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BULLETIN OF THE
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CERAMIC DESIGN ELEMENTS OF MASSACHUSETTS

William S. Fowler

During the past year, 1945-46, members of the Massachusetts Archaeological Society in various parts of the state have furnished for classification, copies of ceramic designs found in their respective localities on pottery sherds. By this technique, an efficient comparative analysis was made, from which a study of the design elements resulted. In addition, reports concerning ceramic manifestations in the states of Connecticut, Maine and New York were reviewed. Correspondence was carried on with the Van Epps-Hartley Chapter of the New York State Archaeological Association concerning Mohawk Iroquois design elements appearing on material from habitation sites in New York. These regions, where ceramic arts were practiced, bordering as they do for the most part the state of Massachusetts, seem the most likely areas for study. Here one might expect to find evidence of spontaneous cooperation arising from pottery making, with superior clay available, Connecticut Valley potters developed a high degree of skill through several states. Frequencies of decorative techniques are as follows:

Design elements are geometric and varied, evidently the result of individual creative ability. Unusual incised concentric curves appear, but usually straight lines form diamond, herringbone and chevron patterns, with but few exceptions, until influenced by Mohawk intrusion. However, it is interesting to hypothesize that their desire to decorate may have originated during the steatite age, when occasionally a bowl would be embellished with a band of pecked marks near its edge. (Fig. 1)

A quick review of the design elements from Massachusetts, as submitted, will provide the basis upon which the conclusion rests. Beginning in the western part of the state, at the Connecticut River and its tributaries, there occurs a valley interspersed with volcanic ridges, which form a natural barrier to travel east and west. Here ceramic manifestations from a large number of habitation sites are in evidence. Heavy concentration is present in some cases, and most sites show general activity in pottery making. With superior clay available, Connecticut Valley potters developed a high degree of skill through several states. Frequencies of decorative techniques are as follows:

- Cord-wrapped stick - scarce
- Punctate ----------- occasional
- Dentate ------------ frequent
- Incised ------------ common

Design elements are geometric and varied, evidently the result of individual creative ability. Unusual incised concentric curves appear, but usually straight lines form diamond, herringbone and chevron patterns, with parallel oblique lines, combined with horizontal linear bands and punctate holes, to form unique developments. Frequent use of a design element seems most common to occur with the incised chevron, of probable Mohawk Iroquois origin or influence. Tempering is generally of grit, showing a preference for quartz, granite or feldspar.

Material from the Westfield Valley, occurring at the end of a well-substantiated primitive route to the West, contains marked evidence of probable infusion from New York State, with the pre-Iroquoian dentate plait diagonal, as well as the well known three line horizontal band, over linear chevron Mohawk element. Material from the Deerfield Valley on display in the Memorial Museum at Deerfield, occurring at the end of the most famous western route - the Mohawk Trail - exhibits a high percentage of what appears to be pure Mohawk design.

Moving now to the Coastal end of the State, the region lying around Plymouth seems to exhibit...
much ceramic activity. Clay deposits are conveniently located. Shells, which abound, were crushed and used quite generally for tempering apparently in every age, although some grit tempering appears. SherdS occur on habitation sites with common frequency. Decorative techniques in this region have the following frequencies:

- **Cord-wrapped stick** - absent
- **Punctate** - scarce
- **Dentate** - frequent
- **Incised** - frequent

While some of the design elements are geometric, with linear chevrons appearing occasionally, most of the patterns are made up of rows, or spot groupings of artfully spaced elements. The rocker stamp design like that of Maine shellheaps is present, also small circles made by a hollow reed. Only one small incised herringbone occurs. Certain wavy lines are evidently made with scallop shells. Dentate stamps vary from fine to coarse, showing some degree of originality. Pottery is apt to be fragile to a greater degree than that from the Connecticut Valley. Cord wrapped paddle background treatments occur occasionally. There is meager evidence of Mohawk intrusion, in fact, so slight as to exclude it from consideration.

Cape Cod presents a somewhat different picture so far as frequencies of techniques are concerned:

- **Cord-wrapped stick** - frequent
- **Punctate** - scarce
- **Dentate** - frequent
- **Incised** - occasional

Tempering is divided between grit and shell, and sherds appear mostly in shell heaps. In general, design elements are quite simple, such as linear bands over cord-wrapped paddle, cord-wrapped stick herringbone and heavy stick wrapped diagonal stampings. Scallop shells were frequently used to form the rocker and linear wavy lined elements. In one such pattern, lines are crossed occasionally at right angles to suggest a cross hatch on a large open scale. Dentate pronged stick stamps are sometimes dragged to form linear bandings going in various directions. A most unusual pattern, from a sherd recovered by E. H. Rogers, is a horizontal banded plait pattern, with cord marks running diagonally, of large proportions, its mesh about 1/2 by 1 inch square. The vertical linear element has six heavy lines, while the horizontal has only four. Technique is either incised or trailed with a pronged stick. Below the decoration, the vessel was shaped with a cord-wrapped paddle, with cord marks running diagonally. The only evidence of Mohawk influence is a large pot recovered by Jesse Brewer from the bank of the Cape Cod Canal. It is well made, as though with trained hands, is globular with a medium high collar. While the general style is Mohawk, design elements are somewhat confused, with horizontal linear banding being extended to form most of the background. Chevrons are irregularly spaced, and, where they fail to join at the base, a vertical linear band intrudes, with a diagonal linear fill-in on one side. Chevrons are not completed in good authentic Mohawk style, but are narrow and irregularly spaced with a lack of uniformity. It is as if the potter were trying to copy the style from memory after having had a reasonable amount of training.

The pottery was almost nonexistent. Pottery making was apparently done only for use within the area, and for the most part, is not decorated. Patterns present when present are of a most rudimentary nature with such weak traits as to preclude description.

From habitation sites in Andover comes a large quantity of sherds, indicating an extensive use of pottery. Much of it is without decoration, while those sherds with design are usually reduced to such small proportions as to render them useless for study. However, it may be stated, according to R. P. Bullen, that the following techniques are represented: cord-wrapped stick, dentate, incised, and over all cord-wrapped paddle markings. The rocker stamp element is present, and occasionally the pot is shaped with cord-wrapped paddle markings inside as well as out. Tempering is largely vegetable, with some grit and shell. Only two patterns displaying a repeat have appeared with incisions deep enough for study. These are from the Maud Eaton site. The smaller one is of probable Mohawk influence with a three linear horizontal element over small chevrons. The larger has a similar three horizontal element over a narrow striped chevron variation, possibly of Mohawk influence.

In the vicinity of Attleboro, few sherds have appeared. They are generally of poor quality and without design. However, one important sherd from the Ten Mile River area is decorated with a dentate diagonal banded plait pattern, similar to the pre-Iroquoian plait motif from the Westfield Valley previously referred to. Grit tempering has failed to bind the clay, which is friable. It is assumed that possibly the quality of clay in this region is inferior, and was used only with difficulty.

It is regretted that no decorated sherds were submitted from the central part of the State in the vicinity of Worcester, which must therefore remain as a blank in this present report. Either, ceramic arts did not penetrate this area, or omission of material has occurred inadvertently.

Considering, now, design elements of border-state cultures, certain motifs stand out as diagnostic traits with consistent repetition, although there is, of course, evidence of unlimited originations as well, with all but the Iroquois. Here, standardization is more apparent than with other neighboring peoples.

From the shellheaps of Maine come the rocker stamp element and punctate bands of holes, the latter associated with cord-wrapped stick. These are probably early manifestations, as they occur from 1 to 14 feet in depth. (Willoughby, Antiquities of the New England Indians, pp. 191, 193, 194.)

![Figure 2](image-url)
In the state of Connecticut appear two distinct styles, Shantok and Windsor. The former is distinct on account of unusual bosses usually triangular in shape (Fig. 3); also ridges which are used in shaping the collar, together with crudely modeled lugs, shaped in the form of human or animal heads. These are affixed to several rim points. Decoration, which is confined to the rims, is punctate and incised, with ceramic Mississippi-Iroquoian resemblances. (Rouse, Bulletin of the Massachusetts Archaeological Society, Vol. 7, No. 1.)

Windsor style includes cord-wrapped stick, punctate, dentate and incised techniques around the neck (Fig. 4). Tempering is grit, whereas sherds of the Shantok style are tempered with shell. Windsor elements are varied geometric motifs, typified by the dragging and impression of shells or sticks, to form linear bands in various directions, some showing in groups. Chevrons are sometimes present, and, frequently, triangles. (Rouse, Bulletin of the Massachusetts Archaeological Society, Vol. 7, No. 1.)

New York State, which borders on Massachusetts to the west, displays perhaps a higher ceramic development than any New England district. Here, over a long period of time prior to the formation of the Iroquoian Confederacy, pottery was fabricated and decorated, finally emerging into, or being replaced by a superior Iroquoian style. Wherever Iroquoian ceramics touched, they apparently left a lasting impression. Imitations modeled after this style quickly sprang up so that a design analysis for New England is not complete without a review of typical pre-Iroquoian and Iroquoian elements. So far as Massachusetts is concerned, however, it may be sufficient to include only those of Ritchie's pre-Iroquoian cultures and those of the Mohawk Nation, whose settlements were directly west of the Hudson River and up the Mohawk Valley, but whose enforced sovereignty reached at least as far as the Connecticut River in proto-historic days.

People of the Laurentian Aspect, Brewerton Focus, Late Archaic, apparently had ceramics and used cord-wrapped stick and dentate impressions for decorations (Fig. 5). The rocker stamp and herringbone elements seem diagnostic, although other variations are present. This culture has been given a chronological position of about A.D. 1000. (Ritchie, "Pre-Iroquoian Occupations of New York State", p. 225.)

Figure 5.—Laurentian and Vine Valley Elements.

Hopewellian Phase, New York Focus, Intermediate Period shows cord-wrapped stick over-all decoration with no design element, although this is based on but one exhibit. (Ritchie, "Pre-Iroquoian Occupations of New York State", p. 131, 159.)

Vine Valley Aspect, Point Peninsula Focus, Intermediate Period favors rocker stamp and dentate herringbone elements (Fig. 5), like Laurentian, as well as other linear variations and cord-wrapped stick not considered diagnostic by this paper. (Ritchie, "Pre-Iroquoian Occupations of New York State", p. p. 147.)

Owasco Aspect, Late Prehistoric Period, presents a variation of design elements in dentate with punctate and incised markings occasionally (Fig. 6). However, two elements stand out as diagnostic favorites: dentate plait and constricted herringbone. The former is composed of a series of dentate bands, vertical occasionally, but generally diagonal left to right, presumably joining an upper with a lower border. (Ritchie, "Pre-Iroquoian Occupations of New York State", p. p. 242.)

Figure 6.—Owasco Elements.

Mohawk-Iroquois, Cayadutta (A.D. 1600) shows incised markings almost exclusively, which decorate a pronounced collar. This is deeply undercut to form the neck (Fig. 7). Mohawk pottery excels in precisely incised patterns which are more or less standardized, and repeat with consistent regularity on ware that is grit-tempered. Other Iroquoian wares follow Mohawk style in some respects, but apparently they are subject to more variation in design, although incision is the accepted technique. However, this paper will confine itself to a study of Mohawk elements for reasons previously stated.

Four Mohawk types that repeat more often than their variations will be considered diagnostic for this culture. All have three line linear horizontals which may occur; over right to left diagonal lines (Fig. 7 A),
over chevrons (Fig. 7 B), over left to right diagonal lines (Fig. 7 C), or over vertical lines (Fig. 7 D). They were classified from 176 sherds by Vincent J. Schaefer and reported for this paper by P. Schuyler Miller, Secretary-Treasurer of the Van Epps-Hartley Chapter, of Schenectady. (Fig. 7)

Figure 7.—Elements of Mohawk Iroquois ceramic designs.

Summary and Conclusion

This survey reveals great variation in ceramic design elements from the state of Massachusetts. Designs have been used, probably for decoration only, nevertheless they suggest cultural variations with direct bearing upon certain traits of the people. While geometric design elements are abundant in the Connecticut Valley, they seem to dissipate as an approach is made to Cape Cod. From Plymouth, around the Bay and on to the Cape, scallop shells seem to have been quite generally used as markers. This use of shells naturally influenced the potters in suggesting a wavy dentate style. However, from one end of the State to the other may be seen individual originations, a product of creative ability, with apparently no regard for standardization of elements, except in certain cases to be referred to further on. It seems as though potters vied with each other in creating different patterns with divergent elements, especially with dentate-trailing and incised techniques.

Undoubtedly, many elements originated with native potters; however, some motifs probably had their provenience in neighboring regions, or at least show association with such out-of-state locales. Correlating Massachusetts elements with those of border states reveals some similarities that are too close not to be noticed. In evaluating this evidence, reference will first be made to those elements which equate with design forms assigned to the earlier cultural states, to be followed by a review of elements down to protohistoric days.

The dentate rocker-stamp, appearing in coastal communities of Massachusetts Bay and Cape Cod from shellheaps and camp sites, equates closely with the rocker element from Maine shellheaps, as well as with Ritchie’s Laurentian and Vine Valley Aspects (Figs. 2A, 5A). Allowing for the use of different shell markers in these divergent regions, this relationship of elements may suggest cultural contacts. This connection is also apparent in the punctate element, (Fig. 2B) and frequent cord-wrapped stick manifestations from Cape Cod. Closeness to Maine and ease of communication with similar shellheap provenience of shell tempered ware, suggest the possibility of a historical relationship with those coastal peoples of the same early date. Whether this blood relationship extended to Ritchie’s Laurentian and Vine Valley cultures of New York State is not so clear, although it is a possibility for further evaluation and research.

The large irregular dentate herringbone and rocker stamp of Laurentian and Vine Valley aspects occurs in the Connecticut Valley infrequently, which may indicate contact with these early cultures by overland routes. However, manifestations are too scarce to suggest anything more than occasional infusions, so far as ceramics are concerned.

Cord-wrapped stick over-all decoration of the Hopewellian Phase seems to be absent from the material evidence of this research. Apparently, this was a cultural movement from the west which did not extend as far east as coastal New England.

Some years later, however, with pre-Iroquoian appearance of Ritchie’s Owasco Aspect, there is marked evidence to indicate that this culture exerted strong influence on the life of the Connecticut Valley and to a lesser extent on that of other coastal districts. Apparently this infusion took place over what in historic days was known to be a primitive overland route to the west, from the Connecticut Valley. This old route terminates in the Westfield Valley by way of Little River, and it is here that the Owascan dentate plait element. (Fig. A) and variation appear. Further east, on Ten Mile River near Attleboro, it occurs again, but here the trace is not so clear cut as at Westfield. Furthermore, on the Connecticut River just below the confluence of the Westfield, at South Windsor, Connecticut, appears a close copy of the Owasco herringbone dentate element (Fig. 6B). Apparently, there was, perhaps, an infusion of Owasco culture, by means of which certain decorative elements were passed on to Massachusetts peoples. Perhaps these ceramic elements are manifestations of a prolonged Owascan settlement. A further comparison of other traits of material culture might confirm or deny one of these possibilities.

At about the turn of the seventeenth century, when Mohawks are supposed to have made permanent settlements in what is now known as the Mohawk Valley, a wholly new style of design seems to have spread over those of Massachusetts regions which felt the impact of Mohawk intrusions. Just what these contacts were is not fully known, but they may have included temporary settlement, bringing in Mohawk ceramic industry with its distinctive elements of design. However, they may only have been raids, on which natives were captured. It is possible that subsequently some of these natives returned with Mohawk ideas to be spread among Massachusetts tribes. Whatever the meanness which incised elements of Mohawk design actually arrived, the fact remains that they are present in the Connecticut Valley and, to a lesser extent, further east. In Deerfield Valley, a known primitive gateway to the west, have occurred what appear to be clearly defined Mohawk elements that equate closely with three Mohawk styles (Fig. 7A, B, D). Further down the Connecticut Valley has appeared the type illustrated in Figure 7B. At South Windsor, on the Connecticut River, occurs a slight variation of this type which has already stated, Shantok elements (Fig. 3) have Iroquoian resemblances and may have had a common Mississippian Valley provenience. Again on Cape Cod Canal, the well-shaped thin-walled Brewer pot has incised
Two Burials at Tiverton, Rhode Island

Adelaide K. and Hipley P. Bullen

Beattie Point is a small sand and gravel point on the east shore of Sakonnet River between Tiverton and Tiverton Four Corners, Rhode Island. It rises less than ten feet above the river and is, in part, separated from the mainland by a marsh. The western side of this point is eroding as the result of wave action, leaving a sandy beach covered with pebbles and cobblestones.

Several burials which have been exposed on this beach have been reburied by Mr. Roy H. Beattie, owner of the land, or his sons. This spring, storms exposed two such burials and the authors were asked by Mr. and Mrs. Malcolm B. Beattie of Andover to excavate the skeletons prior to reburial.

All of the dirt over the burials, down to the tops of the skulls, had been removed by erosion. After scraping away the loose gravel and surface sand the outlines of the burial pits were exposed. Both were rectangular, 18 and 24 inches wide by 60 and 64 inches long, respectively. These pits were parallel, 18 inches apart, and their long axes due east-west, magnetically. The narrower pit was marked at the edges by bits of decayed wood and hand wrought nails indicating burial in a coffin. The head end of this coffin appeared to have been curved. Of the wider pit there was a line of decayed wood along the north side and another 18 inches to the south. Apparently the extra width of the southern burial pit represented back fill. From the symmetrical arrangement it may be inferred that both burials were made at the same time or else that the earlier was marked so that its location was known.

Both bodies were buried on their backs, feet towards the east. The north skeleton exhibited blueish-green stains on anterior and squamous areas of right parietal, mid-portion of left parietal, and on maxilla just above the incisors. Similar stains were found on the south skeleton on left parietal, basal portion of occipital, and one metacarpal bone of right foot. Where clearly indicated on the skulls, these stains consisted of a bluish-green rectangle, 1 x 1-1/4 inches, while the total area affected was 1 x 1-3/4 inches.

Directly under the stain on the occipital bone of the south skeleton was found a brass (?) pin, 3/4 inches in length with a round head, 1/16 inches in diameter. Microscopic examination of material around this pin showed bits of wood and a black substance but no woven material. The black substance appears to be paint used on the coffin but identification is not positive. There can be no question but that such pins caused these stains. Apparently the bodies were wrapped in a shroud, which was pinned together, and interred in simple coffins.

Due to the youth of the interred individuals, sex was indeterminable. The age at death of the individual represented by the north skeleton was about thirteen. The skull was dolichocephalic (74.8%), the nasal index hypercaterhine (30.7%), with bulbous forehead, alveolar prognathism, small mastoid processes, and genial tubercles not pronounced. Teeth were large, upper incisors shovel-shaped, lower ones not. Gories were pronounced in both lower first molars and present in second right lower molar and left lower canines. There was marked wear on lower first molars, some on upper first molars. Walar bones did not flare nor jut outwards. The linea aspera was not pronounced.

The southern burial was that of a child about
Eleven years old. The teeth were extremely large and
the upper incisors very markedly shovel-shaped.
Caries were present in the premolars (baby teeth).
Aneurysm prognathism was marked.

These skulls exhibit both Indian and Negro
caracteristics. The method of burial certainly
proves the date of burial to be after settlements
by the whites. From the small amount of information
available, it is evident that at least some of the
other eight burials, found previously at Beattie
Point, were also children who had been buried in
coffins. It should be mentioned that no Indian materi
al was found by the authors on the point. However,
an Indian site is located nearby on higher land.

One is tempted to suggest that Beattie Point
represents an old slave burial ground. Apparently
child mortality was high.

Early in 1946, Mr. Carl Alsing, the owner
of the land upon which the rock shelter is located,
noticed the Springfield Museum of Natural History
that what appeared to be Indian remains had been
found under a ledge on his property in Wilbraham. He
suggested that the site be explored completely and
offered his cooperation to any competent group who
would do so. Mrs. Johnson of the Museum reported
this to the Connecticut Valley Chapter of the Massa
chusetts Archaeological Society and arrangements were
made with Mr. Alsing to "dig" what appeared to be a
small rock shelter.

The location of this rock shelter is about
three-fourths of a mile south east of the center of
the town of Wilbraham. It is also just two miles as
the crow flies from the soapstone quarry in North
Wilbraham, which has been the scene of past excavat
ing both by this Chapter and the Springfield Museum.
The rock shelter itself consists of an overhanging
conglomerate which has been eroded
away at the base
so that the overhanging shell provides a low roof
over an area roughly six feet in depth and twenty
feet long. The general appearance of this ledge can
be seen from the accompanying photograph and sketches.

From the point of view of its Indian inhabi
ants, the well-drained location of this shelter must
have been nearly ideal. It is on a southwest slope
with southern exposure. There are two small springs
about one hundred fifty feet away, one on the east
or uphill side and the other on the opposite side. A
lean-to of some sort to provide cover for the ex
posed face would have made of the rock shelter a fine
small habitation with a minimum of work. The present
height of the shelter is about five feet at the front,
receding sharply to the rear with slope of the roof
approximately 45 degrees.

Before excavations began, the area to be dug
was first staked off into 3-foot squares with the
back wall of the shelter as a base line. The accom
panying sketch shows the position of the burial which
was found, in relation to the shelter area. Scattered
throughout the space dug over were fragments of char
coal, small pieces of animal bones, fresh-water mussel
shells and a few sherds of plain, grit-tempered pot
tery. At no place in the area uncovered was the
depth of remains more than ten inches below the sur
face. Below the fertile strata was a layer of red
soil which covered the bedrock.

Among the artifacts found were a black flint
thumb-nail scraper, a quartz scraper, three trian
gular quartz points and a small quartz pick similar
to those found at the soapstone quarry. There were
also two pointed bone implements each about two
inches in length. These were either axis or pro
jective points. All of these pieces were scattered
about in the soil and had no evident immediate
association with the burial.

The burial itself was just under the sod
and some of the bones were disturbed when the sod
was first pulled up. It was a flexed burial which,
to judge from the position of the vertebrae, had
originally been placed somewhat on the right side
with the head to the east. A large stone at both
the head and foot of the burial were apparently
placed there during the interment. It is also pos
sible that this Indian may have been flexed and
wedged between these stones since a number of similar
slabs which have fallen from the ledge overhead were
scattered about. Beneath the few remaining fragments
of the skull a fresh-water mussel shell was found.

Considering that this burial was so shallow
and subject to the action of frost, rodents, and
growing vegetation, the bones were very well
preserved with the exception of the skull, of which only
fragments were found. All of the long bones were con
siderably broken and disturbed from their natural
position. Only the vertebrae and ribs were in their
normal position to prove this was a flexed burial.
and not a "bundle" burial. From the appearance of the teeth this individual was at least middle aged at death as the incisors were well worn. No molars were found which may indicate that this person lost them during his lifetime or that they were carried away by rodents. The incisors show the characteristic "shovel" shape frequently found in Indian teeth.

The general state of preservation of all the skeletal material found would place the date at which the burial was made as quite recent. With no evidence to the contrary, it appears safe to assume that the burial is contemporary with the period of occupancy of the shelter. The only signs of white contact were three pieces of a clear, colorless glass bottle or vase which were found near the surface in the shelter. To an amateur this glass does not appear to have been of the same period as quartz points and is probably the remains of a picnic on the mountainside.

A few test pits were dug in two other possible shelters nearby but no signs of occupancy were found. Neither of these shelters were afforded as much protection by the overhanging ledge and as habitation sites they would have been much less desirable than the shelter in which we dug. It is definitely possible that further excavation in the area around the springs and in front of the shelter will turn up more campsite material but the area does not appear to have been very intensively used.

Springfield, Mass.

View of the Rock Shelter at Wilbraham

Floor plan of Wilbraham rock shelter
There are certain parallels between the archaeological situation in New Jersey with that in Massachusetts which makes Miss Cross's contribution a "must" for the student of Massachusetts prehistory. There is a suggestion that there may have been a change in the relative levels of the land and sea. At the Tuckerton Shell mound, were a test trench unfortunately yielded only a few sherds and no stone artifacts, "shells extend for an unknown depth below the present water level".

It seems doubly unfortunate not to have at least taken borings to determine whether the shells accumulated in a "hole" or whether a problem in coastal stability is present. "Iroquoian" pottery is present in the north but not in the south. There are close similarities between both styles of decoration of pottery and types of stone artifacts from New Jersey and those from Massachusetts. There is a strong suggestion that the period represented by the excavated New Jersey sites is one during which a transition was occurring in styles of arrowheads, with the trianguloids replacing other types. Irrespective of whether this shift reflects chronology or merely variations in the habits of Indians living at the same time, the evidence from New Jersey gives us a point of view which is worth considering.

The data, summarized and analysed by Knowles and Cross, was secured by an Indian site survey and excavation program conducted in New Jersey under the Work Projects Administration. The project was sponsored by the New Jersey State Museum with the Archaeological Society of New Jersey in an advisory capacity.

The main objective is given in the introduction. "...it is obvious that at the time the Indian Site Survey began, not enough areas in the State had been investigated, nor enough work concentrated at any given site, to allow for a comparative study of the types and materials of artifacts or a determination of the change and interrelations of cultures". The book accomplishes this aim and offers workers in the northeast a large amount of data for comparative study.

The 526 sites surveyed have been covered by a summary giving their location, topographical situation, soil conditions, and surface finds. No attempt has been made to organize this data further. The 39 sites, singled out for excavation, form the body of the book. The specimens from them have been studied and the results presented by numerous charts and distribution curves in the discussion.

The plates are particularly excellent, both archaeologically and photographically. Miss Cross is to be congratulated for her refusal to crowd the plates and for having the reproductions of the specimens large enough for careful examination.

The introductory part of the book includes a brief but adequate history of the archaeology of New Jersey and of the field methods used in the excavations. The geological background is well presented by Henry B. Kummel. The relationship between late Pleistocene phenomena and archaeological problems is ably given by Horace G. Richards who has also written the clear and concise description of the rocks used in New Jersey for the manufacture of artifacts.

This is followed by a chapter on typology. Among the projectile points, 2-3/4 inches has been used as an arbitrary division between arrowheads and spearheads. Nine major types of arrowheads and seven of spearheads are described. In this connection it would have been helpful to the student of types if the same type number had been used for both. Drills and scrapers are also classified into major types. The larger implements are defined but, except for axes and hammerstones, are not further classified.

For pottery, types are defined for various surface finishes and decorative techniques.

Descriptions of the excavations are arranged in a way that might well be used as an outline for small site reports. Each of the sites is treated separately. Geographical location and situation are given in about one paragraph. Two or three paragraphs usually cover the excavation proper, including the history of the site, a description of the levels, and the amount of excavation. In most cases this is accompanied by a sketch map of the site and excavations. In seven cases, profiles of levels or of pits have been included. Pits and other features are described. Specimens are briefly mentioned and average depths for different types and materials are given. This is followed by succinct conclusions.

While this data has been skillfully boiled down, there are a few points which could have been made a little more clear or more specific. In the description of the pits at the Salisbury Site (pp. 54-55) mention is made of the fact that European trade material as well as arrow-and spearheads were included in the contents. As there were different types of points at this site it would be interesting to know just which types were found in this specific association.

Under the conclusions on this same site, we find (p. 62) "Jasper and other flinty materials as well as certain types of implements which are commonly associated with late sites or which are concentrated at shallow depths in older sites had a greater frequency in the old humus layer than outside of it." What are these "certain types of implements"? It is not explained.

In the sketches of pits at Worrell (p. 91) and at Rosenkraans Ferry (p. 139), the edges of the pits have been drawn up through the humus layer into the
grasses. One wonders if they were actually traceable that far.

The use of the arithmetical mean for the vertical distribution of an artifact type at a site is more conservative than the use of the modal point. However, the later, if definitive, would appear to be more apt to reflect chronological changes by minimizing the effect of aboriginal disturbance. The application of accepted statistical methods to archaeological data, as is done in this book, is relatively new in archaeological literature. It appears to be a good tool for the handling of a large amount of data from many sites but its usefulness at one site is not so easily demonstrable.

The site reports are followed by a summary of the "Comparative Petrology and Typology" by Knowles who demonstrates that the material used in the manufacture of artifacts corresponds roughly to that available and to some extend cuts across typology. The fact that net sinkers (notched pebbles) are concentrated along the Delaware River suggests to Knowles that their use was "confined to fishing methods employed in swifter and deeper water and that other devices were used in the flat, sluggish streams of central and southern New Jersey". This is a logical hypothesis which sounds a note of warning in the use of trait lists for cultural comparisons.

Otherwise, Knowles does not seem to note any significant variations in the comparative typology. If, as Knowles suggests later under the discussion of the vertical distribution, the trianguloid arrowheads were gradually superseding other forms of arrowheads, it should be noticeable from a study of the comparative typology. Certainly Table 6 - Per Cent of Arrowheads By Types - shows statistically significant differences between the percentages at the various sites. These change from 1% trianguloid and 82% stemmed at Koens-Crispin to a maximum of 82% trianguloid and 12% stemmed at Higgins. Unfortunately the amount of material found at Higgins was extremely small, but, if Salisbury, a rich contact site, is substituted, the percentages are 22% trianguloid and 39% stemmed, which still represents a very great shift in comparison with Koens-Crispin.

Under the discussion of pottery Miss Cross demonstrates regional variations between the northern, central, and southern portions of New Jersey with both shapes and decoration more complicated in the north where "Iroquoian" influences are clearly discernible. The wide-mouthed, flat-based vessels found in the southern half of the state may represent similar influences from further south.

From a study of the vertical distribution of artifacts, Knowles makes several conclusions some of which are of particular interest to Massachusetts.

"The relatively small triangular points are definitely shallower than other artifacts although they do occur at all depths." (p. 192) The evidence suggests that they "... are chronologically somewhat later than other artifacts." (p. 187) "This conclusion is confirmed by the evidence ... at the Salisbury Site" (p. 187) where they are found with White trade material. "The triangular points are likewise definitely nearer the surface in the one uncultivated site where they occur and apparently more profuse in the upper stratum of the only Abbott Farm Excavation with buried humus. It is therefore probable that they may have been gradually superseding the other types." (p. 192) The relatively shallower depths for small triangular arrowheads is abundantly documented in the site reports. At Ledhardt-Lahaway, where there were many contact burials, 35% of the arrowheads were triangular. Knowles's conclusion is based upon a plenitude of evidence.

Regarding the vertical distribution in general, Knowles says, the "distribution is represented by a normal frequency curve skewed towards the lower end" with "the point of maximum concentration ... at or slightly below the plow line." This "curve of vertical distribution from the surface is a normal frequency curve due only to continuous cultivation and collection" by relic hunters. "Under original conditions it would most probably have been a straight line distribution with the maximum concentration within the first few inches below the four or five inches of true humus at as Koens-Crispin."

While it is undoubtedly true that collecting from a plowed field would give the distribution curve Knowles finds, it does not follow that the finding of such a curve due to collection. At two recently excavated sites in Andover (Hofmann and Foster's Cove) artifacts were found starting at the grass roots. Their frequency increased and then decreased with depth and gave approximately the same curve Knowles discusses including the skewing towards the lower end. These sites showed no evidence of plowing, exhibited a normal soil profile and one was unknown before excavation. In neither case had the curve been affected by collecting as far as could be ascertained. It is possible that other factors such as deposition by natural forces, the bringing up of dirt by worms, animals, and wind-felled trees, and occupancy by later Indians (there was evidence at these sites of stratigraphy) or over a long period of time might also produce a "normal frequency" vertical distribution curve. The decrease of material in the humic zone may be the result of collecting but it is also a function of habitation level, soil growth, and erosion.

Knowles also notes "There is general similarity in the vertical distribution of the total stone artifacts and pottery from all New Jersey Sites". There is, of course, implies the absence of a pre-pottery horizon. Miss Cross, in the conclusions, refuses, at least for the time being, to recognize a pre-pottery level. However, she quite properly points out that it is "the difference between the greatest depths rather than the means which would be significant in defining a pre-pottery level. Table 26 gives the typology of the level between the deepest pottery and the deepest stone for the eight sites where enough artifacts were found at this level to permit of comparison. After a comparison of these tools with those found with pottery, Miss Cross quite properly concludes that the evidence "in no way justifies the assumption of a pre-pottery level which varies measurable in content from the levels above except in the apparent absence of pottery".

However, there remains a strong suggestion that a pre-pottery horizon may be present in New Jersey but not definable in the sites excavated. There is an excellent positive correlation between the percentage of stemmed points at the site and the distance in inches between the deepest pottery and the deepest stone.
Throughout the book, the emphasis has been placed on the material used in the manufacture of artifacts. This probably reflects the bibliography of New Jersey archaeology which is replete with references to an "argillite culture". For having buried this spectre Miss Cross merits our thanks. Miss Cross has substantially increased our knowledge of the northeast. Further work will paint the lines of the picture clearer. The conservative and logical presentation of this vast amount of data has much to recommend it. We look forward with anticipation to Volume Two on the Abbott Farm excavations.

As this review has been written because of the apparent similarities in the archaeological situation in New Jersey and Massachusetts, it may be permissible to close with a comparison of a few New Jersey sites based upon the hypothesis that there may be chronological implications in the percentage of triangular arrowheads. Koens-Crispin, Red Valley, and Salisbury have been chosen as they are by far the three largest sites, judging from the amount of excavated material. Goose Island has been included for comparison with Salisbury and Ledhardt-Lahaway because of the numerous burials containing artifacts of White manufacture.

Salisbury and Goose Island are both on the shore of the Delaware River and only one quarter mile from each other. They are considered to be part of the same site with the exception that the portion designated as Salisbury was occupied into historic times while the Goose Island portion was not. There should, therefore, be a difference in the average time of occupancy and if this difference is of any magnitude it should be reflected in the percentage of triangular arrowheads under the above hypothesis. That such a shift is suggested is evident from the following table.

<table>
<thead>
<tr>
<th>Types of Arrowheads from Five New Jersey Sites</th>
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<tr>
<td><strong>Lighthart-Lahaway</strong></td>
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<tr>
<td><strong>Salisbury</strong></td>
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<td><strong>Goose Island</strong></td>
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<tr>
<td><strong>Red Valley</strong></td>
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<tr>
<td><strong>Koens-Crispin</strong></td>
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A still higher percentage of triangular arrowheads is evident for Ledhardt-Lahaway which had many contact burials. It is out of the question, however, to consider Ledhardt-Lahaway any later than Salisbury. As the mean depths at Ledhardt-Lahaway were less than at Salisbury, the greater percentage of triangular points may reflect a later beginning for that site. However, the amount of material found does not permit of a valid comparison.

The shift from Koens-Crispin to Salisbury is rather clear cut with Red Valley occupying somewhat of an intermediate position. This is evident not only in the change in the forms of arrowheads, but also in the relatively large number of spear points, drills, axes, hammerstones, and bannerstones at Koens-Crispin. The marked increase in net sinkers and scrapers at Salisbury may reflect a greater dependence on fishing. The other changes may also reflect differences in gaining a livelihood and have nothing to do with chronology but that there are differences can not be denied.

Andover, Mass.
January 23, 1945

<table>
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<tr>
<td><strong>ARROWHEADS</strong></td>
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<tr>
<td><strong>Total</strong></td>
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<tr>
<td><strong>Triangular</strong></td>
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<tr>
<td><strong>Stemmed</strong></td>
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<tr>
<td><strong>Notched</strong></td>
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</table>

| **SPEARHEADS** | **Total** | **SALISBURY** | **RED VALLEY** | **KOENS-CRISPIN** |
| **Total** | 152 | 213 | 87 |
| **Triangular** | 5% | 1% | 8% |
| **Stemmed** | 68% | 73% | 85% |
| **Notched** | 3% | 17% | 3% |

| **SCRAPER** | 169 | 199 | 31 |

| **DRILL** | **Type** | **X** | **XX** | **Total** |
| **Type 1** | 4 | 1 | 5 | 11 |
| **Type 2** | 4 | 2 | 6 | 12 |

| **CELT** | 7 | 1 | 1 |
| **AXE** | 7 | 12 | 29 |
| **PESTLE** | 3 | 3 | 9 |
| **HOE** | 2 | 3 | 10* |

| **HADDERSTONES** | 34 | 2 | 1 |
| **HAMMERSTONES** | 30 | 186 | 206 |
| **BANNERSTONES** | 1 | 14 | 10 |

| **TOTAL SPEARHEADS** | 1618 | 2293 | 2605 |
| **CONTACT** | Yes | No | No |

*Including Choppers
Preliminary reports received from the field indicate that archaeological surveys in the Missouri Valley have uncovered more than 150 sites. Inasmuch as the surveys have far covered only a portion of the areas on which dams may be built, it is apparent that a far greater number of promising sites will be turned up when the survey is completed next year.

Dr. Harry Tschopik, Jr., who has been making ethnological studies in the Andean area, reports two non-ceramic sites near Huancayo, in south central Peru. The sites have yielded a variety of rather crude points and some scrapers. All are stemless and lack barbs. They are flake implements shaped by percussion and pressure. Although animal bones were found in the refuse, the number of bone implements recovered was insignificant. This is the first time that sites of this kind have been found in the Andean area, although Bird has found non-ceramic sites, apparently of respectable antiquity, in Chile.

During the past summer, Bird, who was working in conjunction with the Viru Valley Project, in Peru, uncovered remains of another non-ceramic culture at the Huaca Prieta, El Brujo, Chicamaa. Surprisingly, this culture, although non-ceramic, appears to have been agricultural in nature. Although the refuse contained animal bones and remains of seafood, this was not sufficient to have supported the population. Furthermore, direct evidence of agriculture was discovered in the form of gourds, squash, lucuma, and cotton. Stone tools were flaked by percussion. Bark cloth, and twined textiles were also found.

The Second Conference on Iroquois Research was held at Red House, New York, October 4-6, 1946. On the morning of the 5th there were discussions of ethnological subjects, and in the afternoon, discussion of archaeological problems. It is the aim of the group which meets at Red House to systematize and correlate studies of Iroquois prehistory and ethnology to the end that Iroquois origins and development may be known. Surprisingly, although the modern Iroquois are known, and some tribes are known very well, there is little real information about the prehistory of the peoples who make up this great linguistic group.

The annual meeting of the Eastern States Archaeological Federation is scheduled for the 9th and 10th of November, in Rochester, New York. The program is not yet definitely drawn up, but tentative plans call for an open meeting with general papers on archaeological subjects on Saturday, the 9th, and the annual Dinner in the evening. The name of the speaker at the dinner has not yet been announced. On Sunday there will be discussions of two topics: banner-stones and boatstones and their use will be considered during one half of the day, while pottery will be the subject for discussion during the other half day. It promises to be a worthwhile and interesting meeting, well worth the trip to Rochester. The new building and exhibitions of the Rochester Museum of Arts and Sciences will be open to visitors. In this are exhibited the type collections from Dr. Ritchie's excavations, as well as an outstanding collection of Seneca material. For those with interests beyond archaeology and ethnology there are fine collections of other materials as well.

SOME NEW PUBLICATIONS.

Hiwassee Island, An Archaeological Account of Four Tennessee Indian Peoples. Thomas W. N. Lewis and Madeline Kneberg. The University of Tennessee Press, Knoxville. This is a discussion of the excavations and the results obtained by parties working under WPA and its predecessors, and the TVA. It is a first-rate report on the work at this large and important site.


BOOKS SOON TO BE PUBLISHED.

Man in Northeastern North America. Frederick Johnson, editor. A symposium dealing with various aspects of the prehistoric Northeast. This is now in proof and should be released about the first of the year. It will form Volume III of the Papers of the Robert S. Peabody Foundation, Phillips Academy, Andover, Massachusetts.

The Prehistory of Northern North America as Seen from the Yukon. Frederica De Laguna. Society for American Archaeology, Memoir No. 3. The exhaustive treatment applied by the author to the matter in hand ties in such widely separated areas as prehistoric Japan and Labrador, tracing various items in the culture of the people of the Yukon to their ultimate limits in either direction. The book which runs to more than 300 pages will appear with the January number of American Antiquity. Members of the Society for American Archaeology will receive it as part of their regular subscription without further charge.
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<td>DAVENPORT, MARY</td>
<td>278 Central St., Central Falls, R.I.</td>
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<td>DODGE, KARL SISSON</td>
<td>15 Hanson St., No. Providence, R. I.</td>
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<td>HASTINGS, GLOVER S.</td>
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<td>LAVALLÉE, MAURICE L.</td>
<td>154 Railroad St., Manville, R. I.</td>
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<td>MACKOWN, ERNEST S.</td>
<td>1112 Colfax Ave. S., Minneapolis, Minn.</td>
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<td>STONE, CLAUDE U.</td>
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<td>STRAIGHT, DAVID H.</td>
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<td>BAGG, MRS. AARON C.</td>
<td>72 Fairfield Ave., Holyoke, Mass.</td>
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<td>BOLTZ, FRED S.</td>
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<td>BREWER, MRS. JESSE</td>
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<td>EKELAW, MRS. W. ELMER</td>
<td>11 Wheeler Road, North Grafton, Mass.</td>
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<td>EVANS, MRS. ADA L.</td>
<td>10th Field St., Taunton, Mass.</td>
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<td>FOWLER, MRS. WILLIAM S.</td>
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<td>HALLETT, MRS. LEAMAN F.</td>
<td>31 West St., Mansfield, Mass.</td>
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<td>HARLOW, MRS. HIRAM</td>
<td>232 Gulf St., Shrewsbury, Mass.</td>
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<td>HEWITT, MRS. F. C.</td>
<td>90 Lexington Ave., Holyoke, Mass.</td>
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<td>HOUSEHOLDER, LAURA</td>
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<td>Whiting, Mrs. Willard C.</td>
<td>210 Union St., So. Weymouth, Mass.</td>
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**Junior Members**

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<td>Brooks, G. Gifford</td>
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