Volume I, No.4 July, 1940

BULLETIN OF THE
MASSACHUSETTS ARCHAEOLOGICAL SOCIETY.

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Douglas S. Byers, Editor

Published at the Robert S. Peabody
Foundation for Archaeology, Andover, Mass.
Summer comes, and with it the anticipated but often unrealized vacation. What are we to do with it? Many of us are making plans to dig on some project - either the Nantucket job, or some group sponsored project nearer home. Others of us are going away, out of the state to fish or swim, hike or golf, to drive or simply "set" where the "settin'" is good and there is something to be seen. Of one thing we can all be assured - somehow we will manage to find a piece of information about Indians. It may be in a book, brook, bunker, or in stories exchanged while "settin'". If we succeed in finding something tangible there can be no question of what will happen, the object will be brought home, we hope with all the information regarding its discovery. It's those intangibles, the story heard here, the little item in a book read there, that are so often forgotten. Sometimes these are real treasures that should be noted down - a book might be reported to the Bibliography Committee, or better still, write a note about it for the Bulletin or the News Letter. The story that you hear may be a clue to a site, or some local history, and is certainly worth noting down until the facts can be investigated. Of course you will have to use your own discretion about the stories you note down - some better be left alone.

This summer also brings to a close the first year (officially) of the Society. Actually by the time fall rolls around we will be a year and a half old. We have grown rapidly from a small group to a fairly respectable organization. Now we must settle down to establish our Society as a responsible group. This can be done if we remember the aims and purposes of the Society. As members of the Massachusetts Archaeological Society we are all set somewhat apart from the community whether we like it or not; we become Authorities in the eyes of the Press and a number of people; anything we say becomes a pronouncement of the gods. One poor man, officer of a sister society of ours, was quoted in a two-column back-page article in a New England newspaper as saying that certain New England Indians were 5000 years old, and expanded on what things were like then. Whether he actually said that or not we can never tell, as reporters like nothing better than a chance to twist what one says. The outcome of it all was that as a result of his ill-considered remark he and his society became the laughing stock of that region.
THE ARCHAEOLOGIST

While lonely sits his wife at home,
O'er field and meadow he will roam,
To seek in any likely place
Mute relics of a vanished race;
Some product of the red man's skill,
Uncovered when the farmers till.
The weather may be foul or fair,
However bad, he doesn't care;
In pouring rain and cutting breeze,
Bedaubed with mud up to his knees,
He flounders on in some bleak field,
With hope an artifact 'twill yield.
It matters not how large his store,
He's ever on the hunt for more;
He often yearns for something rare,
A bit of flint beyond compare,
That he may add to his display,
A truly beautiful array.

When surface hunting seems to pall,
And 'fields of grain are getting tall,
He takes his shovel and his hoe,
And near a brook or pond will go
Where chips or bits of shell show white,
Which indicates a camping site;
And there by most exhaustive toil,
Removing layers of sod and soil,
With patience and the greatest care,
He scrapes away the black earth where
The Indian artifacts remain,
For his reward and well earned gain.

Above a sandbank sheer and high,
With tousled hair and gleaming eye,
Appears our archaeologist,
A long stone knife within each fist.
Small wonder he should thus behave,
For he at last has found a grave,
And it is his sincere belief
That if it held within, a chief,
Stone implements and weapons rare,
Remain to be uncovered there.
But archaeology is not
Alone the finding of a lot
Of implements, and points of stone,
Of pottery and tools of bone.
We should give earnest thought as well,
To facts these articles all tell
About the life in days of yore,
And creatures that have gone before.
A bear's claw or sturgeon's tooth,
Provide us with the patent proof
That beasts and fish, or birds of air,
Were plentiful at one time where
They now are never to be found,
Beneath the sea or on the ground.

If I relax by open fire,
When not quite ready to retire,
In retrospect my mind will stray,
Back to some dim and distant day.
I seem to see within a glen
A chieftain talking to his men,
And not so very far away,
Are squaws at work, and boys at play.
Atop some nearby hill or mound,
Cross-legged seated on the ground,
With block of wood and piece of bone,
A young brave shapes a bit of stone.
And so with evidence at hand,
Imagination takes command,
And we may reconstruct at will,
The Indian life, and work, and skill.

Adrian P. Whiting
While it is well known that New England territory was occupied by the Indian from a very early period, yet very few know or realize how important the Connecticut Valley section in Western Massachusetts was to them, or what were its resources that attracted the Indian from all parts of the territory to its center. But little research is required to be convinced that it was one of the most outstanding parts of the whole territory. Located between the Deerfield and Westfield rivers, it was the main gateway to all New England from the west and north, for the mountain barriers discouraged very much communication and traffic at any other location. (1)

(1) "Every year two old Mohawk chiefs would leave their castles on the Mohawk River, in their elm-bark canoes, and crossing the Hudson, ascend the Hassicke (Hoosic) to its head and carry them over the mountain range, re-embark in the headwaters of the Ag-a-wam (Westfield River) and the Deerfield River, come down to the villages of the Woro-noaks, the Agawams, the Nonotucks, the Pacumtucks, the Squakheags in the valley and to the Nipmucks at the head of the Chicopee River and gather the wampum in which tribute was paid.

"On the west side of the Connecticut the territory of the Mohawk was supposed to begin; and in western Massachusetts and in what is now the state of Vermont, no Indian tribes had permanent houses. This large territory was a beaver hunting territory...

"At the close of King Philip's War they (the Algonkian River Indians) left their unharvested cornfields for the new home on the east bank of the Hudson, at the mouth of the Hoosic. They took what is now the Tunnel Route for the west." (i.e. over the Mohawk Trail.) (History of Connecticut Valley, 1879, Vol.I, p.20 et seq.)
Within this section nature provided a great drainage basin that extends from the Canadian line to Long Island Sound, and through it coursed the mighty Connecticut. Within the limits of western Massachusetts four large tributaries flowed into it. Two, the Millers and Deerfield Rivers, were in the northern portion of the state, flowing in from opposite directions; in the southern portion of the state the Chicopee and Westfield rivers did likewise.

Upon the surface of these streams were to be found the light, portable, log dugout and birch bark canoes, which were perfectly adapted for portage around falls or from stream to stream, and also the larger and more weighty dugout log canoes used for...

(1) cont. J.G. Holland in his History of Western Massachusetts tells that "Major Talcot stationed his troops at Westfield for the purpose of cutting off such fugitives as might pass that way ... bound for the Hudson."

De Forest in his History of Connecticut recounts that the Mohawks extended their forays into Connecticut, and that they left the northwestern part of the state a barren desert. Their appearance caused alarm and consternation and the flight of the inhabitants of the region to swamps, thickets, or their fortresses. He also mentions the two old Mohawk chiefs going the rounds to collect tribute and haughtily issuing orders from the great council at Onondaga.

My own experience has been that there is no evidence of a route to the Connecticut Valley and western Massachusetts that was used in prehistoric times to be found in the Burlington-Colchester district. It was assumed that they (the Mohawks) would take the Champlain-Lake George-Hudson River route to the Hoosic and thence eastward by the Mohawk Trail. There probably was a trail southeasterly up the Winooski from Lake Champlain, thence over the watershed to the Wells River and into the Connecticut. No data regarding its early use have been found by the writer. It was at the period of King Philip's War when the captives from Deerfield and other localities were taken to Canada that this route was mentioned.
traffic on the larger streams; these streams were their thoroughfares of travel and for transportation into distant territory. The water route was used in preference to packing their burdens overland where the trails were not over two feet in width as they ran up hill and down, through woods and around swamps and tangled thickets.

Bordering the Connecticut River were meadow lands of fine friable sedimentary soil, perfectly adapted for agricultural pursuits. In the background were the wooded hills and dense forests of the mountain sides, abounding with deer, bear, probably moose, and other kinds of animal life which supplied them with both food and clothing.

In the spring, after the flood season was past and the river had resumed its normal channel, the fish from the sea swarmed up the streams to the headwaters for spawning. It was at this time that the Indians from all parts of New England came to the different falls with their families to gather in their annual supply of fish, hold councils, and make their supply of pottery from the superior quality of clay that was found in abundance within this section. (2)

While the Indian was fishing, the squaw was making the pottery from the clay she found outcropping in the bed of the small streams adjoining their campsites.

This superior quality of clay was found only where it had been deposited in quiet deep water, for this part of the Connecticut Valley, at the close of the Glacial Period, contained several great lakes.

As the waters gushed forth from the edge of the melting glaciers they brought with them boulders, rocks, gravels, fine sand and the roily water. The particles in the roily water were held in suspension and carried far out into the still water of the lake where they gradually precipitated to the bottom.

(2) Daniel Gookin, an early Commissioner to the Indians, reported that throughout New England clay was very scarce and hard to find.
This accumulation, which in recent years has been found to have been deposited to a depth of thirty or more feet, was the pure clay the squaw used for making her pottery. It was a fat clay, easily worked and when moulded to the form desired, dried and fired, made a very serviceable pot.

Near the shore line the clay and fine sand were deposited in alternate layers of varied thickness. Pottery made from this mixture was hard to mould and when the pot was completed it was very brittle and easily broken. This was the type of clay generally found at that time at most other locations.

The period of these gatherings was an opportune time for holding council sessions. Its personnel included a much larger and wider distribution of representation of the New England tribes than probably any other session held within their tribal territory. While the topics that were discussed are problematical there is little question that the decisions arrived at in the meetings had a great bearing on the method of defence and the maintenance of integrity of their territory, for the Mohawk raids down both the Deerfield and Westfield rivers were a frequent menace and disastrous to the settlements along their course. This was particularly so in the spring when the streams were running full and canoe transportation was at its best. Also, at this time there were but few inhabitants left in their villages or fortified settlements, as the larger portion of their numbers were away at the fishing falls or in the fields starting their agricultural pursuits, leaving the villages practically defenceless against the surprise attacks of the merciless raiders.

The pilgrimage to the fishing falls each year was probably the first and only time during the whole year that the squaw, who was the true industrialist of the family, had to meet the women of other tribes outside her own family group and she profited greatly by these contacts.

When William Pynchon first arrived in Springfield in 1636 or 37 he found only a few bands of weak and sickly Indians and they were under bondage
to the powerful Mohawk nation of the Iroquoian family group who collected an annual tribute from the Valley River Indians (the Socoquis of Frontenac, or the Pocumtuck Confederacy).

This weakened condition, no doubt, was due to two great pestilences that ravaged their territory prior to the coming of the Pilgrims. The first was a scourge of what Daniel Gookin thought was yellow fever, contracted from seamen of an exploring vessel touching Cape Cod about 1602; the next pestilence was of small pox about 1617. The ravages of these diseases greatly depleted most of the southern New England tribes.

William Wood in his New England's Prospect, a report to an English syndicate in 1636, says of these New England Indians, that through these pestilences they had lost all their fighting men, and that the young men did not know how to fight. Because of this weakened condition their conquest by the Mohawks was easily accomplished.

It was at the season for fishing and pottery making that the Mohawks, including those of the Champlain Valley district, exercised their rights of sovereignty and came to participate in these peaceful pursuits, making pottery side by side with the local Indians on the same workshop site. This contact with the Champlain Valley Indians, who were by some considered the master potters of the northeastern section of the continent, had a great refining influence upon the New England Indians' pottery making until the time when it ceased to exist. Their ware was composed of many different forms, though the spherical base characteristic of all their pottery, was constant throughout all their production. The ornamentation was varied, refined and executed with great care. Their decoration was almost entirely done with a sharp pointed stylus type of implement. It is surprising to note the great amount of variation that was designed from very simple motifs.

The pottery of the native Algonkian Indian groups of New England seems to have been more of a utilitarian ware and its decoration was applied as a secondary consideration. Their pots varied but little between a straight cylindrical form having
a pointed base and those having a somewhat bulging side, a contraction toward the top, with the rim slightly enlarged and rolled outward. The decoration characteristic of the pottery of this group was nearly all done with an implement with a wedge shaped end, like a screw-driver with the end of the blade notched like teeth. The decoration was generally applied by indentation, manipulating the implement in various ways to accomplish the results they desired to obtain. The twine wrapped stick used in wiping the surface of the pot during its construction gave a textured surface and decorative pottery.

With the Mohawk and the native River Indian women working side by side upon the same workshop site, the native squaw must have recognized the inferiority of the pottery she was producing and strove to improve upon her work by imitation of both the form and decoration of the pottery of the Mohawks. From the time of these contacts forward, there was a marked change in the ware produced by the southern New England Indian. This improvement seems to have radiated from the Connecticut Valley section around the Great Falls of Holyoke Massachusetts, the strength of the new features diminishing with distance from this center.

Unfortunately its production ceased during what might be classed as a transition period for the Indians were able to procure the more durable metal pots of the early settlers before the close of King Philip's War, when they left the territory for good.

The Indians of the Valley were true agriculturalists and very provident. Their soil was ideal for cultivation, there were fish in abundance and close at hand for fertilization (3) of the crops

(3) References to the use of fish for fertilizer by the Indians of Connecticut are made by several writers, including the author of History of the Connecticut Valley. The father of an elderly man whom I knew in my youth and who owned and ran the old ferry below the dam told me many stories of the old fishing days. In his father's time the tradition of the Indian using some of the surplus of fish they
which apparently were great. They had storehouses for their crops and record is made of their supplying the famine stricken colonists down the river one spring with a cargo of fifty canoe loads of their corn.

At the base of the cliffs, on the northerly and westerly side of both the Mt. Tom and Mt. Holyoke ranges were great banks or talus of angular fragments of basalt or trap rock of all sizes which were thrown off from the ledges above each year by the action of the frost. These pieces were ideal material for making cutting tools where impact was required such as axes, adzes, gouges, celts; and also for such implements as mauls, hammers, and pestles. They were eagerly sought and bartered for by the Indian from more distant territory where the material could not be found.

All these features were not only great assets and a source of revenue to the River Indian nation, but also a great menace since their territory adjoined that of the Mohawk who by their nature were a ferocious predatory group who would prey upon their neighbors, rob them of what they desired, kill all except the few they took for torture and profitable exchange, and laying waste to their territory, leaving it a desert as described by De Forest.

(3) cont. gathered for fertilizer was common knowledge. There was no location where fish were obtained in greater abundance. If we know from historical records that fish were used in the eastern part of the state for fertilizer it seems only a logical deduction that they would be used within this territory where they were obtained in such great quantities.

An old story is told that the fish filled the river so full that a boatman who tried to cross the stream gave it up with his boat and got his snowshoes and crossed without any trouble.
An independent group of English merchants sent Bartholomew Gosnold and Sir Humphrey Gilbert's son Bartholomew Gilbert, on a trading voyage to the then little-known coasts of New England in 1602. Included in the company were a small group of men who entertained some plans for founding a colony, but as events turned out, this somewhat half-hearted attempt at colonization was abandoned. Gosnold's ship sighted land along the southern shores of Maine and proceeded southward around Cape Cod to the Elizabeth Islands in Buzzard's Bay. On the island of Cuttyhunk they built a small settlement where they stayed about three weeks, and there loaded a cargo of sassafras, in the month of June. The expedition arrived back in England on the 23rd of July.

The best account of the voyage, written by John Brereton was published in England in 1602. This account as reprinted in George P. Winship's "Sailor's Narratives of Voyages along the New England Coast 1524 to 1624", Houghton Mifflin Co., 1905, gives us the following excerpts that throw light on New England Indians. The first passage which follows, refers to the fact that unchronicled French traders had contacted the Maine Indians.

"But on Friday the fourteenth of May, early in the morning, we made the land, being full of faire trees, the land somewhat low, certaine hummocks or hilles lying into the land, the shore ful of white sand, but very stony or rocky. And standing faire alongeth by the shore, about twelve of the clocke the same day, we came to an anker, where sise Indians, in a Baske-shallop with mast and saile, an iron grapple, and a kettle of copper, came boldly aboord us, one of them appareled with a wastcoat and breeches of blacke serdge, made after our seafashion, hose and shoes on his feet; all the rest (saving one that had a paire of breeches of blue cloth) were all naked."
These people are of tall stature, broad and grim visage, of a blacke swart complexion, their eie-browes painted white; their weapons are bowes and arrowes: it seemed by some words and signes they made, that some Basks or of S. John de Luz, have fished or traded in this place, being in the latitude of 43 degrees."

Later on at Martha's Vineyard Brereton makes the following comment.

"... captaine Gosnold, my selfe, and some others, went ashore, & going round about it, we found it to be foure English miles in compasse, without house or inhabitant, saving a little old house made of boughes, covered with barke, an olde piece of a weare of the Indians, to catch fish, and one or two places, where they had made fires."

In the same region, that is, around Martha's Vineyard, Brereton gives us the following:

"... the rest of these Islands are replenished with these commodities, and upon some of them, inhabitants; as upon an Island to the Northward, and within two leagues of this; yet wee found no townes, nor many of their houses, although we saw manie Indians, which are tall big boned men, all naked, saving they cover their privy parts with a blacke tewed skin, much like a Black-smithes apron, tied about their middle and betwene their legs behinde: they gave us of their fish readie boiled (which they carried in a basket made of twigges, not unlike our osier) whereof we did eat, and judged them to be fresh water fish: they gave us also of their Tabacco, which they drinke greene, but dried into powder, very strong and pleasant, and much better than any I have tasted in England: the necks of their pipes are made of clay hard dried (whereof in that Island is great store both red and white) the other part, is a piece of hollow copper, very finely closed and semented together: we gave unto them certeine trifles, as knives, points, and such like, which they much esteemed."

Reaching Cuttyhunk Brereton's narrative gives the following excellent description of Indians who came out to the islands from the Mainland.
Now the next day, we determined to fortifie our selves in the little plot of ground in the midst of the Lake above mentioned, where we built an house, and covered it with sedge, which grew about this lake in great abundance; in building whereof, we spent three weeks and more: but the second day after our comming from the maine, we espied 9 canowes or boats, with fiftie Indians in them, comming toward us from this part of the maine, where we, two daies before, landed; and being loth they should discover our fortification, we went out on the sea side to meet them; and comming somewhat neere them, they all sat downe upon the stones, calling aloud to us (as we rightly gressed) to doe the like, a little distance from them: having sat a while in this order, captaine Gosnold willed me to go unto them, to see what countenance they would make; but as soone as I came up into them, one of them, to whom I had given a knife two daies before in the maine, knew me (whom I also very wel remembred) and smiling upon me, spake somewhat unto their lord or captaine, which sat in the midst of them, who presently rose up and tooke a large Beaver skin from one that stood about him, and gave it unto me, which I requited for that time the best I could: but I pointing towards captaine Gosnold, made signes unto him, that he was our captaine, and desirous to be his friend, and enter league with him, which (as I perceived) he understood, and made signes of ioy: whereupon captain Gosnold with the rest of his company, being twentie in all, came up unto them; and after many signes of gratulations (captain Gosnold presenting their L. with certeine trifles which they wondred at, and highly esteemed) we became very great friends, and sent for meat aboord our shallop, and gave them such meates as we had then readie dressed, whereof they misliked nothing but our mustard, whereat they made many a sour face. While wee were thus merry, one of them had conveyed a target of ours into one of their canowes, which we suffered, onely to trie whether they were in subiection to this L. to whom we made signes (by shewing him another of the same likenesse, and pointing to the canowe) what one of his companie had done: who suddenly expressed some feare, and speaking angrily to one about him (as we perceived by his countenance) caused it presently to be brought...
backe againe. So the rest of the day we spent in trading with them for Furres, which are Beavers, Luzernes, Marterns, Otters, Wild-cat skinnes very large and deepe Furre, blacke Foxes, Conie skinnes, of the colour of our Hares, but somewhat lesse, Deere skinnes very large, Seale skinnes, and other beasts skinnes, to us unknown. They have also great store of Copper, some very redde, and some of a paler colour; none of them but have chaines, earrings or collars of this mettall: they head some of their arrows herewith, much like our broad arrow heads, very workmanly made. Their chaines are many hollow pieces semented together, ech piece of the bignesse of one of our reeds, a finger in length, ten or twelve of them together on a string, which they weare about their necks: their collars they weare about their bodies like bandelieres a handful broad, all hollow pieces, like the other, but somewhat shorter, foure hundred pieces in a collar, very fine and evenly set together. Besides these, they have large drinking cups, made like sculles, and other thinne plates of Copper, made much like our boare-speare blades, all which they so little esteeme, as they offered their fairest collars or chaines, for a knife or such like trifle, but we seemed little to regard it; yet I was desirous to understand where they had such store of this mettall, and made signes to one of them (with whom I was verie familiar) who taking a piece of Copper in his hand, made a hole with his finger in the ground, and withall, pointed to the maine from whence they came. They strike fire in this manner; every one carrieth about him in a purse of tewed leather, a Minerall stone (which I take to be their Copper) and with a flat Emerie stone (wherewith Glasiers cut glasse, and Cutlers glase blades) tied fast to the end of a little sticke, gently he striketh upon the Minerall stone, and within a stroke or two, a sparke falleth upon a piece of Touchwood (much like our Spunge in England) and with the least sparke he maketh a fire presently. We had also of their Flaxe, wherewith they make many strings and cords, but it is not so bright of colour as ours in England: I am perswaded they have great store growing upon the maine, as also Vines and many other rich commodities, which we wanting both time and meanes, could not possibly discover. Thus they continued with us three daies, every night retiring themselves to the furthermost part of our Island.
two or three miles from our fort; but the fourth
day they returned to the maine, pointing five
or six times to the Sun, and once to the maine,
which we understood, that within five or six
daies they would come from the maine to us
again: but being in their canowes a little from
the shore, they made huge cries & shouts of joy
unto us; and we with our trumpet and cornet,
and casting up our capses into the aire, made
them the best farewell we could: yet sixe or
seven of them remained with us behinde, bearing
us company every day into the woods, and helpt
us to cut and carie our sassafras, and some of
them lay abord our ship. These people, as they
are exceeding courteous, gentle of disposition,
and well conditioned, excelling all others that
we have seene; so for shape of bodie and lovely
favour, I thinke they excell all the people of
America; of stature much higher than we; of
complexion or colour, much like a darke Olive;
their eie-browes and haire blacke, which they
weare long, tied up behinde in knots, whereon
they pricke feathers of fowles, in a fashion
of a crownet: some of them are blacke thin bearded;
they make beards of the haire of beasts: and one
of them offered a beard of their making to one
of our sailors, for his that grew on his face,
which because it was of a red colour, they judged
to be none of his owne. They are quicke eied,
and stedfast in their looks, fearelesse of others
harmes, as intending none themselves; some of the
meaner sort given to filching, which the very name
of Salvages (not weighing their ignorance in good
or evill) may easily excuse: their garments are of
Deere skins, and some of them weare Furres round
and close about their necks. They pronounce our
language with great facilitie; for one of them one
day sitting by me, upon occasion I spake smiling
to him these words: How now (girha) are you so saucie
with my Tabacco: which words (without any further
repetition) he suddenly spake so plaine and distinctly,
as if he had beene a long scholar in the language.
Many other such trials we had, which are heere need-
lesse to repeat. Their women (such as we saw) which
were but three in all, were but lowe of stature, their
eie-browes, haire, apparell, and manner of wearing,
like to the men, fat, and very well favoured, and
much delighted in our compane; the men are very
dutifull towards them."
A DISCOVERY - THE INDIAN KEYWAY
by
WILLIAM S. FOWLER

In mechanics a grooved channel cut between two objects into which a key or peg is driven to prevent these objects from slipping past each other is called a keyway. It is now becoming more certain, as new evidence continues to come in, that the Indians understood and used this keyway principle in the hafting of certain types of artifacts. After noting a few isolated examples of actual Indian hafting where the wooden handles were preserved by immersion in a swamp or water I realized that we have but one or two artifact types which have been preserved for our study with the handles still intact. A number of other kinds have been drawn or described by early observers, which is helpful, and something may be learned from certain Eskimos of the North who haft knives and a few other artifacts in what is thought to be a manner similar to that used by the American Indian, to whom they may trace their relationship. However after all this information is studied we still have a great many of the twenty-five or more different artifact types about which there is little or no information describing the method of hafting as used by the Indians. As Willoughby says in his recent book on the New England Indian that nearly every kind of artifact was hafted, even the pestle, which has been commonly considered as a hand implement, I came to the conclusion that if we would know how these other artifacts were hafted we would have to find out by actually hafting them and learning as the Indian did through trial and error the best methods to use.

My work led me from one kind of artifact to another until I came to the curved-edged three cornered scraper. This type is thought to have been used for scraping thin the walls of soapstone and wooden bowls. According to Willoughby, scrapers of this kind, and also knives, were hafted in handles that were ingeniously made to fit the hand so one was devised out of a series of knots found in a small sapling, which was cut for the purpose.
As the hole in the handle to fit the scraper was being cut out, an opening was accidentally made through the top of the handle. As this hole could be filled in later on, no thought was given to it until the scraper was finally fitted into place. Then, on looking down through this hole in the top of the handle, a decided gap caused by the chipping away of one of its sides was noticed in the top of the scraper for the first time. At once it was seen that this chipped section formed a channel into which a key or peg could be driven from the top down. Thus the scraper would be wedged securely against the sides of the handle so that it could not be worked loose even with the roughest handling. A wooden peg or key was quickly driven into this channel and I suddenly realized that perhaps I had stumbled onto a principle of hafting which had never before come to light - the keyway.

To prove that the idea was feasible it was decided to haft another specimen with a keyway. A tomahawk blade was selected that had a clear cut channel chipped away from its tip. This artifact was found in the same region as the scraper, once occupied by the Agawam Indians. A handle was cut from a sapling, with an enlarged knot on its end, and into this knot was set the artifact after a small hole was cut through from the larger hole to the top. A wooden peg or key was then driven down from the top of the knot into the channel of the artifact as had been done in the case of the scraper. The result was the same as before. The blade was wedged fast against the sides of the large hole in the haft into which it had been fitted and it now seemed quite plausible to believe that the Indians had had a purpose when they chipped out these channels or keyways. The more one thinks of this the harder it is to believe that their purpose was other than to make it possible to secure the artifact in the handle by means of a wedge driven down from the top instead of up from the bottom although both forms of wedging may have been used at the same time for added security.

In the matter of hafting in general, my work leads me to believe that there was no set way for hafting any particular kind of artifact and that there were very probably as many different methods
Three specimens hafted with the key or wedge fitting into the key-way from the top.

Soapstone bowl scraper.
Four from Connecticut Valley, one from Worcester.

Tomahawk (Blade Type)
M-29-1, Connecticut Valley.

Tomahawk (Prong type)
M-29-20, Connecticut Valley.
as there were Indians with different independent ideas. However, it seems reasonable to believe that in the case of the scraper the workman would have welcomed the keyway wedge idea as a guarantee that the artifact would not become loose, for a loose implement in any handle is unmanageable even in the most skilled hands. Likewise in the case of the tomahawk the warrior would have wanted the same sort of a guarantee to insure against the blade coming loose from the handle and becoming lost in the thick of battle.

Now although the keyway idea seems quite logical it is nothing more than a theory and of course all theories have to be proven before they are accepted as facts. With this in mind I set out to look for evidence in the form of artifacts of a similar kind which would also have the chipped out channel in their tops. The only kind that would fall in this class was the kind that when hafted would normally be used in a horizontally held handle where the top of the artifact was not intended to protrude through the upper surface of the handle. Besides the scraper and tomahawk which were hafted, there have been reported as evidence ten other artifacts of various kinds, all with keyways. All have been tabulated and sketches made for the purpose of guiding others as to the type and character of artifact to be on the lookout for; a descriptive list of this evidence follows.

2 - Three cornered scrapers - M-29-1, Fowler - Agawam Indians. Same location from which the hafted specimens came.

1 - Four sided scraper - M-18-8, Howes - Nonotuck Indians, 15 miles up river from M-29-1.

1 - Small gouge - M-23-18, Smith - Concord Indians.

1 - Three cornered scraper - M-18-7, Denasko - Nonotuck Indians, near M-18-8 - identical to the one hafted.

3 - Three cornered scrapers - M-27-6 - Bullen - Worcester Indians, from soapstone quarry at Worcester.
1 - Circular scraper - M-29-20 - Fowler - Nonotuck Indians, 15 miles up river from M-29-1.

1 - Tomahawk prong, large size - M-29-20 - Fowler - Nonotuck Indians.

These specimens with keyways, some from other localities other than the Connecticut Valley, tend to indicate that the Indians utilized the principle of the keyway and therefore they may be considered the originators of this important technique of mechanics and not the Whites.

In a further effort to substantiate this theory, a pencil sketch with locality of other artifacts that could be used as evidence clearly indicated, should be mailed to W.S. Fowler, Wyckoff Park, Holyoke, Massachusetts for tabulation.
I realize that anyone who has a new theory to offer is just making himself open to attack, but as I have no reputation to lose I am going to take that chance.

After about four years of digging in Plymouth County camp sites, I am going to offer an opinion about something which has interested me very much—that is, out of all the broken pieces of projectile points I have found, approximately 80% have been bases, or butt ends.

The least-mentioned, but most important, to my mind, parts of the Red Man's equipment were his arrow shafts, spear and lance handles, and not the points, and I would like to give you a few reasons why I think so.

As you probably know, the only native woods which are suitable for these shafts and handles are straight, well-seasoned pieces from the butt logs of the ash, white oak, or hickory trees. These are the only woods in this vicinity which are straight and durable enough to withstand the shock of striking an object. The wood has to be well seasoned before being made up into arrows, as the green wood is too pliable and the arrow would whip when shot and wabble in flight.

After his stock was properly seasoned, the Red Man had to scrape the shaft down to the proper size and smoothness. Then came a very exacting and important part of the work, the adjustment of the flight feathers. Undoubtedly he used animal oil to keep moisture out of the wood, thus preventing warping.

On several occasions I have read statements saying that it probably took an Indian fifteen minutes or less to make a good arrowhead. From my line of reasoning it took at least six months,
through the various stages, to make an arrow shaft.

From this point of view, I believe that when an Indian retrieved his arrow or spear, should the head be broken, he brought the arrow or shaft back to the workshop, and, removing the broken butt, discarded it, and replaced it with a new point.

Which, I think, is the reason why there is such a high percentage of butts found on workshop sites.
THE RESULTS OF THOROUGH EXCAVATION
AND CAREFUL STUDY

by

ARTHUR M. HOFMANN

The following paper is written to stress the great importance of extreme thoroughness in excavating any Indian site, followed by very careful study later. Field notes and all the evidence that has been uncovered should receive very careful study when the necessary time and attention can be given such study.

If the facts here stated result in even but a few persons acquiring and practicing a thorough method of excavation, rather than the haphazard method practiced by some, then this article will not have been written in vain.

Nearly two years ago the writer started excavation of an undisturbed, prehistoric Indian site in the town of Andover, Essex County, Massachusetts. Knowing full well that this particular site had never been disturbed, except the cutting of the timber, and lay just as the prehistoric people who occupied it had left it hundreds of years ago, he resolved to obtain the complete story that lay waiting there to be pieced together again and reconstructed. It was resolved that every bit of evidence that lay in that site would be recovered if it be there and that no evidence regardless how small or unimportant it might seem, that had any bearing on the prehistoric occupants of the site would be overlooked or discarded, at least not until the entire site had been excavated and the complete collection of evidence and material carefully studied.

Proof that such a policy, honestly practiced, is well worthwhile is very much in evidence when the collection of artifacts from this site so far recovered is examined. Numerous specimens almost perfect and complete were found, except that the tip of this spearpoint or the base of that arrow point were missing - broken off. Just a tiny piece yet enough to cause them to be classed as broken and incomplete. Examination of the collection
will reveal that many of these tiny missing pieces were ultimately recovered enabling some of these broken specimens to again be made complete — reconstructed. Furthermore, many of these missing points or tips may well be the very evidence needed to solve the reason for, or method of, the original breakage thereby often revealing a most interesting and valuable story concerning the artifacts from which they had become separated.

It is a very common occurrence to recover the bases of spear points and arrow points that are perfect except that the tip or point has been broken off. What a disappointment it is to find such a specimen — where is the point? Why does it not lay near the artifact from which it has been broken? How was it broken off? These are questions all of us at times would like to have answered. A common belief, and probably this belief in most cases is quite true, is that these damaged bases of spear points and arrow points, so often recovered on village sites, were for purposes of replacement detached from arrow shafts and discarded where found. It is believed these tips or points were broken off, some distance from the site, by striking a stone or some other hard object while the owner was hunting, the damaged arrow being returned to the village for repairs. The following true story however of such a broken arrow point, excavated by the writer and through the medium of thorough excavation and careful after study solved not only the reason for the breakage, but in addition made of a common broken artifact a perfect one — reconstructed. Also one of special value because of the very interesting and valuable facts the recovery of the broken off tip revealed. Thoroughness alone in this case brought forth from the past a series of facts which would have otherwise been forever lost.

THOROUGHNESS PAYS A HIGH DIVIDEND

On July 10, 1940, the writer uncovered a number of animal bones, four sherds of pottery, charcoal and what at first appeared to be a small flake or chip of felsite. Upon closer examination however this flake proved to be the tip or point of a knife or arrow point (see Fig.1). All of this material was very closely associated, laying within the area
of a ten inch circle, in fine sand which was stained a dark brown color. Careful notes were made in the usual manner. The next day these bones were taken to the Department of Archaeology, Phillips Academy, Andover, Massachusetts where Doug Byers identified them as the bones of deer - two deer astragali - and nine fragments of leg bone. Upon reaching home again the writer made a careful study of the small felsite tip (Fig.1) found associated with these deer bones and pottery sherds. All of the broken artifacts recovered during the present year (1940) were then examined in the hope that the tip had originally been a part of one of them, but without result. Then all broken specimens excavated during the past year (1939) were carefully looked over. To the surprise and delight of the writer the tip matched perfectly with arrow point No.221 (See Fig.2). This had been excavated on September 2, 1939, ten months earlier than the finding of the tip. The field notes on this specimen were then consulted and the fact established that the tip was recovered slightly more than twenty-two feet distant from the position where the base was found. Because of the finding of the tip associated with deer bones and pottery sherds, the deer bones were now given a very thorough study. In one of the deer astragali (Fig.3) was observed with the naked eye a depression which appeared to have the same shape as the felsite tip. When this tip was placed in the depression it became obvious that it actually had been caused when the complete and unbroken arrow point (Fig.2) had entered the animal. Subsequent examination of the depression in the deer astragalus under the powerful microscope at the Department of Archaeology at Phillips Academy, Andover, Massachusetts clearly showed the crushed bone tissue - obviously forced inward - caused by the impact of the arrow point (See Fig.3). The microscope also revealed the force of impact of the arrow point with the bone which had caused a small chip to have been forced off on one side of the depression in the bone (Fig.3 at "A"). The felsite tip was also studied under the microscope and showed evidence of slight damage on one edge.

It now became a simple matter to reconstruct what actually caused the breakage to arrow point No.221 (Fig.2) and also to determine why the broken
Tip of arrow point lay in this depression until disturbed by trowel

A Bone chipped off here by impact of arrow point.

FIG. 3
(Scale 1-1)

Reconstructed arrow point
(Scale 1-1)
tip lay twenty-two feet distant from it. One can very easily visualize an Indian leaving the village on a hunting expedition. How he came upon a deer which he shot and killed, one of the arrows used in the killing being pointed with the very arrow point now under discussion. After the deer was dead one can see this Indian attempt to pull the arrow from the dead deer's body, to be used again, perhaps to kill another deer. He pulls at the arrow but does not pull straight and the arrow point being imbedded in bone, the tip suddenly breaks off. The Indian then returns to the village where he detaches the broken arrow point from the shaft and discards it for replacement with a perfect one. This same discarded and broken arrow point has lain hidden where it was thrown for untold hundreds of years, forsaken and forgotten until on September 2, 1939 it is again brought into the light of day - still broken - the point who knows where. The slain deer also in due time is brought to the village, is dressed, cooked and the meat finally eaten, the bones being discarded. All these long years our little felsite tip (Fig.1) separated from its base (Fig.2) imbedded in bone lays hidden and in darkness twenty-two feet distant, its story still untold. On July 10, 1940 however, ten months after the discovery of its base, the scraping of a trowel disturbs its slumber and its resting place. Once again it is re-united to its base. The story of its usefulness and the cause of its breakage, apparently forever lost, through the practice of thoroughness in excavation has been reconstructed.

Is there anyone that has read this paper who will not now agree with the writer that thoroughness pays a high dividend?