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HAFTING STONE IMPLEMENTS
WILLIAM S. FOWLER

Over the past several years the writer has had a number of requests from various Society members to publish an account of his experiments dealing with the hafting of stone implements. Apparently, these interested individuals represent an ever growing number of new members, who have not had the opportunity to read what has been previously written on the subject by the writer in now, non-available back issues of the Society Bulletin. They seem to express a desire inherent in most people to know how wooden handles and shafts could have been made and attached to the many stone implements of aboriginal man, without the use of metal tools of today. For it is apparent that most all stone implements required shafts or handles to make them fit for use. However, no one today can be sure of just what methods were used. Nevertheless, there have come to light in more recent days several stone implements that show worked notches or grooves placed on them in such a way, as to leave little doubt as to the part they played for each corresponding haft. In view of these impressive revelations together with more recent discoveries that have refined our thinking in the matter, it seems desirable again, to devote space for a comprehensive report on the subject. This will perform include evidence outlined in earlier reports, but now presented in revised form. While hafting methods suggested in this paper may seem logical, it should be obvious to most that the aboriginal haft in each case depended to a considerable extent upon the skill and ingenuity of the artisan doing the work. However, in spite of such probable variation from fixed hafting patterns, there doubtless was more or less adherence to certain basic working principals for the various kinds of hafts, which tended to produce somewhat similar overall appearances in each case.

Regardless of exactly how each haft was made, it appears likely that workers had a limited variety of shaft woodworking tools. After searching sites over a life-time, both by surface hunting and through excavation, it seems apparent that woodworking connected with hafting utilized in the main only four distinctly separate kinds of tools, each with a specialized function. However, some of these doubtless were serviceable for performing more than one function. Although these woodworking hafting tools do not conform rigidly to fixed classified shapes, all appear to belong to their respective type groups by virtue of marked basic traits, which set them apart from each other.

Much of the writer’s research has been carried out on sites in the Connecticut River Valley of Massachusetts. However, it is significant that during his work in the eastern part of the state and in Rhode Island over the past 25 years, he has found these woodworking tools much the same as those from the Connecticut Valley. Therefore, his recognition and classification of them into four distinct groups seems relevant. The writer’s belief is that they represent early man’s principal implements used in producing wooden shafts and handles. More refined and well-shaped tools for making dugouts, paddles, log mortars, etc., such as Grooved axes, Hatchets, and various types of gouges and adzes are omitted, although they were undoubtedly essential tools for heavier kinds of woodwork.

Tools for hafting, like those presently described and illustrated (Fig. 1), have been used by the writer in a few cases to perform experiments, in which he succeeded in making handles, suitably notched, without recourse to steel tools. However, while for most hafts he used a saw to shorten the work, finishing of the handles and shafts invariably was accomplished with stone tools. This produced results approximating in appearance, no doubt, those of aboriginal workmen.

WOODWORKING TOOLS FOR HAFTING
( Illustrations in part are from Vol. 25,#1. of the Society, Stone Implement Classification )

Notcher (Fig. 1,#5-8). First to be considered is this most useful tool, which actually is a straight edged knife. While it may occur in various convenient shapes suitable for hand use, it always has one carefully serrated edge that is relatively straight. Often, its shape is three edged, apparently to provide a convenient finger grip, when used to notch the ends of the shaft for insertion of an implement (Exhibits #6,7). However, it may have a thick roughly worked back opposite the thinned serrated edge, used for a handle (Exhibits #5,8). When in this shape, it may also be used as a saw, with which to fell a shaft or handle-sized sapling, and for making further cuts. Hence this tool has at least two functions, as a notcher and as a saw. In both cases it is effective only when used with green wood. When employed as a saw, the taut outside fibers of the sapling, which is bent with one hand, are gradually severed. The time consumed in cutting about a 1 ¼” diameter sapling amounted to about a half an hour, while cutting it off again to the desired length took somewhat longer; narrow shafts for arrows or spears require a relatively shorter time.

Frequently the Notcher is made of quartzite, but it has also appeared made of durable quartz. It occurs in smaller shapes, when fashioned expressly for notching the ends of shafts—Exhibit #7 from Amherst shows
considerable wear on its long edge.

**Roughing Knife** (Fig. 1, #9,10). Second in importance, this tool is essential in the process of shaping handles. Often made of hard quartzite, it is of a convenient size to fit into the hand. Its moderately thick blade, fashioned from a large spall, has one or both of its opposing long edges worked. They display irregular large serrations of perhaps as few as three or four to an edge. While this useful tool may seem to be nothing more than a casually flaked spall of no account, to the writer it has appeared otherwise. Careful study of its worked edges reveals intentional removal of flakes struck first from one face and then from the other, to produce coarse serrations. With this tool the writer succeeded in removing unwanted bulges in shaping handles, but only while the wood was green. It proved to be an important tool for making handles straight from often crooked sticks. For a handle, being made for the popular club or hatchet, had to be straight to be useful, a condition that nature seldom provides.

The method of using the Roughing knife, following the reported aboriginal way, is to hold the green stick, after removal of bark, with one end placed against the body. The knife held in the other hand is then drawn toward the body in slashing strokes applied against high places on the stick. These are slowly worked away in this straightening process. After preparing eight or more handles in this way, Exhibit #9 showed little or no signs of wear, which seems to confirm the durability of stone tools.

**Shaft Abrader** (Fig. 1, #1-4). This third tool to be described is one that lacks definite shape. It consists of a fist-sized, or a small block of coarse to medium grained stone, such as granite, pegmatite, conglomerate of various kinds, or sandstone. Its chief feature is a shallow or prominent hollowed groove, or grooves on at least one of its faces. A wide groove on coarse grained blocks — usually no more than one — indicates an accommodation for handle abrading, while a narrow groove on sandstone — sometimes more than one — suggests a tool for arrow or spear shaft finishing.

Actual use by the writer of the wide grooved type (Exhibit #1,2) in the straightening of handles proved it to be useful not only as an assist to the Roughing knife in elimination of unwanted bulges, but also it proved efficient in wearing down exposed knots to a level with the handle's surface, but only while the wood is green.

In the case of narrow grooved Shaft abraders (Exhibit #3,4) the stone block used is of a medium grained sedimentary kind such as sandstone. It seems probable that this type served as a projectile shaft smoother, after the scraping process, next to be described, had been completed. It effectively removes fine splinters from shafts as efficiently as sandpaper, but only after the wood has become dry. In this respect, its application differs from that of the wide grooved, coarse grained type.

**Shaft Scraper** (Fig. 1, #11-16). Last but not least of the shaft-working tools, this class consists of relatively large thick flakes of stone with at least one thinned, sharpened edge; or frequently of smaller flakes. Both kinds are made of very hard stones, such as quartz, quartz crystal, felsite, or flint when available. Occasionally they have a reworked straight scraping edge (Exhibits #15,16) but more often, one or more retouched edges are somewhat concave from excessive use. As compared to the convex worked edges of Stem and Steepedge scrapers, they may be identified by their distinctly different straight or concave edges.

The Shaft scraper is useful in the finishing of handles left frayed from action of the Roughing knife, but may not be used in this way until the wood has become thoroughly dry. However, in the case of projectile shafts, when a firm fibered wood is used, scraping may begin while the wood is still green, as will be described under the subject of hafting projectile points. From this it may be seen that scraping of such shafts is for the purpose of reducing the shaft’s thickness, while in the case of handles, the benefit accrued is that of smoothing.

**SUGGESTED HAFTS FOR SOME IMPLEMENTS**

**Projectile Points.** For both arrows and spears the shaft for the haft requires much the same treatment, the difference being principally in the matter of size. The arrow being the shorter of the two, depending upon the length of bow used, demands more precision in its making, to assure true flight when released by the bow. In preparing the shaft, the writer’s success resulted after experiments revealed probable procedures, which are basically the same for both arrows and spears.

At the start, selection of a suitable wood for the shaft is essential, for it is desirable to obtain a wood that will not warp out of line in damp weather. A straight growing wood in stalks without knots, such as alder, is most attractive at first glance, but was found unsatisfactory in the end. Its soft fibers and pithy center proved to have poor resistance against damp atmospheric conditions. Even after the wood had become fully dry, it bent out of shape, which made it undesirable for a permanent haft. After this experience, it became clear that the preferred wood would have to be one that had a close grain without a soft center. In the end, white ash saplings were found to be preferable. They attain about a foot or more of growth in a year depending upon the soil, and each succeeding year send out a long shoot from the last. These saplings
Fig. 1. SHAFT WOODWORKING TOOLS. 1,2, Shaft Abrader [coarse grained]; 3,4, Shaft Abrader [fine to medium grained]; 5-8, Notcher; 9,10, Roughing Knife; 11-16, Shaft Scraper.
are relatively straight and slender, providing good shaft proportions. However, they have knots between each year's growth, which have to be smoothed down, while the stem is somewhat crooked and out of line from one year's growth to the next. These irregularities should be kept in mind, when consideration is given to the preparation of the shaft.

First, after pealing off the bark, while still green, the knots are rubbed smooth with a coarse Shaft abrader. Then by finger manipulation a start is made to straighten the shaft; no perforated stone (the so-called shaft-straightener) is needed. Next, using a Shaft scraper, the work of scraping the wood is commenced. The objective is to make the basal section slenderer than the point-tipped end. This tends to place more weight at the point to insure a straight flight. Now, at this junction an important discovery was made, which seems to be the secret in the making of a successful projectile shaft.

As the scraping continues without abatement, only interrupted from time to time by finger straightening of the shaft to correct its tendency to return to its original crooked state, heat is produced by the friction of scraping. Within minutes the outward fibers of the shaft begin to dry rapidly due to this induced heat, and in this way form a dry crust around a green center. In a short time this dried outer shell becomes rigid enough to act as a vise to hold the shaft straight, as induced by the aforementioned finger-straightening. When completely dry, this ash shaft holds its shape against all climatic conditions.

The projectile point is now placed in a notch, previously made at the heavier end of the shaft with the Notcher, while the wood is still green. It is lashed on with a water-softened fine gut thong, as may be required for the type of point being hafted. A few suggested hafts are illustrated for both arrows and spears (Fig. 2). Also, note Colorado haft with a thong resembling rawhide (Fig. 3). Mention should be made here of an additional operation besides the end notching, which probably was required in the hafting of most Early Archaic points like Exhibit #6, a Corner-removed#8. Since these points have an extended tongue that converges to narrow proportions, it seems likely that the pith was first reamed out for a short distance at the shaft's end to receive the tongue. This would then have been followed by the notching operation to accommodate the seating of the point's shoulders.

Finally, the opposite end of the shaft is slightly notched for the bow string in the case of an arrow, and feathers, previously cut from a split quill, are bound on with fine gut in a double or triple combination.
Hatchets and Clubs. These stone implements require handles of 1 1/2 feet or more in length, depending upon the preference of the one making the haft. However, the hafts used for all such implements probably varied in only a few minor details. Therefore, they are treated as a single group, for which the preparation of handles has proven to be much the same. Sharp bladed Hatchets vary little in form, but clubs have two types: the Hatchet club, and the Pronged club.

A fairly hard wood is preferred, which produces saplings with a minimum of branches. A stalk of about 1 1/4" in diameter after removal of bark seems about right for size. A section is selected that appears to have about the correct shape, although nature rarely ever provides the exact form desired. Oak and hickory have been used by the writer successfully for handles, although maple is also a possible choice. A branch may be used, but the stalk of a sapling is more accessible for procurement. As previously mentioned, the sapling is bent over with one hand, while the outward taut fibers are gradually cut with the Notcher, applied with a sawing motion. By ringing the tree in this manner, accompanied by corresponding bending of the stalk each time away from the surface being cut, the sapling is finally cut in two. Obviously, slenderer stalks for projectile shafts may be cut in the same way.

After the bark is removed and while the wood is still green, unwanted bulges that usually occur are removed, as formerly explained, with the Roughing knife, and knotty intrusions are smoothed off with a coarse grained Shaft abrader. But now, deviating from this basic procedure, the thickness of the handle near the end to receive the stone blade is reduced with the Roughing knife. This produces an effective balance by transferring that much handle weight to the stone blade. However, in performing this operation the reduction stops short of the end by about 1". Here, transverse cuts have been made on opposite sides with the Notcher. By this maneuver, a shoulder of wood is formed, which serves as an anchor to hold thongs in place during the hafting. Finally, while the wood is still green, a notch is cut in the butt end with the Notcher to a depth of about an inch, and to a breadth sufficient to fit the thickness of the stone blade at its notched side.

With the handle prepared in this way, it is now ready to receive the implement, which should fit snugly into the notched end. With rawhide or water-softened gut the blade is lashed on by simple crisscross weaving over both faces. Two methods are illustrated (Fig. 4), as indicated by a single notch, or double notches as found on some clubs — Hatchets invariably have only a single notch (Fig. 5). Here, a clarification seems advisable. Double-notched clubs appear to have been intentionally notched in 2 places on the outside edge opposite the handle. As shown in Exhibits #1,2, of figure 4, these notches seem to have been made to accommodate hafting thongs, so as to
equalize the tension drag and so prevent the blade from wobbling in the haft.

**Gouge and Adz Blades.** For these tools, of which there are several types, preparation of the handle for the haft entails operations that differ from those required for clubs and Hatchets. Requirements include a reasonable straight branch with a thickness of about 1 1/2", one that has a branch protruding at its thicker end. After slashing a flat face on the inside of this protrusion, which had been cut off to a length of about 2", the implement's face is placed against this oblique support. This should extend about half way down the blade. Its head now rests against a protrusion of the handle end that is allowed to extend beyond the branch support.

With rawhide or gut the blade is now lashed to the handle. However, it soon will be apparent that no matter how tightly the thongs are drawn, the blade may be slightly moved one way or the other. In order to stabilize it in the haft, two turns of the thong are made between the implement's head and the protruding end of the handle. This provides a seat for the blade. Illustration shows this method of hafting (Fig. 6,#2).

**Full Grooved Axes.** In the case of this ax, several methods of preparation and attachment of handle were doubtless employed, depending to some extent upon the kind and quality of wood available. This report will confine itself to one method only, as suggested quite clearly by an ax specimen from this area on display in the Bronson Museum. This ax has a unique deep groove extending vertically over the center of its head. Its significance will readily be understood, as the method of hafting is outlined step by step.

First, selection is made of a sapling for the handle that has a length of about 2 feet or more; one that branches in a symmetrical fork at the smaller end. The two branches are cut off, allowing them to protrude about 2 1/2" beyond the main stalk. Now, while still green, the crotch in the branched fork is cut out with a Notcher to fit the horizontal main groove of the ax at one side. Next, the projecting branch stubs are thinned with a coarse grained Shaft abrader, and before the wood dries are bent by pressure to fit snugly into the central groove, where they are held in this position until dry. After this, the ax is lashed to the handle with rawhide, not gut (Fig. 6,#1).

However, the ax may be found to be slightly loose in the haft in spite of all that can be done to pull the thongs tight. Now the purpose of the second groove over the poll becomes apparent. With another piece of rawhide that is fastened to the main thongs at both sides, several turns are made over this groove and are pulled taut as illustrated. This effectively tightens the haft, and holds the ax head firmly in place. It seems probable that this second groove was deliberately made for this purpose, so that as the blade loosened from continual usage, the haft might be tightened without the need of relashing the entire haft. If this unique haft represents more than an isolated case, it appears probable that any ax without the top groove might have been similarly lashed by simply pulling the extra thong tight over the plain head of the ax.

**Stem Scrapers.** These tools appear in at least three different shapes, each representing convex bladed scrapers with stems, apparently made for hafting. The largest of these scrapers measures about 3 or 4" in length, and has a broad, relatively long stem that tapers to a point or thinned blunt end. This tool is believed to have been used principally for scraping the hair off hides, as is now done by present-day Indians of the Dakotas with similar metal bladed scrapers. This tool requires a sturdy handle 7 or 8" in length to make it useful. It may have been made from a section of an antler with an end crook, like the Dakota specimen once owned by the writer, or it may be fashioned from any stick with a nearly right-angled crook at one end. This could be a branched root, as shown by the illustration, or some other irregular growth of a similar kind. The crooked projection is cut off to about a 2" length, to which the scraper is bound. But before this takes place a notch is cut at the base of the projection on the under side of the handle, into which the scraper's pointed base is placed. The lashing is performed by winding thongs around the handle projection and scraper, leaving the wide blade...
exposed below, as shown in the side view drawing of the illustration (Fig. 7,#1). As supporting evidence of this form of a haft, often these scrapers are found with worn blades at the large end, only, and with the pointed end missing, apparently snapped off when the blade became loose in the shaft.

The next Stem scraper to be considered is usually relatively small, about 1 to 2" in length with a stem that is symmetrical, sometimes slightly side-notched on both sides. Evidently this kind of a Stem scraper was inserted deeply in one end of a split stick, or in a notch made for it with the Notcher. It was then merely bound on with thongs wound around the blade and handle as illustrated (Fig. 7, #2).

Perhaps the method of hafting the third kind of Stem scraper is the least obvious, but at the same time may have been the most ingenious. This relatively small blade of about the same size as the aforementioned one is dissimilar, in that it has an asymmetrical stem that is side-notched on but one side. The opposite side is left more or less straight and at somewhat of an obtuse angle with the direction of the blade, which tips obliquely away. To haft this scraper it is necessary, first, with the Notcher to cut a deep longitudinal groove at one end of the handle, extending to at least the length of the scraper's stem. Its straight edge is then placed in this groove, while thongs are bound around handle and through the notched side of the scraper. Examination of the illustration showing this haft should impress one with its advantage, in giving the operator a chance to firmly grip the handle, when using the tool (Fig. 7,#3).

Grooved Hammerstones. Unlike most Hammerstones which were held in the hand without handles, a grooved variety is at times encountered and probably had a different use from the hand-held type. The groove, in most cases, is quite shallow and is pecked horizontally around the center of the stone, which shows results of hammering at one, or sometimes at both ends. It seems obvious that the groove indicates hafting, suggesting that this kind of hammer required a handle to be effective. Since the groove is not deep, it seems to be intended more as a grip for holding thongs than for the wooden shoulders of a handle. Therefore, the haft would have to differ in this respect from that of the Grooved ax with its encircling deep groove.
A satisfactory haft has been discovered, which may have been the preferred one for the Grooved hammerstone. Also, it might well have served for other implements with similar traits, such as some Ballheaded clubs, as well as for certain blades with a flat facet on one side, instead of the usual hafting notch.

A suitable straight stick about 1 1/2" thick of any length desired is prepared for the handle. While still green, its thickness is reduced toward one end. However, in so doing, care is taken to preserve a knob at this end, after a suitable cut around the stick is made with the Notcher to delineate the knob, which serves as an anchor for the thongs.

In lashing on the Grooved hammerstone, the knobbed butt end of the handle is placed against one side of the stone at its grooved center, while rawhide is lashed around the knob and over the groove of the stone. After several turns have been made, it will be noted that the stone is loose in the haft. To correct this, two winds of the thong are made between the stone and the knobbed end and around the thongs thus far lashed in place. As these are pulled tight, the implement head becomes rigid in the haft, as shown in the illustration (Fig. 8, #1). It is possible that this tool, when furnished with a handle long enough to be wielded with both hands, may have been used to split white ash shafts into basket staves. This operation, presumably the same then as now, is accomplished by hammering the end of the shaft against the rigid edge of a hard platform.
Placing Tools. There are three kinds of implements in this category, only one of which needs more than a casual description of its haft. This exception is the Triangular hoe, which has a more or less flat oblique base. In hafting, a thick, dead branch will answer for the handle, at the thicker end of which a flat facet is made by splitting off a portion. The oblique base of the hoe blade is then placed on this flattened end of the handle, while a rawhide thong 3 or more feet in length is wrapped around it. The preferred method, which holds the blade firmly in place, consists of crisscrossing the thong both over its face and back, as shown in the illustration of a small sized weeding hoe (Fig. 9,#3). See Appendix for special Triangular hoe hafting.

Knives. Of all stone tools, the Stem knife cutting blade requires the closest attention in following certain essential hafting operations. The writer’s success with this haft is such that one he made entirely with stone tools and laced with gut more than 20 years ago — now on display in the Bronson Museum, and as illustrated — holds the blade as tightly in place as the day it was made (Fig. 8,#2).

After obtaining a stick for the handle using the Notcher as a saw, as previously explained, a notch about an inch deep is made in one end with the same tool, while the wood is still green. After enlarging this to receive the knife’s shank, side notches are cut into the handle at the base of the deep notch. These side notches are then deepened to a point, where they little more than meet both edges of the knife’s stem. Water-softened gut is next stretched around the handle’s end within its side-notched cuts. From here it is crisscrossed on both sides of the handle and around the protruding knife blade, while at least two more turns are made around the stone itself just off the handle end. In this way the knife blade is held firmly in place, so that it cannot work loose transversely, nor can it be pulled out of the handle. Illustration shows this method of lashing (Fig. 8,#2).

ULUS. Another tool is the well-known knife of the Early Archaic, the Ulu, with its straight back and semilunar ground slate blade. When it has a comb back — sometimes incision decorated — attachment of a wood or
bone handle probably was unnecessary. However, when the straight back is plain, some kind of a handle would seem to have been required, either of wood or bone. An Eskimo haft of today of a similar flat slate Ulu, now on display in the Bronson Museum, has the back slipped into a slot cut along one side of a bone, and made fast with fish glue or its equivalent. This seems to indicate that an attached handle for the plain backed Ulu was utilized. Sometimes, one or more holes produced by abrasion perforate the straight back through the blade, which must have been made to receive thongs for hafting it to a handle. For either the plain or perforated blade, the handle may have been a short length of a stick, with about a 1 1/2" diameter. It might then have been split in two — as is suggested — with one edge worked out to accommodate the thickness of the blade's back. From here on, hafting would consist simply of binding the handle halves together at both ends, as well as through any existing perforations. In this way the Ulu is bound tightly, and is held in place as though fastened in a vise, similar to one on display in the Bronson Museum (Fig. 10). This specimen has one hole placed about midway between both ends of the back.

**Triangular Scrapers.** In the category of scrapers there is one kind that seems to require separate attention, because of its distinctive triangular shape. The sides of its stem form two sides of a more or less right angle triangle while its semi-lunar-shaped scraping blade becomes the hypotenuse. This edge is coarsely flaked, doubtless to accomplish the kind of work for which it was designed. Several specimens of this blade have appeared at the Westfield and Dolly Bond stone bowl quarries, with worked traits similar to those of the industry's Abrading-scraper, which seems to place it in this class of tools (Fig. 11,#2). Other specimens, found at two camp sites in South Hadley and Agawam, with similar traits, also presumably are Abrading-scrapers used for completing the hollowing of steatite bowls at home sites; one is used for the suggested haft (Fig. 11,#1).

Attention should now be called to a deliberate thinning of the blade's triangular stem that took place, in which large flakes were removed from one face to form a distinct channel at times, as shown by the Dolly Bond exhibit. The thinned stem of the hafted specimen is hidden from view; is indicated by dotted lines. It seems obvious that this type of blade had to have some kind of a handle attached in order to make it useful, since its triangular base would seem to have prevented a finger grip, if held in the hand. But what sort of a haft could have been invented to produce a suitable handle?

Leather thongs wound around the stem, as may have been used for many tools, was here out of the question, since the sloping triangular sides would have quickly caused the thongs to slip off. What then could have been devised? Does not the heavily thinned triangular end suggest the answer? For, as has been shown in the case of other hafts, definitely worked notches or grooves on blades do appear to indicate methods used in attaching handles. After much thought and subsequent experiments, a possible haft was accomplished — improbable as it may seem at first glance — of a perforated wooden handle, into which the blade's stem is inserted (Fig. 11,#1). To hold the blade fast in the haft, a wooden plug is driven down from the top into the flaked-out channel, formed by the stem’s thinning, as illustrated. By performing this unique haft, the writer proved the basic principal of the wedged plug correct. But would
an aborigine, with his limited means, have been able to effect such a haft? For him to have attempted the required perforation by the use of fire would have been long and tedious, not to mention its probable failure to form a tight satisfactory haft.

However, after further thought, it does seem that a similar result would have been possible in Stone Age times, by the simple expedient of splitting a thick, short stick. The blade's triangular stem could then have been held firm between the stick halves by binding them together at both ends with thongs, much the same as when hafting the Ulu. Then, as a final act, a wedge could have been driven in as previously explained. If this hafting technique was actually used, would it not seem that it may have been the forerunner of the machine key way of today?

While the described hafts of this paper do not include by any means all the various kinds of stone tools that required handles, they do account for some of the more well-known types. Doubtless some of the operations employed in hafting, as outlined for the ten different kinds of tools, were utilized for still other tools not described, such as drills and Chipped axes. Also, still other techniques must have been used for hafting the War Club Prong, and Celt. For these implements — the Celt in small sizes that show an unbattered poll — it is likely that the blade was sunk half way in one end of the handle, after a suitable hole had been made to receive it, probably by fire. The stone head might then have been not only held in place with pitch, but also bound in with thongs for security. Such a Celt haft, minus the thongs of course, is understood to have been reported recovered from water emersion in the Ohio River Valley some years ago.

Although thongs of gut or rawhide are mentioned for hafting in this report, it is probable that other kinds of material were sometimes used for impermanent hafts, when more available. For example, in the case of planting tools, doubtless made by women planters, often in the field, strips of twisted bark or wild grape vines might have served; the writer has successfully used twisted bark cord for such hafts. In any event, continuous application of creative effort over thousands of years of aboriginal labor, must have developed hafting results far superior to any imaginary hafting suggestions of today. The efficiency of the human mind, when faced with problems of survival, no matter how primitive such effort may seem today, outweighs any attempt at this late date to duplicate early man's ingenuity in devising suitable hafts for his stone implements. And with this thought in mind, the writer humbly offers this report with a feeling of inadequacy in suggesting these several methods of aboriginal hafting.

Bronson Museum
May 3, 1970

APPENDIX

(Special Hafting of Triangular Hoes).

When it comes to determining the various methods of hafting stone implements that may have been utilized by
aborigines of the Northeast, no quick way is possible of learning what the methods were. Strange as it may seem, such early commentators as Roger Williams, who relate at some length about the material possessions of the Indians and much about their beliefs and social customs, say nothing about how their stone implements were lashed to handles, although it is likely that more than 80 percent of all such tools had to be hafted before they could be used to advantage. For example, Williams states that the Indians about Boston used clam shells for hoes, which formerly were of stone, but fails to say how they were bound onto handles. Obviously, they would not have become hoes until they had been attached to handles in a way that would preserve their strength, so they could withstand the strain of planting. The writer found that since quahaug shells have similar traits to stone Triangular hoes they may be hafted in the same way.

In the case of most Triangular hoe blades basal corners are lopped off irregularly with enough rough frets exposed to provide the required support for holding the thong in place, as it is wound in a crisscross fashion over the face and back of the hoe blade (Fig. 12,#1). However, occasionally one occurs with a short triangular blade and sloping basal sides, produced by removal of the corners (Fig. 12,#3). This specimen of white quartz, recovered from a Palmer River site in Swansea, Mass., is an example of a Triangular hoe with an undesirable slope on the left basal side. Evidently, the maker of it, when knocking off the basal corners, was successful in obtaining the desired notch to hold the hafting thongs in place on the right side, but not on the left. Therefore, to haft this specimen, the method described in this report would apply. The stubby pointed bit in such cases would not be long enough to accommodate the presence of thongs fastened just below the extremities of its sharply expanding sides, since such positioning would subject them to undue wear from sharp stones and coarse dirt, as the hoe cut into the soil. In such a situation the sloping basal sides, on only one side, as in the case of Exhibit #3, seem more desirable as a suitable location for the hafting thongs that they may be kept out of contact with the earth. However, it has been found that this is not possible without some sort of an accommodation to prevent the thongs from loosening and slipping down the slope toward the handle. What is lacking, obviously, is a fret of some kind prominent enough on one, or both basal sides, as the case may be, to hold the thongs in place.

It has been found that such frets may be artificially created by first winding the thong a couple of times around the sloping base before crisscrossing it from blade to handle (Fig. 12,#2). This discovery, simple as it may seem, makes the difference between success and failure. It suggests that aboriginal craftsmen probably resorted to clever devices in their hafting, which because of their simplicity often baffle modern attempts to duplicate them.

Fig. 12. TRIANGULAR HOE HAFTING. 1. Usual haft for long bitted hoes; 2. Special haft for short bitted hoes and sloping basal sides; 3. Palmer River specimen of white quartz, showing one sloping basal side, and one that is satisfactorily side-notched.
CERAMIC POT DISCOVERY IN COASTAL CONNECTICUT

CLARENCE DONATH, JR.

I first learned of a probable ceramic pot discovery during the summer of 1971 from a friend who owns a small Indian/Eskimo-made goods store in Niantic, Connecticut. He was visited that day by a local man who had in his possession what appeared to be an Indian clay pot, which the man recently found and had brought to the Indian store to inquire about its origin. Not being able to offer much comment on the artifact, but knowing of my great interest in amateur archaeology, my friend obtained the man's name and phone number.

I was able to contact the pot's discoverer, a Mr. Louis Beaudreau of Waterford, Connecticut, that evening and was extended an invitation to visit his home to view the vessel. Armed with my camera and a copy of the Massachusetts Archaeological Society's Bulletin "Ceremonial and Domestic Products of Aboriginal New England" Vol. 27, Nos. 3 and 4, dated April-July 1966, containing classification details of ceramic pots, Stage 1 to Stage 4, I could only wonder as I drove to see the pot, how and where it was found; was it authentic; and how did it survive so long undiscovered in an area settled during the first days of New England. The answers were to follow.

As Mr. Beaudreau unveiled his find, I knew at once that he had indeed come across an authentic ceramic vessel, since its ware compared to the few pot sherds I had been fortunate enough to recover during my many hours afield. The surprising factor was the state of preservation of the vessel, with no crumbling sections and apparently not requiring any preservative treatment since the pot's walls were quite rigid, with good tensile strength.

Inquiring how he came upon such a rare find, Mr. Beaudreau related that as an amateur geologist, he had been searching the woods near his home for various minerals, as his hobby normally required on weekends. Naturally, large rock outcroppings, ledges or glacial falls always caught his attention and it was on one of these outings a few weeks before, that he had come upon a likely looking spot in the woods. It consisted of a large outfall of glacial boulders along a wooded hillside, which had been naturally thrown together in such a way as to produce a dense boulder-strewn area.

Prowling under the rocks with his flashlight and rock hammer, he saw a portion of the rim of the vessel appearing above some loose sand. He carefully removed the find by clearing the area with his hands. The pot, in an almost upright position, was recovered complete, although the bottom does have a two inch hole broken out. All pot sherds from this base hole were found immediately beneath the pot which would seem to indicate damage incurred during the length of internment, rather than a deliberate "killing" elsewhere prior to its secreting away. No other artifacts were found in association with this vessel.

Mr. Beaudreau allowed me to photograph and take important measurements of the vessel, so these facts could be studied. We then compared the neck decoration and overall appearance to the Bulletin detail of Stage 1 to Stage 4 ceramic pots, trying to date its origin.

The pot exhibits Stage 3 traits; has a 6" diameter mouth opening and is 7 1/2" high. The basal walls, as measured through the bottom hole, are 3/8" thick, with a temper consisting of medium to coarse crushed quartz. Some of the larger quartz temper fragments occasionally are noticeable on the outside surface of the vessel as they came to the surface during construction and became fixed in place. A flat rim has an everted 1/4" high lip with a deeply scored decoration around its outside. The pot's full globular body is cord marked on the exterior.

![Fig. 13. CERAMIC POT RECOVERY, Stage 3. 1. Photo of Pot; 2. Illustration of Pot, showing deep incised lines around neck, overprinted with dentate plaited oblique bands; flat rim with incised rope-like lip; cord-marked outside, plain inside.](image-url)
only, while the constricted neck exhibits a good degree of design. This neck design (Fig. 13) consists of deep horizontal incised lines, overprinted by a diagonal dentate platted motif, which frequently occurs on Stage 3 pottery. Appearing around the lower edge of the neck design and separating it from the body cord marks are a series of small vertical incised lines.

The pot's interior is completely smooth, with the entire inside surface charcoal black as though it had contained a fire during the last days of its use or manufacture. Mr. Beaudreau mentioned that during the initial discovery, the pot had been about half full of small granular charcoal bits, which he later recovered to keep all evidence intact. Classifying this pot as Stage 3 would place it in the late prehistoric, or about A.D. 1400 and on, sometime prior to the first arrival of Dutch and English traders in this region.

Our meeting ended with a promise from Mr. Beaudreau that we would get together soon for a visit to the site of his find.

THE SITE

Several months passed before we were able to arrange our time for the meeting. In the meantime, Mr. Beaudreau had a short account and photo of his find written up in our local newspaper. I took this clipping with me on a visit to the Bronson Museum during August 1971, to show the curator, Dr. William S. Fowler. His immediate comment upon viewing the photograph was that the full globular base of the pot probably was indicative of a New York influence. This rapid analysis was to prove to be most factual once we learned where the pot had actually lain hidden.

Waterford, Connecticut is a coastal town located on the southeastern Connecticut shore line. The west section of the town is bordered by the Niantic River flowing for about three miles to Niantic Bay and then into the sea. It was in the upper Niantic River Valley (Fig. 14) that Mr. Beaudreau took me to see the discovery area.

The site is located along the edge of a powerline cutting through the woods. As soon as I saw the site, I realized why the pot had lain hidden so long, even though the surrounding section has been and still is rapidly building up. Here was a rough and rugged boulder-strewn rock slide, with the larger boulders 10 to 15 feet high and with dangerous gaps appearing between sharp rocks. This situation does not lend itself to the casual walker or youngsters, who usually find these outcroppings close to their homes and frequent them as a refuge or play area. The pot lay hidden in the lower edge of this rockfall between two good sized rocks, which formed a cavity. To view the actual sand-filled floor of the cavity, you have to almost stand on your head between the rocks.

A quick investigation among the surrounding rocks revealed quite a few oyster shells about the surface as though they had been thrown down from above. Mr. Beaudreau pointed out an interesting looking rock shelter on the east side of the rockfall. This may reveal more data relevant to the ceramic vessel once we have a chance for closer examination in the spring.

The Niantic River, even today, abounds with wildlife in the form of ducks and geese which stay all year long. The river is full of saltwater fish such as striped bass, white perch and flatfish, with sea-run brown trout adding an interesting flavor. And only in recent years has there been a decline in the once abundant and famous Niantic Bay scallop.
With such attractions it is a certainty that the area was well known and frequented by aboriginal natives, who may have come across Long Island Sound from Long Island, New York. They would have brought with them thoughts and customs to influence our local Nehantic and Pequot Indian tribes, thus accounting for the full globular vessel, with a design motif resembling Castle Creek Owasco pottery of New York.

CONCLUSION

The pot's history and purpose is difficult to determine, but from its perfect condition — save for its damaged base — and facts associated with the find, it is possible to make some observations. It would appear that the pot had been carefully laid away in good shape after possibly a season's use as a domestic product, to be reclaimed at some later date, rather than to be carried to a new location. An unserviceable item would most likely have been broken up and discarded around the occupational area instead of being so carefully hidden.

The contents of charcoal bits and blackened inner wall surfaces are most intriguing. Could this have been a result of some oyster smoking process, wherein the vessel served as a smudge pot to smoke its contents of freshly shelled oysters, thereby preserving them in preparation for the long winter months? The scattering of oyster shells in and around the glacial boulder area proves that mollusk gathering activities were being conducted in this seashore location.

Or possibly the pot had never seen service as a domestic product, since the charcoal bits still remaining may indicate a newly manufactured item with signs of the firing process still in evidence. It seems reasonable to speculate that the pot could have been made during the summer months due to the ease in this season of gathering clay, with long daylight hours and easy living conditions that favored pot construction activities. Then, if this new-pot theory is used with the pot secreted away after summer firing, rather than being pressed into use, this might tend to show that the area was occupied only during the summer months — shellfish gathering time — to be retrieved next season after a winter spent at some inland site.

In any case, the fact remains that a good pot was hidden away, rather than being used until broken, suggesting that a movement of people from the area took place with the intention of returning to the same site at a future date. One can only surmise what events may have taken place to prevent their return and recovery of this vessel. Could it have been the arrival of the white man?

North Stonington, Conn.
February 28, 1972

ABODES OF FOUR ABORIGINAL PERIODS

WILLIAM S. FOWLER

During the past quarter of a century, in the course of archaeological research of the New England area, recurring tantalizing questions have arisen about the living conditions of its aboriginal occupants. People seem eager for knowledge, especially, as to what the abodes were like that related to the several different culture periods. Realizing that environment has been a determining factor in man's survival, research has included a study of climatic changes that took place over the long span of man's occupation of this northeastern area. This has entailed the work of geologists as well as archaeologists in an effort to find out what may have taken place over the last 9,300 years. This starting date was obtained from a radiocarbon measure of charcoal from an open hearth at the Paleo Bull Brook site in Ipswich. Years of research have now produced several kinds of evidence of a reliable nature, which have given encouragement for this report. Not that this evidence has always been as factual as might be desired, but that a reasonable interpretation of it has led to a probable understanding of changing living conditions reaching back over an extensive span of man's occupation. And, as man adapted himself to environmental conditions throughout the ages, it seems relevant to attempt a reconstruction of the kind of housing he may have devised to protect himself from the elements.

This report attempts to envision the various kinds of lodgings, as influenced by changing environmental conditions and ways of life that may have existed here
during four well-defined culture periods: Paleo, Early Archaic, Late Archaic, and Ceramic-Woodland. Some of these abodes are well-defined, but others are inspired by circumstantial evidence of a kind that seems convincing. To those who demand factual evidence before accepting an attempted postulation, parts of this report will doubtless appear as heresy. And yet, the writer feels that the evidence, such as it is, should be exposed and interpreted, seasoned with a generous sprinkling of common sense. After all, archaeology is not an exact science in the sense that an envisioned fact can be definitely proven beyond a possible doubt. Instead, it represents an effort, in which groping for the truth never ceases, but forever continues toward an evasive goal. However, it would seem that this should not prevent reasonable postulations, which might lead to a better understanding of otherwise heterogeneous evidence.

**Paleo-American (about 9,300 years ago).** The ancients of this initial period of occupation in New England were not the Indians of Columbus. They were our first Americans, and are known to have used the distinctive Fluted point in spearing their tundra-fed late Pleistocene game, such as mammoths and mastodons. Although small deposits indicating their presence have appeared in various locations, their heaviest concentration has appeared at the Bull Brook site, previously referred to. There, at depths of from 10 to 15” below the loam on hard-packed gravelly sand have appeared numerous workshop areas. These were indicated by accumulations of flint chips with flint Stem scrapers, Gravers, and Fluted points mixed in. No stone hearths were found at this level, but an open hearth of charcoal was encountered, which provided the radiocarbon date previously referred to. No post molds were found to suggest frame structures of any kind, which is understandable, since the tundra surroundings would have furnished nothing larger than bushes. What then could have protected these early hunters from stormy weather in the form of an abode?

Here is a situation with only sparse factual evidence available, of which a hypothetical evaluation seems necessary. Summers would have been short, during which tundra grazing would have been open for animal feeding, while for the rest of the year ice and snow would have forced both animals and hunters to warmer more southerly climes. The highly nomadic state of existence that resulted must have kept these Paleo hunters on the move with only short stopovers. However, these doubtless were long enough at some sites, as at Bull Brook, to have furnished sufficient time in which to make tools from flint stock brought in from outside regions. To judge from the charcoal remains of an open fire at this site, hearths of these people probably were outside affairs, not located within shelters.

Considering these conditions and existing tundra limitations, it seems reasonable to envision for this early period an impermanent hut composed of brush, which might have been set up with an opening at one side, with accommodations for one or two people. For additional protection from the rain, a skin, when available, might have been thrown over the top as a roof. This brush hut would have served only as a night shelter, daytime living being in the open. Bull Brook’s workshops, then, might be conceived as places outside the hut, where activities of the day were carried on including the making of flint implements.

The brush hut, about 4 feet high to the roof, of the Shoshoni, “Digger Indians” of the 1800’s (Fig. 15), furnishes a good example of a primitive brush abode, used in modern times by backward people in desert tundra surroundings. It should probably resemble the Paleo shelter of 9,300 years earlier, since it too was subjected to a similar barren environment as that of the Shoshoni.

**Early Archaic (about 7,000 years ago).** At the end of the Paleo, when the making and use of Fluted points had ceased, new ideas arrived to alter somewhat the cultural attributes of the day. These changes are apparent by the
appearance of several new projectile point types. Counterparts of them have been reported from regions to the south and far west, where they have been radiocarbon dated. These data have indicated a probable transitional position for these points between the Paleo and Early Archaic ages. Here in New England they have been considered as representing the Early Phase of the Early Archaic, and may have occupied a span of about 500 years extending down to 6,500 years ago. They include the following types: Eden, Corner-removed#2, and Parallel Stem. At Oak Island, Titicut, and Twin Rivers, excavations uncovered occupational remains involving at least one of these three point types, appearing in the lowest occupied horizon. Also, at these sites presence at this low level of small unique stone hearths with small fire pits encircled with stones, and with an opening for feeding fuel at one side, furnishes evidence of related conditions that may have existed.

In these hearths appeared charred sticks, not log remains, which should indicate presence of a bushy tundra instead of forest growth, although there might have been pockets of coniferous trees growing in low swampy places, as forestation was commencing to creep in from warmer climes to the south. But for the most part, a wide open tundra probably covered the countryside, swept over at times by high winds that caused formation of sand dunes in some areas. At this time herds of caribou are thought to have roamed the tundra, and are believed to have influenced the mode of human existence to a considerable extent — their bones have been recovered at various sites. As far as shelters are concerned, it seems obvious to one, who has examined the small stone hearths at close range, that they must have been used in the open. For the hearth's construction with stones surrounding a small fire pit suggests an intentional attempt to protect the fire from wind action; an unnecessary precaution if the hearth had been used inside a shelter. As to the form of human existence, the presence of caribou suggests a highly nomadic existence for the hunters of this early period, to judge from today's experience of the Caribou Indians of Canada. They hunt and follow caribou herds over the Quebec-Labrador peninsula, a tundra waste that once existed here in New England.

By this time poles for building could have been obtained from the few trees, which were beginning to appear in low places. And with the availability of caribou hides, it is probable that a more carefully constructed abode than that of a brush hut would have resulted. Post molds or other organic remains from this early period may never appear to substantiate what the structure actually looked like. Nevertheless, man's survival, as determined by caribou and the environment of those days, suggests a small caribou hide-covered hut. Smoke exhaust probably would not have posed a problem, since the stone hearth, previously described, appears to have been constructed for outside use.

This shelter postulation, probably would not only apply to the Early Phase, just described, but also to the rest of the Early Archaic. During this final span of about 1,500 years the nomadic caribou hunters of the age moved slowly northward out of New England, it would seem, in gradual pursuit of the caribou, upon which their survival depended. Retreat of the tundra and its supply of lichen, upon which the caribou fed, followed the melting ice northward and set the stage for what followed. Archaeologically, this remainder of the Early Archaic is associated with small stone hearths with an opening at one side, quite similar to those of the Early Phase. These were clearly identified by recoveries at the Oak Island site on North River, Society Bulletin, Vol 29, #3.4. Evidence suggests that this last portion of the Early Archaic was tundra motivated, like the Early Phase, followed by an ever persistent approach of forest cover, which was slowly moving up through New England. Projectile point types found in close association with this culture period are: Corner-removed#5,8 and 9; and Bifurcated with sharp barbs.

Searching for an example of a shelter of more recent times, which might resemble the envisioned skin hut of the Early Archaic caribou hunters, a probable parallel occurs to the writer. He recalls seeing a good photograph in a magazine issue of the early 1900's of a skin-covered hut, then in use by herdsman of some part of the Mongolian desert. This was before arrival of canvas tents, now widely used. If his memory serves him right, this hut of Asiatic nomads had a somewhat rounded shape of about 10 or 15 feet in diameter. It appeared to have skins fastened to a simple frame of poles, which had been bent over at the top to form a round-edged flattened roof. This reached to about shoulder height from the ground, and on one side of the hut was an opening for the doorway. Such a structure, it would seem, could have easily been taken down and moved at will. This example appears to support the postulation of skin-covered huts for New England's caribou hunters of the Early Archaic.

**Late Archaic** (about 5,000 years ago). This final Archaic stage is separated stratigraphically at excavated sites from the Early Archaic, which it follows, its most diagnostic projectile point types being: Eared, Corner-removed#7, Side-notched#1, and Small Triangular#4. A general lack of evolutionary development of stone implement types from Early to the Late Archaic, but instead a replacement in the latter age of old with new types in most categories suggests arrival of a new people. Small in number at first, but with advanced ceremonial rites in evidence often including the use of red powdered ocher, excavated recoveries suggest a creative alert people had arrived, probably from western regions. They
were part of an eastern movement of peoples that had been going on from earliest times. And by now, forests had taken over, covering most areas much the same as today. A warm period, the so-called "Climatic Optimum," was in progress with modern kinds of animals present, replacing the caribou of former days.

With these changed conditions people became more sedentary, which had much to do in bringing about an elaboration in house construction that now took place. A report in Society Bulletin, Vol. 32, #1&2, describes in detail recovery of house floor evidence, outlined by post molds at the Wapanucket #8 evacuation on Assawompsett Lake. This has enabled a probable reconstruction of the Late Archaic house structure as illustrated (Fig. 16). An associated charcoal sample from outside the house was radiocarbon dated about 4,300 years ago. This house was comparatively large with a 32 to 45 foot diameter, and was probably somewhat conical in shape, interrupted by vertical low side walls and a straight sloping rafter roof. The side walls overlapped at one end to provide an entrance, and because of this unique characteristic this structure has been called the "snail-shell" house. Evidence shows that the hearth fire was inside the structure, the smoke escaping through an opening at the top between the rafters.

There is reason to believe that this advanced form of building, which utilized cut tree poles for rafters and probably bark for shingling, continued as the preferred type of construction throughout the Late Archaic. At the close of the age, sometime after the beginning of the Ceramic era, destructive forces appeared that seem to have caused a change in house building methods.

The Late Archaics, with their dominant stone bowl industry, which had persisted for more than 2,000 years, apparently were unimpeded during this time by warfare; were engaged in making products for the welfare of the family. Hence, they lived, as it would seem, in a peaceful society, which encouraged expansive architectural accomplishments in house building. But by the end of the period populations evidently had multiplied, to judge from the heavy concentration of stone artifacts left behind. Then, with arrival of ceramics, cooking pots began to be made of clay by women, replacing stone bowls formerly made by men. And with the resultant closing of the stone bowl quarries, men were deprived of the invigorating work of producing the products of the quarries, except for stone pipes, which continued to be made by men.

As a result of this industrial change, living conditions
must have become altered. And with more people to deal with, the stage was set for formation of tribes to effect better group control. But, as always happens under such circumstances, infringement of tribal fishing or hunting rights seems to have caused friction that was redressed by tribal warfare. Evidently, such action involved fire with destruction of the enemy's houses. This appears to have brought about an architectural decline, in which the defeated tribal group no longer was interested in tribal warfare. Evidently, such action involved fire with, the stage was set for formation of tribes to effect rebuilding their large snail-shell houses requiring weeks of labor. Now, with the threat of repeated conflagrations, people seem to have settled for more quickly constructed smaller shelters, to be described in the following section.

_Ceramic-Woodland_ (about A.D. 300). This last culture development involves people, who, because of their continued used of some implement traits from the Late Archaic with only slight changes, are presumed to have been descendants from that age. It was a period when the activity of pottery-making and maize planting was conducted by women, while men were the fighters, when not engaged in hunting or fishing. Somewhat more sedentary than their predecessors, due perhaps to the addition of maize as a partial food staple, these people left behind several types of projectile points, which are considered most diagnostic of this period: Large Triangular, Small Triangular#5, Corner-notched, and Side-notched#3,5,6, and 7.

As suggested in the previous section, the living abode for this age was reduced to small proportions, doubtless as a result of the threat of destruction by enemy groups. Ritchie reports, in his _Pre-Iroquoian Occupations of New York State_, the finding on one Canandaigua village of circular hut or wigwam sites about 10 feet in diameter. They were traced by postmold patterns with central fireplaces, consisting in each case of an indiscriminate group of firestones, and indicate small abodes of some kind. But the best evidence of what these structures may have looked like, and the way they were constructed is to be had from reports of early commentators. They witnessed these abodes, called wigwams, and at times lived in them, which should make their accounts authoritative. Several of these references may be found in the report on house floors, Society Bulletin, Vol. 32, #3&4.

Morton's account, as found in that report, is quite descriptive as to the method of wigwam construction, and is repeated here. He says: "They gather Poles in the woods and put the Great end in the ground, placing them in the form of a circle or circumference and bending the tops on them to form an Arch they bind them together with the Barke of Walnut trees which is wondrous tuff so they make the same round on the topp."

Champlain, Roger Williams and others refer to small round houses ranging in size of from 10 to 15 feet in diameter, while several modes of covering are mentioned, including: finely woven mats; thatched with rushes or corn husks; and pieces of bark attached like shingles. Of these various coverings, bark seems to have been a favorite selection, since it is mentioned frequently in early accounts. With the presence of dense woods and large trees, its preference is understandable, although length and width of the pieces of bark must have depended to a large extent upon the kind of trees involved.

Besides bark's accessibility, it seems to have provided a dry shelter, as may be gleaned from _The Captivity and Removes of Mary Rowlandson in 1676_. Taken into captivity along with others at the burning of Lancaster in Philip's War, she survived a grueling ordeal of travel with her captors. It covered a long trek through the wilderness of the Connecticut River Valley, before ransom was effected at "Redemption Rock" near the foot of Mount Wachusett. Her account, coming as it did shortly after her return, is considered most authoritative, and is often used for reference because of her detailed descriptions.

On occasion of her fourteenth remove, as they went through the forests toward the Bay-towns this reference is of interest: "When night came on, we sat down: it rained, but they [Indians] quickly got up a bark wigwam, where I lay dry that night . . . many of them had lien in the rain all night." The kind of wigwam involved in this account can only be surmised, but the work must have been expertly done to effect the dry result as reported. To have been a wigwam in this instance — a term used frequently by Mrs. Rowlandson — the structure would probably have conformed somewhat to the established pattern: pole-framed and shingled with pieces of bark, although the bark slabs might well have been larger than usual to save time. To have accomplished this work in the short time inferred by her expression, "quickly," is an impressive piece of house building, far from that which might be expected from lazy individuals.

In respect to wigwam living of those days, it is of interest to note from further remarks of Mrs. Rowlandson that the family fire place was inside the wigwam. Describing her seventeenth remove, she says: "Then I went into another wigwam [in an Indian Town] The squaw was boiling horses' feet, she cut me off a little piece."

From such early reports it is possible to obtain a fairly accurate mental picture of what the house of the last culture period looked like, and how it was used. But there is another piece of evidence derived from an observation of today, which seems to confirm the wigwam structural form, as described by colonial eye-witness accounts. In 1933 the writer was in Chicago on business, and attended the last World Fair held in that city. The thing that attracted his attention was a performance by
American Indians from three sections of the country, demonstrating different methods of house construction peculiar to their respective cultures. There was the adobe pueblo of the Hopi, and the spacious tepee of the Sioux. But what interested him most was the wigwam of the Winnebagos, a people living in the forests of Wisconsin near Lake Winnebago. They speak Algonkian and belong to the same linguistic stock as the aborigines of New England. Could it be that this relationship accounts for the similarity of the Winnebago wigwam to that described by our early commentators? Whatever the reason, their wigwam appeared to the writer, as he examined its structure, to conform in general to that described by Morton and others, as used by the historic natives of New England. The Winnebago structure appeared relatively small and had a domed-over shape with a vent for the escape of smoke, and with a small opening in one side for the entrance. A framework of bent-over saplings, covered with slabs of dark colored bark, had a height of only about 5 feet, necessitating a stooped position for anyone entering, with no chance of moving about within in an upright posture. Several of these wigwams were being lived in at the fair by a group of Winnebagos, which presented an impressive sight.

An early photo of about 1860 has been obtained from the Minnesota Historical Society, showing Winnebago Bark Wigwams with the type of bark construction then in use: long strips of bark laid over a frame of saplings (Fig. 17).

Another people of Algonkian lineage, the Chippewa of northern Minnesota, occupy an area around the western shores of Lake Superior. Their name is said to be a corruption of Ojibwa [pronounced Ojibway], garbled by Europeans into Chippeway, so that even today many Ojibwas call themselves Chippeways. Like the Winnebagos, these people were living in bark-covered wigwams as late as 1870, as shown by a photo of this date, courtesy of the Minnesota Historical Society (Fig. 18). This picture shows wide slabs of bark placed over, and secured to a frame of saplings, while outside, posts and strap saplings lean against the bark covering to hold it in place.

**CONCLUSION**

Looking back over the 9,000 or more years of man's occupation of New England, and examining the probable kinds of abodes he used, it seems clear that his actions were often impelled by his environment. At the start with the open tundra wastes surrounding his camp, he used such structural material for his hut as nature provided in the form of brush. The result may have resembled the brush hut of nineteenth century Digger Indians of our western plains, who were faced with similar waste land limitations. With low temperatures and a short hunting season for the Fluted point hunters, permanency of housing was never contemplated. Hence, the quickly thrown-together brush hut was most probably the structure of Paleo New England.

As time moved on, about 2,000 years later, conditions had begun to change, with newcomers arriving, whose source, as formerly, may have been Asia. By now prehistoric animals had disappeared and had been replaced by certain animals of today. Of these, by far the most useful and therefore the one most hunted is believed to have been the caribou. Herds of these animals must have frequented New England at this time, and moved north into Canada following retreat of the glacial ice caps and tundra. Their hides were useful for clothing, and because of this availability, very probably were also used in house construction. Certain it is that skin-covered huts at the turn of the 20th century were being used by certain nomadic herdsmen of the Asian desert, who may be derived from the same racial stock from which the Early Archaic migrants sprang in earlier times. New England caribou hunters may likewise have used skin-covered huts, which, being easily moved, would have served them well in place of more permanent structures.

At this point it may be well to explain the reasons for
assuming that the next culture period of the Late Archaic was peopled by new arrivals from the west, rather than by descendants of the Early Archaics. Doubted by some, who like to consider the entire Archaic era as one cultural development, what may be said to the contrary is anathema to them. However, it seems to this writer that a conscientious appraisal of archaeological recoveries, stratigraphically recorded, should serve as a valid approach to the truth. More specifically, the fact is that certain implement types of the Early Archaic are replaced by new types of the Late Archaic, having similar functions, but with no evidence of having gone through an evolutionary change. For example, the Wing atlatl weight replaces the Oval atlatl weight; Stem and Stemless knives replace the Ulu and Leaf knife; Grooved gouge replaces the Channeled gouge; Grooved ax and Pestle are new introductions; and broad-bladed projectile points, such as, Eared, Side-notched#1, and Corner-notched#7 replace the narrower javelin Corner-removed#5,8 and 9 points. Also, there was a change from the old method of hafting these last named spear points of the Early Archaic, which have elongated narrowing stems of relatively reduced proportions. For these points, it seems self evident that a hole was first reamed in the pith of the shaft at one end, into which the extended narrow stem of the point was set, after a slight notch was
cut across the end to hold the point’s shoulders. This method is far different from the Late Archaic haft, which required only a deep notch cut in one end of the shaft to accommodate the relatively broad-stemmed points of that age.

When all such replacements and changes are taken into account, a logical conclusion seems to evolve that a new tradition had arrived, made up of people with different equipment and ideas. For without an evolutionary development of artifact traits in evidence, a lack of racial continuity seems evident. Therefore, disappearance of the Early Archaic caribou hunters from their camps seems apparent. Barring a cataclysm to explain this situation, of which no trace remains, the evidence strongly suggests a departure of these hunters, north, in quest of their main quarry, the caribou, as previously hypothesized. The new occupants of the former camps appear to have been more culturally advanced with more creative ability. In time, they opened the steatite quarries and became the stone bowl makers of the Late Archaic, the first industrialists of New England. A few caribou hunter stragglers, who may have stayed behind, were soon absorbed by the newcomers, with some useful traits here or there adopted and modified.

No better example of this cultural absorption exists than that concerning the class of implements called plummets. Here, the Classic plummet of the Early Archaic is followed, stratigraphically, by the Clumsy plummet of the Late Archaic, obviously a modification of the former. Assuming this artifact to have been a line sinker for fishing, an explanation of the modification seems quite obvious. Here, the new arrivals apparently adopted an Early Archaic fishing tackle, because it was useful for their survival. But, in making it, they did not bother to refine it to its symmetrical classic shape, because they were not its inventors. Instead, they made it in clumsy shapes, which only approximated the classic symmetry of the Early Archaic plummet.

So, the evidence appears to indicate that about 5,000 years ago the Late Archaics began arriving in small family groups, as had been the case with all previous movements of people into New England. Hence, a long time should doubtless be allowed for a population increase sufficient to make any group action possible. After about 500 years their ceremonial burials, appearing at several excavations, show them to have been culturally advanced above a purely hunting-fishing economy like that of the Early Archaics. They had developed satisfactory explanations involving the presence of spiritual beings, who controlled man’s actions in this world and the next. With such advanced thinking, it seems natural to find these creative people living in large commodious snail-shell houses, which must have taken days to build. Also, this explains their intense industrial activity in the making of stone bowls for cooking. These activities would seem to suggest a somewhat sedentary life for these people, with established home camps to which they continually returned.

By about A.D. 300 arrival of the knowledge of pottery making, as previously alluded to, changed everything. When women became the potters, stone bowls became unfashionable and unwanted, which brought about the closing of steatite quarries. An industrial revolution had quietly taken place, in which women replaced men as makers of the day’s cooking pots. And now with arrival of maize, women took on the job of planting and harvesting the grain. This new food gave these descendants of the stone bowl makers a more sedentary sort of existence. But the opportunity that now presented itself for a further cultural advance was gradually eroded by tribal warfare, when it was accepted as a means to an end. And, as has already been pointed out, this sort of destructive action caused an architectural decline, resulting in smaller abodes, or wigwams, no more than 10 to 15 feet in diameter.

Early commentators’ descriptions of these structures, as previously noted, tend to indicate how the industry of the former alert stone bowl makers had suffered. Doubtless these peoples’ greatest mistake, which caused this decline, was their acceptance of military bravery as a chief social attribute. And in time this brought on excessive degrading practices, resulting in unbelievable torture of captives. And, as so often happens in like circumstances, a determined sustained rise of a people to a remarkable industrial level was halted by warfare, and over a span of somewhat more than a thousand years was reduced to a more savage state of existence.

Bronson Museum
June 7, 1970
RECOVERY OF A DOUBLE-BITTED GROOVED GOUGE
CONSTANTINE ZARIPHE, JR.

Some 200 yards southeast of the Lone Pine site, as described in Society Bulletin, Vol. 32, #1 & 2, at the foot of extensive basalt ledges lies a flood plain. Through this relatively level area runs Goff Brook, which is fed by several springs, one of which is now covered with piles of debris from bulldozer operations. The brook skirts a large marsh to the east, and finally empties into the Connecticut River. This flat plain area is known as the Spring site, and enough evidence here has appeared to indicate that once it was an aboriginal camping place.

Two years ago Caruso Bros., a construction company, bulldozed the area to provide a land-fill dump for the town of Rocky Hill, Connecticut, and continuing use of the land for this purpose is now gradually encroaching upon the site. As the land was bulldozed, numerous quartz chips and some of flint were noticed while surface hunting, and in the end a well-made adz of basalt was recovered.

While no records have appeared to show that the site had ever been plowed in the past, it may have had some disturbance from an old stage coach road that once passed through the area, connecting Rocky Hill with Ferry Landing on the Connecticut. Today much of the road is overgrown with brush and trees and is scarcely discernible.

A patch of blackened earth where the bulldozer had scraped first attracted our attention, and a trowel was used to explore this discolored area. Ultimately a stone hearth was discovered adjacent to it. It lay approximately 10” below the present bulldozed surface in the subsoil, and was filled with fire-cracked stones. Continued troweling suddenly uncovered in the hearth a perfect Grooved gouge of basalt, which had apparently been untouched by the hearth fire. But the thing that attracts the eye about its general construction is the appearance at the poll end of an evenly chipped semi-circular bit with thinned edge that borders on sharpness. It seems obvious that here is a Grooved gouge, double-bitted, but in place of a gouge as the second bit there is a small chipped adz blade instead (Fig. 19). Lying only 3” away from this tool appeared a Small Stem quartz point, and about 2 feet removed was found a Corner-removed#7 spear point of flint, besides several quartz chips and one of flint. All of which seems to indicate that a living area had been encountered.

DISCUSSION

Because of the proximity of the Spring site to the Lone Pine site on top of the basalt ledges that separate them, as previously reported, it seems advisable to mention some of the tools found at the latter site. In the lower zone appeared Late Archaic evidence in the form of: Eared, Side-notched#6, Corner-removed#3,7, Small Stem, and Small Triangular#4 projectile points; a T-based drill; Grooved gougess; Celts; a Grooved ax; and a 6 1/2’’ long, small traveling stone bowl, well-made with a pouring spout. In the upper zone were remains of the
Ceramic occupation including: Small Triangular&, Small Stem, Corner-removed&, and Side-notched& projectile points; a Hatchet club; War Club prongs; Hand spades; and several clay potsherds.

The Spring site find of the combination tool of Grooved gouge and chipped adz appears to be culturally associated with the lower zone occupants of the nearby Lone Pine site of the Late Archaic. Such a double-bitted implement is seldom found and at once creates speculation as to how it may have been used. Since the basalt tools of the two sites of this report were relatively numerous, it seems possible that they may have been used in the making of dugouts. If so, this report's double-bitted implement probably performed a double function. The gouge blade would doubtless have been used to scoop out the charred wood in the hollowing of the log, while the adz blade might have been useful in trimming the outside, as is suggested by the writings of Willima Wood in 1634 in his report, New England's Prospect, to Sir William Armyne, Knight and Baronet, in England. Wood visited among the natives about Plymouth and noted their various customs and projects, one of which was the making of dugouts. Here is what he says: "Their Cannous be made either of Pine-trees, which they burned hollow, scraping them smooth with clam-shels and Oyster-shels, cutting their out-sides with stone hatchets.

On this occasion, at a much later age from that of the Late Archaic, stone gouges apparently were not in use; were replaced by clamshells used as scrapers. However, the Grooved gouge would probably have been used in Archaic times before shellfish had become part of the diet. Wood's mention of stone hatchets seems somewhat suggestive of the kind of work the adz blade of the double-bitted gouge might have performed in the earlier age. Although if this is so, it would have been wielded not as a hatchet, but as an adz because of its haft; attachment of the handle to a gouge is not from the side like a hatchet, but from its face, which would have caused the chipped bladed end to have been handled as an adz. As another functional probability, it seems possible that this extra cutting blade, coarser than the ground blade of the gouge, might have served the useful purpose of cutting out rough areas such as knotty spots not thoroughly charred by the hollowing fires. The idea back of this, it seems obvious, would have been to save the thinly ground blade of the gouge from possible fracture, which in most cases would have made it useless.

Rocky Hill, Conn.
April 26, 1972

METAL CUTOUTS OF THE NORTHEAST

WILLIAM S. FOWLER

Upon arrival of European explorers along the coast of New England in the 16th century, the stage was set for a sharp reaction in the aboriginal economy of the country. Through barter the natives were quickly introduced to the white man's superior metal tools of iron and steel, of which the knife and hatchet probably were the most sought after. And while the creativity of the Indians in the making of tools from stone and bone was steadily eroded with replacement of their implements by those of the whites, the inherent desire to produce by their inventive skill still persisted. As metal gradually took the place of stone, a growing desire prevailed among the natives to fashion useful objects of it. And of all available metals, copper and brass kettles — in general use by the whites — and possible sheet copper and brass also, as some recovered grave goods may indicate, were highly prized. For Indian craftsmen soon found ways of cutting this metal into pieces. These they ingeniously shaped into various serviceable objects of which the projectile point seems to have been a favorite. An early account as reported by De Forest amply supports these statements. He relates an occurrence at a time preceding the Pequot war of 1637, when the garrison of Saybrook, Connecticut forbade departure of a Dutch vessel, whose crew was planning to trade with the Pequots, "saying that they [the crew] would supply the Indians with kettles and other articles of metal, which would immediately be turned into arrow heads," derived from an account of about 1640 by Capt. Underhill.

From our point of view, it is difficult to imagine how a spear or arrow point made from relatively thin copper or brass — these metals are indistinguishable after lying in the ground for many years and will be referred to here in
general as copper — could have withstood the impact that occurs when killing game without bending over. However, many projectile points were apparently made from this copper in various triangular shapes, which suggests they were put to practical use as replacements of the natives’ former triangular points of stone. Perhaps they were found more effective in penetrating flesh than the uninitiated today can imagine; when made from a copper kettle, fingers cannot bend the point, as seen from a recent recovery. Some early accounts leave little doubt as to their use. In 1602, Brereton reports seeing among the Massachusetts Indians: “... great store of copper, some very red, and some of a palor colour [brass] ... they head some of their arrow herewith [with copper] much like our broad arrow heads.” And Higgerson, another early commentator, wrote in 1629 that some of the arrows of this region were headed with bone and some with brass. Further it is interesting to note that in more recent times Professor Putnam of Harvard exhumed from an Indian grave across the harbor from Boston a triangular brass arrowpoint found embedded in one of the lumbar vertebrae of the skeleton. And as described in this paper, several recoveries occurred in locations where their use as projectile points seems quite probable.

As is well known, there were different sizes of copper kettles with varying thicknesses of metal, which must have reached its thickest state in large copper caldrons. Just how the natives managed to cut these kettles into pieces is still a mystery — sheet copper, however, would doubtless have posed less of a problem. Possibly they succeeded with the help of certain metal tools of the whites. Copper and brass kettles were bright to the eye and must have held great attraction as loot in the event of a sacked village, or as barter in times of peace. Then there was iron, a more difficult metal to shape, since the native craftsman’s knowledge of how to work it was limited to the malleable technique. This metal was used occasionally, as will become evident, when the artifacts of this report are described.

The writer’s attention was first focused on this subject years ago, when he carried on research for the Society in the Connecticut River Valley of Massachusetts, as Chairman of the Connecticut Valley Chapter. It was about 1942 when Roger Johnson became interested in the Indian history of Hadley and vicinity. From his home in Hoccanum near the foot of Mt. Holyoke he had searched the nearby area on the east side of the Connecticut River, where a palisaded fort was recorded to have been built by the River Indians for protection from Mohawk raids in early colonial times. After careful tracing of historic records, he located a certain ground formation deep in the woods, not too far removed from the river, which he believed marked the site’s location. And it was to this locale that he led the writer and other Chapter members for an investigative excavation.

After making a clearing and laying out a line of squares along a mounded rise, excavation of the site was undertaken. Nothing of note appeared until just before the day’s dig ended, when Mrs. Harold Plough uncovered a thin metal point. It was triangular in shape, made from a copper cutout, and furnished evidence, although limited, that here indeed might have been the Hoccanum Indian fort of colonial days.

Subsequently, the writer’s area of research was shifted to the eastern end of Massachusetts, where, as time went by, other interesting copper cutout of Indian ingenuity appeared (Fig. 20). Because of a similar stockaded situation to that at Hoccanum, the first recoveries from the state’s eastern section to be mentioned are those found at Fort Hill in North Middle­boro. Here, at a sharp bend in the Taunton River, a short way up stream from the Titicut site on a high bank of the river, was exposed by careful excavation many post molds in line. These were found to mark the outline of a small palisaded Indian fort, known to have existed here in historic times. The work was completed by Society members, and was followed up by a dig close by at the rear of the fort. It was here that the late William H. Taylor recovered from the loam two metal triangular points made from copper cutouts, of which one is attrac­tively shaped with its base deeply cut out (Exhibits #7,8).

If these had to do with the defense of the fort, as their nearby position seems to indicate, then it is likely that this kind of point may have proven serviceable as a lethal weapon. Further recoveries by Taylor and his son made at the Seaver Farm and Titicut site, and in Raynham will now be described.

A short way down river between Fort Hill and the Titicut site lies the Seaver Farm, source of many abori­ginal finds. A small section of it was excavated by Society members in 1962 at a bend in the river. Here, recovered from the loam was a small triangular copper point with drilled hole and a deep cut-out base that gives it the shape of an A. Also found in the loam were two rolled copper beads with unevenly cut edges, and a drilled copper pendant, all presumed made from cutouts (Exhibits #2,4,5). The hole through the point — also appearing in several other points yet to be described — may indicate that the point was strung with other perfor­ated ones on a leather cord to be held in reserve in this way for safe keeping (Exhibits #2,12-14). However, when the hole is large it sometimes served to attach the point to the shaft, as shown by 4 hafts from a Seneca burial at the Green Farm, Boughton Hill, Victor, New York. The thongs used in doing the hafting were preserved by cuprous salts from the copper points (Fig. 21).

At the Seaver Farm surface finds of cutouts consist of a perforated copper pendant, a triangular copper point, and another one (Exhibit #3), ingeniously made with lapped-over edges on both lateral sides, apparently to
Fig. 20. METAL CUTOUTS, Eastern Massachusetts Recoveries. Implements cut from copper and brass kettles or sheets.
METAL CUTOUTS OF THE NORTHEAST

Illustrated (Exhibit #21). Although the copper of these beads is badly eroded with irregular surfaces showing, their even rolls and uniform lengths suggest that they may be trade beads originating in Holland. Such beads are reported to have been used by Dutch explorers and others as barter; referred to again in the conclusion.

In Raynham and an adjoining region two more triangular copper cutouts were recovered as surface finds (Exhibits #14,15). The perforated one, a Taylor recovery, has graceful slightly incurvate lateral sides, as do some of the other points previously described, which, along with the several deeply cutout bases, represent well-developed artistry of native craftsmen in the making of these projectiles.

At Wapanucket sites on Assawompsett Lake several skillfully made metal artifacts have been recovered by Cohannet Chapter excavators. Perhaps the most outstanding one is a large brass spoon with decorated handle (Exhibit #17). This expertly designed and well-made spoon was uncovered in a grave along with a small Stage 4 ceramic pot with vertical collar having but one castellation, as though for a pouring spout. The spout's edge is decorated with three small effigy faces, framed underneath by two ears of corn in the shape of a V. This pot recovery evidently has an early colonial provenience because of the spoon, doubtless made from a brass kettle cutout.

An unusual find was made here of an iron projectile point (Exhibit #16). However, because of rust erosion it is impossible to tell how it was constructed, although because of its hollow condition, it may have been made from a relatively thin piece of wrought iron. This might have been wrapped around a tapering core with its point hammered into shape. Also found at this site were two long rolled copper beads (Exhibit #18). Ragged edges, where the pieces of cutout copper overlap, may be clearly seen in each which suggests that they were formed around a solid core of some kind.

If this were all, it should be evidence enough to indicate the varied extent of Indian cleverness in the fabrication of metal cutouts into useful objects. However, still another unusual recovery was made recently on the Island of Nantucket, which seems to require special attention be given to the circumstances surrounding its discovery, with a detailed description of its appearance.

Also at Titicut interesting cutouts were recovered from osseous Burial #6. This contained a female adult, child, and 2 bark bundles, each containing half of the remains of a new-born infant. At the feet of the adult lay a birch bark container shaped like an envelope, preserved by cuprous salts oozing out from copper objects within. These consist of a cutout pendant 5 1/2" long with a small perforation at the wider end which is decorated with 8 notches (Exhibit #22); and 4 small cutout pendants 5/8" square, each with a tiny perforation (Exhibit #20). Beside these copper finds, out of one of the bark bundles came hundreds of short, rolled copper beads in uniform lengths 1/2" and 5/8"; 3 of each are
pipe. It was then that on the mound of back-fill from the previously excavated house foundation he picked up the metal knife, as illustrated (Exhibit #19), the subject of this part of the report.

In trying to assess its source it seems important to review other recoveries made at this time in the trench, and in another one dug close by and parallel to the first, only about 12 feet distant from the house foundation. Broken human bones from presumably a grave, including part of the skull, lay strewn along the first trench, where the backhoe apparently had gone right through a burial. Then, in the second trench at a depth of about 26" a cache was uncovered. It contained two long bladed whale bone spades about 3 x 10" in size with side-notched polls, directly below which appeared two stone celts about 6" in length. Apparently these were part of the grave goods, which may have included several other recovered artifacts, including two Small Triangular stone points and a Grooved hammerstone.

Returning now to the metal knife, which also may have been part of the grave furnishings. Its characteristics have been carefully examined by Paul C. Morris, Jr. and reported to the writer. The knife is made of relatively flat-faced metal that is badly pitted from soil erosion; is fully 1/8" thick, and, as described by Morris, is "very reddish-brown in color over all." This seems to indicate that it is made of copper, not bronze, as thought by some. Bronze, after being buried for extended periods, has been observed to take on a deep brownish color without a reddish tint and without surface pitted erosion. The knife's shank has been hammered on top and bottom to form 1/32" flanges, probably with the intent of eliminating sharp edges, which otherwise might have cut the thongs that would have bound on a handle. Along one decorated face of the blade, as shown in the illustration — the reverse face is plain — there appear 9 triangular indentations in a line, which tends to produce a kind of chevron decoration suggestive of native design work of protohistoric times. It is believed probable that these marks were hammered into the metal by use of an iron punch of the whites that had a triangular-shaped bit, since the indentations are irregularly spaced with different depths in evidence, especially at both ends of the line. Finally, the cutting blade has been sharpened on both edges top and bottom, a condition reminiscent of aboriginal stone knives, which usually are sharpened on both edges by chipped serrations.

While all these finds including the knife were not recovered at one place, they appeared near enough to the burial spot, where the skeletal remains were strewn about, to suggest this grave as their source. If so, then the knife would appear to be of Indian provenience of the colonial period, since the fragmented skeleton — presumably Indian because of presence of the stone celts — was in a state of fair preservation of not too ancient an interment. The knife, if of copper, as its reddish color implies, might have been a cutout from a large copper caldron in order to provide its 1/8" thickness. Such metal vats were in use on ships of the day and in certain colonial manufacturing enterprises, but how they were cut up, presumably by Indian ingenuity, is not known to this writer. A curious detail about the knife is a small hole to be seen in its shank. This appears cut straight through without taper on either side, unlike aboriginal reaming with stone drills. Possibly it was made with a white man's metal drill, Indian operated.

These interpretations of the evidence are offered as possibilities only. Other interpretations, of course, are possible, but considering the disturbed condition of the various recoveries from this Nantucket uprooted grave, those as presented seem quite possible. What purpose the knife's small hole could have had can only be surmised, as is the case, similarly, with those holes found in some of the points. Doubtless the likeness shown in this respect between these two kinds of copper goods is suggestive of a like intent with culture association indicated.

**CONCLUSION**

The subject of cutouts from copper or brass kettles, or from sheets of these metals by Indian craftsmen of early colonial days is engaging, because of the many resultant artifacts. However, copper as a metal was not new to the natives, for as far back as the Late Archaic — in many cases probably toward the close of that period — it had found its way into New England in small amounts from deposits in the Lake Superior region, generally in the form of finished articles. Excavated recoveries including ornamental copper objects appearing in the Late Archaic horizon have been reported by Ritchie, occurring at several excavated sites in New York. Rolled copper beads, sometimes barrel-shaped, are perhaps the most common of all, while awls, axes or celts, and an ear plug have occurred. In New England a copper nose ornament 1/4 x 6 1/2" in size, pointed at both ends, was recovered in 1868 from red paint Adena burials, encountered while foundations were being dug for the West Street School in Holyoke. More recently a copper ax — assayed and found to be of Superior copper — was excavated by Richard Bent from just under the shell at the Powers Shellheap in Kingston, representing a time level toward the close of the Late Archaic (Fig. 22). Other recoveries worth noting, Society Bulletin, Vol. 27, #1, are barrel-shaped rolled copper beads taken from Adena burials at Brookfield. Undoubtedly, all of these artifacts were premade before arrival in the Northeast, brought in by Adena migrants, or as trade goods. But this does not rule out the possibility that occasionally an artifact might have been made here of imported nuggets of Superior copper.
Evidently, copper objects continued to arrive from the Midwest during Ceramic times, but only to a tantalizingly minimal extent that made copper a much prized commodity. This may be gleaned from reports of some of the early explorers who reached these shores in the 1500's. Verrazano, one of the first to sail along the New England coast, made contact in 1524 with the Wampanoags at about where Newport is today, and calls attention to their most valued possessions as follows: "... plates of wrought copper, which they esteem more than gold." It is presumed that the copper plates referred to were personal ornaments brought in as trade goods from the Lake Superior region. This becomes more evident from a report made by explorer Cartier in 1535. He tells of his meeting with the Hurons, who also wore similar copper ornaments. They gave him to understand — pointing west — that these copper goods came from the "Land of Gitche Gumee," presumed to be Lake Superior.

During the long span from the Late Archaic down to the coming of the whites, as has been indicated, knowledge and use of Superior copper by the aborigines of the Northeast existed, although only to a minor extent. Therefore, it is not strange that in colonial times the Indians should have been attracted to the copper goods of the whites. In some way they found out how to cut them into pieces to be fashioned into prized ornaments and tools in their economy. The copper cutouts, as described herein, when reported as recovered by excavation, occurred in the loam, where they were associated in most cases with colonial artifacts. This close association of these two kinds of remains supports the long-held belief of their contemporaneity, which upholds the thesis of this paper.

However, to establish a source for the Nantucket knife poses somewhat more of a problem, since no colonial artifact, appeared in association with the disturbed grave goods. Evidently, this grave is not a deposit of the Late Archaic, since it is not the usual secondary cremation burial with red ocher of those times. Instead, it appears to be a burial of colonial days, an osseous interment of only two or three hundred years with a fairly well-preserved skeleton. Furthermore, its later-day status seems well supported by the presence of whale bone spades. For it is a matter of record that Cape Cod and the Island Indians in more recent times successfully hunted and took whale when sighted near land. Therefore, their Indian predecessors in early colonial days might be expected to have done likewise, thus making whalebone available. Furthermore, if the knife had been made earlier in the Late Archaic of Superior copper instead of from a copper cutout, the probability is that it would have been more than 1/8" thick, with uneven facial surfaces, more like those seen on the Kingston copper ax as illustrated.

Still another possibility exists to explain the knife's source; that is if its metal is bronze. In this event, it might then be established that it is of European manufacture and came into the hands of Nantucket Indians as barter. However, two facts seem to refute this hypothesis. First, the reddish-brown color of the metal, as previously reported, appears to indicate copper, since European-made trade artifacts of bronze taken from certain Maine Indian graves, as observed by the writer, are dark brown in color with no reddish tint: have no surface eroded pitting, and are generally thicker than 1/8". Second, the irregularly spaced triangular indented decorations are more suggestive of native handwork than of precision workmanship of European artisans. Further, the unique way in which these simple triangular indents have been used to form the familiar chevron design common to native-made Stage 4 pottery of the protohistoric period.
seems convincing evidence of Indian artistry. For these several reasons the Nantucket knife appears to be of local Indian manufacture in early colonial times, a cutout from a large copper kettle such as a caldron, made of relatively thick metal.

When it comes to an analysis of rolled copper beads, it is well to observe that they are first encountered in red paint burials at the end of the Late Archaic; in most instances presumed to be the remains of Adena migrants. In this respect they are doubtless premade imports from Ohio, homeland of the Adena wanderers. These beads usually are short, sometimes barrel-shaped. When plain rolled copper beads are unusually long, like the two shown from Assawompsett Lake, with ragged unevenly cut edges, it seems probable they were locally made from copper cutouts. Still another source of these beads in moderate lengths is Holland, as indicated by certain excavated evidence. The Dutch appear to have made them in quantity for use as barter in the hands of the explorers. Therefore, it is probable that when a number are found together in equal lengths, all evenly cut and uniformly rolled, that they originated as precision-made products of European manufacture, like those from burial #6 at Titicut (Exhibit #21).

Understandably, those objects as illustrated, which seem to have been made from copper cutouts, are probably only a small sampling of such metal products. Other specimens doubtless exist, including various ornamental trinkets and implements of aboriginal ingenuity. It is hoped that this paper, in presenting this subject for study, may result in bringing more of these metal goods out of hiding, retrieved as surface finds or as excavated recoveries.

Bronsom Museum
October, 1971

SITTING BULL: THE PATRIOT

WILLIAM S. FOWLER

In the course of archaeological research, it is well at times to stop and ponder what the people, who made the stone implements, were like. While we cannot jump the span of years that separates us from the prehistoric peoples of the Northeast, or elsewhere, we can study the characteristics of those, who have descended in a pure state. To find this condition of racial purity, we have to refer, for the most part, to known contacts with Indians of the 1800's, which were reported in those days.

While the subject of this paper may appear to some to be unrelated to the aboriginal past of New England, when the occupation of North America in early times is considered in a broad sense, a relationship becomes apparent. For, it is quite generally believed that an irregular migratory movement of long duration involved Asiatic hunters following game into this country. According to authorities, who have studied the facial traits of various Plains Indians, it is thought that the early arrivals came from different racial stocks still to be found in various parts of Asia. The entrance to North America seems to have been at Bering Strait, which in those days, due to a greatly lowered ocean level that exposed land between the two continents, became a land bridge that connected them. The point is that of whatever traits were peculiar to the New England aborigines, probably some were similar — Asiatic in substance — to those other Asian migrants, who occupied the western plains of the country. Therefore, perhaps the writer may be forgiven for this paper’s apparent divergence from a more direct involvement in New England’s aboriginal past. In any event, it seems appropriate to consider the emotions of an outstanding leader of the Plains Indians, aggravated by the encroachment of the white civilization upon his people. For, although this was in the third quarter of the 1800’s, it was during the western Indians’ contacts with the whites. And the effect upon the aboriginal way of life there, no doubt, was similar to what it was during the 1600’s, the contact time here in the Northeast. A clash of two different social orders occurred, whenever the whites attempted to find living space beside the original occupants. However, it was this sort of cultural friction between two totally different races that brought out, on occasion, deep-seated expressions from the heart, one of which is related in this report.

It came about quite unexpectedly, as so often
SITTING BULL: THE PATRIOT

happens, during the early days of this Society, when arrangements were being made to hold our annual meeting at Mount Holyoke College in South Hadley, Massachusetts. Dr. Allyn of the college had introduced the writer to Evelyn Yellow Robe, who was a student at this institution, for the purpose of inviting her to give us a word of welcome at the meeting. She proved to be a charming person with educated poise, a worthy representative of her race, the Hunkpapa Sioux of the Plains, and a great grand niece of Sitting Bull. Through conversation had with her as a result of this introduction, the writer gathered information about her people, which he would now like to share with the readers of our Bulletin. For, it is possible that some of it may apply to those natives who occupied New England, because of their probable similar Asiatic source with that of the Plains Indians.

Evelyn appeared at this 1941 meeting in native deerskin clothing, a changed person in appearance from her civilian college dress. After a few words of greeting, she repeated the Powder River speech of her early forebear, Sitting Bull, which made a marked impression upon her audience.

It seems that this speech occurred just before the battle of the Little Big Horn, in which Lieutenant Colonel Custer and his entire elite cavalry company of 260 men were wiped out by an Indian attack. It was led by Crazy Horse with his Oglala Sioux and included Sitting Bull's Hunkpapa Sioux with some Cheyenne. In anticipation of the fight, at a council of the Sioux held several days before on the Powder River, nearby, Sitting Bull delivered his famous speech that has assumed a rightful place among a host of noted freedom orations made by leaders of numerous races throughout the ages.

The writer was so impressed by the words that he asked Evelyn Yellow Robe, at the conclusion of the meeting, if she could furnish him with a copy of the speech and an authentic photograph of Sitting Bull, if possible. She gladly agreed, and their presence in the writer's hands has inspired this report; a belated token of admiration for this important medicine man of the Sioux. In his cry for freedom, he appears to this writer not only as a great leader, but as the "Patrick Henry" of his people (Fig. 23).

The death of Sitting Bull as told in the 14th Annual Report of the Bureau of Ethnology, 1896, has been reviewed by the writer and the essential events are herewith recorded. Early in the morning on December 15, 1890, 43 Indian police under command of Lieutenant Bull Head surrounded Sitting Bull's log house at his camp that had been discovered, located at some distance from the reservation. He was made a prisoner and was told he must go to the agency; to which he agreed. The police took two rifles and several knives from the cabin. By this time a crowd of his Indian followers to the number of 150, congregating outside the cabin, had the police entirely surrounded, and were pressing them to the wall. Upon being brought out Sitting Bull apparently changed his mind, became greatly excited, refused to move further, and called on his followers to rescue him. Then, while the Indian police tried to clear the way through the crowd, Catch-the-Bear, a Sitting Bull follower, fired and shot Lieutenant Bull Head of the police in the side. Whereupon Bull Head turned and fired, sending a bullet into the body of Sitting Bull. At the same moment Sergeant Red Tomahawk of the police fired a bullet through the head of Sitting Bull, who fell to the ground, dead. Now followed a hand-to-hand fight between less than 43 police and more than 100 Indian followers of Sitting Bull, in which the latter were driven into the nearby woods. At this moment troops of the Eighth cavalry appeared on the scene, who drove Sitting Bull's warriors up Grand River. During the skirmish, 6 of the Indian police were killed or mortally wounded, while Sitting Bull, his son Crow Foot, 17 years of age, and 6 other hostiles were killed. It is of record that during the fight Indian women attacked the police with knives and clubs, but were promptly disarmed and put in one of the cabins under guard. And so ended the career of Sitting...
Bull, who had said he would never submit to capture, a determinaton that persisted to the end.

POWDER RIVER SPEECH

Sense of a determined independent spirit to be free runs throughout the Powder River speech that follows, and the photo of Sitting Bull accompanies it (Fig. 23). As a war chief it has been said that this famous medicine man was one of the most able, honest, and idealistic statesman in Indian History.

"Behold my brothers, the Spring has come; the earth has received the embrace of the sun and we shall soon see the results of that love. Every seed is awakened; and so has all animal life. It is through this mysterious power that we too have our being, and we therefore yield to our neighbors, even to our animal neighbors, the same right as ourselves to inhabit this land. Yet hear me, people, we have now to deal with another race — small and feeble when our fathers first met them — but now great and overbearing. Strangely enough, they have a mind to till the soil, and the love of possession is a disease with them. These people have made many rules that the rich may break, but the poor may not; they have a religion in which the poor worship, but the rich will not. They take tithes from the poor and weak to support the rich and those who rule. They claim this mother of ours, the earth, for their own and fence their neighbors away; they deface her with their buildings and their refuse. That nation is like a spring freshet that over-runs its banks and destroys all who are in its path. We cannot dwell side by side. Only seven years ago we made a treaty by which we were assured that the buffalo country should be left to us forever. Now they threaten to take that from us. My brothers, shall we submit, or shall we say to them; first kill me before you take possession of my fatherland."

Beside whatever meaning this speech may suggest, the writer gleaned some interesting information from Evelyn Yellow Robe, who finally gave up the idea she once had of devoting her life trying to uplift her people back on the reservation. Instead, she decided to cast in her lot with the whites, from whom she had received her education. After graduating from Mount Holyoke College, where she majored in English Speech, she was admitted to the faculty at Vassar College, where she taught our girls how to speak English properly, as an instructor in English speech — a strange but noteworthy accomplishment of one from a race, formerly considered as savages. All this came before she won her Ph.D. at Northwestern University with honors, and a scholarship to Paris for further advanced study.

Such an amazing scholastic record seemed to the writer at the time to require some explaining, which prompted conversation had with her on the subject. It appeared unusual that this descendant of the Hunkpapa Sioux could be so talented, and yet had given up in disgust — an investigation had been made by her during a sojourn among her people — when she came to realize she could never hope to overcome the apparent lack of interest for learning among the rank and file on the reservation. She quickly explained to the writer that two class groups exist in Indian society — now under attempted change through new government educational regulations — those with ability to learn and get ahead, and those who are satisfied to stay behind in the common ranks to be led. The reason seemed clear enough according to her. The upper class is composed of tribal leaders — probably dates back into antiquity — such as medicine men, war captains, chiefs, etc. They have inherited their acquired abilities during many generations of training by performing duties of leadership, and through controlled marriage within their select group. That is, their children were not allowed to marry individuals from the lower class. That group was composed of all others, who, as a result of this kind of segregation, had failed to develop qualities of leadership. Consequently, today, with but a few exceptions, only those from the upper class have the ability or a desire to absorb advanced education. Could it be that a similar condition had existed among the Algonkian tribes of New England, which, in colonial days, had produced such outstanding leaders as Massasoit, Ousamequin, Canonicus, Miantinomo, and others?

It appears possible that this custom of marriage selectivity may be an outgrowth of tribal warfare over the centuries, in which military leadership became a necessary qualification for those of the upper class. It is probable that warfare was confined to the Ceramic Age alone in prehistoric times. For evidence of transition to it from the peaceful Late Archaic industrial age suggests the coming of warfare with the probable formation of tribes at that time. In all this, a concomitant factor seems to have been the industrial change that took place, in which women became the makers of cooking pots from fired clay. By then women no longer wanted the heavy male-made stone bowls, causing the stone bowl quarries to close down. This must have shifted industrial procurement responsibility from men to women, which left men free to fill their time otherwise, exclusive of hunting and fishing, men's perennial activities as food providers. And with a probable increased population that then was prevalent, the time was ripe for men to show their leadership in tribal affairs that included tribal warfare, which took the place of their former stone bowl industrial activity.

Bronson Museum,
December 20, 1970