hunters ranging into the uplands seasonally to obtain game and Westborough Quartzite,
and not remaining at the site long enough to bother about redeposition of debitage (Hoffman 1980:5). The later, large pits from Area II may represent a seasonal camp of a complete social unit, near the water for the acquisition of aquatic resources such as turtles. With the presence of children in the camp, it may have been advantageous for safety reasons to backfill pits and get rid of sharp debitage from the ground surface. Finally, at Cedar Swamp-3 we have a large multi-seasonal camp revisited frequently over a 2,000 year period, undoubtedly by a fairly large mixed group. Preliminary indications from organics indicate a spring through late fall encampment (Rhodin 1986; Bellantoni and Dorr 1986). Here, once again, it was obligatory to backfill pits and remove debitage. It is estimated that this is a
larger population group than that at Charlestown Meadows, given the higher density of features.

As a final test of the hypothesis of prehistoric backfilling, it was decided to backfill some of the squares at Cedar Swamp-3 in various ways at the end of the 1985 season. They were unbackfilled the following spring to see what one winter of settling in had produced. Feature #1 (Figure 8) was backfilled with shovels under loose earth conditions. The lenses apparent here are rather thin, some of them tipped as at the A7-8HR site. Feature #24, a fairly shallow red earth pit (Figure 9), was backfilled in early December after the ground had frozen. Our backfilling was necessarily in large chunks of approximately the size of the hypothesized basketloads; we intentionally included soils of different types at various levels. The effect is, on the whole, rather similar to that observed in the prehistoric features at the site, with discrete lenses of different colored soils at various levels. Feature #15 (Figure 10) was backfilled with even larger slabs of frozen soil. Here, the effect is to produce large, thick lenses of different colored soil. This preliminary test suggests that the effect of lensing observed is a function of the volume of soil in a single load. Future tests may attempt to quantify this.

Thus, the phenomenon of prehistoric backfilling can account for some of the mysterious properties of features at archaeological sites in New England. It must be taken into consideration if we are to interpret them correctly.

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IMPRESSIONS OF A HUSBAND,
MONTGOMERY, ALABAMA

July 11, 1985

David H. Dimmick

Note: The following was written during a trip to central Alabama to research sites and collections relating to a reconnaissance survey made ten years earlier by an archaeologist and not yet reported. The writer's wife, Frederica, is working on the narrative and descriptive aspects of the survey report for the original investigator, Dr. Ian W. Brown of the Peabody Museum at Harvard University.

The search for one of Ian's sites turned out to be much more exciting than I could have imagined. I had read his survey field notes, but could not form a mental picture of the scene because I had no frame of reference. Fields of sandy loam with no rocks; nearly level terrain with scoured out river and creek courses; vegetation covered with kudzu vines reaching to the tops of tall trees and forming impenetrable thickets; changed land appearance due to flooding and agricultural activities; friendly natives!

For some reason not clear to me, the site to be found this morning was Debardeleben. Freddie had located the site on Ian's U.S. Geological Survey maps. Without these maps, we would not have located the correct farm (dirt) road South of Route 14. After a false turn we were able to trace the farm road North from the site on the map, and then identify the correct crossroad angles and configuration where the farm road intersected Route 14. The bends in the road and location of occasional landmarks confirmed we were on the right road.

We parked just off the farm road to the West of the Debardeleben TC 6 site. I appreciated the simplicity and accuracy of Ian's sketch maps in his field notes. The demarcation between woods and cultivation was especially helpful.

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Initial wanderings about TC 6 to see if I could actually locate anything that I could clearly identify as being the work of another person were fruitless. Finally, with my disposable snake-stick thrashing the thigh-high vegetation in front of me, I clambered down the bluff to the river's (Coosa River) edge, a vertical height of only eight to 10 meters. Walked along the water's edge for about 100 meters. Noted a small amount of normal river edge debris (beer cans, etc.) and a few pebbles. To this point I had only seen sand, and all potsherds were decaying bits of wood or leaves.

I found an area open from recent erosion and started back up the bluff. At my feet was a one-inch long thing (I should say 26 mm, but in my excited state it looked like an inch), black on the top side, in the yellow sand. The edges and other side were a gray-brown color. It was about five mm thick with parallel sides with a black side slightly concave. The real thing; no question about it! In my haste to show it to Freddie, I almost forgot to warn the snakes with my stick. She was annoyed with me for disappearing so I had to conceal my enthusiasm until she got over being upset.

Subsequently located other potsherds and flakes in the cultivated (cotton fields) area of TC6. Ian's notes had come alive for me. I wonder if seasoned archaeologists can remember uncovering their first artifact at the site where it was used by its makers?
THE CONTRIBUTORS

PHIL BRADY is an avocational archaeologist and a member of the Cohannet Chapter of the Massachusetts Archaeological Society.

BOB CARLSON has had a lifetime interest in American archaeology and has done extensive work in the local area. He is a long time member of the M.A.S. and authored "The Washakamaug Site" (Bulletin of the Massachusetts Archaeological Society 25: 29-35 [1964]).

DAVE DIMMICK trained as an engineer and works as a sales manager for Honeywell Information Systems. He has a growing interest in all aspects of archaeology.

CURTISS HOFFMAN teaches Anthropology at Bridgewater State College and is past President of the Massachusetts Archaeological Society.

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NOTES TO CONTRIBUTORS

The Editor solicits for publication original contributions related to the archaeology of Massachusetts. Authors of articles submitted to the Bulletin of the Massachusetts Archaeological Society are requested to follow the style guide for American Antiquity (48:429-442 [1983]). Manuscripts should be sent to the Editor for evaluation and comment.

Manuscripts, typed as originals with two copies, should have margins of 3 centimeters (1 and 1/4 inches) on all edges. Corrasable paper should NOT be used. Typing should be on one side of paper only with at least double spacing. Proper heading and bibliographic material must be included.

Bibliographic references should be listed alphabetically by author and presented as follows:

Gookin, D.

Several references by the same author should be listed chronologically by year. Reference citations in the text should include the author’s name, date of publication, and the page or figure number, all enclosed in parentheses, as follows: (Bowman and Zeoli 1973:27) or (Ritchie 1965: Fig. 12).

All illustrations, including maps, are called figures. Figures should be submitted to the Editor as originals and must conform to the following:

1. Figures should be planned with the available space of a Bulletin page allowing for margins:
   - A full page figure turned on its side can be 23 cm (9 inches) wide by 18 cm (7 inches) high (including caption).
   - A full page figure in the preferred vertical position can be 18 cm wide and 23 cm high (including caption).
   - A half page figure can be up to 18 cm wide and 11 cm high (including caption).
   - A quarter page figure can be up to 8 and 1/2 cm wide and 11 and 1/2 cm high (including caption).

   Reduction of figures to the proper size is the responsibility of the author, but the editor can offer advice in special cases before the final figures are made.

2. Figures must be referred to in the text and are to be numbered in their order of reference, with their number placed lightly on the margins of their reverse sides. Every item in each figure and each person should be identified. All lettering must be clear and legible and have high contrast; dry transfer letters available at any stationery store are fine. No pencil drawings are acceptable. Photos must be glossy prints with high contrast. Scales with dimensions should be included with all figures for which they are appropriate. Captions, not a part of the illustrations, should be typed on a separate sheet in order and numbered to correspond to the figures.

Dimensions and distances should be given in metric units or in metric units and English units. If feet and inches are used, they are to be spelled out.