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BRONSON MUSEUM
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This, the Society Museum, is located on the 5th Floor of the Attleboro Trust Co. building, at 8 North Main Street, Attleboro, Mass. — Museum Hours are from 9:30 to 4:00, Mondays, Tuesdays, and Thursdays; other days by appointment. Contact the Society office at the museum; Maurice Robbins, Director; William S. Fowler, Curator and Preparator.

The museum has extensive exhibits of stone implements, obtained for the most part from central Massachusetts areas. They have been arranged in the four culture periods identified in the Northeast that extended over the past 10,000 years; diagnostic artifacts are shown in the culture to which they belong.

Beside seven large dioramas depicting scenes of aboriginal activities, many large wall-case displays have been added. These contain impressive ceremonial remains of cremated burials that exhibit probable mortuary rites of Late Archaic peoples, who lived 4,200 to 4,700 years ago on the shores of Assawompsett Lake. The museum has been developed so as to aid archaeological research for those interested in gaining comprehensive information about the cultural development that took place in New England throughout its four culture periods; Paleo, Early Archaic, Late Archaic, and Ceramic-Woodland.
A REVIEW OF DUGOUT-MAKING

WILLIAM S. FOWLER

Long before archaeologists began digging up and studying the remains of early man in the Northeast, much had been learned from writings of early commentators about what probably had occurred before discovery of the New World. It was felt, and with good reason, that most of the activities of the natives, as seen by the explorers, were rooted deep in the antiquities of prehistoric times. With such beliefs about native life habits dating back into Indian ancestry, it remained for later day archaeologists to confirm or disprove them. As a consequence, reference is often made to 16th and 17th century writings as a guide in arriving at a better understanding of archaeological remains uncovered today by trowel or hoe.

To those who are familiar with these early reports, the subject of this paper will appear as no surprise, since the method of aboriginal water travel has always been one of the more intriguing subjects. Because several early commentators along the Atlantic Coast have included in their remarks more than casual reference to dugout-making, it would appear that the dugout was an important means of water transport, and was the preferred kind of boat used by most. However, while the method of making boats from logs seems quite similar, no matter to which part of the coastal region a reference refers, the tools used in doing the work varied somewhat. Furthermore, it should be understood that these eye-witness accounts deal only with reporting those implements then in use, and should not be loosely considered as indicating the tools used throughout preceding ages of dugout construction.

What should make this report worthy of study is not so much the written description of dugout-making as seen by English and French explorers—although by themselves they make fascinating reading—but rather the account of a significant archaeological discovery that reveals the presence of probable dugout manufacture. Beside this, it is the purpose of this report to bring together, for the benefit of a more complete understanding of the subject, several other important contributing pieces of evidence, most of which have been illustrated and reported in former Bulletin issues, but separately. This review is made for the purpose of coordinating these several parts in order to afford an opportunity for a more complete study.

How far back in time the art of making log canoes goes is a moot question, but it seems likely that even Paleo man may have in the end acquired the skill in areas where large trees were available. Certain it is that these early hunters moved up water ways in some kind of boats, for here their unique Fluted points have been found. And it would appear reasonable to assume that this close relationship between Fluted points and water routes should suggest water travel. However, as will become evident from archaeological evidence presented further along, the earliest probable proof of dugouts places them in the Late Archaic period. This might point to their use throughout the more than three millennia of this age. Obviously, over such an extended time, to say nothing of the preceding and following years, stone tools of the enterprise would have varied depending upon the tool types in use in any given culture period. Unfortunately, conditions that preceded the age of the explorers can only be postulations from archaeological excavated sites revealing probable dugout-making evidence. Such is the case at the Eaton site, as reported in this paper, derived from the initial account by Arthur Petzold, in Society Bulletin, Vol.22, #3#4.

But first, in order to learn as much as possible about the subject, early writings by four commentators are worthy of notice, for they describe scenes that were actually witnessed. They represent reliable evidence of dugout-making practices before the intrusion of civilization that in the end destroyed them.

In about 1610 Captain John Smith of the first Colony of Virginia furnishes several observations of interest about dugouts: "These they make of one tree by burning and scratching away the coals with stones and shells, til they have made it in forme of a Trough. Some of them are an elle deep, and fortie of fiftie foote in length, and some will beare 40 men, but the most ordinary are smaller, and will bear 10, 20, or 30, according to their bignesse."

As late as 1634, William Wood reported his observations of aboriginal life in the Massachusetts Bay Colony to Sir William Armyne, Knight and Baronet, of England. About the making of dugouts he makes these remarks: "Their Cannows be made either of Pine-trees, which before they were acquainted with English tooles, they burned hollow, scraping them smooth with Clamshels and Oyster-shels, cutting their out-sides with stone-hatchets: These Boats be not above a foot and a halfe, or two feete wide, and twenty foote long." No mention is made, unfortunately, as to how the "Pine-trees" were cut down and trimmed to the length desired. However, an important item mentioned is the "stone-hatchets" which were used to cut and shape the dugout's exterior. "Stone-hatchets" here should be unmistakably understood as such, since the text is in English.

Earlier in about 1604 Samuel de Champlain sailed down the New England coast and described dugout-
making in the Boston Bay area. In somewhat more
detail than that of Wood, he recounts what he witnessed
in this way: [A translation from French] “Those who
inhabit it have canoes all made in one piece, very easy
to upset... After having taken much trouble and spent
a long time in felling the largest and tallest tree that
they can find with stone hatchets, they take off the bark
and round it all but one side, where they set fires every
little way all along the log. Sometimes they take red-hot
pebbles, which they also put on it, and when the fire is
too fierce they extinguish it with a little water, not
entirely, but only enough to prevent the edge of the
canoe from being burned. When it is as much hollowed
out as they wish, they scrape it all over with stones. The
pebbles with which they do the cutting are like our
musket flints.” Here we are told that “stone-hatchets”—questionable translation, with axes probably intended—were used alone to cut down the large trees. This may
only partly describe the operation, since the following
reference from Virginia reveals that fire was used to do
the job. Possibly Champlain inadvertently missed some
details, of which fire, as an assist to ax cutting, may
have been one, although he does include the use of fire
for the hollowing operation; apparently was well aware
of its importance.

Perhaps the most complete account concerning this
subject was reported in about 1585 through illustration
and word by Master John White, an English painter,
who was sent to the New World by Her Majesty the
Queen to make drawings of the country and its inhabi­tants. Unfortunately, he portrayed his figures with
European features. His precise and most illuminating
account follows: “The way they build their boats in
Virginia is very wonderful. For although they
completely lack any iron tools such as we use, they can
make boats as good as ours. And these boats are sea­
worthy enough to take them sailing or fishing wherever
they want to go.

“First they choose a tall, thick tree of the size
required for the boat’s frame. Then they light a fire
close to its roots, feeding it bit by bit with dry moss and
small chips of wood, keeping the flames from mounting
too high. When the tree is almost burnt through, they
make a good fire to cause it to fall. Then they burn off
the top and boughs, taking care that the trunk should
not be shortened.

“The tree is raised upon a platform built on forked
posts at a height convenient for working. The bark is
stripped off with sharp shells; the inner length of the
trunk is kept for the bottom of the boat. A fire is made

Fig. 1 DUGOUT-MAKING IN VIRGINIA, IN 1585. Pen-and-ink facsimile of De Bry’s engraving of Master John White’s water color painting.
Courtesy The New World, by Stefan Lorant.
all along the length of the trunk, and when it has burned sufficiently it is quenched and the charred wood scraped away with shells. Then they build a new fire, burn out another piece, and so on, sometimes burning and sometimes scraping, until the boat has a good bottom. Thus God has endowed these savages with enough reason to make the things they need.” A pen-and-ink copy has been made of De Bry’s engraving of White’s drawing to permit a more complete understanding of the above description (Fig. 1), derived from The New World, by Stefan Lorant.

This drawing clearly shows the extensive use of fire, but fails to include the use of probable axes—“stone Hatchets”—as mentioned by Champlain. However, it seems evident that stone axes, not hatchets, used with fire would have speeded up the work of felling trees, and may well have been the preferred method. A questionable feature of White’s drawing is the sharp cornered end of the dugout. This may be a careless rendering due to failure of artist or engraver to be more realistic in portraying the actual burned round cornered end, as might be expected from a tree felled by fire. Furthermore, one feature of the illustration seems a possible contradiction of the written caption, which mentions shells as the tools for scraping out the charred wood. The object shown in the hands of the figure doing the scraping, although it could be a very large shell, appears more as the poll end of a large stone implement rather than a shell—might conceivably have been a Celt. Other possible stone tools that may have been employed in the Late Archaic or before may have been the gouge and adz.

To return to Champlain’s description of small stones like gun flints being used in scraping out the charred wood, it seems entirely possible that these may have been our archaeological recoveries known as Stem, Steepedge, or Flake stone scrapers. The Stem scraper, only, may have been hafted; is illustrated not hafted (Fig. 2).

As far as the use of shells is concerned, as reported by Wood and White, such scraping tools would only apply in the case of dugout-making near the sea coast, where shells would have been in abundant supply; would have been replaced by other tools—probably of stone—in inland areas where shells were not available. And in connection with this scraping operation, when White refers to the fire being “quenched,” doubtless he infers that water was used, as mentioned by Champlain.

While these several descriptions with the White drawing provide a good idea of how a dugout was made, we are now able to examine a finished one recently discovered in good condition from a pond in Weymouth. Preserved over the years by its immersion in water and muck, it was properly treated with polyethylene glycole and so preserved for the future. Its shape conforms to White’s drawings of finished dugouts in use, in which rounded ends are in evidence. A wood sample from its side was radiocarbon tested, which produced a date of about 500 years ago, or probably before Columbus. The accompanying photo shows the way it appears today (Fig. 3). The writer has viewed it at the Tufts Library in Weymouth, where it is effectively exhibited in a room reserved especially for it. Upon close examination the writer found it to show irregular tooling of the wood inside and out, the hallmark of hand work with crude stone tools or their equivalent. It represents a relatively small dugout about 11 feet long by slightly more than 2 feet wide, with a draft of about 11”, somewhat shallower at one end than at the other. The full account of its recovery and preservation may be

At this point it is gratifying to have available the report of an excavation in North Reading, Massachusetts, that has yielded convincing evidence suggestive of a dugout-making workshop. Here at the Eaton site, previously referred to, the conditions and recoveries were so outstanding that it seems worthwhile to expose them again somewhat in detail. A great mass of charcoal covered an area about 20 feet square to a depth of 11″. Located 6 feet above nearby Skud River and Martin’s Pond, it consisted for the most part of crushed charcoal, and through it appeared chunks of charcoal as large as 1″ in diameter in some cases. A significant feature of a number of these chunks was a smooth surface on one side, as though made by a cutting blade of some kind after the wood had been burned. Apparently, much work of some kind had been carried on in this restricted area in order to have produced such an accumulation of charcoal. In explanation of this feature, several possibilities suggest themselves, such as a refuse pit, a house floor, or a crematory, but no contributing evidence appeared to support anyone of them. Finally, what proved to be most convincing was recovery from the charcoal mass of 5 large undamaged woodcutting tools, which showed wear from probable usage. They consisted of a Hatchet, Plain gouge, 2 Celts—one large, the other small—and a Full Grooved ax (Fig. 4). In themselves they have little significance, but as they show wear and were imbedded in the charcoal deposit, they seem to take on a new meaning, as though they may have helped produce it. Could it be that here were the remains of a dugout-making workshop? More and more this thought becomes a reality, as the function of each tool seems to fit into some important work groove. First consider the ax, which when hafted could have been used with fire in cutting down the required large trees. Next the Plain gouge with a worn rounded edge and battered poll, which appears to suggest that it was mallet propelled in chiseling out the charred wood in hollowing the log. And similarly, the Celts—the large one with battered poll—could have been useful in such work, while the double bitted Hatchet might have been hafted and used, as explained by Wood, in trimming the outside of the emerging dugout.
Of all excavated charcoal deposits known to the writer, this Eaton site stands out as being the nearest thing to what a workshop might look like, where logs had been burnt and worked into dugouts; a site at which even the actual tools involved had been conveniently left behind in support of this postulation. Also, it is probable that this workshop site, especially because of presence of the Grooved ax, belongs to the Late Archaic Age, of which this type of ax is considered diagnostic, on account of its frequent appearance in this horizon and in stone bowl quarries of the age.

**PROPULSION ASPECT**

Closely related to dugouts are paddles that were required to propel them in all but swift water, where poles are said to have been used. However, references to paddles are scarce with no mention as to how they were made, so far as this writer knows. One early commentator in 1735, A. L. de D. Lahontan, describes "Oars"—probably wrong translation for paddles—as follows: "The Oars they make use of are made of Maple-wood . . . The blade is 20 inches long, and four lines thick. The Handle is about 3 Foot long, and as big as a Pigeon's Egg. When they have Occasion to run up against rapid currents, they make use of Poles made of Pine-wood."

Fig. 4. WOODWORKING TOOLS, Eaton Site. 1, Full Grooved Ax; 2, Double Bitted Hatchet; 3, Celt-like Gouge; 4, 5, Cels. (Note battered polls of 3 and 4).
From a New York State Museum publication, *Aboriginal Use of Wood in New York*, reference is made of a rare recovery in 1880 from Canoe Place on Long Island. It consisted of the remains of an oak paddle—presumably aboriginal. Owned by W. W. Tooker, it measured 34 1/2" long. Illustrated is copy of the drawing shown in the New York Museum publication (Fig. 5).

The silence of early writers on the subject of paddle-making leaves one to wonder how paddles were made, of which there must have been a great many. To judge from the Tooker paddle, apparently they were fashioned from wood of the width of the blade, which had been worked down at the blade end probably by fire and scraping to about the thickness of "four Lines" (Lahontan). Could "Lines" mean wood grains, or stratification of the wood fibers? Finally, it seems obvious that the opposite end to that of the blade would then have been burned and scraped down to the thickness required for the handle. Splitting the log to begin with into slabs, using Celts as wedges, may have been followed as an aid.

Captain John Smith of early Virginia fame speaks of paddles as follows: "Instead of Oares they use Paddles and sticks, with which they row faster than our Barges." But this is all, with no mention as to how they were made.

In this day of rapid machine manufacture it may be difficult to think in terms of slow methodical hand labor with stone tools of bygone millenniums. However, it is probable that many days would have been consumed in making a dugout. And who knows how much longer it would have taken to burn-and-cut out the paddles required for the group of men being served. Such patience and determination as would have been needed seems almost inconceivable today, and yet it represents the kind of human effort that went before, and from which we have evolved.

Bronson Museum, November 4, 1972

**DIVISION OF LABOR: ARCHAEOLOGICAL DISCLOSURES**

**WILLIAM S. FOWLER**

The study of archaeology is, or ought to be more than the recovery and recording of aboriginal artifacts. If we stop here, satisfied that all has been accomplished that can be within the doctrines of this science, we will miss the human element that should be basic in the study. Whether or not this is acknowledged, we should not forget that the much sought-after stone and bone implements are present only because someone spent thought and labor in producing them. To abandon this human aspect of archaeological research just because the people had no written language to guide us would cause an unfortunate omission; one that would prevent our trying to understand what may have happened. But, you may say, on the contrary this sort of human approach is quite generally accepted and becomes a part of most site reports today. Why then raise the question of acceptance of the human aspect of archaeological study.

While the writer agrees that in recent years there has been a welcome recognition of the human side in scientific reports, he believes there is still much that can be done in discovering the motives back of man's actions that developed the artifacts of our study. Not only this, but he feels confident that an authentic interpretation of artifact recoveries can in some instances lead to deductions that may open up new avenues of thought, such as the division of labor that may have existed between the sexes. This subject should be of interest, since only as men and women accepted different kinds of labor throughout man's rise from animalism has the human race developed. And, whether the reader is man or woman, one's curiosity inevitably is aroused to know more about the aborigines of the sex to which he or she belongs, their duties, the products of their labor, and how they may have contributed toward survival of the family.

This subject has been treated by the writer in some of his reports appearing from time to time in the Society Bulletin, but only in a disconnected way as applying to instances here and there, in one culture period or another. He now proposes to attempt a study of this topic extending throughout the four culture periods from the Paleo down to the time of colonial settlement in New England. He fully realizes that archaeology is limited in supplying valid disclosures that may be depended upon, when based only upon a single piece of
DIVISION OF LABOR: ARCHAEOLOGICAL DISCOVERIES

evidence. However, when considered in relation to other evidence, what at first seemed meaninglessness may now emerge as a source of new revelations. Of course the best that may be expected will inevitably be no more than a logical interpretation of evidence, often influenced by hypothetical reasoning. And yet, this sort of a disclosure should be more useful, it would seem, than none at all in furnishing some idea of how men and women worked together in their upward climb.

As a prelude to this thesis it should be noted that there are certain physical functions pertaining to men and women, which obviously would remain more or less constant from one age to another. For instance, women bore the children, while men provided the food for survival, usually from their hunting forages. And since women per force were thus relegated to the home with the care of the children, whether in cave or crudely built shelter, it must have been they who tended hearth fires and kept them burning. Hence, it should follow that they were the builders of stone hearths, the remains of which are so frequently uncovered. Then there are other manual labors that had to do with family living, which are described by some early commentators such as Roger Williams, William Wood, and others. From their accounts, we believe that what they witnessed very likely represented inherited activities handed down from previous untold generations.

William Wood in 1634 writes in New England Prospect that the women are more industrious than the men. For, as he relates, they build their simple wigwams, weave baskets large and small, weave mats from rushes, make their skin clothing, catch lobsters for food and for bait to be used by the men in fishing, clean and prepare fish and game brought in by the men, and as he further states: "... which done, they must dresse it and cooke it, dish it, and present it, see it eaten over their shoulders. ... [later they must] scramble for their scrappes." Also the woman's lot was that of planter, in which she cultivated maize, harvested it, and stored it for future use in time of need. Here is what Wood says about this: "... another work [of the women] is their planting of corne ... keeping it so cleare with their Clamme chell-hoes, as if it were a garden rather than a corne-field, not suffering a choking weede to advance his audacious head above their infant corne ... they gather it, and drying it hard in the Sunne, convey it to their barnes, which be great holes digged in the ground in forme of a brassie pot."

As late as 1724 we know that women continued to be the planters in the Northeast from the well-known drawing by Lafitau of Huron women planting corn in the St. Lawrence River Valley—the drawing shows triangular-shaped hoes and the equivalent of the Corn-planter in use. From this it seems reasonable to assume that women had been planters from the time when maize was first introduced into this region. For, it is probable they could have acquired the knowledge necessary to assure successful harvests in no other way. This tenet becomes one of the premises in an important later postulation of this report.

As for the men, William Wood describes them as performing the hunting and fishing, and as being the chief providers of food. They are also shown to have done the fighting, which was rife in colonial times, both inter-tribal as well as against the whites. Also they are reported to have joined in various kinds of games, including games of chance to the exclusion of women. Industry of the men is described as including woodworking in the making of bows, arrows, and spears; probably included the hafting of implements. Then, Wood goes on to tell how they made wooden dugouts, which he refers to as "Cannows." Also he speaks of their making other light weight "Boates made of thin Birch-ries."

Having now exposed various activities of men and women, we are ready to examine other labors that were divided between them, and try to imagine what effect they may have had in altering the peoples' way of life from one period to another, even to the extent of changed mores.

Paleo-hunters of the earliest period with their Fluted points appear to have been nomadic hunters of prehistoric animals that roamed the tundra wastes, left by the retreating ice sheet of the Ice Age. Beside this, little can be deduced from the stone tools they left behind. However, there can be no doubt that the normal duties as previously outlined of men and women applied also to their home life, primitive as it seems to us today. In substance the Fluted point hunters and their families probably performed their daily activities in much the same way as those who followed, since they were human beings with basic survival traits common to all.

This situation also would seem to fit the people of the following Early Archaic. They must have been faced with very much the same nomadic hunting demands as the earlier Paleo hunters, except that they moved about in tundra surroundings that were gradually disappearing. The normal division of labor doubtless remained the same, as both sexes continued to perform duties peculiar to nomadic hunters, although by now they are believed to have been hunting caribou. And, as these animals gradually followed the retreating tundra into Canada with the melting of the ice sheet, the hunters moved north after them. So far as is known, they left no evidence to indicate they performed ritualistic burial ceremonies. This suggests existence of nothing more than survival practices; no burials have been found to prove otherwise. However, during this hunting age, as well as that of the Paleo, there is no doubt that men were the tool makers, since their hunting activities would have made demands upon them for projectile points, knives, and other tools. As a matter of fact, down
through the ages, as will be revealed, activities, whether of men or of women, seem to have induced the making of tools, as required, by those of the sex directly involved.

By the time the Late Archaic had arrived, cultural living held the seeds of change that in the end brought about a new form of life. Hunting and fishing still required men's attention, but with these activities came a new occupation—stone bowl-making—an important industrial accomplishment. This was an age from which its industrial stone tools have been the means of discovering much about the division of labor that probably existed. After all, an established industry represents a definite diversion from a simple food gathering existence, as it adds new duties and obligations to those of man's basic struggle for survival. While some parts of the following reasoning have been presented by the writer in earlier reports, they are included here again. For to be omitted would defeat the purpose of this report, which attempts to follow man's cultural development throughout four prehistoric ages.

The Late Archaic was a period of discovery and industrial fulfillment. Someone had located steatite, a soft soapy stone that submitted to being pecked into shapes acceptable to human wants. In the end an idea developed to fashion stone bowls out of it. These vessels were conceived as a means of adding liquid foods to the diet; a big step forward from the simple solid food diet.
of preceding ages. After long years of trial and error, a number of specialized stone tools were invented by the men and successfully used in pecking cooking bowls into shape, as well as cups with which to eat the new liquid foods. And now ensued an industrial enterprise probably extending over more than 2,000 years, in which new skills would beget new customs and duties for both men and women. An age of combined human effort had begun, in which people were concerned in making goods for the welfare of the family; not solely, as in the past, for survival. Operations in stone bowl quarries became a living part of the cultural life of those times, and quarry remains have provided us today with the means of discovering how the work was conducted and by whom.

For many years following the first archaeological excavation of these quarries, the opinion had been generally held that they were exclusively operated by male labor. It was not until the writer had spent ten seasons digging through the rubble of seven quarries in Massachusetts, Rhode Island, and Connecticut that a new concept of who the quarriers were began to take shape. It came about through a study and comparison of certain implements found at the quarries, known as tailing-removal tools, and consisting of Triangular tailing-breakers, Spiked tailing-breakers, and Hand spades (Fig. 6). At first these implements were thought of as industrial tools applying solely to the removal by the men of steatite chipped waste at the quarry works. But later their similarity to planting tools of the women of the following Ceramic-Woodland Age were so striking that some relationship seemed inevitable; planting tools consist of Triangular hoes, Corn planters, and Stem spades (Fig. 7).

The question then arose as to how this could be. For, as the former were from the quarries thought to have been operated by men, and the latter were planting tools known to have been used by the women—refer to LaFitau’s drawing, 1724, previously mentioned—an inconsistency of the sex involved seemed evident. However, with more mature thought upon the subject the truth of the situation began to emerge. Here was a comparison between two sets of implements with similar traits, one of which—planting tools—had a known female association, while the other—quarry tools—an unknown one. It became obvious that the known value should take precedence over the unknown, if the tools were related as their traits seemed to imply.

The results of this reasoning have suggested a new quarry work status, indicating a division of labor that probably existed. It now seems apparent that the quarry tools in question served as models, from which the planting tools evolved. And since the planters were women, who are believed to have made these tools, then it should follow that the quarry workers using tailing removal tools also were women. For we tend to promote the working equipment and techniques of the sex to which we belong. Therefore, the scene at the quarries should doubtless be changed to family-sharing labor, in which the men cut out the stone and pecked it into bowls with stone tools of their making, while women removed steatite-chipped rubble with tailing-removal tools that were probably made by them as needed. This kind of labor-sharing must have brought the whole family to the quarry, where they remained until the required bowls and cups had been roughed into shape by the men, and made ready for removal to home sites for the final finishing doubtless by the women. For in many completed bowls recovered from secondary burial remains and elsewhere, elemental decorations are to be seen in the form of notched edges of the bowl, and sometimes of the lugs. Since women performed the simple decoration of pottery that replaced stone bowls with the coming of ceramics, it seems more than likely that stone bowl decorating represents female artistry in its elemental stages, and hence the final finishing by women of these bowls, by then their property. At the quarries the women’s roll, actually, was keeping the floor of the quarry clear of steatite waste to allow the men to quarry deeper on steatite veins—often carried to depths of eight or more feet.

In the conveyance of quarry bowl products to home sites an interesting observation may be made from a burial recovery of a 20 year old girl at the Sweet Meadow Brook site in Rhode Island. An oyster shell covering of a food offering in the grave, radiocarbon dated, provided the basis for an estimated date of about A.D. 1000; the skeletal remains had been preserved over the years by lime leaching from a refuse pit of clam shells that intruded her grave. And from potsherds in the pit representing a transitional status between Stage 1 and Stage 2 pottery, we know that this girl lived at a time only a few hundred years later than that of the stone bowl age. Equipped with this knowledge, the girl’s skull was examined by Dr. Edward E. Hunt, Jr. of the Department of Physical Anthropology at Peabody Museum, Harvard University. He called attention to a significant deformity of the mastoid process just below the ear duct, in which the process was perceptibly enlarged (Fig. 8#1). He stated that this condition is known to be produced from the continuous carrying of burdens on the head, and usually comes about in no other way. So here is a piece of evidence that sheds additional light on the mode of burden conveyance by women about a thousand years ago in the early Ceramic-Woodland period.

To see where this might carry us, we examined the mastoid process from a much later female burial at the same site and found no enlargement, but rather a normal pointed condition (Fig. 8#2). And again we found the same pointed process to be present in the case of the burial remains of a 30 year old woman of the
Fig. 7. PLANTING TOOLS. 1-3, Triangular Hoe; 4,5, Corn Planter; 6, Stem Spade.
DIVISION OF LABOR: ARCHAEOLOGICAL DISCOVERIES

Contact period, exhumed at Titicut. Apparently by then the custom had changed to carrying burdens on the back by means of a burden strap supported from the forehead, known to have been present in Contact days.

Fig. 8. MASTOID PROCESSES, Sweet-Meadow Brook site, Rhode Island. 1, Enlarged Process, 20 yr. old girl, about A.D. 1000; 2, Normal Process, female burial, much later.

From this a logical deduction might be made, based on the assumption that the 20 year old girl should represent the mode of conveyance in her day. For it would appear most abnormal, if she were the only one during her lifetime in her community to use her head for burden carrying. Therefore the belief seems tenable that woman had been carrying burdens on her head for centuries before—life customs in primitive societies extend over long periods of time, sometimes stretching over a thousand years or more. This being so, it seems possible to postulate that quarry women workers of the preceding Late Archaic carried quarry equipment in baskets on their heads over mountain paths to the quarry, returning to their home sites carrying quarry-made products in the same way. So here was another labor of the women, as conveyors of burdens on their heads; a custom still seen in various parts of the world.

In 1914 on a trip to Italy, the writer recalls seeing a peasant woman leading the way up a canal path with a large burden balanced on her head, while her husband followed behind empty handed.

With the arrival of ceramics—after its long diffusion across the continent—the division of labor changed. This time it was the women who experimented with the making of clay pots, and finally became expert potters of the day. And when at last they learned the secrets of how to mold clay and fire it into usable cooking pots, they no longer wanted the stone bowls of the past. The demand for these heavy cooking bowls ceased; the quarries closed down; and the men found themselves relieved of the bowl-making labor they had become accustomed to for probably 2,000 years. Work positions were now reversed. Women became the industrialists and from now on made all the cooking vessels they needed in their own rights; an industrial revolution had quietly taken place. This reasoning derives from the premise that since women are known to have been the potters in colonial times, they must have been from the inception of ceramics, in order to have acquired the needed skill to fashion the superior castellated Stage 4 pots of the latter days of pottery-making.

But this was not all, so far as woman's work was concerned. The arrival of maize added one more labor to her growing list of duties. She took on the raising of maize, which had found its way into the Northeast, as excavational evidence indicates, with the arrival of ceramics, and so she became the planter and producer of corn. Thus women became suppliers of a stable food, something more than nuts and berries they had gathered from earliest times. While men still brought in fish, and game from the hunt, as they had throughout the ages, women now added corn to the diet. As a result, they became respected as providers of food for journeys and during winter months when game was scarce. In fact, they must have suddenly found themselves in an influential position, far from that of servants as in the days of stone bowl-making.

The respect that women now must have enjoyed because of their newly acquired status as potters and planters doubtless elevated their social standing. This could well have been the factor that brought about a matrilineal form of society, which survived in some areas down to the time of the whites. On the other hand, for the time being men may have been relegated to an inferior social position. This together with the formation of tribes that took place about then, could have influenced the advent of tribal warfare—supported by the presence in this horizon of War-club prongs—which appears to have occurred at about this time. It provided men as fighters the opportunity of regaining respectability through military bravery—a means to the end of advancing the dominance of men. However, this sort of respect gained from non-productive labor introduced a decadent element into their society, which in the end destroyed the benefits derived from the progressive industrial life of former stone bowl days.

While women as potters remained the leading industrialists throughout the Ceramic-Woodland, the last cultural period, men had not completely given up their craftsmanship of stone bowl days, as may be seen from the following. The making of stone pipes was probably introduced by Adena settlers, who seem to
have been the first to bring in the custom of smoking. Wanderers from their homeland in Ohio, the finding of several kinds of stone pipes in their cremated burials seems to point to them as the source. Just what may have happened cannot be determined, but it would appear that local men, the former quarriers of the stone bowl industry, would have been the most likely trainees of Adena instructors. They would have known where and how to procure the necessary steatite, and would have had the skill in handling the tools required for the making of pipes.

As time passed, ceramic pipes also were made and have appeared in some burials. Invariably they are of the Elbow type and seem to be copies of Elbow stone pipes. Since women had the knowledge of how to mold and fire pottery, they would have been without doubt the makers of these ceramic pipes. Here again is seen a division of labor in pipe-making that existed between men and women. From the closing of steatite quarries men produced stone pipes in several styles: Straight, Platform, Elbow, and the Bowl type—made in this order down to colonial times. Following a period of experimentation, women fashioned ceramic pipes commencing with the Straight type, quickly changing to the Elbow pipe in a variety of styles.

This report has attempted to point out certain changing work tasks, as suggested from a study of available evidence, in the division of labor that may have existed between men and women throughout the four culture periods of man's occupation of New England. While the more obvious ones have been covered, doubtless there were many more, which in time may be revealed to make this study more complete. In any event, this sort of investigation seems worthwhile in an effort to thread our way through the ups and downs of man's survival struggle in aboriginal times.

Bronson Museum, March 28, 1972

THREE PEMBROKE BURIAL KNIVES
WILLIAM S. FOWLER

In the summer of 1974 certain artifacts with an intriguing account of their recovery were brought into our museum by an enthusiastic Society member, Ronald Vinal. Not only did the story of discovery warrant our attention, but the artifacts, themselves, were so similar in body traits and associated grouping to other finds made in this New England area that we felt a significant relationship was evident. Not that anything positive might be forthcoming, but rather that a constructive hypothesis might be suggested by the evidence, to provide perhaps one more clue as to who certain settlers were, and where they came from. For, when significant artifacts are uncovered combined with ceremonial features as at Pembroke, an attempted interpretation is an important objective that should be considered in the interest of archaeological research.

On this particular occasion Vinal recounted how a swimming pool had been under construction a year ago on the property of John Terranova, Center Street, Pembroke, Massachusetts. This town lies only about two miles south of North River, near several bodies of water that drain into the river. Much evidence has appeared on excavated sites in years past to show that this water course, which empties into the Atlantic to the east, was a favorite means of travel for early peoples, extending back into the Archaic ages. And so, when in October of 1973 Craig Whitcomb, operating a backhoe while excavating for the swimming pool, uncovered what has turned out to be important aboriginal remains, recognition of the recoveries as important clues of prehistoric times should not be wholly unexpected.

When Whitcomb had reached a depth of about 36" in the subsoil, he uncovered several startling spots of red. These seemed to him to be nothing more than natural deposits of iron-impregnated soil due to oxidation. All told he counted 7 of these colored areas and gave them but little notice until a stone object caught his eye, having the appearance of a broad knife. Apparently it had been knocked loose from one of the red spots. When he climbed down from his machine to pick it up, he noticed several more stone pieces that looked similar, and were found to be one more knife blade and another that had become broken in two. But there were still two more pieces of stone that fitted together to make what appeared, to his untrained eye, to be a tomahawk—as he said—because it had a perforation where the fracture had occurred. Still his curiosity was not aroused beyond the keeping of these curious stone objects as mementos. Fortunately, however, long after the work of building the swimming pool had been completed, Whitcomb, hearing of Vinal's
THREE PEMBROKE BURIAL KNIVES

Fig. 9. SECONDARY BURIAL RECOVERIES, Pembroke Site. 1-3, Dagger Knives; 4, Wing Atlatl Weight. 1-3 are of flint; 4 is a fanciful spotted granular stone.

interest in relics of the stone age, gave him one of the perfect knives, beside the fractured one, and the broken implement with a perforation. These few recoveries finally were the ones that were brought to the museum for our evaluation. Subsequently, the remaining perfect knife blade was made available for study, and the four recoveries have now been illustrated to provide a closer inspection of these important artifacts than words alone can furnish (Fig. 9).

Former knife recoveries made in two other sections of New England closely match the Pembroke specimens. And because previous evaluations of them have been made, it is now possible to describe and attempt to interpret the Pembroke recoveries. The 3 knife blades are of flint, 2 of which have the characteristic apple green shade of much of the flint found at the Great Coxsackie Flint Mines on the Hudson. This Deepkill flint has an excellent concoidal fracture that is well displayed by all three Pembroke specimens. The third knife, 4 1/8" long, also probably is from Coxsackie; has a deeper shade than the other two, a variation frequently found at the mines. These 3 broad-bladed knives appear to be of a special kind, since their blades taper symmetrically to a point; might more specifically be classified as Dagger knives. Furthermore, a contributing trait is their extremely wide stems of up to more than 1 1/4" in width. These knives, of necessity, would have required broad handles as for daggers that may suggest their use as defensive weapons; might also have been useful in the hunt for dispatching game brought to bay, during the Late Archaic that preceded the advent of tribal warfare.

The fourth Pembroke recovery can at once be recognized as a Wing atlatl weight, now that the two wings have been cemented together. As such it seems to have a close relationship to the knife blades—if they were a part of hunting equipment—for it too, as a weight on a spear-thrower, would have been included in hunting gear.

As to the seven red spots from one of which the artifacts came, there is every reason to believe they would represent the tops of secondary cremation burials, all generously supplied with red powdered ocher. Such ceremonial remains attributed to the Late Archaics have been found at other sites in the Northeast. Unfortunately, the grave goods that might be in the remaining six untouched burials will never be known, as they are now covered with a swimming pool.

Upon closer examination of the Pembroke Dagger knives, it will be noted that two styles of basal chipping are present. Two blades have double side-notching, while the third displays wide side-notching with relatively straight sides. These traits together with all others, as previously mentioned, may be found among 22 knife blades of Feature #120 at Wapanucket 8 on Assawompsett Lake, reported in An Archaic Ceremonial Complex, a special Society publication. Furthermore, Pembroke double side-notched blades (Exhibits #1,2) have their counterpart in knife blade, Feature #120, E, in all particulars. Furthermore,
Pembroke’s widely side-notched blade (Exhibit #3) closely resembles Feature #120, 1, of the Wapanucket recoveries. Also, it should be observed that the Wapanucket blades are made of what appears to be the same Deepkill flint as that of the Pembroke specimens. Beside these similarities there are two more that should be considered. One is that all Pembroke blades and those from Feature #120 came from secondary cremation burials, furnished with red ocher. The other is that both burials contained a Wing atlatl weight, Pembroke (Exhibit #4) and Wapanucket 8, Feature #120, R.

Because of this apparent close affiliation of features between the two sites, it is worth noting that a radiocarbon measure of charcoal from the Wapanucket burial gave an early date of 4,700 years ago. From this it might follow that the Pembroke burials could have had a similar early date attached to their deposition. Applying this probable relationship as a racial denominator, it might not be far from the truth to say that the two burials were performed by people belonging to a similar race, and were motivated by similar social conditions.

There is still evidence from another section of New England to be considered as being related to the Pembroke recoveries. In Maine’s red ocher burials have occurred broad-based, side-notched blades, symmetrically tapering to pointed ends. These have been referred to as Daggers, since their wide stems of more than an inch suggest large handles, and not spear shafts. Two of these probable knife blades have been illustrated, and appear in Society Bulletin, Vol.33, #3,4, p.13, Fig.7, #1,2. Typologically they are quite similar to the Pembroke knives. In fact, Exhibit #2 is identical in shape and size to the Pembroke blade (Exhibit #3). However, whereas the latter is made of flint, the Maine specimen is of felsite, a stone indigenous to New England, while flint is not. There may be, and probably are other specimens of the Dagger knife type from Maine that are of flint, representing probable imports from outlying flint-bearing regions, such as eastern New York’s Hudson and Mohawk river valleys.

CONCLUSION

Perhaps the most important part of any archaeological research—certainly the most interesting—is that portion that attempts to present a logically reasoned interpretation of the exposed evidence. It seems that the proper place for such comments is in the conclusion, an appropriate ending for what went before. And so, for the purpose of adding what seems to the writer to be a significant portion of this paper, an attempted reconstruction is offered of what may have happened, as deduced from the remains at Pembroke and elsewhere. These concluding remarks are made, it is hoped, without breaching scientific etiquette, but with the intent of adding perhaps one more straw of knowledge to the story of man’s arrival in New England during Late Archaic times.

If the appearance of this report’s Dagger knives, made of Coxsackie flint, means anything at all, it is that they were derived from stone that is not indigenous to New England. Therefore, either the blades were made in such a locale as the Hudson Valley where flint is to be found, or they were made here from flint stock brought into this eastern section from flint-bearing regions to the west. But to have resulted from the latter situation a large amount of flint chip waste would have occurred to confirm on-the-spot manufacture of blades. This evidence was lacking at Wapanucket 8, where the 22 blades of Feature #120 appeared, in spite of a thorough and extensive excavation of the site. Therefore the former alternative seems more than likely, that these knives were imported to the site in their present form. This being likely for the Wapanucket blades, a similar condition should doubtless hold for their ceremonial-associated Pembroke counterparts. Also, since Maine’s Dagger blades appeared in red ocher secondary cremation burials, they too may be related to a postulated importation from regions to the west.

What then does this line of reasoning suggest? Consider first that the time of burial-associated evidence at Pembroke, as set by the radiocarbon date of 4,700 years ago at Wapanucket 8, indicates an age toward the start of the Late Archaic, reliably established as occurring about 5,000 years ago. Before this date, during approximately 2,000 years of the Early Archaic, no burials so far as is known of any kind at excavated sites have occurred, which should indicate absence of mortuary ceremonials. Evidently, the nomadic hunters of those early times gave scant attention to disposal of the dead, which indicates a lack of development of spiritual beliefs. Therefore, without appearance of prior simpler forms the stark appearance of Late Archaic religious formalism, as displayed by the red ocher burials at Pembroke, Wapanucket 8, those in Maine, and elsewhere, seems to justify a belief that the Late Archaic settlers had a culturally-advanced way of life. In all probability they came in small family groups from adjoining regions to the west, such as the Hudson River Valley, with the probable intent of seeking new hunting grounds. Whatever was the reason, they came no doubt to settle in this part of the Northeast as permanent residents—liberal deposits of their valued flint knives as gifts to the dead for use in the next world appear to suggest it. For by these acts they showed confidence in being able to replace them from flint stock, as had been their custom in their former flint-bearing home land. However, when it was too late, they would have discovered that flint was not to be had in their newly adopted home, and would have been obliged to use local stone materials, such as felsite, for replacements—the Maine specimen previously cited.
THREE PEMBROKE BURIAL KNIVES

may be exactly that.

As confirming evidence that helps establish the probable source of these Late Archaic settlers, identification of the flint used for their unique Dagger knives as probable Deepkill flint from Coxsackie is significant. By all odds, this seems to point to some place in the Hudson Valley as being their former home, where they made their knives of flint. The importance of the evidence, as presented in this paper, should now become apparent. It supports the belief that the Late Archaic period of New England consisted of new settlers, the earliest of whom seem to have come from the adjoining Hudson Valley to the west—were not descendants of the Early Archaics, if evidence uncovered so far can be relied upon. It consists principally of two kinds, one of which, ritualized burial of the dead, has been presented in this paper.

The other evidence is less frequently mentioned, and is not understood by many. It has developed as a result of comparative study of Early Archaic diagnostic artifacts, found at excavated sites in this central New England area stratigraphically below those attributed to the Late Archaic—when not disturbed. From this analysis it is amply evident—to those who care to be concerned—that in general Late Archaic diagnostic implements appear as replacements of those of the Early Archaic, having similar functions. More specifically, no specimens of these implement types displaying transitional intermediate characteristics have appeared to support an evolutionary-tool development from the Early to the Late Archaic; therefore no proof of racial continuity. For example, four important implement classes—projectile points, knives, atlatl weights, gouges—have distinctly different traits within each group, separating Early from Late Archaic implements. To examine one of these groups more closely, it becomes apparent that projectile points of the Early Archaic, Corner-removed#5,8,9, with pointed to narrow bases, must have required a different method of attaching them to the shaft, than would have been used for Late Archaic points with broad bases—distinct differences not only of point types, but of the required method of hafting are indicated.

When thought is given to a study of the two forms of evidence, as described, it becomes apparent that two separate racial traditions are represented in the Archaic. With this a possibility, what may have happened to the Early Archaics that made the Late Archaic take-over possible? As has so often been suggested by the writer in previous reports touching upon this subject, the answer seems almost self evident. That is, the Early Archaic hunters very gradually vacated their sites, leaving them open for the most part to Late Archaic occupation. With this a probability, there appears sufficient reason to suggest that, during the 2,000 years of the Early Archaic its people slowly moved north and eventually reached Canada, following retreat of glacier, tundra, and caribou, which game they depended upon for survival—caribou are tundra-feeding animals.

Simply stated, this theory reveals evidence that some choose to overlook as being inconsistent with their belief in a racially integrated Archaic period, having an early and a late aspect. The Pembroke recoveries have now made it possible to present in some detail the theory of two distinctly separate Archaic cultures, Early and Late, consisting of two dissimilar peoples, and it is hoped that this analysis will be accepted as a reasonable interpretation of the evidence.

Bronson Museum,
September 16, 1974

PROCUREMENT AND USE OF BARK

WILLIAM S. FOWLER

Among recovered stone implements of the aboriginal past the archaeologist sometimes runs across tools that have some familiar traits like certain identifiable implements, and yet are different. Either they are too large, slender, or oddly shaped to match the known type they look like, and are usually set aside as problematical. This term, while intimating an unknown quantity, by no means is meant to suggest an unfinished condition. In fact, just the opposite is the case with the stone tools yet to be described, exhibiting a high degree of skillful workmanship of the toolmaker. This report has been inspired by two intriguing, large, well-made stone implements in the Bronson Museum. Coming as they have from different New England sites, they have for years caused various viewers to question what their functions might have been. While a ready answer
usually has been forthcoming, which pointed in the same general direction no matter from whom it came, still there seemed no way of confirming it as more than a haphazard hypothesis.

A situation like this might well require research from early writings of those who had an opportunity to examine the activities of their Indian neighbors at close range. With this as a start, it might then be possible to deduce reasonable postulations connecting the present with what may have gone before. In this fashion the curious stone implements, as described in this report, might become more meaningful as having functions substantiated by this sort of realistic investigation. Not that the resultant answer could be considered an expression of the truth. Rather that it might suggest a probability of soundness; something more than a calculated guess.

However, before an attempt is made to place this report's stone tools in their rightful context, suffice it to say that they are thought to have had something to do with the aboriginal procurement of bark. For this reason it seems best to first examine reports of early commentators about the use of bark by the Indians, descendants of aboriginal forebears.

W. M. Beauchamp. 1905, in his Aboriginal Uses of Wood In New York, after reviewing many early writings as well as examining goods and customs of the Iroquois of that day, has much to say about the use of bark. Perhaps the way to appreciate how extensive the use of bark actually was is to enumerate the many useful articles made from it, some large and others small. Besides its use in covering wigwams and long houses in Contact days, it covered many bark canoes. Other goods made of bark were: eating trays, sap troughs, lodge shelves, baskets, scoops, sleds, barrels, and braided rope—made from the inner bark of the elm.

In adopting bark for these many articles, it is worth knowing that bark from eight different trees was used, including: white birch, ash, basswood, chestnut, elm, fir, spruce, and cedar. Beauchamp, speaking about the prevalent use of bark for covering their houses, makes this comment: "For building or repairing their bark houses, bark was taken from the trees at the best time [presumably the spring, when sap flows freely,], and kept it in water till needed. The pieces were thus preserved from warping and checking."

Since the greatest demand for bark occurred in the covering of houses, it now seems important to review what has been said about this matter by early writers. Many doubtless witnessed the actual handling of bark, as it was pulled off the trees and attached to the roofs of various kinds of lodges. While the Iroquois frequently built long houses in their villages, the round topped wigwam was also in use. On the other hand, in New England early reporters emphasize the wigwam as being the preferred type, with the long house occurring only occasionally, probably inspired by those of the Iroquois. Therefore, a closer look at the way wigwams were covered will emphasize the importance of bark to the Indians, and presumably to their aboriginal predecessors. Archaeological remains prove that they, also, lived in circular huts, probably of wigwam proportions, during the Ceramic-Woodland Age that preceded the coming of the whites. Nearly all early accounts of circular abodes represent them as being round-topped, including Champlain, 1604, who describes them as being relatively small with only a 10 to 15 foot diameter.

G.H. Loskiel, 1794, describes the covering of round topped wigwams with bark, for which basswood was preferred. He says, the bark was cut from 6 feet to 9 feet long and laid under stones to make it flat.

A much more detailed account comes from an early Dutch settler, Van der Donck. 1653, who says: "For covering [an arched house] they use the bark of ash, chestnut, and other trees, which they pull off in pieces of about 6 feet long, and as broad as they can. They cover their houses, laying the smooth side inwards, leaving an open space of about a foot wide in the crown, to let the smoke out. They lap the side edges and ends over each other, having regard to the shrinkage of the bark, securing the covering with withes to the lattings."

Another reference is from the Jesuits Relations, 1635. Speaking of Huron cabins or garden arbors, it states: "Some are covered with great pieces of ash bark, of elm, and of fir or spruce, and though those of cedar are the best, according to the most common advice and use, there is this inconvenience, that they are almost as susceptible to fire as matches . . . ."

Still another later reference is by L. H. Morgan, 1851, who comments: "The Onondaga bark house was called ka-no-sa, while in Seneca it was called ga-no-sote. The frame was shingled with broad pieces of ash or elm bark, stitched to the poles."

These few references should give some idea of the extensive use of bark for covering Indian houses in colonial times. And, while round topped wigwams probably were more numerous, it is stated, also, that long houses of the Iroquois and presumably their counterparts in New England were likewise covered with bark. But so far only brief mention has been cited of what bark procurement was like; that great pieces of bark were pulled off the trees, measuring as much as 6 to 9 feet in length and as broad as possible. And another qualifying statement by Van der Donck tells a little more about bark removal. He says: "When the bark of the ash and chestnut trees is not loose, they have recourse to the timber trees, which grow along the brooks, the bark of which can be taken off during the whole summer season."

However, this report is concerned more with the methods pursued in cutting the bark loose, about which
a most explicit account was given by John Bartram, 1743. Obtained during his Onondaga journey, presumably from personal observation, he describes how bark was procured in these words: “They cut the tree round through the bark near the root, and make the like incision above 7 feet above it; these horizontal ones are joined by a perpendicular cut, on each side of which they after loosen the bark from the wood, and hewing a pole at the small end, gradually tapering like a wedge about 2 feet, they force it in till they have completed the separation all-around, and the bark parts whole from the tree, one of which, a foot diameter, yields a piece 7 feet long and about 3 wide.”

What now can be said as to the use of bark for covering lodges in prehistoric times. Obviously, the written reports just recounted deal only with conditions that existed from the coming of the whites. However, by logical reasoning one is able to project a similar use of bark into former aboriginal days. This projection seems justifiable, when consideration is given to the fact that most well established customs have sources, which many times can be traced. The problem that confronts us is to find out what archaeological stone recoveries have traits that suggest relationship to the procurement and use of bark. Beyond this, there is a related ecological problem in forestation that has generally been overlooked, but one that should now concern us in the course of this research. These matters will be considered and discussed in the conclusion that follows.

CONCLUSION

Archaeological research in the matter of bark procurement in aboriginal times usually narrows down to a study of the stone tools involved. And before anything definite is possible a review of those tools used in more recent colonial times for accomplishing this work is necessary. Fortunately in 1743, Bartram, thought it important enough to go into some detail, as has already been related, to tell the way the Indians went about it. By then, of course, they had advanced doubtless beyond their aboriginal predecessors in their ability to strip bark from the trees with the use of steel knives, then in general use. However, even though their equipment in this respect had improved over that of the stone age, there is every reason to believe that the operations remained ostensibly the same. Because of this, another look at Bartram’s account seems worthwhile. He first describes how a knife was used to encircle the tree with two horizontal cuts, separated 7 feet apart; and then how one perpendicular cut joined them. Next, he tells how a “pole”—as he calls it—probably a heavy stick 2 feet long was hewed at one end with tapering sides to form a chisel or celts-like blade. This was forced under the bark at the perpendicular cut, and so accomplished the separation of bark all-around the tree.

Applying these operations to bark removal in prehistoric days, when most tools were made of stone, we should first search among recovered stone knives in order to locate the one best suited for cutting through the bark of a tree. While it is not likely that anyone will be able to make a selection that can be verified, nevertheless a reasonable choice may be possible. The writer’s would be a sizable thin spall—a blade that sometime occurs—with its thin edge chipped to form regimented serrations. Such a tool should be able to perform the work when sawed back and forth over the bark’s surface. While this preliminary function was essential, the final work of prying the bark loose with the help of a celt-bitted implement—a 2 foot wooden tool in Bartram’s day—may well have been made of stone centuries earlier, when stone was more conveniently worked than wood.

From among the extensive collection of stone implements on display at the Bronson Museum, 2 unusual celts-like tools, elongated in shape, have for years awaited research that could discover their probable function. Now another similar tool has appeared in a private collection and has been made available for our study. These implements have the appearance of being long, wide-bladed celts, and yet they have modifying traits that appear to make them something more than celts. For instance, their extreme lengths made up of a straight plain stem, without grooves, would be too long, it would seem, for attachment to a handle. That is, any such haft would be thrown out of balance by the awkward projections of the elongated stem. The inference to be drawn is quite clear, that such tools were wielded with both hands; also at times may have been struck on the poll end by a mallet of wood or stone to facilitate the work of wedging.

This analysis leads to a belief that these implements are, in fact, the counterparts in stone of Bartram’s tapered wooden “pole”, and were used to wedge under the bark in preparation for peeling it off. A name given to similar blades seems as fitting as any, and so the 3 specimens of this report likewise have been called—Spuds—and are here shown faithfully illustrated (Fig. 10). Webster’s New Collegiate Dictionary furnishes a description that appears to closely fit the functions of this probable bark procurement tool: “Spud—a tool or device—as for digging, lifting, or cutting—combining the characteristics of spade and chisel.”

In order to better evaluate the 3 Spuds of this report, enumeration of their traits and recording of available information about their provenience may be of interest. Exhibit #1 of hard sandstone is 13 1/2” long, with a 3 1/4” wide blade. It has a thick uniformly tapered shank that was first pecked into shape. Abrasion of its cutting blade is complete, while the
Fig. 10. SPUDS, Massachusetts Sites (Bark-removal Tools). 1, 3, Hard Sandstone; 2, Argillite — all show preliminary pecked scars, with final abrading that has partially eliminated them in 1 and 2; almost completely in 3.
shank is only partially smoothed with peck marks still showing. It shows heavy usage at both ends, and has a thick, rugged body, sufficient to withstand much abuse. Loaned by George Barton, it was found by the young son of Lawrence Reinhard in 1959 at a well-known site on the east side of Winnecunnet Lake, in Norton, Mass., at a spot about 300 feet from the lake shore. Recovery was so unique, it seems worth recounting. It appears that young Reinhard was chasing a chipmunk in hopes of catching him for a pet, but the animal quickly scrambled down a woodchuck hole. The boy, not to be denied his quarry, brought a shovel from his home nearby and started digging. But instead of the chipmunk he brought up the Spud from the woodchuck hole. He found it lying about 8” below the loam in yellow sandy subsoil.

With reference to Bronson Museum Exhibit #2 of hard argillite, its extremely long shank of 19 1/4” with a 2 1/4” wide cutting blade gives this Spud a unique appearance. Obviously, its long stem would have required both hands to operate. Its Celt-shaped blade could have been employed to cut and then to be wedged under the bark. However, while its long shank is thicker throughout the central area for added strength, it is too slender to have withstood much prying of the loosened bark. Possibly a heavy stick of wood would have filled in for this requirement. Apparently, this perfect specimen, pecked into shape and then abraded like the others, was never used—a rare discovery. It was one of many stone implements accidentally plowed up, in the process of making a ball park about 1900. It proved to be an extensive site that lay between Olive Street and Riverside Avenue in Attleboro, Mass. Here a large spring of fresh water made this a favorable camping spot on the Ten Mile River.

Bronson Museum Exhibit #3 of hard sandstone is almost a duplicate of Exhibit #1. It has a length of 13” with a 3” wide cutting blade. It was pecked into shape and then heavily abraded with the peck marks almost completely obliterated, leaving a polished surface. This Spud, presumed to be a local recovery, has seen hard usage with wear showing at both ends. It has a sturdy body structure that would have withstood much prying.

Up to this point our research has concentrated on removal of bark from trees that in prehistoric days were doubtless large in size. However, little research, it would seem has been made to discover what effect removal of bark would have had upon tree survival. The question is: What would have happened to tree growth after centuries of bark procurement? With this query in mind, the writer sought help from John H. Lambert, Jr., of the Massachusetts Department of Natural Resources, Division of Forests and Parks. With years of tree study under all kinds of situations, Lambert was ready to answer questions related to our bark investigation. Our chief inquiry was: What would happen to a tree if a large piece of its bark were removed encircling its trunk? Could it survive. The answer was, positively no. If the removed bark section was as large as that stated by Bartram, the tree would die in a year. And even if a smaller amount of bark were taken, the tree would not survive for more than several years, growing weaker each year until the end.

With these facts as a guide, what then would be the picture of the tree cover surrounding well-established aboriginal camps. Suddenly, a realization becomes apparent of something different from that of a verdant forest primeval. Think for a moment what this rape of the forest would have meant after even a short span of 50 years, to say nothing of its continuation for centuries, with the realization that it doubtless required the bark form more than one tree to cover a wigwam. Instead of the green foliage of our imagination surrounding a settlement of wigwams, one might see a few surviving stark dead trees standing here or there. The only green showing perchance would be sparse underbush and second growth of the area. Far from the former picture of our dreams, we must now adjust our thinking to perhaps a less-attractive scene of dying trees, some on the ground and rotting. You say this could not have happened; that it is unrealistic and hard to believe. Then read what Silas Wood, 1828, has to say about Long Island, an area known to have been generously inhabited by aborigines and latter day Indians. He states: “There are numerous facts to prove that at the time of the first white settlement of the Island, the woods were destitute of underbrush, and that the large trees were so scarce that it was deemed necessary to take measures for their preservation.”

As stated in this reference, underbrush is known to have been kept under control here as well as on Long Island by fires. These were set yearly in some areas to clear out the brush and so improve the hunters’ search for game. While perhaps all this will cloud our previous fanciful images, it may at least furnish a more valid understanding of the decimated camp surroundings, brought about by prolonged aboriginal stripping of bark from the trees.

Bronson Museum,
May 10, 1974
In the fall of 1973, while driving along about two miles from the center of Millbury, a group of impressive boulders caught my eye. They lay some 1,000 yards from the road, and at a distance of about two and a half miles east of the headwaters of the Blackstone River. The New England Electric Company had run a power line along the western end of the boulders, which provided an unobstructed view of these immense rocks. The thought occurred to me that here might have existed a rock shelter used by early man, and I climbed the rather steep incline that led to the boulders. Upon reaching them, I was impressed by their height, as anyone would be, especially in aboriginal days, when a search for an over-night camping place on a hunting forage was doubtless of common occurrence.

The central area between the three main boulders was comparatively level, subsequently found to have been part of the living area of the site. Here a small test pit was dug that immediately yielded many quartz chips, and so gave promise of more occupational evidence to come. Only a short distance the other side of a large rock that lay close by, rose one of the massive boulders of the group that soared to a height of some 15 feet. I noticed that the side nearest me jutted out with an ample overhang that would have created a natural shelter for anyone who might have been in need of it. As I left the site, I was further impressed with its potential as a rock shelter, when I noticed at the foot of the incline leading up to the boulders a useful spring-fed brook. Based upon this favorable research, plans were made to carefully excavate the shelter, to see what more could be learned about who may have used it in prehistoric times. A schematic layout has been made of the site, showing all important features associated with its excavation, description of which follows (Fig. 11).

Because of the presence of rocks here and there, which could not be moved on account of their size, the grid layout system was found impractical. However, due
attention was paid to the depths of recovered artifacts, which may reveal something about the age and time span during which the shelter was used. Occupation of the area beneath the overhang, which was excavated first, apparently was accompanied by a continual use of fire, for here was uncovered a foot of almost solid charcoal. Below this the yellow subsoil proved impossible to dig because of scattered large pieces of rock, probably falls-offs from the overhang. At the bottom of the charcoal appeared a Side-notched#5 point, and nearby at the same level occurred a small pile of freshwater clam and snail shells. Also, a piece of soapstone—possibly a fragment from a stone bowl—was uncovered in close proximity. Except for these finds, this area produced no further evidence of occupation.

Moving out into the open, flat floor area, centrally located among the three large boulders, continuation of our excavation uncovered more evidence of occupation outside the overhang. A glance at the site map shows this area extending along one side of a large rock slab that, apparently, had separated as a result of natural elements from a large 25 foot high boulder on the south side, leaving a wide crack in the rock—a significant feature of the site. Here in this 25 x 30 foot plot excavating continued, which produced artifacts at two different levels. The deepest, in the subsoil at 7" below the bottom of the humus, represents undoubtedly the earliest use of the shelter. At this lowest level of occupation appeared a Corner-removed#5 point of the Early Archaic. However, since a Stemless knife, 1 Side-notched#5, 1 Eared#1, and 2 Corner-removed#7 points of the Late Archaic, also, were recovered from this low level, it may be that the single Early Archaic point was a stray; should therefore be excluded as a culture determinant of the level. Open hearth #2 of solid charcoal without firestones, 19" in diameter, which appeared at this low level, is proof of occupancy, while the several artifact recoveries—doubtless the Side-notched#5 point from the shelter overhang area should be included—indicate that the site was first used by the Late Archaics.

What happened at the site some time later may be judged by the artifacts recovered at the second level of occupation—from 2" below up to the humus. In this upper level occurred 2 open charcoal-filled hearths without firestones, one, 19" in diameter, the other, 30" in diameter. Recovered artifacts from this upper level include, a broken Celt; 3 Small Stem points; and a number of potsherds, all from the same vessel. That a ceramic pot—probably dentate-marked Stage 2 ware—was in use at the site after years of eroded fill had brought the surface of occupation up to this upper level, indicates use of the shelter at this later date by Ceramic-Woodland people. Illustrations of selected recovered artifacts from both levels have been made for clarification (Fig. 12).

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Fig. 12. RECOVERED ARTIFACTS, Cracked-Rock Shelter. 1-3, Small Stem, 4,5, Corner-removed#7, 6,7, Side-notched#5, 8, Eared#1 Points; 9, Celt; 10, Stemless Knife; 11, Corner-removed#5, 12,13, Corner-removed#3 Points; 14, Potsherd, Stage 2.
A few concluding remarks might be in order, although I realize there are no remarkable recoveries from the site about which to get excited. However, I have had satisfaction in having added one more piece of evidence to show that prehistoric man of New England used rock shelters for temporary places of abode. While I am aware that Cracked-Rock shelter has provided but few artifacts as compared with other shelters reported from time to time in the Society Bulletin, nevertheless, it furnishes another instance of a natural rock formation shelter used by primitive hunters. Another thing has given me satisfaction, and that is a realization that through an archaeological approach, a research—however small—involving the actions of early man for survival has been made possible. And this research has revealed the presence of women as well as men, at least during the last period of occupation. For, with the appearance of potsherds in the upper level there is firm evidence of occupancy by a family group, in which a woman’s presence is certain—she not only was the culinary handler of pots, but also their maker. And I cannot help but wonder what the loss of a broken pot might have meant to such a family group at the shelter.

Worcester, Massachusetts
October 6, 1974

AN INQUIRY INTO THE CONTACT STAGE
WILLIAM S. FOWLER

It seems important and quite necessary to examine what happened, when the last of the Ceramic-Woodland people first made contact with navigators from the Old World in the 1500’s, and during the 200 years that followed, if we are to get the complete picture of man’s rise and fall in this part of the New World. After following cultural development from the coming of Paleo Man, as he entered New England down through four culture periods, it is essential to learn what social changes took place, and finally, what impact white civilization had upon his primitive way of life. Not that we may ever grasp all aspects of it, but rather that we may spend some thought examining various phases as they are suggested, often by recoveries of artifacts from sites where the aborigines once lived. Tomahawks, like those that prompted this report—to be described in detail in a later section—were among the most significant native implements of this final Contact stage. However, they were only one of numerous factors that had to do with Indian opposition or occasional accommodation to a more civilized way of life.

As a proper approach to this inquiry, it is first necessary to briefly review the cultural changes through which primitive man came from the time of his arrival about 10,000 years ago, in what was then a tundra terrain in this coastal region of the Northeast. Throughout this highly nomadic era and the Early Archaic that followed about 5,000 years elapsed, during which hunting activities consumed much of man’s effort for survival. Then, with the coming of forests about 5,000 years ago, new settlers arrived from western adjoining regions, the Late Archaics. They had progressed culturally and had developed attributes, such as well-formed spiritual beliefs and highly significant ceremonials, while hunting was their chief activity for procurement of food. During this age that lasted about 3,000 years industrial activity occurred that produced stone cooking and eating vessels for the family’s well-being—a cultural uplift quite evidently took place. With no warfare to stifle creative thinking, society progressed and moved up onto a higher plain.

Out of this industrial age evolved the Ceramic-Woodland era, in which ceramic cooking pots made of clay took the place of stone bowls. Women became the potters, while men—the former stone bowl makers—controlled the newly formed tribes, and fought to redress infringement of tribal rights. Intertribal warfare now became a recognized part of primitive activities, which in time incited human passions, resulting in indescribable torture of captives, committed by both men and women. During the 1,300 years of this period such a perverted existence must have gradually eroded the advanced cultural qualities of the previous creative, industrial life, and in the end produced a decadent society. So, when the first whites arrived on these shores, the Indians they met probably had only a fleeting cultural resemblance to that of their early stone bowl-making forebears.

Study of the Contact stage that terminated the last
aboriginal culture period should enlighten us in various ways, besides tending to provide evidence of the presence of a decadent state, the result of a steady cultural decline. This is quite evident, for instance as expressed by William Wood, 1634, in this way: "... since the English came they 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: but lazinesse drives them to buy more than profit or commendations winnes them to make of their owne."

Similarly, from our study of recovered ceramic pots, as displayed in the Bronson Museum, it is amply evident that with arrival of European attractive copper and iron vessels Indian women potters were adversely affected. They soon lost their desire to create native-styled ceramic pots as in the past. Now they found it easier to copy vessels of the English, as shown by two museum ceramic exhibits, resembling a small copper kettle and an iron bean pot. People rapidly acquired an avid desire not only to imitate, but to obtain English-made goods, of which implements of iron were much in demand. Throughout the 1500's and 1600's chill-hardened iron knives, iron axes, and other goods were exchanged for furs. And finally, even flint-lock muskets were traded in goodly number, although stone projectile points on arrows continued to be used. Above all else, the flare of copper and brass kettles attracted the natives' eye, with some of these vessels finding their way into native hands. From them, Indian artisans cut pieces out of the metal, and fashioned them into knives, awls, pendants, and much desired triangular shaped arrow points.

An Indian practice of yearly burning the woods to keep down the underbrush is a controversial subject that seems worth discussing in our examination of this last stage of aboriginal life. While the several reports of early writers that mention such fires are not be doubted, one may assess the damage that accrued, and wonder for how many years this disregard of survival consequences had persisted. Looked at from the eyes of the Indian hunter, whose object doubtless was to remove the low-growing bushes so as to obtain a less-obstructed view of his quarry, the burning seemed to him a useful maneuver. However, considering the resultant damage, one has the right to question how far back into aboriginal days this destructive practice would have reached. Granted that although burning, repeated consistently year after year, might have destroyed only some large trees, smaller ones certainly would have been stunted and eventually killed. But beside this threat to forest survival, consider the more important factor that had to do with man's survival. What affect did this destruction of brush and saplings have upon the deer population? By this brutal act the Indian hunter deliberately destroyed the food upon which deer depended. No longer could these animals and other herbivorous feeding creatures graze upon the low-growing leaves, so necessary for their survival. Driven off by the fire's destruction of their feeding grounds, these animals' grazing habits would have been compromised with a possible reduction of the herd if not total annihilation. With loss of their feeding grounds, deer would have been obliged to move away to unburnt areas if they could be found, awaiting growth of new vegetation before their return, and so would have defeated the purpose of the burning.

Considering this probable disruption of man's principal food source, it seems questionable to this writer that forest burning would have had an early provenience. Rather, it appears more probable that it was a relatively late practice, brought about possibly on account of a continuing cultural decline, the resultant act of a decadent people. And this seems not too far from the truth, when consideration is given to another aspect of forest burning. Consider the threat to man's well-being, when at times he may have been obliged to fight an approaching fire to prevent it from destroying his living abodes. Should the reader care to question this supposition, perusal of a quote from De Forest's account, derived from Lambert's History of New Haven Colony, should be informative: "Once the Indians set the neighboring county on fire, and settlers had to hurry out and work with all their might to beat down the flames before they reached the town palisades. They succeeded in checking them at a large swamp north and west of the settlement; but the fire did much damage notwithstanding, destroying a large quantity of timber, and completely ruining several pieces of good natural meadow."

Here is evidence revealing not only the threat to a palisaded village from an Indian-set fire, but also, resultant damage to woodlands in actually wiping out a "large quantity of timber." It is difficult to believe that anything like this would have happened in the previous more culturally advanced age of the Late Archaics. Its stone bowl industrial activity had elevated peoples' minds onto a high plain of productive, creative thinking that would have left scant room for irresponsible acceptance of fire as an aid to hunting. This senseless activity could only have been the brainchild of lazy individuals, who, through a period of falling social values, had drifted into performing thoughtless acts in looking for an easy way out. William Wood's reference to this characteristic, as previously stated—"but laziness drives them"—is quite convincing, if a proof is needed.

THE TOMAHAWK FACTOR

Probably the tomahawk, more than any other element of the Contact stage, is one most often talked about. It was a necessary weapon in the hands of the Indian, and a dreaded object of destruction in the
With this interpretation in mind, thought may now be directed to further discussion of the tomahawk. It was a hatchet-shaped implement of iron, such as made by the whites in their bog iron foundries. One may rightfully wonder how our colonial ancestors could have been so thoughtless, as not to foresee that these blades in the hands of Indians would be used by them in an attempted white annihilation. Nevertheless, the fact remains that tomahawks were forged and delivered to the Indians by barter, and occasionally are recovered today from Contact sites, which establishes their previous Indian ownership.

Recently, several interesting specimens recovered at two such sites were brought into our museum by Dr. Zariphes, an enthusiastic member, continually on the lookout for new opportunities for study. These finds have given this report an important base for discussion, with the opportunity to carry forward this much needed research. But before a description and narration is made of the circumstances surrounding their recovery, a brief account about the production of tomahawks in this central New England area, and how they were eventually used by Indian fighters seems important as a setting for what is to follow.

The earliest known production of tomahawks—referred to sometimes as hatchets, little hatchets, or small axes—took place at the Saugus Ironworks, Massachusetts, which was in operation from 1646-1655. Before this, axes of various weights of European manufacture had been put into Indian hands through barter. At the Saugus plant, nearby its blast furnace, where bog iron was smelted and made into pig iron, a blacksmith's forge run by three waterwheels was built and operated by Joseph Jenks. He obtained a patent for the waterwheels in these quaint words: “engines for mills to goe with water.” In this forge—called the Jenks concession—were made various kinds of wrought iron goods including tomahawks, a few of which were recovered from this excavated area of the site; 2 are illustrated (Fig. 13). In apparent confirmation, an old resident of Saugus, Fred M. Terrill, wrote the following in 1952: “I once saw a list of objects created for the Indians by the Foundry. It was on a sheet of gray, thick—either paper or vellum [later accidentally destroyed by fire]—written in ink, old fashioned spelling, but what interested me was a notation of: 28 Hatchets for ye Indians.”

To judge from various early references to these iron implements, they were of different weights. The heavier ones would doubtless have been those Champlain refers to in 1604 as “worn-out axes,” used by his Huron allies for felling trees for a barricade in their campaign against the Iroquois. Concerning lighter weight blades, the two illustrated specimens from Saugus represent a possible variation in size of such tomahawks, with the smaller one, Exhibit #2, less than 3” in length.
Fig. 13. LIGHT WEIGHT TOMAHAWKS, Saugus Iron Works. Recovered from the Joseph Jenks forge near the blast furnace of the works, called the Jenks' concession.

Apparently, there was no set size or weight for a tomahawk. It doubtless was determined by the personal desire or strength of the Indian involved. Conceivably, it might weigh as much as 2 lbs., as in the case of one of the Zaripheres specimens to be referred to in a later section.

Before closing this introspective portion of the report, it seems worthwhile to mention two documented historic events that illustrate how the weapon got the name, "bloody tomahawk." The first of these is derived from an account by Rev. John Williams, 1704, describing the Indian burning and pillage of Deerfield, and his subsequent captivity and redemption, entitled, The Redeemed Captive. In this narrative he relates how his wife was killed by her Indian captor. One of 119 captives from the burned and plundered village, Mrs. Williams—weak from a recent sickness—along with other captives was ordered to ford Green River on the first day of their long trek over the snow to Canada. In the midst of the stream, with the ice-chilled, swift flowing water knee deep, she stumbled and plunged entirely under the water. Reaching shore in a shocked and chilled condition, she struggled along, but was unable to keep up with the march, whereupon her captor lifted his tomahawk and with one blow quickly ended her life. Her body was later removed, and buried in the old Deerfield cemetery.

The second account is confined within the Indian society, as obtained by De Forest from John Winthrop's Journal of about 1650. It relates how Miantinomo, chief of the Narragansetts met his death at the hands of his enemies, the Mohegans. The colonial court at Hartford, Connecticut, after a long protracted trial, judged Miantinomo guilty of treachery, as charged by Uncas, chief of the Mohegans, and ordered him put to death by his captors. Delivered to Uncas as his prisoner, he was marched through the woods in the midst of a band of Mohegan warriors, on their way to their village. Wawequa, brother of Uncas, walked close behind Miantinomo, and at a signal from Uncas silently raised his tomahawk and sunk it with a heavy blow into the head of his unsuspecting prisoner. Uncas then cut a large piece from the murdered captive's shoulder and ate it with savage delight, saying it was the sweetest meat he had ever tasted.

With such barbarous acts as these occurring at
unexpected intervals, the Contact stage was fraught with a host of tragedies, the result of intertribal warfare, and hostile operations of a deteriorating primitive society against the approach of a civilized one. At least, this appears as a probability, if we are to accept archaeological research as a logical source, supported by historic events recorded by early commentators. A reasonable evaluation derived from this investigator suggests that a cultural decline took place during the 1,300 years of the Ceramic-Woodland period due to pursuit of warfare as a means to an end, of which military bravery was accepted by both men and women alike as an essential social attribute.

CONTACT RECOVERIES

The various recoveries now to be described were found during the summer and fall of 1974 by Dr. Zariphes, and recently were brought to the Bronson Museum for study, as previously mentioned. Illustrations of them are shown to help the reader obtain a better idea of how they look than words alone can provide (Fig. 14).

Exhibit #1 is from East Windsor Hill, Connecticut, an area that has produced a great many artifacts of aboriginal days. On this occasion the search for artifacts was undertaken with a metal detector. The site is located at the confluence of the Scantic and Connecticut rivers, where in Contact days the Scantic Indians had a large camp. Search for artifacts continued for hours, and at last, on a 4 foot high bank above the Connecticut, where river flooding had worn away some of the site in past years, a strike was made. About 6 feet from the edge of the bank the illustrated tomahawk (Exhibit #1) was located lying just under a covering of loam. This blade is significant because of the pointed design of its oval eye in the poll, where the handle was attached. This trait, of infrequent occurrence, is to be seen on the two specimens from the Saugus Iron Works (Fig. 13). Could it be that this East Windsor blade was made at Saugus, and found its way across country to the Connecticut Valley over well-known Indian trails.

Recovery of this East Windsor Indian weapon of Contact times was on one of two occasions, as reported in this paper, when a metal detector was used to advantage in locating metal objects concealed from view in the ground. The second occasion came about as a result of a personal invitation. This time Dr. Zariphes journeyed into Iroquois territory and searched a well-known Mohawk site, to which he had had previous access with favorable results. The site is located in the town of Fort Plain, about half way between Little Falls and Schenectady in the Mohawk Valley. It covers the crest of a steep-sided 75 to 100 foot high ridge, or "hogsback," with the Caroga Creek on one side—about 1 mile distant from the Mohawk River. On this ridge in Contact days Mohawks of the Wolf Clan are known to have had a double stockaded village, one of several Iroquois strongholds, which early writers refer to as Iroquois "Castles." The Mohawk castle of this report, Tionondogue, is reported to have contained 30 lodges inside the stockade, besides 10 more lying outside at the base of the ridge near the creek. The number of fighting men is said to have been 300, who were called into action on two notable occasions in 1689 and 1693. In these fateful years their stockaded stronghold was destroyed by fire, when attacked by the French and Hurons from the north. As reported by early writers, in the successful 1693 assault, 300 Mohawks, men, women and children were taken captive into Canada. With such fights occurring at Tionondogue from time to time, recovery at the site of weapons that may have been used should be expected. The tomahawk, more than any other weapon was doubtless a necessary part of a fighter's equipment. So, when the metal detector struck first one and then another, evidence of the fighting that once took place there seemed well established.

Two types of relatively heavy tomahawks were recovered, one with a plain oval eye poll (Exhibit #2, weighing 2 lbs.), the other with a solid poll (Exhibit #4). Of this type, an interesting specimen was recovered (Exhibit #3). This blade was being cut in two, in an effort to make a narrow bladed tomahawk with a width of 1 3/4". Apparently, the Mohawk workman had obtained from the whites a cold chisel, with which he had succeeded in cutting a groove the length of the blade not only on one face, but on the opposite face as well. Just short of cutting the blade in two, the workman had given up on what obviously must have been a tedious job. To have carried a 2 lb. tomahawk like Exhibit #2 would have needed a strong arm, of which doubtless there were many. Given such motivation, a heavy blade like this would have been ready to do double duty when required, such as cutting down trees in building a barricade—reported by Champlain as previously mentioned.

During these recoveries at Tionondogue Dr. Zariphes made numerous surface finds as well, which are included in the page of illustrations. Exhibits #5-10 are Iroquois projectile points. Their appearance in the plowed top soil suggest that not all the Mohawk fighters had trade flintlock muskets from the whites. Evidently, arrows played a significant part. Also included among the recoveries are 4 Crescent drills (Exhibits #11-14). Points and drills are all made of black flint—probably Helderberg—except one bluish-gray point of Little Falls flint (Exhibit #9).

As further evidence of Contact days 3 large colored striped glass trade beads were picked up (Exhibit #15). And, as evidence of native industry, 2 black shell discs of perforated wampum were found (Exhibit #16), possibly drilled by one of the recovered drills, or its equivalent.
Fig. 14. TOMAHAWKS AND RELATED RECOVERIES. a) East Windsor Hill, Connecticut: 1, Tomahawk with pointed oval eye. b) Tionondogue Mohawk "Castle" site, Mohawk Valley; 2, Heavy 2 lbs. Tomahawk with oval eye; 3, Tomahawk with solid poll, showing cold chisel attempt to make a narrow blade; 4, Solid poll Tomahawk; 5-10, Iroquois points (Small Triangular #5, 6; 11-14, Crescent drill; 15, Striped glass beads; 16, Shell wampum.)
Evidence as gathered seems to present the Contact stage as one of frequent tribal warfare between opposing Indian groups, such as Iroquois against Hurons; Mohegans against Narragansetts; Wampanoags against Narragansetts; Mohegans against Connecticut River tribes; and numerous others. Such warfare must have tended to stifle other elevated cultural activities, and over the more than a millennium of its existence, had forced the native society into a decline, as has been previously outlined. With fighting an inherent tribal acquisition, it invited destructive antagonism against the whites. Is it any wonder, therefore, that a peaceful accord with white civilization was missed.

Jacques Museum, January 15, 1975

SHARPENING STONES
WILLIAM S. FOWLER

One of the most useful tools to early man was a rubbing stone, which helped him fashion by abrasion needed tools for survival. This sort of an implement may have been one of the first aids, along with the Hammerstone that served man in his creation of other tools toward an advance in living standards. In the beginning any stone, large enough to have been conveniently held, may have served the purpose. However, primitive man soon made a discovery that certain rough grained stones wore away the surface being ground faster than finer grained ones. This accounts for the various grinding stone materials found today in different kinds of abraders, including granite, conglomerate, schist, and sandstone. The last mentioned was frequently employed, if excavated evidence can be relied upon, for sharpening tools, such as gouges, adzes, and axes. Sources from which some fine grained sandstone came are usually hard to locate, and probably never will be known in most cases. And yet sharpening stones made of this preferred material continue to appear, which defy interpretation as to their provenience and the manner in which they were used.

This report concerns itself with this sort of an abrader, and in particular with an unusual specimen recently excavated, 2" below Junction in the subsoil, at a site near Beaver Pond in Franklin, Massachusetts. As so often happens, a good Society member, A. Santacaterina, brought into the museum a perfect specimen, found by him at the Beaver Pond site, of what has been identified as a Whetstone. A description of this kind of a sharpening stone may be found in the Society’s Stone Implement Classification, Vol.25,#1, page 19. The first one displayed in the Classification’s illustrative cut resembles to some extent the case specimen from Franklin, which will now be described in detail.

It measures 6 3/4" in length; is about 1 1/4" wide at its poll end, which is perforated by a 1/4" hole, drilled from both faces of the tool; and is a little over 1/4" thick. This drilled base has been carefully ground into shape both across the head and on both sides of the perforation. From here there extends a gradual taper to the opposite end, terminating in a 3/16" wide point. Both faces have been ground smooth, producing relatively sharp edges on both sides, which causes this specimen to differ from most Whetstones that usually have worn rounded edges. The wear on this tool is different. It appears, strangely enough, along both edges, one more than the other, in the form of a 3/16" wide flat faced groove, extending more perceptibly on one edge 2 1/4" up from the pointed end. But the unusual feature about this grooving is its uniformity, which has left 1/16" shoulders on either side, extending the entire length of the groove. Finally, a distinct departure from the usual perforation found in Whetstones is a finely pecked reduction of the sharp edges about the drilled hole on both faces. This produces a sloping surface into the hole all around its circumference. What this reduction of the drilled sharp edges could mean is a mystery, so far as this writer is concerned. Evidently it had some significance, since it represents meticulous work of seeming importance. An illustration has been prepared of this Whetstone, showing a face view and a view of the deepest grooved edge (Fig. 15,#1). Donated to the Society, this specimen is now on display in the Bronson Museum.

The stone from which this tool is made is a fine grained sandstone that has a light greenish-gray color, with a ferrous rusty discoloration over both of its faces. They show signs of the original relatively smooth grinding that flattened them, while over part of one is a
merely a small natural slab of fine grained sandstone—apparently the identical material to that of the case specimen—but without any sign of grinding to have worked it into a classified shape. However, it shows the same ferrous staining on both faces of a 3/8" thick, 4 x 1 1/4" rectangular block with unworked ends. Both elongated edges show similar wear from abrasion with grooving indicated on one, but not as pronounced as on the case specimen. Apparently, here is a naturally formed stone that was used without preliminary shaping, in performing a similar sharpening operation as suggested by the Lincoln Whetstone. While we are unable to imagine the exact operation that produced the edged wear, it is possible to get some idea of what it may have been from the position of some of the sharpening stones found in the Wapanucket burials, which appeared in close association with the stone gouge furnishings of these deposits.

According to the Wapanucket site report, sharpening stones in small size natural shapes of the same sandstone material as that of the case specimen were recovered from many of the eleven secondary ochre-treated burials of feature #206. And in most of the burials appeared a Plain gouge. But the thing that relates more specifically to the thesis of this paper is the fact that among the sharpening stones, at least one, as found in two of the burials, was lying near by a gouge as though to suggest that it was placed there as a sharpening agent. While the abraded surface on some of the sharpening stones had worn away all sharp edges, on several appeared narrow worn grooves along the face of their edges, somewhat similar to the Lincoln Whetstone. Possibly this may represent wear resulting from honing the curved corners at either side of the cutting blade of a gouge. If so, then use of this grinding operation must have been wide-spread to have been present in Franklin as well as at Wapanucket, separated as they are by many miles.

One thing still remains to be covered, and that is the probable age of the case specimen. At Wapanucket radiocarbon dating indicates a time of about 4,300 years ago for its burial complex that included the association of Plain gouges and naturally shaped sharpening stones. This would be during the first millennium of the Late Archaic. At Franklin this age is stratigraphically confirmed for the Whetstone, excavated, as it was on a 2" level below the loam in the subsoil: the Late Archaic zone of occupation.

This is a fortunate discovery, for it is the first complete Whetstone recovery known to the writer in this northeastern area that has been excavated in apparently an undisturbed condition. With this new evidence we can now be reasonably certain that this important sharpening tool belongs to the Late Archaic. Whether or not the several surface finds of Whetstones recovered from this area belong to the same culture period, or to an earlier or later cannot be proven. However, it seems
appropriate that these well-shaped abrading tools, shown now to have been in use in the Late Archaic, should be accredited to that culture, although they may also have continued in use during the following Ceramic-Woodland period. As for the Early Archaic, some kind of a sharpening stone must have been in use during this preceding age, to account for its Channeled gouge with ground blade that has been reliably found associated with this culture at Twin Rivers, Swan Hold, and Oak Island sites. That it might have been a Whetstone is possible, although the probability is that it had a different form, since evidence of an evolutionary implement development of most well-defined tools is lacking from the Early to the Late Archaic period.

Bronson Museum, March 24, 1973

A GROOVED AX STUDY
WILLIAM S. FOWLER

An impressive, large, heavy artifact was brought to the museum by Guy Mellgren, who had found it in a worn cart path several years ago, near the site of the Contact Indian village of Norridgewock in the upper Kennebec River Valley, Maine. At first glance it appears as an oversized Grooved ax, but on a more thorough inspection is seen to be only partly shaped. While a well-formed groove is in evidence, providing the means for attachment of an ax handle, the facets of the stone just below are only partially worked in an abortive attempt to provide a cutting blade—obviously a Grooved ax preform.

With these few words as an introduction, let us first examine the culture position of the Grooved ax, since this is an important tool that the Maine preform represents. One of the most well-known implements of the stone age, the Grooved ax has been prized by collectors throughout the past century or more, and still holds an important place in the minds of both collectors and researchers. Although there are several types of this ax—3/4 Grooved, Full Grooved, and Chipped Grooved—this report will confine its remarks to the phrase, Grooved ax, with the understanding that it could mean any one of the three, although the Full Grooved type is more often encountered in the Northeast. The question is: In which culture age did it have its inception? Speculation has suggested several theories, some of which are influenced by this ax's occasional appearance in plowed fields, or in disturbed areas exposed by traffic or by water erosion. However, the most reliable method of determining its culture affiliation is by stratigraphic evaluation of its position in the soil at excavated sites, but only when they are not disturbed by some such action as plowing. The Grooved ax has been uncovered at the Late Archaic level at several Rhode Island sites, notably one recovery at Sweet-Meadow Brook, 5 more at Potter Pond, and one at Flat River. Also, in Massachusetts one recovery was made in the Late Archaic zone just below the loam at the Nunkatusset site, while at Titicut a fine specimen appeared in a red ocher-filled secondary burial of the Late Archaic that also contained a Clumsy plummet of that age—now on display in a special case at the Bronson Museum. In support of the Grooved ax culture position, as being that of the Late Archaic, this important tool does not occur on other culture levels at undisturbed sites in this area.

But there is still another convincing piece of evidence that quite definitely places the Grooved ax in the Late Archaic period. Frequently found in stone bowl quarries of this industrial age, to dispute its culture affiliation with the Late Archaic appears senseless. For the purpose of clarification, however, suppose we have a look at some of the steatite quarries where Grooved axes have occurred. As early as 1893, W. H. Holmes of the Smithsonian, excavating in Potomac Valley quarries, has this to say about his work at the Connecticut Avenue quarry in Washington: "One of the most important finds made during the excavations at this place was a large grooved ax of the wedge-hafted type [3/4 grooved]. It was found in one of the shallow pits on the southern margin of the hilltop, a foot from the surface and resting on the surface of the soapstone in place. There is no doubt that this tool was used by the ancient quarrymen in dislodging, and possibly in trimming the masses of stone. Its edge shows consider-
A GROOVED AX STUDY

able wear, apparently from use as a pick, and its surface irregularities are filled with steatite [dust]."

Also, Holmes comments about other nearby quarries in this way: "Finds on the sites of ancient soapstone quarries in Maryland include many of these grooved axes. In most cases they have been more or less completely remodeled by flaking to fit them more fully for use as picks."

Similarly, in New England steatite quarries Grooved axes have appeared. At the Wilbraham site in Massachusetts a Grooved ax with its bit reworked into a rough point—apparently to be used like a pick—was uncovered in quarry tailings.

At the Horne Hill quarry in Massachusetts a Chipped Grooved ax occurred with its bit missing, evidently broken from quarry mining.

Most significant of all, at the Bakerville quarry in Connecticut 5 Grooved axes were uncovered—some broken from use—in an area on an outside edge, where quarrying appears to have first started. This ax concentration seems to suggest that the Grooved ax had been a recognized mining tool at the opening of the quarry.

As to the culture position of stone bowl-making at the quarries, recoveries of many projectile points at Ragged Mountain quarry in Connecticut of the following types—Eared#2, Corner-removed#7, Small Triangular#4, Side-notched#1, and Tapered-Stem, since proven at many sites to depict the Late Archaic period—leaves no doubt of this industry's affiliation to this culture era.

Since the Grooved ax, so far, has not appeared in this region in the Early Archaic zone at excavated sites, it doubtless should be considered as belonging in the Late Archaic along with the Grooved gouge. Therefore, it may be considered as not having evolved from the Early Archaic. Such a tool replacement—found also in the case of knives, projectile points, and gouges—instead of an evolutionary development from the previous age, suggests the absence of racial continuity between the Early and the Late Archaic. In other words, it infers existence of two separate traditions of different peoples divided between the two ages.

To carry this research a step further, it is important to pose the question of what happened to the Grooved ax during the last culture period of the Ceramic-Woodland. Unlike the previous two Archaic periods, racial continuity seems to have existed between the Late Archaic and this final age that extended down to the Contact stage of the coming of the whites. And it might seem natural that a tool, as popular as the Grooved ax must have been to the Late Archaics, would have been passed on to their descendants. However, this does not seem to have been the case, if we are to believe the excavated evidence at site after site in this region of the Northeast. Here, presence of the Grooved ax in
Fig. 16. GROOVED AX PREFORM, Kennebec Region, Maine.

GROOVED AX PREFORM INTERPRETATION

Returning now to the recovery that inspired this report, it consists of a large 4 lb. oval, flattish, smooth surfaced cobble that has received some preliminary tool-working. This has progressed far enough to show that the intent of the workman was the making of a large Grooved ax. The full groove of the ax has been completed with a deep groove showing, that encircles the stone. With this accomplished by means of gradually pecking away the stone with a pointed chunky block of hard stone, the toolmaker had commenced to peck away the stone below the groove. This was done in an effort to reduce in thickness the lower part of the cobble for the purpose of forming the cutting blade, when, inadvertently, a small fragment broke off. Evidently, this accident stopped further work on the ax that left it an unfinished preform (Fig. 16).

This Maine specimen reveals one method of making a Grooved ax. All that was required was a smooth surfaced cobble of nearly the size and shape desired, which was then reduced to an ax form simply by pecking. Grinding of the blade to a cutting edge would have been the final process. However, not all Grooved axes were made this way. For instance, the Chipped type was flaked into shape from a large spall, of which the chipped-out groove often took place on both sides only, leaving the ax faces ungrooved. Nevertheless, probably axes were more frequently made by pecking than in any other way, to judge from the hundreds of specimens that have been collected over the years.
A GROOVED AX STUDY

This particular Kennebec Valley preform, as shown in the illustration, was made from a carefully selected nature-shaped cobble that has crystalline intrusions. Concentrations of these crystals appear as dark spots over the cobble’s surface, produced perhaps as a result of water-smoothing from glacial run-offs in early Pleistocene times. Presumably, years of aboriginal experience and training went into the labor of searching for and selecting this cobble, which may have consumed more man-hours than we have any idea of today.

Bronson Museum,
December 7, 1974

VANDALS WITH PH.D’S

Professional and non-professional archaeologists alike are quick to castigate the lowly pothunter, yet these often semi-literate, local characters, seldom if ever completely destroy an archaeological site. They are more often a nuisance rather than a real threat to our archaeological heritage, and can sometimes be educated to a point where they become of great value to the science of archaeology. There are far worse people than pothunters at large in the world.

A far greater threat to our record of the past is posed by a small, but growing number of supposedly well-educated archaeologists who possess degrees, more often Ph.D’s in anthropology-archaeology. These pseudo-archaeologists are excavating archaeological sites at a rapid rate, sometimes completely destroying smaller sites, but they leave no record of their findings. They do not write or publish archaeological reports.

It is true that most of them keep notes during their excavations, these notes in some cases are illegible to anyone but themselves. Their methodology in most cases is unquestionably good, they do excellent work in the field. They label their finds meticulously, then store them away in the dark recesses of some warehouse or museum cellar, then blithely go on to another excavation. No published report, no interpretation, no studies of skeletal material, ceramics, and other aspects of the site, just a collection of artifacts for future archaeologists to ponder. The same legacy the pothunter leaves for posterity.

The only information the public receives is a lurid account written by a reporter for the local newspapers, or a short slide presentation of the dig given at local club meetings.

When questioned about site reports, they invariably state that: 1) they plan to publish a full report at a future date; 2) they are waiting for further studies and lab reports; 3) the site did not reveal new information or anything of significant value, etc. Ten years pass without a report; meanwhile they have excavated ten other sites, and these too go unreported. These people either will not write, or are incapable of writing an archaeological report.

Many of these excavations are being financed with public funds of up to $50,000. Surely the public deserves to know what discoveries were made and where their money was spent.

The Society for American Archaeology is at present considering a future program of accreditation or registration of capable archaeologists. Those not meeting the standards set for accreditation would not be eligible to receive grants or public funds to pursue their work.

I strongly urge that accreditation be refused these vandals, who excavate but do not publish. Ostracize them, or re-educate them as we would a common pothunter, for these people are indeed destroying our archaeological heritage.