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This is the Society's Museum, 5th Floor of the 8 North Main Street Building, Attleboro, Mass. — Museum hours are from 9:30 to 4:30, Mondays, Tuesdays, and Thursdays. For special arrangements to visit on other days, contact the Director, Maurice Robbins, or the Curator, William S. Fowler at the Society Office, Bronson Museum, Attleboro, Mass.

The Museum includes exhibits of artifacts and seven dioramas portraying man’s prehistoric occupation of New England. The displays are arranged so as to show man’s development through four culture stages, from early post glacial times.

The most recent diorama extends 15 feet across the front of the museum. It depicts an Archaic village of seven large and unique wigwams as indicated by their foundations, excavated at Assawompsett Lake by the Cohannet Chapter. Human figures to scale make the scene come alive and help create what unquestionably is an outstanding addition to our ever growing museum displays.
EARLY ARCHAICS AT THE BLUFF SITE

WILLIAM S. FOWLER

After completing a successful excavation at the Flat River site, members of the Narragansett Archaeological Society of Rhode Island were faced with the problem of finding another site that looked promising. Previously, they had moved from shore sites into the uplands in search of Early Archaic evidence, which had been found at Flat River. And now they desired to continue their search in the uplands in hopes of finding more remains of the Early Archaics. The slow-flowing Flat River, nearby the last site, seemed to offer a possible answer to this quest, but to find the exact occupational locale along its banks required something more than a wild guess. A bend in the stream at one point seemed to be attractive, especially as the bank around the bend was quite steep, rising some 30 feet above the water. Test holes were dug at places nearby, some 20 or 30 feet away from the bank, but without much success except for an occasional chip or two. Encouraged by this scant evidence of aboriginal man the work of testing continued, until in the last hole dug a perfect white quartz Small Triangular projectile point appeared. This was a good omen, or so it seemed, that invited a more extensive investigation at this location. Soon after on September 7, 1967 a small excavation by several Society members was undertaken at this spot, with recovery of a Sinewstone and many Small Stem points of white quartz. This sparked the opening in June of the following year of an extensive dig by the Narragansett Society, the subject of this report. Upon such small beginnings often more intriguing discoveries are made, which turned out to be the situation at this site, as the soil that had covered untold ages of occupation was gradually scraped away.

Work was undertaken with permission granted by the Quidnick Reservoir Company, owner of the land, to continue excavation of the area in the interest of further archaeological study. To judge from recoveries reported in this paper, it would appear that this grant has been amply worthwhile, and it is acknowledged with sincere thanks.

THE SITE

With excavation of the site completed, occupational evidence was found to cover a long, strung-out area extending along the river bank for a distance of 300 feet around the bend previously mentioned. This area, covered with pine and beech growth, consisted of a fairly flat piece of land, which sloped at both ends down to the stream below. Width of occupation away from the river bank, as determined by artifact and stone hearth recoveries, was confined to about 30 feet at the western end, only a bare 15 feet at the eastern end, and some 40 to 50 feet for a stretch of about 70 feet in between. Beyond this central area and extending to the eastern end the land sloped off into a shallow gully. There in earlier times a spring may have existed, although this is only a guess, as no tests were made. Possibly the occupants of the site were content to use river water to satisfy their thirst. Be that as it may, whatever may have been the source of drinking

Fig. 1. MAP OF SITE EXCAVATION, the Bluff Site, showing occupational features.
water, aborigines, moving over this river thoroughfare, probably selected the site because of its advantages as a lookout. Here, 30 feet above the stream at a place where it made a sharp bend, a view could be had far up and down the river. And going back to the time of the Early Archaics, when the site was first occupied, the probable absence of trees in the tundra of those days afforded hunters a sweeping view of the countryside in their quest for game.

An important feature, as defined by recovered artifacts and a distinctive stone hearth, was a small area of about 588 sq. ft. at a spot near the western end, where the river makes its sharpest bend. Here were found the remains of an Early Archaic camp, exposing the results of hunting activity, the only signs of this early occupation to appear. Throughout the rest of the site, evidence solely of the Late Archaic and Ceramic cultures was found. Apparently the Early Archaics had selected this most advantageous spot as a lookout for game — probably caribou — which are believed to have been their principal quarry. An approximation of these site features is shown by the accompanying drawing (Fig. 1).

**EXCAVATION DATA**

Three seasons — from 1968-1970 — were required to complete excavation of the site, and during this time approximately 7,316 sq. ft. were carefully dug by short-handled hoe and trowel-scraping. In laying out the site the grid system was used, with 6 foot grids extending back from a base line at the edge of the bluff. Excavation was carried down through the subsoil to depths dictated by occupational evidence, with recordings made of 400 recognizable artifacts, and 23 stone hearths in situ. Refuse pits were few in number, only three of which contained artifacts. This suggests limited sojourns at the site of a few people at a time, which might be expected on a water thoroughfare such as Flat River.

Soil stratigraphy consisted of a depth of from 6 to 8" of loam, below which appeared yellow sandy subsoil. This had depths varying from 8 to 15" or more with white sand lying below of an undetermined depth. Lenses of pebbles occurred a short way down in the yellow at several places, with a few scattered small pebbles appearing frequently throughout much of the site. However, in the area where the Early Archaic remains occurred, presence of pebbles was almost non-existent.

Disturbances of several kinds interfered to some extent with depth measurements of recoveries at a few places, but most artifacts seemed to represent reasonably accurate levels of deposition. Of the disturbances, one of the worst was from an old wood road, which ran the length of the site. Artifacts from this trodden pathway often appeared to be out of context, and were excluded as occupational zone determinants. Possibly this resulted from logging vehicles in bygone days cutting ruts in wet weather, that pushed artifacts either up or down in muddy soil. Other disturbances were minimal, such as may have occurred from animal holes, or from refuse pits made by the occupants themselves. As for plowing, there were no signs of it, such as plow share marks in the upper subsoil, or a sharp well-defined line of demarcation between loam and subsoil. Therefore, with only a few disturbances to contend with, recoveries on the whole seem quite reliable as to their stratigraphic positions.

**ZONES OF OCCUPATION**

In a site like this with disturbances at a minimum, archaeological stratigraphy becomes an important agent in the interpretation of the evidence. However, some movement of artifacts from levels at which they were first dropped always may be anticipated from natural forces, such as erosion caused by wind and rain, or from heaving as a result of frost and tree growth. Therefore, depths of artifacts as excavated, although they only approximate their original levels of deposition, should be relative. For this reason, the following method of establishing occupational zones was used with what seem to be satisfactory results.

As a base line for vertical measurements, the area separating loam from subsoil — called Junction — served a useful purpose. It provided a natural established line to which all recoveries were measured to the nearest inch, and then recorded. However, as the Junction was formed by the leaching of dark colored loam into the yellow subsoil — not sharply defined as when cut by a plow — an irregular one inch band of a darkened mixture resulted. Hence, measurements were made to its center as nearly as possible, with a second vertical measurement made to the grass roots at top of the loam. These were recorded on a printed form and a note made of the soil horizon in which the artifact was found. This is now the standard procedure in this region, as used by many.

Three culture periods were found to exist at the Bluff site using typology as a guide. Projectile points have been used in this study, since they were numerous, and more than anything else were man's most reliable means for survival. As always, the problem has been to determine what sections of the soil belonged to each culture occupying any given site. In considering this question, it seems obvious that strati-
graphic depth and concentration of a projectile point type should be indicative of either an early or a late culture to which it may have belonged. With this in mind, the following zones of occupation have been established. For each zone the mean depth of the most diagnostic projectile point type or types of the culture involved was calculated to the nearest inch — type names are taken from the Stone Implement Classification of the Massachusetts Archaeological Society.

The lowest zone (confined to a small area at the western end of the site) — Early Archaic — (maximum depth of point types involved was 9" below Junction); 15 recoveries of Corner-removed #5 and #8 had a mean depth of 3.74" or 4" below Junction.

The next zone just above — Late Archaic — (maximum depth of point types involved was 3" below Junction); 11 recoveries of Eared #2, 3, 4, had a mean depth of .82" or 1" below Junction.

The last, and highest zone — Ceramic (Woodland) — (maximum depth of point type involved was at Junction); 11 recoveries of Small Triangular #5 had a mean depth of 2.10" or 2" above Junction.

Therefore, using these criteria and allowing for some probable overlapping between zones 2 and 3, which tended to merge at Junction, occupational zones, in which these points and other associated artifacts were found, are suggested as follows:

Zone 1 — Early Archaic — from 9" below up to 4" below Junction.
Zone 2 — Late Archaic — from 3" below up to Junction.
Zone 3 — Ceramic (Woodland) — from Junction up through the loam.

SITE FEATURES

Charcoal Pits. Beside a few small refuse pits, 3 of which yielded 6 projectile points, there occurred 4 larger pits filled with charcoal. Three of them appeared somewhat similar. They had diameters of from 18 to 20" with their level of origin at about 3" below Junction in yellow subsoil. Depths of their charcoal fill measured between 3 to 11", and in one pit were large chunks of charcoal. No bone refuse or artifacts appeared; only one small white quartz chip occurred in one pit. The fourth pit with a 20" diameter had its level of origin deeper than the others, which makes a closer examination of it seem worthwhile.

Directly above this fourth pit a workshop consisting of many quartzite chips appeared at 1" below Junction, extending 6" in depth. Below this deposit occurred a lense of coarse gravel about 5" thick, while directly below it about 13" from Junction the round 20" diameter top of a black charcoal deposit was exposed. A 7" deep fill of crushed charcoal was found in the pit, interspersed with small chunks of charcoal, but with no bone refuse or artifacts of any kind. Just what interpretation can be made of this and the other 3 pits from the available evidence is doubtful, except to observe that apparently they were the work of man.

Stone Hearths. A stone hearth is important as it represents the center of family living, and when found at different levels sometimes reveals something about environmental changes that may have taken place. Of the 23 hearths found in situ, 14 occurred at Junction and so might have belonged to either the Late Archaic or Ceramic occupants. Another hearth was uncovered an inch up in the loam, which places it quite definitely with the latter people. Seven more appeared 2 to 3" below Junction in Zone 2 of the Late Archaics. All of these hearths were more or less the same in appearance. They consisted of an indiscriminate assembly of stones, massed together in more or less circular groups with diameters of from 15 to 30". Sometimes the stones consisted of large cobbles, while at others only small stones were present. Quite generally they were of pegmatite, a common stone in the area. In several cases some charcoal was present, but for the remainder only a few flecks were found, while burned reddened subsoil was noticed with some. Apparently, these hearths were in use when forests were present with logs burned on top of the stone masses, since central small fire pits, suggesting stick fuel, were not in evidence. These hearths were found at various places over the entire site, as shown in the site drawing (Fig. 1), while a few loose firestones perhaps from demolished hearths appeared throughout the loam.

However, description and interpretations of the remaining hearth of the 23 recorded ones is quite different. This hearth occurred in the small area occupied by the Early Archaics, as shown in the drawing. It lay at a deep level of 6" below Junction, well within Zone 1, and was the only hearth to appear that deep in the subsoil. It was irregularly circular with an outside diameter of about 24 x 26", and consisted of 32 cobbles, small and large, of which the largest measured about 5 x 5 x 5". Several of these were so placed as to form a fire pit, and in this respect the hearth differed from all others.

Instead of a scattered mass of stones, it was built with a wall of cobbles partly surrounding a small fire pit, which had a diameter of 11 x 14". On one long side an 11" opening between two large cobbles had been left, apparently as a convenience for feeding the fire. The fire pit was paved with 6 flat-faced stones, under and about which some charcoal and burned
soil appeared (Fig. 2). Similar in one respect to the other hearths was the use of pegamite for the cobbles. These, in some instances, were heavy cobbles with rather flattened faces. Evidently, these indigenous stones had been brought to the camp from the river bed below or from nearby regions. Apparently, here was a hearth with a different story to tell, since it seemed to be made for burning sticks and not logs, as suggested by its small fire pit. Located in a small area of the site, the only place where Corner-removed #5 and #8 points of the Early Archaics were found (Fig. 3), it seems obviously associated with these early occupants. Further, this hypothesis is supported by the hearth's deep position in the subsoil. Seemingly, this evidence suggests a tundra environment, which produced not logs but sticks for fuel, which were burned in the confinement of the small fire pit, apparently made for the purpose of conserving the heat.

ARTIFACT RECOVERIES

Of the 400 artifacts recorded at the site, 211 are projectile points of which 52% are Small Stem; 12% Small Triangular #4,5; 15% Corner-removed #3, 7% Corner-removed #5,8; and 6% Eared #2,3,4. The remaining types are divided between Leaf, Large Triangular, Corner-notched, Corner-removed #7, Side-notched #1,3,5,6, and Diamond. Beside projectile point recoveries there are 81 scrapers divided between Steepedge, Stem, Flake, Shaft, and Oval types; 33 knives made up of Stem, Stemless, and Flake types; while the balance consists of numerous other implements, but in small numbers. Representative specimens of these together with projectile point recoveries will be found among the illustrations, shown in the zones to which they belong (Figs. 3,4,5).

Apart from these group illustrations, it seems desirable to describe in detail another important recovery. This consists of 3 fragments from 2 decorated ceramic pipe bowls. Sizable rim sherds are present for both, each identified by different designs. On both bowls an incised motif is meticulously executed with what must have been a very sharp stylus of some kind. Presumably both pipes had the elbow shape; at least the fragment from pipe #2 displays the curve of an elbow style where the bowl joins the stem. The projected bowl opening of pipe #1 has about a 3" diameter, while that of pipe #2 measures about 5"; the inside surface of each have areas blackened from burning. The paste used for these pipes is fine grained, very hard, and without perceptible temper. Light tan in color, it is unusually thin, measuring 3/16" and tapering to 1/16" toward the rim. The pipes ap-

Fig. 2. EARLY ARCHAIC STONE HEARTH, the Bluff Site. Hearth appeared in Zone 1 within small area at western end of site.
PEAR to have been evenly-shaped with very smooth surfaces both sides, while one reveals a high gloss on the outside; slightly less on the inside.

The design on pipe #1 consists of a fine 9 line incised horizontal linear, interrupted by a 1/16" wide vertical space. This probably repeated about the pipe bowl to divide the linear motif into four segments, as calculated from the 3" length of a small rim sherd from this pipe. Because of the fractured bottom of this sherd, 3 horizontal lines of the linear are missing, but at least one line of the vertical interruption at one end is present to prove the sherd belongs to this pipe.

The design motif of pipe #2 reveals an indicated 3 line linear chevron, filled in with many fine horizontal lines carefully drawn so as not to overlap. The circular bowl opening of this pipe appears somewhat square-cornered, with a slight rise of the corner showing on the recovered sherd. This suggests that a rudimentary castellated development may have been present. Illustrations of the fragments, including projected illustrative restorations of both pipes and design motifs have been prepared to provide an opportunity to study the various details just mentioned (Fig. 6). Fragments of both pipes appeared in Zone 3 half way down in the loam. Probably they represent a sophisticated development of the late Ceramic Age.

Potsherds from one pot of late Stage 1 — 15 to 20 in number — occurred at Junction, presumably a deposit of Zone 3, since no sherds of any kind were found deeper in Zone 2. They are thick, with coarse mineral temper; a flat to rounded rim; prominent evidence of coiling; cord-marked outside with a rough surface inside. Whether or not this group of sherds was intrusive at Junction as a result of being in a refuse pit could not be determined. However, 3 more stray sherds, not in a pit, appeared at Junction at another spot, and they were from an earlier Stage 1 pot, cord-marked both sides. These recoveries tend to show that the Ceramic occupation of Zone 3 commenced at Junction, where Zone 2 left off.
Fig. 4. LATE ARCHAIC RECOVERIES, ZONE 2, the Bluff Site. 1-4,18,Corner-removed #3, 5-11,Small Triangular #4, 12-17,Small Stem, 20,Side-notched #6, 21,Side-notched #7, 22-27,Eared #2,3,4, Projectile Points; 19,Cross Drill; 28,29,Flake Scraper; 30,Shaft Scraper; 31, Stem Knife; 32-34, Flake Knife; 35,36, Stem Scraper; 37, Oval Scraper; 38, Semifinished Whaletail Pendant; 39, Chunky Knife.
Fig 5. CERAMIC (WOODLAND) RECOVERIES, ZONE 3, the Bluff Site. 1-8, Small Stem; 9-11, Corner-removed #3; 12, Side-notched #6; 13, Side-notched #3; 20-24, Small Triangular; 25, Large Triangular Projectile Points; 14, 16, Shaft Scraper; 15, Hammerstone; 17, Oval Scraper; 18, Stem; 19, Stemless Knives; 26, Crescent Drill; 27, Whelk Shell Awl; 28, Tapered Stem Drill; 29, Chipped Ax; 30-32, Flake Scraper; 33-35, Stem Scraper; 36, Hatchet Club; 37, Sinewstone.
Scattered pieces of quahaug shell occurred throughout the loam, but no lower. Apparently, occupants of Ceramic Zone 3 were shellfish eaters to some extent, and at times brought a few of these mollusks to the site from the seacoast. As added proof of a shellfish-oriented economy for this last zone of occupation, recovery in it was made of a whelk shell awl lying in the loam, 3" above Junction.

Now with all the evidence in, that which remains is its interpretation, so that the story of the Bluff site can be told. Identification of the first occupants of the site has been shown to have been the Early Archaics with their uniquely different Corner-removed #5 and #8 projectile points, probably about 6,000 years ago. They made camp at a sharp bend in the river, doubtless because it was elevated high enough above the stream and surrounding terrain to provide an extensive view in their search for caribou, upon which they were dependent for food, clothing, and maybe for the building of skin huts as well. They were few in number, but no doubt included the entire family, as suggested by the well-constructed stone hearth with small fire pit, indicating the probable presence of women. In this limited area of the site, as shown, these early campers stayed long enough to build the hearth, which reveals much about the environment. Its walled-in fire pit was only large enough to accommodate sticks for fuel; logs would have been impossible. Therefore, a tundra bushy expanse probably existed, which provided stick fuel, suggesting that forests, as we know them today, had not arrived. This Early Archaic type of stone hearth is by now well-known as it has also been found and reported at low levels at Titicut, Twin Rivers, and Oak Island sites. However, unlike these other sites the remains of the Early Archaics at the Bluff site were confined to a small part of the site at the lowest level. This tends to set them apart as the first arrivals, and at an early period unrelated to the later occupants of the site. It supports the belief that they belonged to a distinct and unrelated culture to those that followed, long before arrival of the Late Archaics.

Years passed, more than a millennium or two perhaps, before these later settlers, arriving from western regions, found the Flat River bluff attractive enough for occupation. This was at a time when forests covered the area replacing the tundra of former days. These Late Archaics were a different people, who now started living at the site. To judge from the relatively large number of artifacts they left behind, frequent sojourns doubtless were made over an extended period. These settlers were the first at the site to use small projectile points — Small Stem and Small Triangular #4 — presumably hafted on arrow shafts; the bow-and-arrow had arrived. Further evidence of the continuation of this oriented arrow economy was recovery of a Sinewstone in Zone 3. That is, if interpretation of it as an abrading softener for bow strings can be substantiated.

Preference for Small Stem points — 52% of all
point recoveries — at once excites speculation as to why the great quantity, and to what use they may have been put. About evenly divided between Zones 2 and 3, apparently they were important for survival over a long span of two culture periods. It may be that this site was used at intervals by hunters of small game, including grouse, wild turkey, ducks, and geese, which may have abounded in the vicinity. Whatever the reason, presence of their stone hearths throughout the excavated area points to a repeated use of the site by small family groups, who camped there for short intervals, doubtless of a week or so at a time.

However, small game was not the only thing hunted in the last two occupations, as larger game than birds or small animals is indicated by the presence of sizable spear points, such as Eared and Side-notched #1 points, not to mention other wide-based observations. In support of this postulation it seems important to call attention to 3 Hatchet clubs found at Junction, and one recovered in the loam, all presumed to belong to Zone 3. Although perhaps the first use that comes to mind for these implements is as fighting weapons, another more relevant interpretation of their functions seems more reasonable. The writer first noticed this type of club at Twin Rivers, where it appeared in the Ceramic zone. Here was a typical hunting site with all excavated evidence pointing to the chase, not warfare. In view of this, and now with evidence of dominant hunting activity at the Bluff site, too, it seems best to associate these clubs with the killing of game animals.

Assuming that the first successful hit by arrow or spear of a quarry, such as a deer, would probably wound but not kill the animal, a chase would then have been inevitable. At length, coming upon the exhausted animal, the hunter would have used his club to make the final kill. It seems likely that this use of the club over millennia of man's existence, more than anything else, provided the Indian fighter of colonial times with an inherited preference for, and skill in the use of the war club — the dreaded tomahawk.

Recovery at the site in Zone 2 of a Whaletail pendant, although only semifinished, for which a beautifully grained piece of green argillite was used, again confirms the culture position of this product of man's ingenuity as belonging to the Late Archaic.

In the projectile point department, several observations seem significant concerning the relationship of certain point types. Of particular interest is presence of the Side-notched #6 elongated point, which first appeared at Junction, where Zone 2 merges with Zone 3. This seems to place this point as transitional between the Late Archaic and the Ceramic ages, although recovery of a specimen in the loam suggests that the type continued in use into Ceramic times. Evidently it is the same type called by Ritchie, Orient Fishtail, identified first by him at Orient, Long Island. There it occurred associated closely with steatite stone bowls and potsherds — probably not intrusive — of Stage 1 pottery. Ritchie interprets this association as placing this point type in a transitional position between stone bowl and pottery-making. Seeing it again at the Bluff site, similarly related culturally, serves to validate this postulation. Further, it seems worthwhile to note that the same point culture relationship was found to exist at the Lone Pine site in Connecticut, Society Bulletin, Vol. 32, #1 and 2.

Another projectile point observation, noted at the Bluff site and at a number of other sites in New England, has reference to two type variants of the Small Triangular point. Small Triangular #4 with convex lateral sides and a slight concave base had its concentration at Junction, and lay below the mean depth of Small Triangular #5. This latter point tends to have straight to concave lateral sides and base, with its concentration at 2" above Junction, as previously mentioned. Here again is stratigraphic evidence, which strengthens the belief that the former belongs to the Late Archaic, the latter to the Ceramic. Quite obviously, type #4 seems to have gone through an evolutionary change from the earlier culture to the next, indicating racial continuity, in which its lateral sides came to be altered to those of type #5. Why this change took place can only be surmised. Possibly the idea back of it was to increase the point's penetrating performance by creating a sharper tip. Doubtless the change came about from trial and error and from the ever present drive for survival, than from mental reasoning such as is now required toward a logical interpretation.

Portrayal of the 2 ceramic pipes, fragments of which were recovered in Zone 3 of the Ceramic Age, has already been attempted by illustration, and their unique traits reported in detail. Now it seems important to look further afield for evidence of other aboriginal thin walled pipes. As a matter of fact, when the site fragments first appeared, their thin uniform construction seemed to label them as coming from kaolin pipes of the colonial period. However, when thoroughly cleaned, closer scrutiny revealed the presence of fine incised designs, cut a line at a time. Clearly, this was the work of aboriginal workmen — kaolin pipes, when decorated, instead of incisions, show coarse molded lines as if embossed, formed in
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the clay mold. The 2 site pipes with their thin evenly finished smooth walls and minute incised designs are unique for this area of New England. Here ceramic elbow pipes tend to have thicker walls with much coarser designs, having been worked in wet clay before firing. Indeed, the fine incisions of the site specimens are so precise, as to appear unattainable by primitive methods of cutting. However, this degree of perfection may have been reached by cutting the incisions after the clay had dried out just before firing.

While these pipes with their delicately worked designs are rare finds — no equivalent recoveries are known to the writer — their fine paste and smooth to polished surfaces have occurred in New Jersey. In Archaeology of New Jersey, Vol. 2, reference is made to ceramic elbow pipes, about which Cross has this to say: "The surface finish on . . . . the decorated pipes is well smoothed and frequently polished. The paste is usually finer than that used for pottery ves-

sels, and the tempering material is seldom visible to the naked eye." However, all designs shown by Cross have either roller dentate or incised lines coarser than those of the Bluff site specimens.

This report would be incomplete if it failed to mention the dedicated excavating that has made possible such worthwhile results, as those revealed in this paper. Not that anything new has been learned about aboriginal living, but what is just as important, much of the evidence tends to confirm similar findings at other New England sites. The notable exception here, of course, is the unusual and finely-made ceramic pipes, the equal of which may never have been seen before. This site account is evidence of much coordinated effort by working members of the Narragansett Archaeological Society, which has brought this excavation to a successful ending.

Bronson Museum, October 11, 1970

TITICUT CHILD OF THE EARTH

ESTELLE MASON

The child lived along the Taunton River in Massachusetts about 5 centuries ago, according to the archaeologists who excavated fragments of his skull. The inch long quartz arrow point, which had killed him, was still lodged in the skull when it was unearthed. The point had penetrated the head just above the right eye and shattered part of the bone.

We can only guess what the child was doing when the arrow hit him. Was he the son of a chief? Were warring tribes having a battle? Or did the little boy just happen to be in the way when his father aimed at a deer? Because it happened in the prehistory of our country we cannot be sure. And yet the Titicut Child truly lives today.

His skull has been at the Bronson Museum in Attleboro, Massachusetts, since 1947 when members of the Massachusetts Archaeological Society excavated it at the Titicut Site, Burial Plot #6, situated along the Taunton River, Bridgewater, Massachusetts — for full description see Society Bulletin, Vol. 28, #3&4, p. 65. The skull was an interesting curiosity kept safely in a cotton lined box, to be studied upon occasion. It held a particular fascination for Dr. Maurice Robbins, Director of the museum, who often wondered what the living child had really looked like. Dr. Robbins entrusted the skull to me to see if I could reconstruct the head. I have sculptured many heads of living people, but this was the first time I had tried to work from the fragment of a skull. We knew it was a child's skull from the teeth as well as their size. There were 12 teeth (some missing) in each jaw, while 4 adult teeth were still in the jaw bones not yet erupted. We guessed that the child was about 7 years old but I had no preconceived idea as to what the child may have looked like.

The skull seemed almost repulsive to me. The eye sockets were crooked, one higher than the other, and not shaped exactly alike, while the peak of the skull was off center and the whole back was missing. There were 12 teeth (some missing) in each jaw, while 4 adult teeth were still in the jaw bones not yet erupted. We guessed that the child was about 7 years old but I had no preconceived idea as to what the child may have looked like.

The skull seemed almost repulsive to me. The eye sockets were crooked, one higher than the other, and not shaped exactly alike, while the peak of the skull was off center and the whole back was missing. Dr. Robbins and my husband agreed that this was a "long head" type Indian as opposed to a "round head", but I had no idea what they meant.

I took books from the library to study anatomy and I had read books about Indians. But the fragile skull became such a challenge that I put aside all books and just began to work.
Because I wanted to duplicate the skull as closely as possible, I used the smoothest most responsive clay I could find.

I set the skull up against a wooden armature, so I could study it from all angles. It is a natural tendency to try to make both sides of a head as nearly alike as possible. But my little skull was lopsided with its teeth uneven. What to do? I decided to build up a duplicate lopsided skull. But how could I get the exact measurements of the bones? If I had been educated as a scientist, I might have used calipers and measurements in centimeters. Or if I had had other formal training, I might have used other methods. As it was I used my own methods, improvising as I went along. I have a fairly critical eye, but this was not enough. Trusting only my finger tips, I felt the bones over and over again, then felt the clay, and, touching the bones, gently shaped the clay, often not even looking at what I was doing. It was as if my fingertips had a mind and memory of their own, and so I trusted my fingers.

Besides, my eyes could deceive me, and I felt I could not trust the look of the clay. The bones were fragile, dry, thin and brittle, and a dirty brown in color. I had to make my clay skull wet, grey, and solid. I was interested in the over-all dimensions of the skull, but this was not enough, as the subtle curves and planes of the bones had to be duplicated. Appearances could be deceiving, because the tiny variations from one side of the skull to the other were not readily apparent, and I could only imagine the measurements of the missing pieces. After all, it is the small differences which give a face character. Every actor and person in public life knows that he has but one "good profile".

So the missing parts did not, necessarily, have to duplicate exactly the bones on hand, but instead had to complement what I in fact had, in order to balance the structure of the skull. I had to imagine the entire cranium until it felt right to me. As I worked, the more fascinated I became. But when I stood back and looked at what I had created, I was appalled! It was so ugly I almost gave up in disgust. What should I do next? Yes, I thought, I must flesh out the skull. But how thick is flesh? How thick, skin?
Involuntarily I felt my own face till it was covered with clay. How thick was my skin? This was a child's face so it should be soft and round in appearance. But I could not change its bone structure, neither add nor subtract from it, in any way, as I wanted the face to be a portrait of this particular child. Slowly, with a skin of clay over the forehead, jaws and lips, and placement of the ears, the face began to take shape. Next, the soft parts of the nose were formed and the nostrils laid over the senseless mass. Then a peculiar thing began to happen. I cannot explain it, so I'll just tell about it and delay trying to find its meaning until later.

I rolled two small balls of clay and set them as eyes into the sockets, fitting them in lopsided, one higher than the other. It was as if the clay began to take on a personality all of its own. The eyelids had to be formed just so, while the pupils seemed almost to shape themselves. I could not comb the child's unruly windswept hair, and his mouth was too grim for such a young person. Perhaps he had cried out when the arrow hit him. I thought myself calm, but I was not making conscious decisions, and my heart began to pound. No longer studying planes, and curves, my fingers seemed to have a definite mind of their own and knew just what to do, and I felt a tremendous sense of excitement, of overwhelming joy as the boy seemed to come alive. (Fig. 8).

Then I had a compelling urge to give him a name. Swift Arrow? Moon Bright? Child of the Earth? How did he say CHILD OF THE EARTH in his long-ago Indian language? And when I turned my back to pick up a tool, I could almost feel him smile a crooked smile at me, as if he liked his name, CHILD OF THE EARTH.

At that very moment my husband came into the room. "Don't touch it anymore!" he exclaimed. "Stop right there or you might spoil it." And then my sensible, logical, learned husband examined my work closely. "It is an Indian child, all right, and you know, he looks as though he is going to smile."

If you should happen to visit the Bronson Museum in Attleboro, Massachusetts, you may see the life size portrait head of a small Indian boy about 7 years old. After you have gone home he might — he just might smile a crooked smile across the years to you.

Newtonville, Mass.
November 3, 1970

BONE IMPLEMENTS: HOW THEY WERE USED

WILLIAM S. FOWLER

Next to stone, bone served as an effective material from which many kinds of implements were made by the aborigines of the Northeast. However, due to its organic nature, destruction from rot, except when certain preservatives were present, has prevented its survival to a considerable extent in the acid soil of this area. Hence, artifacts made of it are infrequently recovered compared to the quantities of those made of stone, which appear at excavated sites. Usually, shell middens or scattered shell refuse at many tidewater sites provide the best chance for bone recoveries, since lime-leaching from the shells acts as a good preservative.

Excavations of several sites of this kind from Maine to Rhode Island have been reported from time to time in the Society Bulletin, and some of their implements will again be illustrated in this report. To
zon at excavated sites, even though they probably existed during this age and even earlier.

Beyond the reason for this review of bone implements as being one with a more adequate explanation of their functions than as formerly reported, this paper was inspired as a result of a large number of bone artifacts received at the museum from a Maine coastal site. Some years ago they were kindly donated to the Society by a generous member, Dr. Charles F. Walcott, who, several years before, had excavated them from a Maine shellheap. Representative specimens from the collection will be found among the several illustrated groups that follow, while a short account of the excavation involved should be of interest to most.

In 1935 Dr. Walcott visited North Haven, northeasternmost of the two Fox islands, located 10 miles east of Rockland in Penobscot Bay. While hunting for artifacts along the shores, Southern Harbor, a shallow inlet, which bisects the Island from west to east, was found to be a likely area because of shell refuse scattered along its beaches. Adjacent to an old house owned by a Joe Amsbury, about half way down Amsbury Point, was a shellheap, formerly a hen yard and then a pigpen. It had never been dug, and with the permission of the owner, Walcott commenced its excavation, which lasted for about five seasons.

Excavation of the Amsbury shellheap, as it is called, covered an area of about 12 by 33 feet. It consisted of a shell midden that varied in depth from about 4" on the landward side to some 18 to 24" throughout most of its length. At first a trench was dug through the shell to the subsoil, and its contents carefully examined. From this the excavation was gradually extended, working away at the exposed face of the shell bank. At the end of the dig more than 100 bone implements had been recovered, including 52 fish spear points, 1 spear and 2 arrow points, 2 pressure flakers, 3 ulna awls, 9 barbed harpoon spear and arrow points, 22 fishhook points, and 11 splinter awls.

Midden shells were predominantly those of soft-
shell clams. Mixed among them were mussel shells, a few large scallop shells, and occasionally a whelk shell. Scattered throughout were a few stone hearths with much charcoal, and several potsherds. Preserved fish bones were identified as those of cod, halibut, dogfish, and, what is most significant, bones of flounder and sculpin, near which appeared many bone fish spear points. Both of the last mentioned are bottom fish, which could have been easily speared at low tide in calm weather — referred to again in the section on fish spear points. An important feature uncovered in the shell was a bone pressure flaker lying beside many stone chips and a semifinished stone projectile point, which seems to provide evidence of the probable functional use of bone flakers.

A few potsherds found in the shell midden indicates it an occupation of the Ceramic Age. Further, it would appear that occupants of this period lived at the site even before shellfish became an important food item, since the subsoil below the shell contained potsherds as well. As a quantity of fish bone remains were present, it seems that this was principally a fishing site, although a few bones of game animals also were uncovered. Considering the great quantity of fish bone remains, a preponderance of bone fishing gear, including fish spear and fishhook points is understandable.

AWLS

Of all bone tools, perhaps those included in this category are found more frequently. In general, they may be recognized as belonging to one of three kinds: splinter, ulna, and joint-handled awls (Fig. 9). Obviously these tools with one end honed to a sharp point, made of animal or bird bones, were designed for punching holes in something softer than bone. While no prehistoric evidence known to the writer exists to prove exactly how they were employed, it seems probable that their use involved the making of skin garments. Possibly, among other functions, they made holes through skins to insert thongs for tying garment flaps together. Or in later days, they may have served to provide for the attaching of buttons. Besides such functions, probably they were useful in punching holes through which bone needles would pass in the sewing of certain pieces of clothing with gut or hemp cord.

NEEDLES

These bone implements are distinguishable from awls, in that they have a small perforation, or eye, made through one end of a piece of bone. The opposite end is sharply pointed, as might be expected if this tool was used as a needle. There are at least two needle shapes, one that is relatively fine and spindly, resembling its modern counterpart, the other with a flat, broad stem (Fig. 10). The former undoubtedly was used in sewing certain skin garments requiring meticulous joining of edges, such as for moccasins or leggings; facilitated doubtless by the awl in preparing holes in advance. The latter is thought to have served as a kind of shuttle in weaving mats, or in making certain kinds of woven baskets. For these products, coarser strands were required, sometimes obtained from cattail leaves, prepared bark, or hemp. Therefore, the eye in these needles is usually larger to accommodate thicker cords.

HARPOONS

These tools appear to have been an important part of aboriginal fishing gear. Their most conspicuous characteristic is presence of prominent barbs — one or more — at one end of a short or long piece of bone, as may have been desired (Fig. 11). Sometimes, but not always, a hole was made through the base end of the shank to hold a twisted cord, used as a retrieving device. This served to play the spearfished fish after the harpoon had jerked free from its loose set in the end of the spear shaft. An illustration is included to portray how this might have taken
place (Exhibit #17). The simple one-barbed, or in some cases multi-barbed harpoon point without a hole may have been used, not on a spear shaft, but fastened securely in the end of an arrow or spear shaft, and so used without the service of a cord for retrieving the fish (Exhibit #16). Occasionally, the perforated type of barbed harpoon was exceptionally large, when employed in spearing big sea mammals such as the smaller type of whale, porpoise, or the like. Such a harpoon, 15" long, recovered at Truro on the Cape was described in Society Bulletin, Vol. 30, #3 and 4.

Still another kind of harpoon consisting of two sections was employed, which utilized bone as a part of its apparatus. It is illustrated with this group of harpoons, and consists of a stone projectile point set in a bone harpoon holder (Exhibit #18). Sometimes, as in the case of this illustrated specimen — excavated at the Assawompsett site — the stone point could be of a type without barbs. When this happened the barbs could have been provided by means of fish bone spikes tied in during hafting of the point. Examination of the illustration showing this method of hafting should convince anyone of the advantage of this harpoon contrivance. When the spear shaft was jarred loose from the harpoon holder and point upon contact with the quarry — in this case probably a seal — the hunter would have had his speared game at the end of the attached cord. A similar bone harpoon holder, but with steel point, has been used more recently in hunting seal by certain of the Eskimos of Alaska. Evidence surrounding the excavated specimen from Assawompsett indicates that it belongs to the Early Archaic period of about 6,500 years ago; a diagnostic Corner-removed of that age was found in the bone holder. However, it would seem that the Bifurcated stone point with sharp barbs of the Early

![Fig. 11. BONE HARPOONS. 1-3.Long Cove Site; 4,5,15.Duxbury; 6.Plymouth; 7,9,Amsbury Shellheap; 10,Maine; 11,14.Long Cove Site; 16.Probable Haft for harpoon-topped arrow or spear, without line; 17.Probable Haft for line-connected harpoon spears; 18.Harpoon Holder with stone point, showing probable haft with bone barbs tied on.](image)
Archaic would have been a better selection for this kind of harpoon. From this it appears evident that bone probably played an important part in tool making at least as far back as the Early Archaic in the New England area of the Northeast.

**FISH SPEAR POINTS**

This unique kind of bone spear point was first brought to our attention by the 52 specimens in the Walcott collection from the Amsbury shellheap. Since then similar bone recoveries have appeared at the Long Cove site in Maine, reported in the Society Bulletin, Vol. 27, #1. They consist simply of a bone spike about 2 to 3" in length that is honed to a point at both ends (Fig. 12). However, what seems proof of their use in spearing certain kinds of fish is Walcott's discovery of a considerable number lying in close proximity to flounder and sculpin bone remains.

Now, all that seems missing is evidence to show how these fish spear points would have been hafted on a shaft. Following a method as used by natives in other parts of the world the bone spike is attached obliquely at the butt end of the shaft, as illustrated (Exhibit #8). Using such a spear for flat fish like flounder, the protruding rear point of the spike would act as a barb to hold the speared fish on the shaft. A significant piece of evidence, which seems to support this hypothesis is the fact that a number of the Amsbury specimens are perceptibly worn at one end (Exhibits #1-5). This suggests repeated misses, when the thrust drove the spear past the fish into the sandy bottom below.

**FISHHOOKS**

Of two known styles of bone fishhooks, the first is a one-piece hook. It was cut and worked out of a relatively wide segment of a split large bone with a fairly flat face. A splendid report presenting factual evidence showing how this work was actually accomplished appears in this Bulletin issue, in the following report. Without repeating the process of manufacture, suffice it to say that the shank of the hook is knobbed to hold the attached line, and the hook has a width of about %" without a barb (Fig. 13, #10-12). Usually, recovered specimens are fractured, which suggests that this hook was far from being durable, and evidently was subject to frequent breakage; probably would have been unsuited for taking very large fish. It was being used as late as the colonial 1600's, if it is the hook referred to by William Wood in 1634, when he says: "... since the English came they [Indians] be furnished with English hookes and lines, before they made them of their owne hempe more curiously wrought, of stronger materials than ours, hooked with bone hookes:"

The second style of hook is a two-piece affair. A short section of a more or less slender bone was honed to a sharp point at one end, while the opposite end was ground so as to produce an oblique bevel at about a 30° angle; several of these fishhook points are illustrated (Fig. 13, #1-8). This bone point was then set with its oblique base flush against the end of a wooden stem or fitted into a slot at that point. Sometimes one or two notches were made on the bone opposite the beveled base to help hold the binding thongs in place (Exhibit #6). Bone point and wooden stem with a knobbed upper end to hold the line were then bound together with hemp to produce a V shaped hook.
Since both kinds of bone fishhooks seem to have been in use when the whites arrived, they appear as elements of latter day fishing gear. However, because of archaeological stone recoveries of Classic plummets thought to belong to the Early Archaic period as fish line sinkers, it is probable that some kind of bone hooks were used with them in those early times. Of the two known styles, the two-piece hook would seem to be the one more likely to have had its source in the Early Archaic. If so, its use would have continued over a very long span of several millennia.

**PROJECTILE POINTS**

As reported by certain early explorers in the 1500's, arrow shafts were sometimes tipped with bone points. Archaeological recoveries show these to be of three kinds (Fig. 14). One is made of a medium sized bone with a pith-hollowed center. Its smaller end is ground obliquely to a point, while the larger end is either cut squarely off or ground so as to produce two short prongs at either side: rarely three like the one illustrated, the only recovery of this kind.
known to the writer (Exhibit #7). The hollowed base is fitted on the end of the arrow shaft, which is pared down to receive it.

The second kind of bone point is made of a deer's antler prong that is hollowed out at the larger end for fitting it onto the arrow shaft (Exhibits #1-5). At the Titicut site in Bridgewater, in Burial #15, excavated under the direction of a staff member of the Robert S. Peabody Foundation of Andover, were found 8 bone points — 3 of bone and 5 of antler prongs. They were located in a cluster at one side of the grave, near the skeleton. Significantly, a small darkened area adjoining the points about the size of a quiver was noted, and may have been the decomposed remains of such a leather container.

The third kind of bone projectile point is of rare occurrence; is here represented by Exhibit #6 from the Amsbury shellheap. It is cut out of a fairly flat section of a large bone, and, as may be seen, is shaped something like a stone point, side-notched for hafting. However, because of a relatively broad body and base, unlike the first two kinds, doubtless it was for use on a spear shaft rather than on an arrow shaft. Specimens of all three types of bone points recovered from shell deposits, obviously belong to the Ceramic culture.

It is doubtful if their use extended back into the Archaic.

TOOL HANDLES

In this category only two recoveries have appeared from shell deposits, and they are illustrated (Fig. 15). Both represent a 3 to 4" section of a relatively stout piece of bone, of what appears to be antler. In one end a small hole has been drilled to a depth of about an inch, and of a size found to be just for accommodating a beaver incisor, slipped into the opening. Evidently these handles were designed for use with just such a sharp woodworking blade as a beaver tooth. The drawings show for each handle a beaver incisor ready for insertion.

The above hypothesis is based not only upon the favorable traits of this factual evidence, but upon writings of early commentators, one of whom speaks of the beaver incisor as a favorite tool for cutting wood. Captain John Smith, writing about the Virginia Indians, says: "... to make the noch of his arrow he hath the tooth of a Beaver, set in a sticke, wherewith he grateth it by degrees." Obviously, a "sticke" might at times have been bone, since the two are known to have been interchangeable for some handmade products.

PRESSURE FLAKERS

Finally, the eighth kind of bone implement to be described in this report is the pressure flaker, for shaping stone implements. Tools of this kind are frequently found along with other bone implements, and may be identified by the presence of considerable wear at one end of a 2 to 4" section of a bulky piece of bone or antler (Fig. 16). Usually the worn end has a coarse roughened surface. However, sometimes the wear is more refined, as though the tool in this case was being used for finer stone retouching. Exhibits #2,3 show this sort of flaker, which is shorter than usual with a well-formed handle end. Probably it was held in the fingers for pressing away minute flakes, such as would be required while shaping a stone point when nearing its tip end. Most specimens are longer and seem more suited for being held in the palm of the hand for heavier work. In either case, supported by the workshop feature previously referred to at the Amsbury shellheap, it seems safe to postulate that these tools were important agents in
Because of such recoveries — their preservation obviously resulting from some favored condition surrounding their deposition — the possibility that bone tools were made and used by pre-Ceramic New England peoples becomes a likely probability. In fact, the bone harpoon holder with stone point, referred to in the section on harpoons in this paper, provides one good piece of evidence from this area of the use of bone as far back as the Early Archaic. Could the preceding Paleo Fluted point-users, also, have used bone in some way not now apparent? Their diagnostic flint Gravers with sharp points, seemingly only good as incisors, suggests their use in making incisions, possibly in bone. This is suggested by three bone discs incised around their edges recovered at the Colorado, Lindenmeir Paleo site. Also, at this excavation appeared evidence, although scanty, to show that bone was used at this early period for awls, certain kinds of knives or fleshing implements, tabular beads, and possibly spear points — ref., *Ancient Man in North America*, by H. M. Wormington.

With such suggested Paleo bone uses as these in Colorado, it seems entirely probable that Paleo hunters of New England would have been equally skilled in bone tool manufacture, to say nothing of the possible development of bone engraved artistry with their needle-pointed Gravers.

Beside the eight different kinds of bone implements covered by this report, doubtless there were other products made of bone. For example, the incised edged discs from the Lindenmeir site are thought to have served as gaming counters of some kind. Then there is a short flat-faced 3/4" wide bone slat in the Bronson Museum, reported to have been recovered from a shellheap on Cape Cod. It has regularly-spaced small surface holes in two sets of 10 each, which may indicate another kind of gaming device. Such evidence as this leads one to the belief that still other uses for bone may have been known to aboriginal man. For instance, the well-known comb cut out of bone, to mention but one more product is proof enough to show that using this less-talked-about material — bone — the impulse to create apparently was as present with early man as it is today. And, were it not for the destructible nature of bone, the probability is that artifacts made of it might be nearly as plentiful at excavated sites as those of stone.

Bronson Museum,
August 19, 1970
ONE PIECE BONE FISHHOOK-MAKING

CONSTANTINE ZARIPHES, JR.

Editor's Note: The subject of this paper is about one of two kinds of fishhooks in use by New England aborigines. The second type, made up of two parts—a short spike-sharpened bone with oblique base that fits into the slotted end of a wood or bone stem, then bound together with hemp—is well described by Champlain, and has been referred to in site reports, the most recent in Society Bulletin, Vol.31, #1&2. The one piece bone fishhook, as described herein is less often seen in collections, probably because it is more subject to destruction due to its slender proportions, being carved out of one piece of bone. Just how it was made has baffled many in the past, but now the method employed is clearly demonstrated in this report, as a result of examination of semifinished hooks from a Connecticut rock shelter.

While engaged in studying several artifact collections made up of recoveries from Connecticut Valley sites below Hartford, Connecticut, my attention was drawn to three small bone fishhooks, somewhat disfigured due to fracture. They appeared in the collection of Raymond Bidwell, and after checking his catalogue, were found to have been recovered from a shellheap at the mouth of the Connecticut River. With this rare exhibit in mind, I was better able to understand the next objects that showed up in another collection, assembled over the years by Raymond Williams. Here, two pieces of split bone attracted my eye, because of certain cuts and holes made in their faces. At first sight they seemed to be nothing more than waste fragments, but upon closer examination revealed intentional surface working. Williams told me he had found them in a refuse pit of a rock shelter in the vicinity of East Hadden, Connecticut, about 10 miles up river from where the Bidwell hooks had been recovered. They appeared to be large splinters, possibly from the leg bone of a deer, in which two deep grooves had been cut, which met at an angle toward one end in a small hole. This had been drilled, as it would seem. The cuts were deep, not quite cutting through the bone structure, while the hole at the end of each splinter had completely perforated the bone. Apparently, an end section of one of the specimens had broken away in the process of making the cross-grained oblique cut, causing this worked form to be discarded. However, the other specimen was undamaged, and presumably was ready for further development into whatever tool the craftsman had in mind. It requires only a casual glance to detect the relationship between the two site recoveries of fishhooks and splinters. Without doubt, the worked bone forms are one piece bone fishhooks in the process of manufacture (Fig. 17).

Fig. 17. ONE PIECE BONE FISHHOOK COMPLEX. 1-3, Fishhooks; 4, Fractured Hook-form; 5, Semifinished Hook-form; 6, Projected #5 Semifinished Hook, with top section removed.

It seems most fortunate that the undamaged one found its way into the rock shelter refuse pit, apparently as an accidental discard. It is a rare recovery, if not the only one that exhibits a well-defined method of manufacture for one piece fishhooks, as far as I know.

PROBABLE METHOD OF MANUFACTURE

Following the method of manufacture, suggested by the 2 worked bone splinters of this report, hooks like Exhibit #2 and 3 doubtless were fashioned in this way, since their thicknesses are comparatively uniform. Also, Exhibit #1 with a bulge at the hook end may have been made similarly, the difference being that this hook was probably cut out of the end section of a bone, terminating at the rounded joint. After a study of this evidence, the making of these hooks seems to have consisted of certain operations that are now described.
A bone fragment about 2" or less long was selected, large enough to provide a not-too-curved face of \( \frac{\pi}{4} \)" or more in width. This was then worked by grinding one end to give it a convex contour, which ultimately would become the curved part of the hook. Next a small hole was drilled at this same end, set in about \( \frac{\pi}{4} \)" and half way between the sides of the fragment. A small stone drill with a taper to a 1/16" diameter bit must have been used, to judge from the small holes of the 2 specimens, Exhibits #4 and 5. As a matter of fact, Exhibit #4 shows circular marks from such a drill on the reverse side from that illustrated. This suggests that this work was done by drilling from both sides. After this, a deep cut was made along the length of the bone, set in about \( \frac{\pi}{4} \)" from one edge, and curving in slightly so that it would pass into the hole. Another deep cut was made obliquely from the hole cross grain to the other edge, thus forming an acute angle between the two incisions. It appears probable that this work was done with a sharp-edged hard stone knife of some kind, which was repeatedly drawn through the deepening incisions. However, care had to be used so as not to cut clear through the bone’s shell, for this would have caused uneven strain and possible fracture of the intended hook. Evidenced by several scratches along one or two of these cuts, the worker may have been troubled in holding to an exact incision, since he was probably using a stone tool, which today would be considered a crude sort of knife. Nevertheless, we have to admire the ability of these early craftsmen, who succeeded in cutting such smooth-edged incisions with their limited Stone Age equipment. Finally, either by making a few more strokes of the knife in the cuts, or more likely, cutting the bone shell from the opposite side just enough to meet the deep incisions already made, the unwanted section would be snapped off. This would then leave a hooked-shaped piece of the bone splinter to be abraded into a fish-hook, as shown by Exhibit #6.

It may be seen by a study of the fractured splinter (Exhibit #4) that the artisan sometimes failed, when this last operation was undertaken. On the opposite side of this bone form from that illustrated is evidence of an incision following the oblique line of the original cut, showing where another cut had been made, perhaps with too much pressure exerted, in an effort to cut through the bone. This seems to have caused the lower hook part to break off, before another lengthwise cut could be made to meet the deep cut along the bone’s length, which would have successfully freed the whole upper section outlined by the incisions.

The second kind of a two piece bone fishhook, referred to in the Editor’s note, is clearly described by C. C. Willoughby in his *Antiquities of the New England Indians*, with an illustration showing how the bone spike was bound onto the straight wooden stem — sometimes made of bone. But in connection with the one piece type dealt with in this paper, Willoughby says they are found principally in Rhode Island and the adjacent region in Connecticut, a statement that the discoveries of this report seem to support. And further, it is of interest to note another comment by the early writer, Roger Williams. He appears to be talking about these same one piece bone hooks, when he says that, “little hooks” are called by the Indians, “peewasicks,” as compared to “large hooks,” which are called “maumacocks.”

In view of the fact that Williams may be talking about the same fishhooks of this paper, it seems probable that their manufacture may have come late rather than early. If this is so, then they might well be of Narragansett and Niantic manufacture of late prehistoric times, continuing up to the coming of the whites. At that time, according to early commentator William Wood, bone fishhooks were quickly replaced by the metal hooks of English make, and the Indians soon forgot how to make their former bone hooks.

Southbridge, Mass.
March 18, 1970

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**FIFE BROOK SURVEYS AND EXCAVATIONS, UPPER DEERFIELD RIVER**

**WILLIAM W. FITZHUGH**

During the summer of 1970 the author conducted an archaeological survey of a short section of the upper Deerfield River valley in the townships of Rowe and Florida, Massachusetts. The specific portion of the river that was investigated lay between the Hoosac Tunnel and Monroe Bridge on land owned by the
New England Power Company. In addition to the river valley itself, an adjacent area on the plateau east of the river, Bear Swamp, was included in the survey. The primary purpose of this paper is to present evidence relating the several Indian sites which were discovered and to view them in the light of the history and geography of early colonial settlement.

This survey was undertaken at the request of the New England Power Company, which initiated the project and underwrote its expenses as a precondition to approval of the company's hydroelectric development plans by the Federal Power Commission. These plans, presently underway, call for the construction of a 130-foot high dam on the Deerfield just below Fife Brook, about a mile north of the Hoosac Tunnel. The dam, when completed in the mid-1970's, will flood a five mile section of the valley. In addition, an adjunct project calls for the creation of an elevated pumped storage reservoir in the Bear Swamp. [Not to be confused with Bear Swamp formerly reported at Berkley, Mass.] area on the plateau 900 feet above the river bed. The survey was primarily restricted to these areas, although some information was learned about surrounding areas. (Fig. 18).

**SETTING AND LOCAL HISTORY**

The section of the Deerfield River surveyed lies in a remote, lightly populated region of the Hoosac Mountains between Charlemont and North Adams, Massachusetts. Geologically, the mountains seem to have formed from a dissected peneplain. They consist largely of rock of gneiss and schist, and have elevations up to 2000 feet. Today the area is relatively untouched and is covered by a heavy second growth of beech and maple, with hemlock on the steeper hillsides. The fishing and hunting potential is excellent. Bear and deer and many smaller animals are commonly seen and were once more plentiful, according to local residents. Besides the variety of fish presently found in the river and in nearby ponds, salmon once frequented the headwaters, as indicated by an old name, "Salmon Falls," for Shelbourne Falls.

The remoteness of the survey area results from several important geographical considerations. Principally, it lies off the main east-west and north-south transportation networks which dominate the geography of western New England. The lower portion of the Deerfield is one of the major east-west routes, but three miles west of Charlemont, at the junction of the Cold River, it turns north, leaving behind its broad valley, and enters a narrow gorge lying as much as 1000 feet below the surrounding hills. This area is known as the "Great Bend" of the Deerfield. North of the Cold River junction the Deerfield does not contain enough water throughout the year to be a useful canoe route, and its valley is so sinuous and narrow as to make foot travel along its banks difficult and subject to frequent fording. Cliffs and slides abound, and bottom lands are rare.

Colonial settlement in this region began after the erection of Fort Pelham at a site west of Pelham Lake, north of Rowe center. This small palisaded fort was one of a series of four forts built to protect the northern frontier during King George's War, and its construction and occupation by men from Charlemont date to the 1744-1754 period. The placement of the fort on the plateau rather than in the river valley was due to strategic considerations. Access to the northern frontier in this area was overland, not via the river route. Later, in the initial settlement of Rowe from the east in 1766, the river was again bypassed, being considered too remote and difficult of access.

Settlement and the expansion of farming did not occur in the peninsular Great Bend and Bear Swamp region until late in the 18th century. One of the earliest recorded houses in this area seems to have been built by Henry William Steel sometime before 1790, the date of its first recorded deed in Greenfield. The site of this particular house, now owned by Mr. Roy Bent, was a natural spring which is reputed to have been used earlier as an Indian campsite. Artifact collections made in this area by Bent verify the legend. Further settlement in the Bear Swamp "Cressey Neighborhood" began in the early 19th century. A graveyard adjacent to Bear Swamp documents this expansion with the earliest headstone dated 1828. Surveys in the swamp area itself revealed the presence of field stone walls, piles of cleared boulders and rock slab, several cellar holes, and other colonial remains. No prehistoric remains were found here.

As for the river valley itself, early historical accounts are replete with documentation of the difficulties endured by travelers, military forces, and settlers in the Great Bend region. These are discussed in various works, including Sheldon (1895), Putnam (1886), Brown (1960), and Healy (1965). The difficulty of communication between the valley and the center of Rowe was great enough that the settlement of Monroe Bridge did not begin until 1800, and twenty-two years after that it was necessary to incorporate the town separately due to the difficulty of maintaining communication with Rowe, barely two miles away. The valley wall was so steep as to make wagon travel and road maintenance impossible. During these times travel to Rowe was roundabout through Zoar or Whitingham, Vermont. Not until the railroad route was laid up the Deerfield River and the Hoosac Tun-
Fig. 18. MAP OF UPPER DEERFIELD RIVER. Fife Brook Sites - upper left and in shaded survey area, to the left of Bear Swamp.
nel built (1851-1875) did settlement in the upper valley intensify. Even so, with rail terminals at Hoosac Tunnel and Zoar, few settlers made their living from the land in the valley. Settlement here and upstream was not further stimulated until industrial development began with a soapstone, serpentine, and talc mine near Zoar around 1874, and a paper mill in Monroe Bridge in 1886.

This historical information emphasizes the considerable geographic isolation of this particular stretch of river. In addition, the lack of river bottom farm land certainly contributed to topographic conditions further enhancing the remote nature of the terrain in colonial times. Undoubtedly, both factors also featured in the later prehistoric times as well.

The paucity of local information concerning Indian occupation and lore in the area is remarkable, especially so, given the popularity of the tourist-oriented "Mohawk Trail" to the south. Few upper valley residents have archaeological collections, and no sites, except the one on Mr. Bent's property, were known prior to this survey. This is true both for the valley and the surrounding plateau country. The early historical documents do not record significant Indian activity in any of these areas north of the Hoosac Tunnel. The Rowe area, in particular, seems to have been on the boundary between travel routes along the Mohawk Trail to the south and the Green River route used by the Indians when traveling north from the lower Deerfield valley.

Several interesting suggestions have been made concerning the route of the old Mohawk Trail (Aiken 1912; Browne 1920; Brown 1921, 1960; Healy 1965). These are based on colonial sightings of Indian camps and early paths used by the colonists. They place the major route crossing the Deerfield near the junction of the Cold River and ascending the Hoosac (Florida) Mountain on the east side of Todd Mountain. It has also been suggested that the trail, or an alternate trail, may have gone up the Deerfield River to Hoosac Tunnel where it ascended the mountain near Whitcomb Hill Road. Although Indians are known to have used this route occasionally, neither route has adequate archaeological confirmation.

In any case, the Deerfield River above Hoosac Tunnel probably lay beyond these routes, and the lack of ethnographic data and the relative absence of sites or local interest in Indian lore or artifact collections seems to support this marginal view, especially of the interior of the upper valley. Data on colonial settlement conforms well to the picture as seen through the local geography and environment. Indians moving in this country probably did so on the southern periphery of the area, and when they did travel through it, they probably used the overland routes on the plateau as did the colonial settlers. It seems likely that the valley itself may have been used primarily as a fishing area.

**SURVEY AND EXCAVATION RESULTS**

A two-week survey of the five mile stretch of river and Bear Swamp resulted in the discovery of three site areas, all within the river valley. These were found on small Pleistocene or post-Pleistocene river terraces. All were located near small tributaries where they entered the main stream, and all were associated with rapids on the main river, suggesting their use as either fishing locations or as portage camps. Two of these sites lacked extensive cultural remains and are useful mostly for distributional data and settlement pattern studies. The third site area contained four find locations of which one yielded a large amount of cultural material. Brief reconnaissance outside the project area resulted in the location of a number of small sites along the river between Hoosac Tunnel and Charlemont. Many of the sites are badly eroded from the banks or completely depleted. No trace of pottery was found in any of the sites.

Although the survey concentrated on the river valley area an attempt was made to locate rock shelters, quarries, and other types of sites. No quarries were noted; however, numerous small rock shelters exist. One shelter that was tested revealed recent historic material. The lack of data for sites away from the river banks is possibly a result of the survey techniques used and the limited time available. The following description presents the data only on those sites found within the project area. All of these appear to be single component sites of fleeting or short-term occupation.

**Hemlock Site.** This site is located on the east bank of the river one-half mile above the present NEP Number 5 generating station, and approximately across the river from the site of the future redeveloped No. 5 plant. It is at the northern edge of a broad terrace about fifty feet above the river bed, in a stand of hemlock. Flakes of quartzite were found eroding from the bank at this locale. Excavation revealed a depleted site area five feet in diameter. Most of the in situ remains were found around a small hearth with charcoal, fire-cracked rock, and hearth stones present. The deposit was only a few inches deep and lay at the top of a typical forest podzol. Tools found included six flake knives and scrapers, two biface preform fragments, a finished biface fragment, and a hammer stone. All came from within a
few feet of the hearth. A small number of waste flakes found indicate the limited use of the site as a manufacturing area. Unfortunately, there was nothing in the site to indicate its age or cultural affiliation beyond the absence of pottery. The stone material used is highly weathered greyish-white quartzite similar to that found in other sites along the river.

Smith Brook site. Opposite Smith Brook on the eastern side of the river about two miles below the power plant the remnants of a small site was found eroding from the terrace bank. The site has an excellent fishing rapids, and the broad terrace is an ideal living area. More sites may once have existed on this terrace, but recent construction activity had badly disturbed the area prior to the survey. No artifacts were found at this site, which also was about five feet in diameter. The flaking debris collected included grey-white quartzite, white vein quartz, and several flakes of grey-brown chert. No pottery was found.

Opposite this site and adjacent to Smith Brook a large quartzite core was found beside the river. Once part of a large boulder, it had been split and used for the removal of core flakes from which other tools could be fashioned.

Four 'find locations' were noted in the Fife Brook site area on a small terrace a quarter mile south of Fife Brook on the west bank of the river. These locations may possibly belong to a single extended site, but there was no direct continuity between them. Rather, they seem independent and each of single occupation. They are best described individually. All seem to have as their raison d'etre the excellent fishing rapids and deep pool which lie below the twenty-foot high terrace. Each of the locations is at the front of the terrace overlooking the river. All have been badly eroded at their river-side (Fig. 18).

Fife Brook 2. Fife Brook 2 overlooks the pool at the base of the rapids. Much of this portion of the bank is eroded. Excavation of fifty square feet resulted in the recovery of nine artifacts and a large amount of flaking debris. Several fragments of a quartzite core were found. The artifacts included a biface fragment, a biface preform fragment, several utilized flakes, a drill, and a lunate biface. The flake tools and drill were made of patinated grey chert, the biface of quartz, and the remaining tools of quartzite. The biface (probably a knife) was nearly in finished form when it had broken. One edge is carefully thinned. The tip of the tool is blunt and its base bears the oblique original striking platform of the parent flake. The chert drill is fashioned from a tabular flake. Its working end is highly polished at its tip, which bears rotary scars and lacks the customary sharp fractured and crushed lateral sides frequently found in drills. This tool apparently was used in working a soft material, such as hide. It seems clear that the site was occupied only once and for short duration. (Fig. 19).

Fife Brook 3. Twenty-five yards south of FB 3 at the extreme end of the terrace a test pit revealed a small number of quartzite and chert flakes, and a broken lunate biface of chert. Excavation failed to reveal a more extensive deposit. No hearths or features were noted. The single specimen bears strong formal similarity to the lunate biface from FB 2. It is a finished piece whose proximal corner has broken off. One edge is prepared for use as a knife and the other dulled for hafting or hand holding. At its base is the original oblique unmodified striking platform. These features duplicate those of the FB 2 specimen and suggest contemporaneity between the sites. (Fig. 19).

Fife Brook 4. A single utilized flake of chert was found on the surface of a newly bulldozed road between the gravel pit and the highway about a hundred yards west of FB 3. No other cultural remains were found. The specimen appears to have been a stray, although there is a possibility that a site once existed in the path of the public highway.

Fife Brook 1. Fife Brook 1 provides the binding data for this report. The site is relatively large in comparison to other sites found, and 375 square feet were excavated. Although its margins extend beyond the central part which was excavated, it is doubtful that much more could be learned from these areas as they seem to contain few tools. As with the other sites mentioned, this, too, has been badly eroded, and the distribution of materials suggests that a considerable portion may have been lost into the river. (Fig. 19).

**RAW MATERIALS**

Almost all of the several thousand flakes and 104 artifacts found were made from a distinctive, fine-grained, grey-white quartzite not commonly found in other sites known from Massachusetts. This relatively intractible, but hard and durable material ranges from a milky white to a bluish-grey with almost cryptocrystalline grain structure. Many flakes have a translucent quartzy look and texture while others are opaque and have a dull surface. Often there are feldspar crystals distributed singly or in speckled bands within the quartzite matrix.

The source of this material is not precisely
known, but from the quantity of manufacturing debris and large core flakes, as well as the nature of the artifacts at the site, it seems likely that the stone derived from boulders obtained in the nearby stream bed. Numerous cortex flakes which were found indicate that the rock was not quarried, nor are such quartzite deposits known for this area. Several quartzite boulders in the river bed were examined, but none, including the core from Smith Brook, exactly matched the material found in the site.

Besides quartzite, very little other lithic materials occurred. The five flakes of grey-brown chert may have come from the single chert artifact, a gouge, found nearby. Three other artifacts were made of a local micaceous schist. A single tool of brown sandstone was found.

**TOOL ASSEMBLAGE**

The tool complex recovered from the site includes 104 specimens, of which 101 are flaked from quartzite. The collection is dominated by roughly finished tools, preforms, and utilized flakes. There are too few of the more diagnostic, finished tools to warrant use of a formal classification system. The artifacts are therefore described in terms of descriptive and functional characteristics. The assemblage is broken down into 13 categories, as follows: lunate knives (3), gouge (1), fishing weights (2), shaft scrapers (4), biface fragments (8), preforms and preform fragments (26), core knives and scrapers (5), hammerstones (2), discs (1), denticulate flakes (2), flake knives (5), flake scrapers (21), and utilized flakes (24). Only the more important of these categories are described below.

The three lunate knives from FB 1 all conform closely to the type described previously for FB 2 and 3. All three are largely unifacial, with their ventral surfaces only marginally retouched at the edges; even their dorsal surfaces are incompletely flaked. Two have careful retouching along their more convex lateral working edge, while the other lateral edge has been deliberately blunted. The third specimen has its sharpened working edge along the less convex side. Two pieces have the remnant oblique striking platform at their bases. None have sharpened tips.

Eight biface specimens were found, of which only one, a large "hand axe" like tool, is unbroken. The single complete tool may originally have been intended as a preform, but subsequently functioned as a knife. Of the remaining biface tools, five are non-diagnostic midsections or tips, and two are basal fragments. The smaller of these has a rounded, thinned base and may or may not have had shoulders. The other is the basal section of a large broad biface with converging sides and a thinned, slightly concave base.

A gouge was the only chert artifact found. It was fashioned from a small nodule whose cortex forms the proximal end of the tool. Its bit (distal) end has been carefully formed by flaking. There is no grinding on the tool which is unusually short for its function.

Other artifacts of note included a large flat stone disc of schist with rounded edges, found near the northern hearth area. Its function is unknown. The two specimens which probably functioned as line weights have been formed by pecking notches into natural pebbles. However, the sandstone weight has a flat facet and may also have served as a whetstone since this material is not commonly found in the local area. (Fig. 19). Most of the remaining tools consist of flake knives, flake scrapers, utilized flakes, shaft scrapers, and biface preforms. The latter are particularly numerous and document all stages of biface manufacture. Many are broken. The inability to fit sections of broken bifaces and preforms together from different parts of the site indicates that some of these pieces were either discarded elsewhere or were reworked. Most of the flake tools show no specific pattern and seem to have been used more or less casually, and discarded.

**FEATURES**

The site area has through the years been heavily disturbed by tree-throw and rodent activity. This fact could be traced clearly in the stratigraphy and occasionally resulted in intrusion of the cultural layer deep into subsoil zones. Given these disturbances, it was difficult to interpret soil information. No post molds were noted, nor other evidence of structures. The only features that could be identified here with certainty were the hearths. Of the four and possibly five hearths located, two (in the central area) seem to have been used most heavily and consisted of a deposit of charcoal and ash within a small area of hearth stones. Two other features occupied depressions in the soil and contained ash and charcoal without the presence of stones. Both of these were at the periphery of the site. There is evidence in the form of patinated and large core chunks in two of the hearths which suggests they may have been used for fracturing or preparing quartzite for flaking.

**DISTRIBUTIONAL EVIDENCE**

A study of the distribution of finds and features suggests a functional variation in activity areas. The largest number of tools comes from the east central
part of the site and include largely biface preforms and utilized flakes. A high frequency of biface thinning flakes was also found here, and the gouge. The area was cleared of rocks and contained no hearth. It seems likely that it was a working and manufacturing area, for it contained large quantities of lithic debris.

The hearth area to the south contained several of the finished bifaces as well as many large, fire-cracked quartzite chunks. The peripheral areas of the site contained few finished tools, a large amount of coarse flaking debris, and broken preforms.

On the basis of this very meager information it is difficult to reconstruct activities at the site. However, it would appear that a three-way distinction might be made between a southern sector where the hearths, rocks, and some tools may indicate domestic activity, an east-central area of heavy manufacturing activity, and a peripheral area for the disposal of waste. These, however, are minor distinctions, weakly drawn.

SITE FUNCTION

The overriding impression given by the large quantity of quartzite flaking debris, the core and preform fragments, biface thinning flakes, and scarcity of finished artifacts, is that the site was used primarily as a manufacturing site for the production of biface preforms. The lack of finished or semi-finished bifaces suggests that most of the bifaces were carried off the site before being formed into completed tools.

It also appears, however, that the site was used for certain domestic or manufacturing activities other than biface production. There are a large number of flake tools, and the shaft scrapers and gouge indicate wood or bone working. The presence of line weights suggests the possibility of fishing, as does the location of the site at a good fishing rapids.

The lack of preserved bone at the site severely handicaps interpretation, both from the point of view of assemblage description and economic analysis.
Given the lack of stone projectile points, it may be that bone was used for this function, as is known in New England and eastern Canada during the era of contact. Alternatively, their absence might be due to the fishing and production emphasis of the site.

Finally, the data suggest that the site was used for a relatively short period, probably only a few days, by a small group of people. An intensive occupation would probably have resulted in the loss of more tools, while a sequential occupation for short periods over a longer period of time is also possible, but is considered unlikely given the number of finished artifacts and the lack of such contrary evidence as superimposed or displaced hearths.

**DISCUSSION**

Typological considerations are difficult to apply to these materials in suggesting a date or cultural affiliation for the site. The absence of pottery clearly suggests an Archaic relationship, while the large biface base would appear at home in the Late Archaic period, possibly related to the Watertown phase, dated by Dincauze (1968:72-6) late in the second millenium B.C. Another possible relationship would be with the Hawes Group (see Lord 1962 and Dincauze 1968:87) of eastern Massachusetts dating approximately 1200 B.C. These tentative relationships are quite speculative, however, and the Fife Brook complex, particularly the gouge and large bifacial hand knife, do not fit neatly into any of these units. In fact, this assemblage appears rather unique in New England prehistory as it is presently known. Local collections from western New England do not offer further suggestions, although a collection of bifaces in the Deerfield, Massachusetts, museum appears similar to some from Fife Brook.

The possibility of a late second millenium for the site is not closely supported by a radiocarbon date of 2305 + 85 B.P. (355 B.C., GX 1961) obtained from a sample of hearth charcoal. This seems too late for late Archaic in this area. [2305 B.P. seems within Late Archaic of coastal Mass. — ceramics arrived about A.D. 300 - Ed.] Within the framework as presently known Meadowood assemblages with Vinette 1 pottery appear in New York as early as 1000 B.C., and similar pottery is known from eastern New England, presumably at a similar time. Despite this possible contradiction it should be noted that western New England is virtually unknown archaeologically and that, given the geographic factors discussed earlier, the persistence of Archaic culture in the mountains and isolated valleys would not be totally unexpected.

**SUMMARY**

Several final comments might be made on the survey of this small section of the upper Deerfield. The settlement data on the sites found indicates that the population and exploitation of the area, at least above Hoosac Tunnel, was never extensive. Rather, the series of small sites suggest that movement through the river valley was infrequent and camps there were small and briefly occupied. While it is not possible to relate the Hemlock and Smith Brook sites to the sites from Fife Brook by tool associations, there are similarities between these sites in flaking techniques and to a lesser degree, in lithic materials. There is more evidence, in the form of a distinctive type of lunate, largely unifacial knife, supporting the relationship between Fife Brook sites 1-3. The separated nature of the sites and variations in frequency and types of lithic materials between them indicates the likelihood of their being occupied at different times by the same cultural group which occupied the FB 1 site, and who returned occasionally to this location to fish and to manufacture tools from the local quartzite while traveling through the valley.

The question of possible persistence of Archaic culture at a later date here than in areas to the west and south is one which requires further investigation and cannot be adequately treated with the data presented here. In any case, it would appear that the upper valley area was not used heavily, if at all, by Woodland peoples who may have settled in the river bottoms where horticulture and travel were easier. Undoubtedly, Woodland peoples utilized the plateau regions to some extent for travel and hunting. Nevertheless, it would seem that their use of the gorge region was minimal. If so, their pattern of occupation, and to some extent, that of their Archaic forebears, corresponded closely with the documented colonial pattern of occupation. All three cultural patterns, in turn, appear to reflect the dominant geographical and environmental conditions of the region. Not until the industrial era did these patterns undergo a marked change.

Smithsonian Institution
Washington, D.C.
December 7, 1970

**REFERENCES**

RECOMMENDED METHODS FOR EXCAVATING A SITE

WILLIAM S. FOWLER

The question invariably arises, especially from those who recently have become Society members, of how one goes about digging a site in an approved manner. That is, what operations are necessary in order that the excavated evidence may be properly recorded and finally reported for publication. While this may seem a complicated problem to the uninitiated, actually, it is merely a matter of following several fundamental rules related to three main divisions of work. However, the exact methods applied in order to accomplish the desired results often vary, depending upon the personal preferences of an archaeological research director. Also, site location, soil conditions, and occupational artifact depositions vary from site to site, requiring modification at times of a pre-conceived, well devised plan of operations. Nevertheless, there are certain basic methods of excavation, which, if followed, will enable an adequate interpretation of the evidence. After thirty years experience in the field as a working director of, or participant in a dozen or more site excavations, the writer has effectively used the system outlined herein. It has permitted quick and accurate evaluation of site recoveries as they occur, which has enabled better control of operations.

Preferred Tools for Excavating. Before outlining the three divisions of work, it may be well to consider what tools are needed to obtain satisfactory results. Essentially, a small or medium sized straight edged trowel is often required for scraping exposed surfaces of soil. However, a more useful and less-tiring tool to use, quite generally approved, is a short handled — about a foot or less — old garden hoe with its long edge and both ends sharpened by filing. The ends become useful in cutting small roots to clear the way for scraping. Beside these tools, a long handled shovel, preferably, will be needed to open trenches and clear the worked areas of scraped soil that has been examined. Tools with pick-like blades are not recommended for most sites, as pecked soil tends to upset the level at which an artifact might appear, and thus spoil a true vertical measure. However, a small hand pick is most useful, and is the preferred tool for excavating aboriginal stone mines and quarries, where stratigraphy is usually unimportant, due to the disturbed condition of most quarry tailings. For all other sites, including rock shelters, the trowel and short-handled hoe are the tools to be used.

First Work Requirement. Laying out a site is the first step to be taken, after permission to excavate has been obtained from its owner. This may be done, satisfactorily, without the use of a surveyor’s transit, although this instrument is frequently used when available. On most occasions, a long cord, pulled tight between two stakes, becomes the base line at one edge of the site, from which it seems desirable to commence work. This is often at the edge of occupation on an elevation overlooking river, pond, or other low area, sometimes containing a spring or brook.

From this base line the area to be dug is now laid out in 6 foot squares, or smaller grids, whatever size seems best for the number of people partici-
pating. This may be conveniently accomplished by stretching another cord between two more stakes, 6 feet removed and parallel to the base line. Now, with a right angle square, drive a stake at one end, opposite the base line end stake, and measure off 6 foot intervals along each line, driving a stake in at each. Mark these stakes numerically in one direction and alphabetically in the other. You will now have identified the squares as A1, A2, A3, etc. on the base line, and B1, B2, B3, etc. on the line 6 feet removed. After these squares are dug, another line marked C may be laid out, and so on.

Second Work Requirement. The work of excavating may now commence, preceded by the digging of a trench in front of the base line to a depth of a foot or more, to provide leg room for the digger. This opens up the vertical face of the square to be dug. Next, with shovel or spade scoop off the upper sod to the bottom of grass roots from about a 15" width bench across the square's front. Then, with hoe begin to scrape the bench down, using care not to cut too deeply with each scrape. The soil may be scraped into a dust pan and frequently dumped in back of the digger, if found more convenient. When the first 15" of the square are dug and removed to a depth, determined by the presence of chips or other evidence, another 15" bench is prepared and dug, and so on.

Third Work Requirement. Now comes the method of recording positions of artifacts, as they are uncovered in the course of examination. The most important measurements to be taken are vertical ones, which, together, locate the position of the artifact in the soil layer. Here, it is important to examine the soil distribution of the site, and note the different layers. Usually, they consist of top loam, yellow subsoil, and a white sand or gravel glacier-deposited base. If the loam has been plowed, then measurements of artifacts found in it are non-essential; are made only for those artifacts appearing below the loam. The grayish line of demarcation separating loam from subsoil is called Junction, and artifact finds are measured to it, in order to establish their relative positions. Measurements are recommended in inches made to the nearest inch, although some prefer the metric system. However, there are so many opportunities for movement of artifacts from their original place of deposition, such as occur from frost action, wind or water erosion, ancient refuse pit digging, and sometimes from foot pressure of the aborigines themselves, that a shorter unit of measure than an inch seems unnecessary. Under such circumstances, all that can be expected from vertical measures is a relative positioning of artifact types at averaged depths, which should place the younger above the older types, stratigraphically.

At least two measures are required, although in rare instances a third may be necessary, when a separate occupation appears in the white sand base. Assuming that the loam at a given site has never been plowed, then an artifact found in it should be recorded by measuring the distance from it up to the grass roots, and also the distance from it down to Junction. Should the artifact appear at Junction, then, one measure from it to the grass roots is all that is required. Now, supposing the artifact appears under Junction in the subsoil. In this case, the two measures will be from the artifact up to the grass roots, and from the artifact up to Junction. When taking measures to Junction, care should be exercised to measure to the center of this line of demarcation, which, while it is sharply defined when plowing is involved, occurs up to 2" in thickness, irregularly wavy, when virgin soil is involved use of a level is essential.

Finally, a field record should be made, preferably on a 4 x 6" form, one for each artifact or feature uncovered. At end of the day's work, each is then listed with a number in numerical order, and the type name is filled in after cleaning and examination of each recovery.

In addition to vertical measures, it is important to locate on the field record with an X the approximate position, horizontally, of the artifact or feature in the dug square, as illustrated in lower right hand corner (Fig. 20). When a ceremonial pit or some other equally unusual feature is involved, it is helpful, in the case of a cluster of more than one artifact to position each by exact measures made to two corner stakes of the square — not opposite each other. But for the usual recovery, an approximate location is all that is necessary.
fact is found, such as loam, Junction, subsoil, or white sand.

While printed forms are helpful to avoid failure to cover all details, blank paper or card forms may be used, if a set pattern of recording is followed. The illustrated form, which covers all essential details of a recording, is recommended. It is partly filled in to cover a hypothetical Corner-removed #7 point recovery, as a sample to go by (Fig. 20).

Correlation of Evidence. Perhaps the greatest assistance to obtaining a better understanding of the evidence, as it is being uncovered from one work day to the next, is the recording of data on master charts from the field records, preferably, at the end of each work day, which has been found more satisfactory than delaying this correlation for future homework at the end of long intervals of time.

Two layouts should be made, one for horizontal positioning of dug squares with recovered artifacts, hearths, etc. spotted in; the other, the more important of the two, to show particulars related to the stratigraphic data. Both master charts may be conveniently made, using quarter inch spaced graph paper, ruled both sides. One side may be ruled off in inch or half inch squares as desired, with recoveries spotted in wherever found. This chart will reveal concentrations of occupation, including the location of stone hearths, refuse or ceremonial pits, and other special features.

On the other side of the graph paper a chart for recording the stratigraphic evidence may be ruled, as shown in the accompanying sample form, with spaces provided for recording inch positions above Junction, below, and at Junction (Fig. 21). This form has been partially filled in with hypothetical recoveries, recorded one mark for each, to show how data accumulated over numerous work days might appear. Also, this form provides a valuable culture guide from a comparative study of types as related to depths.

As a last important instruction, recovered artifacts, when cleaned, should be marked in India ink with the number they have been previously assigned. Also, initialling of the site name on each is helpful for future reference. The ultimate goal of these recording operations is to provide an interpretation of the evidence that will make a written report more relevant.

Bronson Museum,  
May 24, 1970
A BOATSTONE FROM FORT HILL

WILLIAM B. TAYLOR

Fort Hill site is situated at a sharp bend in the upper reaches of the Taunton River on a high bank or bluff. It lies on the southeastern side of the stream, which at this point is relatively narrow with a swift current, and is located a short distance upstream from the ancient fording-place near the Titicut site, reported in Society Bulletin, Vol 28, #3&4. In this North Middleboro location in early colonial times sachem Chickataubut is known to have resided, and his son, Josias Wampatuck gave the land to the later-day Indians of Titicut before 1644; actually deeded on June 9, 1664.

In those days the Indians built a small palisaded fort on the bluff overlooking the river. Here in 1952 its outline was discovered by diggers of the Cohasset Chapter of the Massachusetts Archaeological Society. They uncovered the post molds of the fort's palisade, showing where the log ends had been set in the ground. Since then this Fort Hill bluff site has been excavated by the Taylors, father and son, with recovery not only of artifacts of colonial times during the fort's existence, but those dating back into prehistoric ages, as well. However, the subject of this paper has to do with a discovery made in a large open field adjoining the bluff site on its southerly side. In former years it had been extensively plowed, except for a 60 foot wide strip of land running the length of the field, the remains of a geologic esker. This had been used as a roadway for the convenience of the cultivation and harvesting of crops, and so escaped disturbance from the plow.

Because of the many fine surface finds made in the field over the years, a careful watch continued here after each plowing. Finally in 1954 the whole field including the 60 foot roadway was plowed, which revealed for the first time in one location at the northerly end small fragments of cream colored burned bone. At once, their appearance suggested that their source might lie in a cremated burial, the top of which the plow had cut into. Accordingly, the senior Taylor, with hoe and shovel excavated the spot and uncovered what appeared to be a cremation deposit, since small pieces of incinerated bone, presumed to be human, were scattered throughout the fill. This ceremonial pit was oval in shape, and measured about 42 x 48" by 36" deep. Evidently, a stone hearth had intruded the earlier cremation deposit, as some firestones and a small amount of charcoal were encountered during the gradual excavation of the pit.

No red powdered ocher appeared and no artifacts occurred until a depth of 30" had been reached. Here, at one end of the pit, was found a Boatstone, the subject of this report (Fig. 22). While red ocher had not been encountered during the dig, it seems significant that imbedded in some of the cracks of the Boatstone traces of this brilliant powder were noticed. This seems to suggest that this grave offering had been removed from another ceremonial deposit in which red ocher had been used.

![Fig. 22. FORT HILL BOATSTONE, North Middleboro site. Note incised checkerboard design on one face only, as shown.](image)

That this much-prized red powder was available for use at this site may be gleaned from a subsequent discovery. About 200 yards distant from the pit in a southerly direction along the top of the new plowed esker roadway appeared streaks of red ocher in an open furrow. The writer lost no time in exploring the spot with hoe and shovel to locate if possible the source of the ocher. Soon he had uncovered a huge deposit of it buried in an oval pit that measured about 24 x 48". It had been completely filled with this red powder to a depth of 18". One may get a better idea of the tremendous amount of ocher that was deposited here, with the disclosure that well over 2 bushels of this brilliant powdered stone was removed from the pit. Now, since no calcined bone fragments, charcoal, nor artifacts were present in the deposit, it seems relevant to assume that here had been stored a supply of this important red ocher for use in performing ceremonial rites connected with human burials, probably of the Late Archaic cremated type.

But to return to the description and evaluation of the recovered Boatstone, illustration of which reveals most of its important traits. First, it should be observed that it is made of steatite, a soft workable stone, found locally in stone bowl quarries of the Late
Archaic. No evidence of it exists in Early Archaic recoveries to show that the stone was known to the people of this earlier age. Consequently, it should follow that it was not discovered and used until stone bowls were made of it in the following age. At the close of this culture period with the coming of ceramics, Adena migrants from Ohio apparently introduced certain new kinds of artifacts, of which the Boatstone was one, often made of stone materials believed to be importations from western regions. Now, however, with appearance of steatite as used for the site's recovery, there is every reason to believe that this Boatstone was of local manufacture. This would then tend to show a continuation of the making of the Boatstone because it performed some important function in the cultural life of the times.

Further description of the site recovery should call attention to the fact that this Boatstone is not hollowed, as is usually the case with most specimens. However, it has the customary holes drilled at each end, which extend through to the artifact's base; out of view in the illustration. At some time during its manufacture or use one end broke off up to the hole, and was subsequently drilled again a short way in from the fracture. This would appear to suggest that however the Boatstone was employed, it must have had an important function to have been thus repaired for continued use. On one of its sides, as shown in the drawing, there is a carefully incised design in a checkerboard-appearing pattern. Beyond this, all other faces are left plain. There seems to be no good explanation for this design work. Whether or not it had some significance other than for ornamentation, evidently it was intentionally incised and was not just a lot of indiscriminate scratches. Finally, the fact that this incised design is only on one side of the Boatstone would seem to suggest that it had some useful purpose aside from that of decoration.

North Middleboro,
June 26, 1969