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

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

INTRODUCTION

The excavation of the Titicut Site, in Bridgewater, Massachusetts, on the upper reaches of the Taunton River, was started in the spring of 1946 by the Warren King Moorehead Chapter of the Massachusetts Archaeological Society under the direction of Maurice Robbins. At the close of that season a considerable area had been excavated and a surprisingly large number of artifacts had been recovered. The results of this work indicated that many complicated problems existed and that the cooperation of specialists in several fields, particularly in geology, was indicated. Accordingly, arrangements were made with the Robert S. Peabody Foundation to collaborate in the work. The original intention was that they should undertake the final study of the data and artifacts and publish a comprehensive report.

Acting under this agreement the Foundation undertook, in the spring of 1947, the excavation of a long trench through that portion of the site available to us (Map 1). Late in the same year, the Foundation retained the services of the late Dr. Kirk Bryan to make a geological study of the site. After his untimely death this work was continued by Dr. Joseph Hartshorn. With the exception of the short period in 1947 while the work was being done by the Foundation, the writer was in charge of the excavations, from 1946 to 1949. During the field seasons of 1950 and 1951, Mr. Burleigh Moulton was the director of field work for the W. K. Moorehead Chapter and as such was in charge of the work at Titicut.

At the time of this excavation, the Titicut Site was a most important one. Evidence was accumulating indicating the probable presence of more than one culture component at the site, the earliest of which was thought to be of respectable antiquity. Later, a radiocarbon date obtained by the Foundation confirmed this observation. As the work progressed, all of the artifacts, field notes, and other data, were turned over to the Foundation to be used by them in their study. However, many difficulties, entirely unforeseen when the project was first initiated, arose to prevent it being carried to a successful conclusion. Mr. Johnson, who was acting for the Foundation, became involved in many professional duties, and it became increasingly apparent that he would be unable to complete the assignment. However, Mr. Johnson did spend considerable time in a detailed study of some of the artifacts and this study is available and has been used by the present writer.

When, in 1959, the Foundation was forced to the regrettable conclusion that it was not in a position to write or publish a final report, the artifacts which had been loaned to them were returned to the Warren King Moorehead Chapter. The Chapter redistributed the artifacts to those who had originally found them at Titicut. In the meantime, the writer had agreed to direct the work of the Cohannet Chapter at its Assawompsett Sites and was no longer a member of the W. K. Moorehead Chapter.

In 1963 the W. K. Moorehead Chapter was disbanded. At that time, it was suggested that the writer make an attempt to reassemble the Titicut material and compose some sort of a final report. To that end the field notes, maps, and other records, which had been retained by the Foundation and the Chapter, were sent to the Bronson Museum. These included some studies by Mr. Johnson and the rough drafts of a portion of the projected report. Included were notes on the geology of the site presumably the work of either Dr. Bryan or Dr. Hartshorn. These notes have been used in the preparation of this report and the author wishes to acknowledge them.

In the interval between 1946 and 1963 many of the individuals who had taken part in the Titicut excavations and to whom the artifacts had been returned could not be contacted. Some few did not choose to again loan their collections. Others, to their everlasting credit, gladly loaned their artifacts for another indefinite period so that this partial report could be written. Approximately one-third of the original inventory of artifacts was reassembled at the Bronson Museum. The task of comparing these artifacts with the original records was time consuming and not altogether satisfactory. As might be expected, field numbers had become blurred or obliterated, and it was necessary to depend upon roughly sketched outlines for identification. Some of the field cards were missing as evidenced by gaps in number sequence and there were disturbing omissions among the feature records, which could not be filled. It is one thing to write a site report while the project is still fresh in the mind and when the records are reasonably complete. It is still another to attempt it after a lapse of fifteen years and with incomplete records. This is aggravated when the writer has, in the meantime, been involved in the excavation and reporting of other sites. This report will not be as clear and meaningful as it might have been if written in 1950 instead of 1966. However, there is considerable satisfaction to the writer in being able to rescue from oblivion a small part of the great effort which was expended by members of the W. K. Moorehead Chapter in excavation of the Titicut site.
THE SITE

Relative to other New England sites, the area excavated at Titicut was extensive. However, it is evident from surface collecting, that less than one-quarter of the area which was occupied by aboriginal people, was available to us. The remaining area was under cultivation and could not be disturbed.

The western boundary of the area of occupation was at the base of the esker (Map 1), which rises to a height of approximately seven meters (22 ft.) above the eastward sloping plain which extends to the river bank. This plain, bordered by the river and Vernon Street, and extending slightly north of Beech Street, was the site of successive and probably overlapping ancient villages from Early Archaic to Historic times. The Taunton River, which at this point is the boundary between the towns of Bridgewater and Middleboro, flows a bit north of west until it meets with the northerly trending esker, where it makes a sharp bend and flows in a southerly direction. There is no indication of Indian occupation on the esker itself. The banks of the river, as it passes the site, are steep, rising some six meters (18 ft.) in less than twenty.

The occupied area on the gentle easterly slope is of very low relief. Three slight depressions were evident prior to excavation along the front of, and parallel to the axis of the esker. Eastward of the southernmost depression a tongue of land approximately one and a half meters (5 feet) in height extends eastward. The surface is broken by two rather deep ravines extending westward from the river. The southern ravine is of natural origin, and in it, flows a small brook fed by a spring at the base of the esker. The northerly ravine appears to be an artificial one having been dug some time prior to 1812 in order to build a shipway in which several small vessels are said to have been constructed.

During the more recent past, the entire area had been under cultivation. In some of the excavations, evidence of old furrows could still be noted. A peach orchard and later a strawberry bed are said to have occupied the area in which the burials were discovered. At the corner of Beech street and the entrance road to the site, an old foundation, probably the house of a previous owner, still exists (Map 1). About the shipway, nails, bits of iron, and slag, were found in the humus layer, mute evidence of this colonial industry. Aboriginal stone tools, chips, fragments of calcined bone, burned and broken stone and infrequent sherds of Indian clay vessels found in the humus throughout the occupied area were obviously redistributed by the frequent cultivation and other modern use of the land.

METHODS OF EXCAVATION

It was decided to start excavation along the property line at the eastern bound of the area open to us. Using an engineer’s level, a north-south base line was established along which stakes were driven at two meter intervals. These stakes were lettered from A to Z in a northerly direction. Additional lines were next laid out at right angles to the base line maintaining a two meter interval. Stakes at the intersection of the north-south and east-west lines identified by a number and a letter, formed a grid composed of two meter squares bounded at each corner by an identified stake. It was arbitrarily decided that each individual square would be known by the designation of the stake at its southeastern corner.

As the excavation proceeded, and it became necessary to expand the original grid, it was called Section A; the grid to its immediate south became Section B, and that to the north of Section A was called Section C (Map 1). In addition, several small exploratory areas called “Tests” were laid out from time to time. With the exception of Test 10 these were projected from the original base line and could have been absorbed into the original system. In fact several tests were incorporated into the various sections and will not be found on the map. The exception, Test 10, was laid out with a base line parallel to the south ravine and would have been designated as Section D, if the original plan had been carried out. However, as the records of features and artifacts from these Tests were credited to tests rather than to sections, I have shown both the Test numbers and Section letters on Map 1 rather than alter the original record. The trench excavated by the R. S. Peabody Foundation extends from the northern bound of Section C, across the entire width of Section A, to the southern bound of Section B. A small exploratory trench also excavated by the Foundation extends westward from Section A to Test 18.

The original grid system was not extended into the burial area as there were a number of large trees within that area which the owner did not wish us to disturb. Individual graves were located by a series of bearings and measurements made from stakes within the grid.
Map 1. CONTOUR DIAGRAM, Titicut Site.
Squares were assigned to individual members, the sod was removed, and the underlying soil was then removed by troweling. An attempt was made to work on horizontal surfaces. By far the larger portion of the record consists of cards upon which individual artifacts are described and located by both horizontal and vertical measurements within a designated square and section. These cards together with the specimen were turned over to the Director at the close of each day. This field data was then transferred by him to a standard card and an identifying number was placed on the specimen itself. This record includes a description of the artifact stating the material from which it is made, an outline or a sketch of the specimen recorded, a diagram indicating its horizontal location from two of the square stakes, a record of its depth from the surface, a description of the soil layer in which it was found, a photograph number — if applicable, the name of the finder and the date on which it was recovered. The descriptions of such features as hearths, pits, and post molds are also recorded in like manner on these cards. Some six thousand cards comprised the detailed chapter record of the excavation of the Titicut site between 1946 and 1950. During the final season it is apparent that this procedure was not strictly adhered to and some of the detailed records of that period are represented by scraps of paper or are missing entirely. In addition to the records described above, the Director — 1946 to 1950 — made a long series of observations and measurements in note books for the purpose of describing the characteristics of the site. These notes included a number of plans, cross-sections and explanatory diagrams. Also several hundred photographs were taken of various aspects of the work. Some of these supplementary records are not available to the writer.

By the close of the 1946 season approximately one-half of Sections A and B had been excavated and Section C had been carried northerly to a point of diminishing return. A study of the results to this point indicated that problems existed. There was great variety in the specimens recovered, no recognizable archaeological horizons could be recognized, the Director and the individual chapter members felt keenly their lack of field experience and feared that important data was not being recorded. Accordingly the arrangements with the Foundation referred to above were made.

In the spring of 1947 the R. S. Peabody Foundation represented by Frederick Johnson and several assistants excavated the trench shown on Map 1. This trench was two and sometimes three squares in width and eighty-six meters in length. Several narrower extensions were excavated east and west in Section B, of which the writer has no precise location.

For the purpose of establishing a level, a temporary bench mark was selected on Beech street near the entrance road. It was assumed that this bench mark was at the 40 foot contour as located on the Bridgewater quadrangle surveyed in 1936-1937 by the U.S.G.S. To show relief, a map having a contour interval of 0.5 meters was made with a plane table. The 40 foot contour corresponds with the 12 foot contour on Map 1. Using the same instrument the level of the surface at each square within the trench was determined. All vertical measurements were referred to the level of the surface as marked on the stakes. This procedure made it possible to record cross-sections and to determine the location of phenomena observed in the soil with a minimum of error.

Screening the soil from arbitrary levels proved to be impractical and so excavation was carried out with trowels. Extensive notes describing the character of the materials removed were written as the excavation progressed. Following excavation of each square, cross-sections of the north and west walls were drawn to scale. This procedure was intended to provide a body of information which could become the basis for an interpretation of the development of the soils and cultures at the site. With the exception of the contour map, reproduced as Map 1, this data is not available to the writer.

**SOIL STRATIGRAPHY**

Upon starting to excavate, differences in color and soil characteristics were recognized. At Titicut these differentiations in the soil layers were more accentuated than at other New England sites at which the writer has worked. Although at least three and sometimes four or five soil layers or horizons were noted, these could not be associated with cultural horizons. No old surfaces could be recognized which had been occupied by aboriginals and subsequently covered by later deposits. This condition posed a special problem that could only be solved by applying geological methods and some knowledge of soils and how they had been distributed. It was determined to secure as much evidence as possible during the archaeological excavations in the hope that the problem might be defined and a method of geological approach devised.

Five terms were employed by Chapter members in describing the soil layers; Humus (loam), Junction, Yellow Soil, Yellow Sand, and White Sand. Later the concept that these represented stages in the development of the soil was greatly modified. It must be kept in mind that not all of these layers were present in each individual square.
HUMUS (Horizon A). A sandy loam, dark grey to dark brown in color, many stones, pebbles cobbles, and even small boulders were present in this top layer including many ventifacts. The surface was covered with a thin turf composed of grasses, herbaceous plants, pine needles, leaves, twigs and other debris usually present in wooded areas. Roots from this layer extended into the underlying soil. This layer varied in depth from 20 to 40 centimeters. Artifacts of modern, colonial, and aboriginal origin, distributed in unpredictable fashion by cultivation and long occupation, occurred. It was assumed that the lower boundary of this layer was, in most areas, a plow line horizon artificially created by cultivation.

JUNCTION (Horizon A). This is not a natural soil layer but represents a layer of mixed color composed of stained sand and yellow sand which has been thoroughly mixed probably by cultivation. The thickness of the layer varied greatly and the lower limit was largely a matter of individual judgment, subject to error. In general it was a zone some 5 to 10 cm. in thickness.

YELLOW SOIL (Horizon A). The top of this layer appeared at depths varying from 10 to 50 centimeters below the present surface, and from five to sixty centimeters in thickness. It varied from light yellow to brown and orange in color. It was composed of medium to fine sand and often included a few pebbles a centimeter or less in diameter. In some areas concentrations of larger pebbles and even cobbles and boulders were encountered.

YELLOW SAND (Horizon B). This layer, when present, was encountered directly below the Yellow Soil. Its upper and lower boundaries were most difficult to determine with any degree of certainty. It was somewhat lighter in color than the superimposed soil and was usually free from pebbles. It was recognized and noted by the Chapter members, but a careful examination of the field cards now available has failed to indicate any artifacts found within it.

WHITE SAND (Horizon B). The records indicate that white sand appeared at depths varying from 30 to 130 centimeters from the present surface. It was composed of very fine sand varying in color from light yellow to white and grey. Small pebbles, rarely more than 2 centimeters in diameter, were occasionally present. Some lenses of coarser sand were occasionally encountered. Infrequent lenses of limonitic sand appeared at some points. At some few places where the excavations were especially deep, the white sand rested on clay. In those areas in which gravel was found, the white sand sometimes rested upon or interfingered with it. The surface of this layer was recognizable at most points but occasionally the transition from Yellow Sand was so gradual as to defy demarcation. Occasionally, dark areas or stains were noted near the top of the White Sand, but these stains could not be accounted for definitely. Possibly these are root stains from an old surface which is no longer distinguishable.

A geological note included among the records which should be credited to either Dr. Bryan or Dr. Hartshorn reads as follows, "From the geological point of view the Humus, Yellow Soil, Yellow Sand and Gravel (the last of which is actually stony Yellow Soil) are all included in the soil designated as Congeliturbate. This is a complicated deposit which has not been derived in place. These complications are characteristic of such a deposit. Congeliturbate, also called warp or loessal material, is a soil of various shades of chestnut to yellow brown and even olive grey, due largely to various stages of oxidation. The organic portion of the layer is humus. The congeliturbate is generally loose and pulverant with much fine sand mixed with coarse sand, pebbles, cobbles and boulders. It may include unworked aeolian material. The sorting is poor. The numerous ventifacts are pebbles, cobbles and boulders. The results of wind action is particularly noticeable on the granites, porphoritic and volcanic stones. Where stones are lacking, the congeliturbate grades down into oxidized sands of various grades. The White Sand and the underlying deposits belong in the basal sediments. These consist of a large range of lacustrine sands and clays, and fluvial sands and gravel. In some cases it is possible that some of the Yellow sand should be included in the Basal sediments."

DISTRIBUTION OF PEBBLES, COBBLES, AND BOULDERS

As noted above, the Yellow Soil included in certain areas a great many stones from 2 to 20 centimeters in diameter. Concentrations of larger sizes were occasionally encountered; these seem to have some relation to the topography of the site. For example, one concentration was found on the tongue of land which extends from the esker to the approximate center of the area excavated. Another tongue extending easterly from the esker was observed to contain more pebbles than the Yellow Soil in other areas.

RELATION OF ARTIFACTS TO SOIL LAYERS, OR HORIZONS

Prior to any excavation at the Titicut site it had become evident, through surface collections made by a number of individuals from the area, that a fairly
heavy accumulation of aboriginal tools was present. The great variety in the tool inventory and the many types observed in the collections was thought to be significant. It was assumed that several stages of cultural development might be identified. It was hoped that it might be possible to relate groups of artifacts to archaeological horizons so that a hypothesis might be developed concerning the content of the several stages and a sequence be indicated. The subsequent recovery by excavation of several thousand artifacts and associated features together with the more detailed data observed has allowed a partial fulfillment of this hope. However, no direct evidence of the presence of former living surfaces, except for fires, could be used to support within and immediately about hearths and pits, them.

ABORIGINAL HORIZONS

As stated above, it was not possible to locate precisely the vertical position of any of the several aboriginal living surfaces, which the great variety of artifacts suggested were once present. However, an article by William S. Fowler (Bulletin of the Massachusetts Archaeological Society, Vol. 23., #1. Oct. 1961, pp 5 to 13.) entitled Projectile Points and Their Cultural Significance, offered a possible way of determining their approximate location. This article

CHARCOAL

Also scattered throughout the excavated area and at all depths, were small fragments of charcoal. Except within and immediately about hearths and pits, these might better be described as “flecks” of charcoal. This could also be the result of forest fires. However, the demonstrable presence of aboriginal hearths indicate that most of the charcoal was derived from them.

CALCINED BONE

Due probably to soil chemistry, bone, particularly that which has not been altered by thermal action, is very scarce on sites in this area. One can recognize, quite readily, bone which has been burned, but it is quite another thing to determine the species from which it is derived. It seems most probable that the larger part of the recovered fragments are remnants of mammals used for food. Their present small size might be attributed to scavenger animals or natural disintegration. This phenomena is common at all aboriginal sites in the area and is usually accepted as evidence of ancient occupation. In one instance, however, a concentration of calcined bone fragments contained bits which were later identified as parts of a human skeleton. In all probability this represents the content of a secondary burial of one or more cremated individuals. Due to our inexperience the burial was not recognized at the time of excavation. Since that time the writer has excavated a number of these secondary burials at other sites.

With the exception of several bone artifacts found within the burials, no bone artifacts from the Indian occupations were found at the site. As it seems most probable that artifacts of this material must have been a part of the aboriginal inventory it must be assumed that they are the victims of soil chemistry.

CHIPS AND FLAKES OF STONE

This portion of the debris encountered may be assumed to be direct evidence of aboriginal occupation. The chips, by their shape and size constitute evidence of the techniques by which the stone artifacts recovered were made. They can be easily distinguished from naturally broken fragments. Thousands of chips of white quartz, quartzite, felsite and other local materials were scattered about in aimless fashion. They were especially numerous in the lower humus and the upper Yellow Soil; however the frequency diminished with depth. The concentration of chips seems to be about the same as that of completed artifacts.
Fig. 1. TITICUT PROJECTILE POINTS AND THEIR RESPECTIVE ZONES. (a) Ceramic (Woodland): 1-6, Small Triangular #5; 7, Large Triangular; 8, 9, Corner-notched; 10, 11, Side-notched #6; 12, Adena; 13, Leaf . . . (b) Late Archaic: 14, Corner-removed #1; 15, Eared #2; 16, Eared #1; 17, Eared #3; 18, Eared #4; 19-21, Tapered-Stem; 22, Truncated; 23, 24, Corner-removed #7; 25, 26, Small Triangular #1; 27, 28, Small Triangular #3; 29-32, Small Triangular #4 . . . (c) Early Archaic: 33-35, Bifurcated; 36-38, Corner-removed #5; 39, Long Eared; 40, 41, Corner-removed #8; 42, Corner-removed #2.
was based upon the stratigraphy at a number of sites in the immediate area. Accordingly the available projectile points, not including those taken from pits or hearths, were sorted into the three suggested cultural congeries. Group A (Fig. 1, a), representing the Ceramic (Woodland) occupation, consisted of Large Triangular, Small Triangular #5, Corner-Notched, Leaf, and Side-Notched #6, 7 (See Classification — Bulletin of the M.A.S. #25, No. 1, Oct. 1965). Group B (Fig. 1, b), representing the Late Archaic component consisted of Small Triangular #1, 3, 4, Truncated, Tapered Stem, Eared, Corner-removed #1, 7, and Side-Notched #1, 4. Group C (Fig. 1, c), included Bifurcate, Corner-removed #2, 5, 8, 9, and Long Eared and is assumed to be of Early Archaic provenience. The balance of the point types represented in the collection are assumed to be non-diagnostic and are not included in the above sorting (Fig. 2).

It is theorized that, if this is a valid grouping, the curves resulting from plotting the depths at which the various artifacts were recorded would indicate the approximate position of the archaeological horizons from which they were derived. Further it was assumed that the indicated horizons would appear in order of postulated sequence. The curves obtained are shown in Fig. 3. The upper or Ceramic Group A attained its maximum peak at a depth of twenty centimeters below the present surface. This coincided with the evidence presented by the several features attributed to this horizon at a point just above the so-called "Junction". A second horizon is indicated at a point approximately 25 centimeters below the present surface. This is just within the Yellow Soil layer and in approximate agreement with the second Group B features. The artifacts included in Group C gave us still a third horizon at approximately 30 centimeters below the present surface. The slight difference in depth between the three horizons (5 cm. or 2 inches +) suggests that the included artifacts could and did become thoroughly intermixed in aboriginal times and illustrates the great difficulty experienced in determining archaeological horizons during excavation. It further demonstrates the possibility of intermixing through the digging of pits and hearths by subsequent occupants of the site.

A fourth horizon is suggested by the presence of a number of features the tops of which did not appear until the white sand surface was reached at an average depth of 68 centimeters below the present surface. Some 40 centimeters below the deepest horizon obtained by projectile point curves. This possibility will be referred to later in this paper.

FEATURES

The features recorded comprise Hearths, Pits, Post Molds, Ceremonial deposits in Red Paint, and the floor of a Lodge. The horizontal location of features is shown on Maps 2 through 8. Those which were contained within the "Yellow Soil Layer" and assumed to be associated with one of three archaeological horizons, as indicated in Fig. 3, appear on the Maps of Horizon A, while those within the White Sand Layer are shown on the Maps of Horizon B.
It seems logical to assume that those features which appeared at or very close to the "Junction" were associated with the Ceramic and Historic periods, while those which appear to have originated deeper in the "Yellow Soil Layer" may be of earlier provenience. As previously mentioned, a third group of features within the "White Sand Layer" may have been associated with a fourth horizon. However, as there was no typological evidence of a Paleo-Indian component at the site, this deepest horizon cannot be attributed to it.

**HEARTHS AND PITS — Fig. 4**

A total of 241 Hearths and Pits were recorded. There is little difference between the contents of such features and it is difficult to be specific as to the precise function of each. For the purpose of this report the differentiations are made upon the basis of general appearance, and on the presence or absence of any evidence of heat in the surrounding soil. A few of the more obvious hearths are those in which a basin of carefully laid stones were present. In the case of small basin-like depressions, especially those rather deep in the Yellow Soil, there is a possibility of error in definition. Some of these may be simply the base of a pit the upper portion of which was no longer visible. Again, some of the features which have been called pits, may have been intended for cooking rather than for the storage of food or for the disposal of refuse. In a single instance, a pit which contained a bushel or more of carbonized nuts, made it possible to determine the purpose for which it was intended.
It has been suggested that the inclusion of certain typical artifacts within a given feature might furnish a clue as to its provenience. However, at this site where archaeological horizons cannot be seen, the possibility of intermixing artifacts in aboriginal times is so great that any such assumption is tenuous. It can be assumed with some confidence that in the few instances in which clay pottery sherds appeared within a pit or those in which artifacts of colonial origin were found, that the feature is of late provenience. The following table lists the features in which artifacts were found.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Artifacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>#8</td>
<td>1 clay potsherd (too small for typing), 2 sandstone Oval scrapers, 1 Small Triangle #3 of white quartz</td>
</tr>
<tr>
<td>#5</td>
<td>1 sandstone Oval scraper</td>
</tr>
<tr>
<td>#7</td>
<td>2 Small Stem points of white quartz, 1 Small Triangle #4 of white quartz</td>
</tr>
<tr>
<td>#8</td>
<td>1 small powder horn, 1 grooved weight, 2 Small Triangle #4 of white quartz, 1 Small Stem of white quartz, and several carbonized kernels of corn</td>
</tr>
<tr>
<td>#10</td>
<td>3 Small Stem points of white quartz, 1 Stem scraper of white quartz</td>
</tr>
<tr>
<td>#4</td>
<td>1 small Celt, 1 Stem scraper of white quartz</td>
</tr>
</tbody>
</table>

Table 1. Artifacts

Map 2. OUTLINE DIAGRAM, HEARTHS, PITS, AND POST MOLDS, Titicut. Horizon A — Section A.
#16 #2 1 small Celt, 1 Grooved axe
#19 #8 10 Scrapers (6 of white quartz and 4 of felsite), 5 Oval type, 1 argillite drill, 2 Small Stem points (1 White Quartz, 1 Flint), 4 Stem Knives (2 of white quartz, 2 of felsite), 1 Grooved axe, 1 small gouge, 1 large Celt, 1 very crude tool of felsite
#25 #2 1 Large Triangular point of felsite, 1 Small Stem point of white quartz, 1 pebble Hammerstone
#26 #2 1 Corner-removed #9 point of felsite
#2 #32 6 quahog shells, 1 oyster shell, 1 Stem knife of white quartz, 1 sandstone Oval scraper, 1 Small Stem point of white quartz, 1 Small Triangle #5 of felsite
#2 #34 1 Small Triangle #3 of white quartz, 1 Small Stem point of white quartz, 1 Corner-removed #9 point of flint
#35 #2 1 clay potsherd, 1 Oval scraper of white quartz
#45 #6 1 Corner-removed #9 point of shale, 1 Small Triangle #5 of felsite, 1 Eared #4 point of felsite
#49 #4 1 Eared #1 point of felsite, 1 Small Triangle #5 of felsite, 1 Small Triangle #4 of white quartz
#4 #46 1 Small Scraper of white quartz, 1 Bifurcated point of felsite
#50 #6 1 Stem Scraper of white quartz
#54 #6 2 Small Stem points of white quartz
#69 #6 1 Leaf point of white quartz, 1 Small Triangle #4 of white quartz
#96 #4 1 Stem Knife of felsite, 1 Corner-removed #3 of felsite, 1 Corner-removed #3 of felsite
#123 #8 1 Small Triangle #5 of felsite
#124 #8 1 Small Triangle #4 of white quartz, 1 Shook of iron
#157 #8 1 Grooved axe
#152 #6 1 Oval scraper of sandstone
#175 #6 1 blade of iron knife
#187 #6 2 Eared #1 points of felsite, 1 Corner-removed #3 point of shale, 1 Corner-removed #4 point of felsite, 1 Stem scraper of white quartz
#189 #6 1 Stem scraper of white quartz, 3 Hammerstones
#190 #6 1 large Grooved Weight
#198 #6 1 Hammerstone, 2 Stem scrapers of white quartz
#202 #6 1 Oval scraper of sandstone
#214 #7 1 Small Stem point of white quartz
#245 #7 1 Small Stem point of white quartz


Fig. 4. HEARTHS AND PITS.
In general, the hearths which appeared at or near the base of the loam had been greatly disturbed by cultivation. Usually, they were surrounded by numbers of burned and broken stones, scattered in the direction of plowing. Some of these stones may have been a part of a stoned-up hearth but the majority were probably cooking stones fractured by heating. These features ranged from 20 to 86 centimeters in diameter. The larger hearths tended to be oval in shape. Pits were generally round, ranging from 25 to 130 centimeters in diameter and from 20 to 100 centimeters in depth — average 20 to 40 cm. Hearths contained within the Yellow Soil had fewer stones about them; in a number of instances no stones at all were found in association with them. Quite consistently they were surrounded by soil burned red by concentrated heat. When stones appeared it differed from those about the hearths on the higher level in that they were largely whole. Although these showed some evidence of heating, they had not been fragmented by it. Hearths at levels below the junction tended to be slightly larger, ranging from 55 by 40 centimeters to 90 by 100 centimeters. The majority appeared between 28 and 54 centimeters below the present surface — 12 to 33 cm. below junction. Few had been disturbed. Pits at this level were not sur-
rounded by burned soil. They varied from 30 to 80 centimeters in diameter and from 28 to 60 centimeters in depth. The tops of a majority appeared from 28 to 60 centimeters below the present surface — 12 to 41 centimeters below junction.

**WHITE SAND HEARTHS — Fig. 5**

Three types of hearths were noted within the White Sand layer. Three of the first type were carefully constructed of stones (some cobbles and some...
Map 4. OUTLINE DIAGRAM, HEARTHs, PITs, AND POST MOLDS, Titicut. Horizon A — Sections C, B.
Fig. 6. RED PAINT DEPOSITS, Titicut. FE 113: 1, 2, Small Stem, 3, 4, Small Triangular, 5, Side-notched #5, 6, Eared #2 Points; 7, Stemless Knife; 9, Plain Drill . . . FE 179: 8 Pictograph Cover; 13, Clumsy Plummet . . . . FE 116: 10, Whaletail Pendant; 12, Graphite, 14, Clumsy Plummet . . . . 11, Red Paint Mortar; 15, 16, Oval Scraper.
fire-cracked stones). The floors of the first two hearths of this type were made of flat-faced stones set quite closely and surrounded by a wall of stones from 15 to 20 centimeters in height supported by the encircling sand. An opening at one side in the ring appeared in all three, apparently intended to allow feeding small sticks to the fire. This suggests something over the hearths, perhaps a large flat stone. The average overall size of these hearths was 76 by 60 centimeters, with a depth of 25 centimeters. One of these hearths, encountered directly beneath the Lodge Floor (H. #12) (Map 3) was 55 centimeters from the bottom of the floor. The other five White Sand stone hearths of the second type had been considerably disturbed. The stones which had formed the walls were scattered and the charcoal spread about the surface of the white sand. It was not possible to determine the precise location of the opening. The third type was a simple basin shaped depression in the white sand averaging 50 by 100 centimeters and 30 centimeters in depth. Some contained charcoal mixed with discolored sand. The pits at this level were also simple depressions in the sand, mostly round, but a few oval in shape. The round variety averaged 50 centimeters in diameter, while the oval type averaged 25 by 78 centimeters. Depth varied from 25 to as great as 80 centimeters. Most of the pebble tools to be described in a separate paper, were found in the vicinity of these White Sand hearth features, especially in Section D (Test #10.) (Map 8). Examples of these hearth features are illustrated (Fig. 5).

RED PAINT DEPOSITS

There are five instances of artifacts intentionally deposited in red paint as shown on Maps 6 and 8. In addition there is mention of small quantities of red paint noted in the vicinity of other pits and hearths. In no instance was any quantity of calcined bone noted in close association with the paint. Red paint also occurred in several of the burials. Feature #179 (Map 6) was the most unusual feature found at the site. It first appeared as a stoned-up hearth. The upper members appeared in the yellow soil at a depth of 5 centimeters below the humus. The loam layer was 27 centimeters in thickness above the feature. The hearth consisted of a circular ring of rather large oval pebbles. Although cracked by heat most of the pebbles were intact. The ring was complete with no opening as at lower levels of the site; it was nearly round, 90 by 96 cm. in diameter. The contents consisted of dark stained soil, charcoal in small lumps, a few broken stones and a small amount of calcined bone fragments. The floor of the hearth was formed by a single, large, flat stone, 24 by 28 cm., at a depth of 20 centimeters below the top of the wall. Upon removing the lower stone, a second horizontal stone, slightly smaller in size, appeared. The sand about this second stone was slightly discolored by the charcoal from the hearth. Beneath the second stone the tops of three, elongated, flat stones appeared. These, placed edgewise in the ground, formed a sort of box with one open end. A slight trace of red paint at the open end indicated the presence of a ceremonial deposit within. Upon removal, it was noted that the underside of the cover stone had been inscribed with several figures and was covered by a thin smear of graphite. Prominent among the figures was a snake or fish. (Fig. 6, #8). Within the box-like structure were a Full Grooved axe, (not illustrated), a Clumsy plummet (Fig. 6, #13), and a scraper-like tool of white quartz, (not illustrated). These artifacts rested on clean white sand. It was apparent that they had been placed in position and the red paint, or powdered ochre, poured over them.

A second deposit containing red paint occurred in Section D, Map 8, Test 10, Feature #116, near the base of the esker (Fig. 7). At this point a 20 centimeter thick layer of gravel lay directly beneath the humus. The gravel rested upon a second humus layer beneath which was the usual Yellow Soil. This in turn was underlain by a second gravel layer, which varied in thickness from 25 to 42 centimeters. Beneath the second layer of gravel the White Sand appeared. An oval shaped pit, 51 by 74 centimeters, had been dug in aboriginal times. Its top appeared within the second gravel layer approximately 12 to 18 centimeters above the top of the White Sand. The content of the pit was mostly a dense, black, finely powdered charcoal. Against this black background three separate deposits of bright red ochre stood out distinctly. Several water-worn cobbles were also present as shown in the illustration. At one end of the pit a plummet — probably the Clumsy type — had been placed in a small amount of red ochre, and near the opposite end of the pit another deposit of red ochre contained a polished bipenate form identified as a Whaletail pendant, also, a fragment of graphite (Fig. 6, #14, 10, 12). The third deposit of red ochre contained no artifacts. A small Tapered stem point of white quartz lay near the upper edge of the pit in charcoal. There was no trace of calcined bone in or about the pit.

Three additional deposits containing red ochre are shown on Map 8, (Features #112, 113, 131). The projectile points, drill and Stemless knife from these three deposits are among those available to the writer (Fig. 6, #1-7, 9), but, unfortunately, the details of the deposits are now missing from the record and no detailed description is possible. To this list of red paint deposits must also be added two small stones with
Map 6. OUTLINE DIAGRAM, RED PAINT DEP., HEARTHS, PITS, AND POST MOLDS, Titicut. Horizon A - Test 10 - Section E.
depressions in their upper surfaces, and stained a deep red by long immersion in red ochre, one is illustrated (Fig. 6, #11). They were found on the surface of the White Sand layer in Section A. In one instance, two small oval scrapers of sandstone, also stained red, were associated with one of the larger stones (Fig. 6, #15, 16). It is assumed that these artifacts had been used in the reduction to powder of iron bearing stones by scraping.

**POST MOLDS**

Molds of former posts appeared in 416 recorded instances within the excavated area. The molds, which are pointed in all instances, contained dark or black stained soil and were prominent against the background of the Yellow Soil layer in which they appeared. The majority of these molds — 391 to be exact — seemed to start at the junction of Loam and yellow soil. However, it is probable that their tops may have been at a slightly higher point, perhaps a few centimeters in the humus. They would not have been discernible in this dark layer. The remaining 25 molds were found at depths from 6 to 16 centimeters below the humus. All except 22 molds were vertical in the ground. Exceptions were at angles of approximately 30 degrees from vertical. The average diameter of the post molds was 8 centimeters and the average length was 25 centimeters. Four unusually large posts were represented by molds from 50 to 70 centimeters in length and approximately 12 centimeters in diameter. Except for those molds which outlined the lodge (Map 2), the molds appeared at random throughout the excavated area and formed no recognizable pattern. Some seemed to be associated with hearths but this is, of course, pure assumption as there is no way of knowing that the hearths and molds are contemporary.

**LODGE FLOOR — Map 2**

A total of 68 molds (26 of which occur within the structure) are assumed to outline the location of a rectangular shaped lodge floor. The area bounded by post molds (42 in number) consisted of a dense black lense of hardened soil averaging 34 centimeters in thickness. This dark soil was composed of discolored sand and granular charcoal. It contained cemented lumps of black material, burned and broken stone, some few fragments of shell, a small amount of calcined bone, and a considerable amount of lithic refuse from the manufacture of artifacts. The outline was approximately 40 by 32 feet in size. A row of post molds within the structure parallel to its shorter sides, together with a marked change in the color of the floor, suggested the presence of bed platforms. This was strengthened by the presence of hundreds of very sharp flakes in the floor within the area as if they had been swept under the platforms to clear the walking surface of the floor.
Hearth #11 and Pit #12, which appear within the structure are not thought to be contemporary with it as they seem to be too close to the outer wall and under the supposed bed platform. This would also apply to Hearth #35 which is bisected by the outer wall of the lodge near its southeastern corner. Two hearths (Map 3) were found at a considerable depth beneath the lodge floor on the surface of the White Sand.

The base of the floor rested upon Yellow Soil, but at a point five centimeters beneath the yellow soil a layer of darker soil, five centimeters in thickness, was noted in an area under the center of the floor. A Corner-removed #3 point of felsite was in this dark layer. Whether or not this layer represents an old sod layer is debatable. It also might be simply a portion of the older floor, which had been covered by a fresh layer of soil at sometime during the occupancy of the dwelling. However, the depth of the layer seemed to discount this assumption.

Within the hardened area of the floor the following artifacts were recovered.

### Table 2

<table>
<thead>
<tr>
<th>Artifact</th>
<th>Number</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gun flint</td>
<td></td>
<td>Flint (European)</td>
</tr>
<tr>
<td>Clay potsherds, Stage 4</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Projectile Points</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large Triangular</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small Triangular #1</td>
<td>1</td>
<td>White Quartz</td>
</tr>
<tr>
<td>Small Triangular #3</td>
<td>1</td>
<td>Felsite</td>
</tr>
<tr>
<td>Small Triangular #5</td>
<td>2</td>
<td>White Quartz</td>
</tr>
<tr>
<td>Small Stem</td>
<td>6</td>
<td>White Quartz</td>
</tr>
<tr>
<td>Eared #4</td>
<td>2</td>
<td>Felsite</td>
</tr>
<tr>
<td>Corner-removed #3</td>
<td>2</td>
<td>Felsite</td>
</tr>
<tr>
<td>Side-notched #3</td>
<td>1</td>
<td>Felsite</td>
</tr>
<tr>
<td>Side-notched #5</td>
<td>1</td>
<td>Felsite</td>
</tr>
<tr>
<td>Side-notched #6</td>
<td>1</td>
<td>White Quartz</td>
</tr>
<tr>
<td>Leaf</td>
<td>1</td>
<td>White Quartz</td>
</tr>
<tr>
<td>Unidentified type</td>
<td>12</td>
<td>Felsite</td>
</tr>
<tr>
<td>Stem scrapers</td>
<td>3</td>
<td>White Quartz</td>
</tr>
<tr>
<td>Oval scraper</td>
<td>3</td>
<td>Sandstone</td>
</tr>
<tr>
<td>Triangular hoes</td>
<td>5</td>
<td>Sandstone</td>
</tr>
<tr>
<td>Hammerstone</td>
<td>1</td>
<td>Granite</td>
</tr>
</tbody>
</table>

**ARTIFACTS**

The records of the Titicut site indicate that something more than six thousand artifacts of aboriginal origin were recovered by excavation. Of these, some three thousand projectile points were classified on the original record. The following description is based partially on that classification made at the time of recovery and justified by a re-examination of slightly more than 1,200 projectile points loaned to the writer for use in writing this paper. In Table 3 for example, the vertical distribution is based on records made in the field, while in Table 10 (Petrology), only actual specimens available at the present date were used. The vertical distributions of all types of artifacts are shown in Tables 3 through 9.

**LARGE TRIANGULAR.** The Large Triangular projectile points demonstrate much better workmanship than the smaller varieties. In the former, the base is usually concave and the lateral edges are finely retouched and smooth. The artifacts are relatively thin and lenticular in cross-section. In most instances, an attempt has been made to thin the base for hafting by the removal of flakes at a right angle.

**SMALL TRIANGULAR.** The Small Triangular #3 and #4 are those having concave bases and, usually excursive sides. In retouching the base of these artifacts the flakes removed are slightly longer than those removed from the sides, with the result of thinning the central portion of the artifact. Frequently, the basal corners have not been retouched at all and are thicker and blunter than the concave portion of the base. This is also seen in the Small Triangular #1 although to a lesser degree. In the case of the #1 point the sides tend to be parallel for a short distance above the base before curving inward to a point. Small Triangular #6 points resemble somewhat the #1 point. In some instances have a concave base, but are generally longer than the #1. One variety of Small Triangular #6 has a straight base. The true Small Triangular #5 is an equisided point with a tendency toward a straight base. Although there is
SMALL STEM. Small Stem points, which are not considered to be diagnostic of any particular cultural period appeared in some quantity at the site. There are several varieties of this type any of which, if slightly larger, would be classified as Corner-removed, Side-notched, or Tapered-stem points. In general this type is fairly thick in cross-section; there is a slight outline to a Small Triangle #5 they all have a concave base. Close examination reveals that one corner of the base is thick and blunt, another corner has been retouched to create a long, thin, very sharp point. The third corner is sharp but similar to that of any projectile point. Often this type of artifact is found, in which one corner, presumably the blunted and thickened corner, is missing and a sharp break creating a a square edge indicates that the corner was broken off under considerable strain. It is possible that these are a sort of specialized knife or graver, the blunt, thick corner being a tang for mounting the artifact in some sort of handle. This same type of artifact has been noted by others from other New England sites and has been called to the attention of the writer.

### Table 4

<table>
<thead>
<tr>
<th>KNIVES</th>
<th>DRILLS</th>
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<td>DEPTH</td>
<td>STEMLESS</td>
</tr>
<tr>
<td>-------</td>
<td>-----------</td>
</tr>
<tr>
<td>0 - 5cm.</td>
<td>7</td>
</tr>
<tr>
<td>6 -10cm.</td>
<td>10</td>
</tr>
<tr>
<td>11 -15cm.</td>
<td>5</td>
</tr>
<tr>
<td>16 -20cm.</td>
<td>3</td>
</tr>
<tr>
<td>21 -25cm.</td>
<td>8</td>
</tr>
<tr>
<td>26 -30cm.</td>
<td>8</td>
</tr>
<tr>
<td>31 -35cm.</td>
<td>3</td>
</tr>
<tr>
<td>36 -40cm.</td>
<td>1</td>
</tr>
<tr>
<td>41-45cm.</td>
<td>2</td>
</tr>
<tr>
<td>46 -50cm.</td>
<td>1</td>
</tr>
<tr>
<td>51 -55cm.</td>
<td>1</td>
</tr>
<tr>
<td>56 -60cm.</td>
<td>1</td>
</tr>
<tr>
<td>66 -70cm.</td>
<td>1</td>
</tr>
<tr>
<td>71 -75cm.</td>
<td>2</td>
</tr>
<tr>
<td>76 -80cm.</td>
<td>1</td>
</tr>
<tr>
<td>81 -85cm.</td>
<td>1</td>
</tr>
<tr>
<td>86 -90cm.</td>
<td>1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>50</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>KNIVES</th>
<th>STEMLESS</th>
<th>STEM</th>
<th>LEAF</th>
<th>TRIANGULAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEPTH</td>
<td>LONG.</td>
<td>WIDE.</td>
<td>x</td>
<td>3-6 cm.</td>
</tr>
<tr>
<td>0 -5cm.</td>
<td>4.5-15cm.</td>
<td>4-10cm.</td>
<td>3-6 cm.</td>
<td>8cm.</td>
</tr>
<tr>
<td>(1 comb. back, 6 plain)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A number of small triangular shaped chipped artifacts appear in the collection which, to the writer, appear to have been intended for some function other than a projectile point. (Fig. 8). Although similar in some attempt at thinning the base of the latter it is not quite so evident as in those with more of a concave base.

A number of small triangular shaped chipped artifacts appear in the collection which, to the writer, appear to have been intended for some function other than a projectile point. (Fig. 8). Although similar in
is little attempt to thin the base or stem, and many are crude in appearance. These points are known to appear in the Late Archaic and to continue throughout the later periods. Possibly, their appearance may coincide with the general introduction of the bow and arrow.

**BIFURCATED.** This is a minority type at the Titicut site. Nine specimens are available for study. Their provenience is certainly Early Archaic. They are a broad bladed artifact in nearly all cases. The removal of basal corners together with a well defined basal notch, produces a pair of rounded stems, possibly for mounting in some specialized manner. The artifact is usually well made and the cutting edges are retouched with considerable care. Quite consistently they are made from some material other than white quartz.

**LONG EARED.** Relatively few of this type of artifact appeared at Titicut. It is thought to belong in the Early Archaic congergy. Most specimens are carefully worked; the base is slightly concave and well-defined corner-notching produces elongated basal corners or ears.

**TRUNCATED.** The basal sides of this point are more or less parallel producing a square or slightly concave base. It is often one of the less carefully made artifacts and can be fairly heavy and thick.

**DIAMOND.** This is another fairly heavy point, its shape being the product of sides which slope together at each end from a point midway of the blade. Sometimes, one end is slightly blunt and is assumed to be the base of the point.

**LEAF.** As implied by its name this point has convex sides which converge without shoulders. It is usually thin in cross-section and much more delicately made than a Diamond point.

**TAPERED-STEM.** These points differ from the Diamond in that the basal end of the artifact is more or less straight, the sides of which are less than one-half the distance from base to point.

**EARED.** These are usually broad-based artifacts with well-defined basal corners or projecting ears made by rather deep side-notching. Often the base is slightly concave having been intentionally thinned by the removal of flakes at right angles to the base. They are considered to be diagnostic of the Late Archaic.

**CORNER-REMOVED. Type #1.** This is a long rather broad bladed point with a broad stem with slightly tapering sides produced by the slight removal of basal corners. In most instances, all edges have been thinned with careful retouching.

**Type #2.** The specimens of this type from Titicut are broad bladed and rather roughly made artifacts. The stem with parallel sides is but slightly differentiated from the blade by the slight removal of basal corners. Often the base is thinned by the removal of long flakes at a right angle to the base.

**Type #3.** This point has a rather narrow blade with a long stem produced by the removal of basal corners. In many instances the base of the blade is as wide, if not wider, than the widest portion of the blade and shows little attempt at thinning. In fact if the construction above the base were not a mere curvilinear indentation it might be called side notching.

**Type #5.** This point has its basal corners deeply indented to produce a relatively narrow stem, and the base is commonly thinned by the removal of flakes to produce a slight bifurcation. Usually, the blade is triangular in outline, sometimes with slightly convex lateral sides. Occasionally, it tends toward a thickness of body.

**Types #8 and 9.** The points so classified are distinctive and seem, to the writer, to be the New England equivalent of Ritchie's Poplar Island and the well...
known Cypsum Cave point. This does not indicate a belief that these are directly related types nor that the ages may be comparable. These points appear in both short and long varieties. Commonly the blade is thin and retouched along the cutting edges with care. The base is the distinguishing feature of the type. It consists of sloping shoulders which meet either in a well rounded base (#9) or a more pointed base (#8). Its provenience is early.

**SIDE-NOTCHED. Type #1.** At the Titicut site this is invariably a fairly large, heavy point. Usually, the base is deeply side-notched and the basal corners have been removed so that the base is narrow compared with the blade. Sometimes, the under side of the shoulders is obliquely undercut, so as to suggest barbs.

**Type #4.** Quartz is the material usually selected for this type of point. The rounded base is formed by slight indentations, but, as the base is usually as wide as the blade, it is a true side-notched point.

**Type #6.** This is an elongated point with broad side-notching, whose lateral sides are slightly convex. It appears in the upper horizons of the site; is made from materials other than quartz in many instances.

**KNIVES.** With the exception of the Ulu (semilunar), all of these artifacts have a common trait, a serrated cutting edge. Often the serration is found only on one edge of the blade. The relative size of the serrations vary with the size and the intended function of the knife. Roughly, chipped knives can be subdivided into two types: Stem and Stemless.

**Stemless Knife.** The knives in this category usually have one curved and one more or less straight edge which meet in a stubby point at one end and in an irregularly rounded base at the other. This is often rounded transversely, so as to produce a blunted surface for hand use.

**Stem Knife.** In this artifact we have a blade quite similar to the stemless variety except that at one end a well-defined stem has been provided for hafting. Without question, some of the larger chipped IMPLEMENTS, which are often classified as spear or lance points, were intended to function as knives. Most of the typical basal shapes, by means of which projectile points are typéd, appear as the basal portions of these knives.

**Leaf Knife.** As implied by the name, leaf knives have relatively long, broad, leaf-like blades, often quite thin in cross-section. The sides meet at a point at one end and form a rounded base at the other. Often both edges of this blade will be carefully serrated.

**Ulu.** This type is a polished stone knife usually of slate with a semi-circular cutting edge and straight back. These knives in broken condition were present in some quantity at Titicut. Two types of back appear; one is a perfectly plain edge, the other expanded in width apparently for attaching some sort of handle. Occasionally rubbed-out perforations appear near the dull basal edge as if to provide for lashing the handle in place. One of the comb back and six of the plain back variety were available among the specimens returned for study.

**Triangular Knife.** This tool is a rather roughly made artifact; when triangular in outline and relatively thin, it is called a Notcher. When made from a rough spall with only the cutting edge coarsely serrated, it is called a Roughing knife in the Massachusetts classification — both types are for woodworking.

**MAJOR ARTIFACTS:** Axes, Chisels and Gouges. Several well made, Full-Grooved axes were present as was the ungrooved variety Celt. Three gouge types are listed in Table 5, i.e., Channeled, Grooved and Plain. The Channeled gouge has a well defined, hollowed out cutting blade and a long widely grooved, stem terminating in an enlarged knob-like end. The Grooved gouges are rather short artifacts and differ from the Plain gouge in that there is a groove across the back of the poll end of the artifact. The Plain gouge tends to have a longer hollowed-out area in the cutting blade, but is not provided with hafting modifications at the poll end. Often this end of the artifact is battered as if it were repeatedly struck by some heavy instrument when in use.

**PLUMMETs.** Both the Classic and the Clumsy plummet appeared at all levels. At this site vertical distribution does not seem to support the assumption that either type should be considered diagnostic of Early or Late Archaic. Nevertheless, a Clumsy plummet appeared in red ochre (Deposit 179) together with a Full-Grooved axe, previously referred to under Red Paint Deposits, of the Late Archaic.

**HAMMERSTONES.** This utilitarian object was, as is usual, present at all levels. Apparently any pebble that accommodated itself to the hand was used for pounding. The only distinguishing marks are those from use. It is most probable that many little-used Hammerstones remained unnoticed. In a few instances a Hammerstone appeared slightly grooved or notched, as if for hafting in some sort of a handle; they might equally as well have served as weights.

**SCRAPERS.** Scrapers of all sizes and types appear at all levels at Titicut, attesting to the importance of this tool in aboriginal industry. The Oval scraper tends to be the larger and less carefully made artifact. Some of the smaller Stem scrapers were made with the same care as the better projectile points. All
of the several varieties described in the Massachusetts Classification appeared at Titicut.

ATLATL WEIGHTS. Both the Oval and Wing forms of atlatl weights were found at Titicut. The latter form was somewhat more frequent, but their vertical distribution is not indicative of their respective culture association.

<table>
<thead>
<tr>
<th>TABLE 9 (FIG. 9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEPTH</td>
</tr>
<tr>
<td>--------</td>
</tr>
<tr>
<td>0-5cm.</td>
</tr>
<tr>
<td>6-10cm.</td>
</tr>
<tr>
<td>11-15cm.</td>
</tr>
<tr>
<td>16-20cm.</td>
</tr>
<tr>
<td>21-25cm.</td>
</tr>
<tr>
<td>TOTAL</td>
</tr>
</tbody>
</table>

NOTE - One coin of Spanish origin, others English or American penny dated 1827 has H.S. Burgess on one face.

Same type of clay pipe fragments appear at Fort Hill, similar blue glass beads and strips of brass appear in the burials.

PAINT STONES. The use of both red and black pigments was indicated by the presence of scraped and pounded chunks of red ochre and graphite at all levels. The red powder made from iron bearing stones was used in ceremonial deposits, and also appeared together with fragments of graphite in some of the burials.

ARTIFACTS OF COLONIAL ORIGIN. A number of objects are listed in Table 9, which are not of aboriginal origin. Some of these may have been owned and used by the later Indian occupants of the site, and some may be of much more recent provenience; a few are illustrated (Fig. 9).

CYLINDRICAL PESTLES, MULLERS. A number of cylindrical Pestles, presumably for grinding corn or nuts in a hollowed-out stump or wooden
mortar were present. However, the small, round, flat-faced grinding stone, or Muller was more numerous, especially at the lower levels; and several flat stones appeared with abraded surfaces, which may have been caused by Muller action.

**ANVILS AND POLISHING STONES.** Eleven large flat stones bearing evidence of battering on one surface were recovered from the site. These are differentiated from the previously mentioned Mullers because of their battered surfaces. A large number of small, usually elongated stones of abrasive material are thought to have been used as polishing or sharpening stones now called Whetstones. A few of these were perforated near one end as if to be hung up by a thong.

**STEATITE VESSELS, PIPES, ETC.** Five steatite vessel fragments were found in the humus near the present surface. In addition to these one complete steatite vessel in 11 large fragments was found at a depth of 20 cm.—9 cm. in yellow soil. The fragments were stacked in a neat pile and appear to have been intentionally buried. They were associated with four eared projectile points (Fig. 10), two of the points being found between the steatite fragments. Nearby, at a depth of 22 cm. the stem and the lower part of the bowl of an Elbow steatite pipe appeared at the junction of humus and yellow soil. This object is practically a duplicate of the pipe remains found in Burial #17. One small, tubular bead of steatite is on record. This bead is seven millimeters in diameter by 2 centimeters long; has been drilled longitudinally, and its exterior is decorated by a series of parallel lines which encircle the bead.

**CLAY VESSELS.** Indicative of the Ceramic and Historic occupations were a large number of clay potsherds of aboriginal manufacture. These were found scattered about the site. In the records now available, 132 potsherds were found in the humus layer and only 36 from the yellow soil. No potsherds were recovered below 42 centimeters from the present surface with the exception of those which were found in features. Most were too small for type identification. Evidently, a few were from Stage 3 and Stage 4 vessels. One nearly complete vessel was recovered from a burial by the Robert S. Peabody Foundation, but is not available to the writer for comment.

**DRILLS.** There are not too many drills among the Titicutt artifacts. Expanded stem drills are in the majority closely followed by T-Base, Cross, Flake, Plain, Tapered-Stem, and Crescent, in this order. Diamond, Side-notched, and Eared Drills are absent.

**POLISHED STONE ARTIFACTS.** In addition to atlatl weights and Ulus the following objects of polished stone, mostly slate, were found: 1) A tablet of red slate, rectangular in outline — 9 by 5.4 cm., with a central thickness of 1.5 cm. This was a highly
polished artifact, not perforated; 2) Four fragments from a rectangular Gorget of gray slate, one of which was drilled, were recorded. The fragments do not match and the overall size of the artifact cannot be determined; 3) Another Gorget of red slate is represented by five fragments, which again do not match. One bears a drilled hole. This artifact had rounded corners and was decorated by incised figures forming recognizable aboriginal patterns (Fig. 11); 4) At a depth of 28 cm. — approx. 4 cm. in yellow soil — a group of eight small polished stone balls were associated with a roughly rectangular fragment of slate. The slate fragment was scored on three edges (6 scores on two edges and 7 on the third edge). A similar stone ball, nearly 5 cm. in diameter, was recovered from the humus layer; 5) A flat, oval pebble, 6.5 by 4.2 cm., slightly polished on both sides, and centrally perforated, bore deeply incised crossed lines on one surface; 6) Twenty additional fragments of polished slate, obviously portions of either Gorgets or Ulus but too fragmentary for positive identification, were taken from the humus layer; 7) One small, round, stone bead, centrally perforated, 1.7 cm. in diameter, was recorded from the humus layer.

ROUGH STONE TOOLS. A respectable number of crude pebble tools which resemble those recently found in Alabama and ascribed to the Lively Complex, are among the artifacts from the Titicut site. All of these were taken from the White Sand layer and were not associated with chipped artifacts from the recognized Archaic or Ceramic congeries. These tools are presently the subject of much discussion in archaeological circles, but considerable effort to collect and study such artifacts must take place before they can be intelligently discussed. Rather than delay this report, these artifacts will be the subject of a later paper should they prove to be of sufficient significance.

CARBON-14 DATING

The Titicut Site was excavated at a time when dating by means of radioactive carbon was in its infancy — 1946-1950. It was not only financially impracticable for the Warren King Moorehead Chapter to obtain this type of dating, but it was also impossible, at that time, for an amateur group to persuade any of the geochronometric laboratories to accept carbon samples. However, the R. S. Peabody Foundation was able to finance and secure such a date and the following data are taken from the published results of the checking of Sample C-809. The sample was not taken from any of the features found by the Chapter and described in this paper.

A sample of charcoal was taken from a hearth at the Titicut site in October of 1949 for the purpose of obtaining a radiocarbon date. I quote from data submitted by Frederick Johnson of the R. S. Peabody Foundation, Andover, Massachusetts: "C-809 Titicut site, Bridgewater, Mass. (4139 ± 260), (5750 ± 720), (4500 ± 300). Charcoal from a hearth from the lowest level at the Titicut Site, Bridgewater, Massachusetts. This hearth from the lowest level found at thirty-six inches below the surface of the ground. It is composed of pieces of charcoal, black sandy soil and pebbles. The hearth was covered by a thin layer of brownish fine sand which was overlain by a layer of gravel and fine white sand about eight inches thick. Humus, the uppermost layer, covered the whole deposit. There was no sign of disturbance or occupation in the layers over the hearth. The distribution of the pebbles and the soil indicated that the layers called "yellow soil" and "gravel and fine white sand"
had been deposited upon the hearth by natural movement of materials. The building and use of the hearth antedated this movement. The present hypothesis is that the soil layers were moved over the hearth by congelifurbation during a period when the climate was colder than at the present. Continuing geological investigations may modify this hypothesis.

The hearth is covered by a deposit which is of natural origin. Various similar deposits found on this site and also a number of artifacts have been excavated from analogous locations. There is evidence of occupation previous to the movement of the materials. A date on the charcoal will contribute to our knowledge of the age of occupation and to the time when the geological event responsible for the movement of the materials took place. It is known that root hairs penetrate the pores of the charcoal.

Collected on October 16, 1949, by J. Hartshorn, Kirk Bryan and Frederick Johnson. Submitted by Frederick Johnson, R. S. Peabody Foundation, Andover, Mass."

CONCLUSION

At this point, one should demonstrate by logical reasoning some definite conclusion concerning the meaning of the evidence recorded from the site. In this instance, this is a difficult, if not impossible task. With the possible exception of the small area contained within the lodge floor, no archaeological horizons could be found. It is apparent that the two most recent aboriginal cultural entities have been inextricably intermixed by natural and artificial disturbances, some of which certainly occurred in aboriginal times. Figure #3 shows that the assumed horizons, or concentrations of diagnostic artifacts, lie within a vertical distance of only 20 cm. (10 inches) and that the peaks of artifact distribution are only 10 cm. (5 inches) apart. Even a minimum amount of erosion or disturbance would cause a considerable interchange of materials in such a thin range.

If one were to rely upon the position of the tops of features as an indication of their provenience, one is depending upon dubious evidence to say the least. In many instances the upper features have been decapitated by cultivation and the original tops destroyed, while in other instances features which appeared at lower levels may be only the lower portions of pits whose upper outlines were no longer discernible. Even the occurrence of diagnostic artifacts within a feature may not be evidence of its proveniences as the diagnostic element may well have been introduced by a later occupancy.

In general, the presence of a Ceramic and/or a historic level is demonstrated by such diagnostic artifacts as clay pot sherds and trade goods. Again one may reason that the presence of intentional deposits of Archaic artifacts in red paint demonstrates the presence of earlier cultures. The Titicut evidence tends to support the assumption that at least three cultural components were present at the Titicut site as illustrated (Fig. 3).

It has been amply demonstrated that the Taunton River was a natural water thoroughfare in aboriginal times. In the face of the evidence presented herein, there is no difficulty in concluding that this particularly well-situated site must have been occupied by all successive cultures appearing in the area — there is no evidence of occupation at Titicut in Paleo-Indian times. We have yet to learn the significance, if any, of the pebble tool complex. Because of the lack of definite stratigraphy the writer feels that comparisons with other better stratified sites in the area would be meaningless in this report.

The range between the two radio-carbon dates — 5750 ± 720 and 4139 ± 280 is considerable. It must be remembered that these dates were obtained by the black carbon method at a time prior to the refining of carbon dating techniques. The lesser of the dates is comparable to the date obtained at Wapanucket #6 site about 10 miles distant on the same river system, and the type of artifacts recovered at this latter site are similar to those assigned to the Late Archaic at the Titicut site.

We seem to have a documented segment of occupation at the Titicut site over a period of at least 5000 years. If promptly reported after excavation, the Titicut date would have been in 1949 the oldest dated aboriginal occupation in New England. Now, however, it only tends to confirm what has been reported from other more recently excavated sites.

During the latter period of aboriginal occupation a rather large village existed here. The known area of occupation appears to cover about fifteen acres, although it was possible to excavate only a minor part of this area. A number of Indian trails are known to have converged at this point on the river, where it was possible to wade across except at periods of very high water.

In 1621, Winslow and Hopkins from Plymouth, are supposed to have stopped over night at this point on the path between that settlement and the Indian town of Sowams. If this is indeed the site of their overnight camp, the village must have been non-existent at that time as they do not mention its presence. Possibly this is one of the many Indian towns depopulated by the great plague of 1617.

Bronson Museum,
March 14, 1966
During the course of our work at the Titicut Site in Bridgewater, Massachusetts, the remains of twenty-six individuals were found. Fifteen of these skeletons were sufficiently preserved to be removed for further study. This study was undertaken on our behalf by the Department of Physical Anthropology at Peabody Museum, Harvard University. We are indebted to Dr. Edward E. Hunt Jr. and to the late Dr. Ernest A. Hooten for the morphological notes which are included in this paper.

The majority of the burials were located in the northern section of the site, west of a trench excavated by the Robert S. Peabody Foundation of Phillips Academy Andover, Massachusetts, and east of the woods road that bisects the Titicut Site. As shown in Fig. 1, eighteen of the graves were grouped within an area approximately twenty-eight meters by ten meters. One human burial was found west of the above mentioned road and excavated by a representative of the R. S. Peabody Foundation. Nearby, the burial of a small dog was located.

A brief history of the cemetery area will serve to illustrate the reason for the method of excavation and will explain the lack of certain pertinent data. At the time at which the excavation of the area was undertaken it was covered by a rather dense growth of white pine. Neither we nor the owner of the property wished to see this beautiful grove destroyed. It was therefore considered impractical to establish the usual grid, or to excavate the entire area. Instead the cemetery area was explored by means of a small probe which brought cores of earth to the surface and indicated the presence of subsurface areas of disturbance. A series of numbered stakes were then placed to facilitate the location of individual graves upon a plan of the cemetery. North of burials #6 and #13 a deposit of medium heavy gravel marked the limits of the cemetery in that direction, while completely excavated areas to the east and south indicated its extent in those directions. There is no reason to assume that additional burials may not exist across the wood road to the west. Indeed the discovery of one burial in that area by the R. S. Peabody Foundation indicates a distinct possibility.

Many years ago a farm house and a large barn are known to have stood approximately fifty yards north and west of the cemetery area. We were told by an elderly man who had once lived in this house that at one time an orchard of apple and peach trees occupied that portion of the farm where the burials were located. After a time these trees were removed.
FIGURE 2. Profiles of Titicut burials showing depth from junction of the loam and sub-soil.
and a strawberry bed was set out in their place. This bed also disappeared after a time, and the area became part of a large corn field. Upon the destruction of the house and barn by fire, about fifty years ago, the farm was abandoned and the old fields grew up to grass and small white pines. The age of the larger pines seems to attest to the accuracy of the story that cultivation ceased about fifty years ago.

We may assume that this Indian cemetery has been subject to considerable disturbance on the surface and that any low mounds or other indication of the presence of the graves had long since disappeared. The level at which the tops of most of the grave shafts appeared may have been artificially created by cultivation. If there was at any time any indication of where the soil was deposited that was originally removed from the grave shafts, this has been effectively erased. With these facts in mind we may proceed with a description of the burials.

In each instance in which a morphological study of the skeletal material is available, Dr. Hunt's description will follow our general remarks and will be indicated by the inclusion of his reference number for the particular skeleton.

During the excavation of squares A-12 and B-12 in section C, directly west of the cemetery area, the calcined and broken bones of two individuals were found. Although this bone was concentrated in two small areas at a depth of from twenty to thirty-five centimeters, well below the disturbed upper soil, they were not, at the time, recognized as cremation burials. Identifiable bits of cranial fragments and teeth made our identification positive. In the absence of charcoal or burned soil it would seem that the cremation of these individuals must have taken place elsewhere. When it became evident that additional burials were present at the site the numbers 2 and 3 were assigned to these cremations as a means of identification.

Burial #1 appears only on the plan of the cemetery, a profile of this grave is not available. This interment was found in 1935, prior to our work at the site, by members of the Middleboro Archaeological Society. It was excavated by them at that time but no records were taken. The approximate site of this grave was pointed out to us and was re-excavated. The skeleton was found at a depth of about ninety centimeters from the surface, but all positive indications of the original shaft had been obliterated. The skeleton was considerably disturbed and no data of importance could be obtained. Twenty-nine projectile points were recovered from the vicinity of the shaft, but whether or not these were in the original burial deposit could not be established. These have not been included in this description.

A human burial found west of the wood road by the R. S. Peabody Foundation has been given the number 4. No data from this burial is available to the writer.

A short distance from Burial #4 the grave of a small dog was found. This animal had been buried with care. The shaft was circular in plan with a diameter of eighty-five centimeters. At a depth of one hundred four centimeters the dog had been laid upon its right side, head to the south, feet or paws to the east. The skeleton of this dog is preserved at the R. S. Peabody Foundation.

**BURIAL #5:**

The kidney shaped outline of this shaft appeared at a depth of five centimeters below the junction of humus and sub-soil. The long axis of the shaft was northeast-southwest. At the north end of the shaft a deposit of charcoal was found, sixty centimeters in diameter and twenty centimeters thick at its center. The earth surrounding this charcoal was burned a deep red indicating that a fire had been made at this point after the grave shaft had been refilled. Slightly lower and north of the charcoal deposit were two flat, worked stones, which may have been digging implements. On the western edge of the shaft, thirty centimeters from its top, was a small lump of graphite. At a depth of one hundred centimeters the shaft suddenly became wider in such a manner as to suggest a partial cave-in while the grave was being dug. The earth from this cave-in had been redeposited on the floor of the shaft at its northern end, creating the irregular profile shown. A tightly flexed skeleton lay upon its right side, head to the southwest, facing east. The hands lay before the face. Resting upon the lower facial bones was a section of woven mat beneath which were two small copper or brass discs with several wisps of hair and a dessicated index finger. The soft parts had been preserved by copper salts.

With the exception of the skull and facial bones this skeleton was in poor condition.

**N/7201** — This is an incomplete skeleton, with skull, many long bones, and fragmentary hip-bones present, and probably in early adolescence at the time of death. The sex is uncertain. The brain case is gracile and rather narrow, without sutural union. The bone is thin and almost no temporal lines or evidence of nuchal muscle attachments are visible. The mastoids are rather small. These bones look definitely immature. The facial skeleton is virtually complete, but separate from the brain case. Prognathism is present in both mid-facial and maxillary...
regions. Mid-facial prognathism is rather unusual in American Indians, but maxillary prognathism alone is quite typical. The teeth are unworn and the third molars are all present as unerupted enamel caps. These traits are indicative of adolescence. The upper incisors are quite large. The right ilium and ischium are partly present. The saccrosiatic notch is a little less than ninety degrees, which indicates a probably male, but preauricular suclus is present which suggests a female. The epiphyses of the long bones are still separated from the shafts, which is a condition normally prevailing until the late teens. The second molars have erupted, which indicates that this individual was probably more than twelve years old. This then, was an adolescent about fourteen years old, whose sex is uncertain.

BURIAL #6:

This burial was the most remarkable ever seen by the writer. The outline of the grave shaft, which was visible at a depth of ten centimeters below the junction of humus and sub-soil, was oval in plan, one hundred eighty-five centimeters in length by one hundred twenty-two in width. The long axis was northeast-southwest. The base of the shaft at its center was one hundred fifty-five centimeters from the present surface. The fill consisted of soil so intermixed with powdered charcoal as to appear dark grey in color. Two triangular projectile points were found within the shaft at a depth of five centimeters from the top of the disturbance. These were thought to have been accidentally deposited when refilling the grave. At a depth of ninety centimeters, a rough junction of humus and sub-soil, was oval in plan, one hundred eighty-five centimeters in length by one hundred twenty-two in width. The long axis was northeast-southwest. The base of the shaft at its center was one hundred fifty-five centimeters from the present surface. The fill consisted of soil so intermixed with powdered charcoal as to appear dark grey in color. Two triangular projectile points were found within the shaft at a depth of five centimeters from the top of the disturbance. These were thought to have been accidentally deposited when refilling the grave. At a depth of ninety centimeters, a rough stone implement, similar to those found in Burial 5, and thought to be a sort of spade, was found. An adult had been placed in this shaft lying upon its back. The lower limbs were tightly flexed so that the patellae of both legs rested upon the sternum, and the bones of the feet lay in disarticulate fashion near the pelvis. The head was to the southwest with the bones of the hands over the face in an extended position. Some of the bones of the small fingers lay within the eye sockets.

To the right or east of the adult skeleton lay that of a young male. The cranium of this smaller skeleton rested directly upon the shoulder of the larger, and the child's body had been placed in a similar position; that is, lying upon its back with the lower limbs drawn up and the hands covering the face. The bones of the feet of the smaller individual lay just to the east of the pelvis of the adult. The condition of these two skeletons was poor with the exception of the larger cranium. A close examination of the smaller cranium disclosed the presence of a small, white quartz projectile point within the frontal bone just above the right eye. Only the skull of the adult was submitted for study. At a point twenty-five centimeters from the feet of the adult skeleton lay the remains of a birch bark container. The bark was in a poor state of preservation, in fact it would have probably disintegrated but for the inclusion of several brass or copper objects. The salts from this metal had penetrated and preserved the container to some extent. The object seems to have been a sort of envelope, twenty by ten centimeters in size, folded but not sewn into shape. The illustration must be considered as a restoration of this artifact rather than a representation of the condition in which it was found. The envelope contained a brass or copper pendant (14 by 4 cm.) with a small perforation near the wider end, four small and almost rectangular objects of brass or copper (1.5 cm. in diameter) a cluster of quartz crystals, and several hundred shell and bone beads. A small section of string still existing showed the beads to have been strung in alternating black and white order. A few tubular bone beads were also present. The position of this envelope is indicated at A. in the plan of the shaft. The position of the two bark bundles which were found lying to the east of the two skeletons within the grave shaft are indicated at B. and C. These bundles were very fragile, bundle C was broken and the bowl of a copper spoon protruded. Bundle B. was the better preserved of the two. An attempt was made, however, to preserve both bundles, but we were successful only in the case of Bundle B. Both were sprayed with a hardening solution in situ, but Bundle C. fell apart when moved. The remaining bundle was wrapped in plaster bandage and retained for further study. The broken bundle consisted of a heavy outer wrapping of bark and enclosed a smaller object which had been carefully incased in a mass of fibre. In this fibre were hundreds of small seeds later identified as from the milk-weed plant. The inner object was a bundle wrapped in deer skin about which had been wound several strings of brass or copper tubular beads. These metallic beads had been strung on a twist of three strands and between each pair of metal beads a drilled seed had been placed. Within the skin bundle were the bones of the lower portion of an infant. Upon opening Bundle B. a similar enclosure was found, except that this bundle contained the upper portion of the skeleton of an infant. The strings of beads in this bundle did not include seed beads. Eight copper or brass discs, a copper or brass pendant, and two triangular copper or brass projectile points had been included in this bundle,
placed within the fibre mass about the inner container.

**N/7198** — This is a well preserved cranium except for the occiput immediately posterior and lateral to the foramen magnum. The cartilaginous junction between the sphenoid and the basioccipital is still present, and the third molars, all of which are visible, are still unerupted. The age is therefore late adolescent or subadult. The diagnosis of sex is uncertain. The brow ridges are small, the forehead is somewhat rounded anteriorly, and the nuchal muscle attachments fairly gracile. These traits are relatively female. On the other hand, the teeth are fairly large, the mastoid medium, and the zygomatic arch extends over the external auditory meatus with fairly substantial muscle markings. These are relatively masculine traits. The zygomatic arches are not visible when the cranium is seen from above, and the head in life was clearly brachycephalic. The cranial index is 87.5%.

**N/7194** — This is the fragmented skeleton of a fetus or new born child. The extensively crushed facial skeleton reveals a full complement of unerupted milk teeth. Near the fragments of the skull are apparently small pieces of skin and short black hair, presumably head hair. (Dr. Hunt was not aware of the association between this fetal infant and the skeleton described as N/7198 otherwise he might have been more definite concerning the sex of the sub-adult.)

**BURIAL #7:**

The top of the shaft of Burial #7 appeared at a point twelve centimeters below the junction of humus and sub-soil. The outline of the shaft was an oval approximately one hundred eighty centimeters long by one hundred twelve centimeters wide. The long axis was a bit south of east-west. The northeastern end of the shaft, near its top, had been considerably disturbed so that an accurate outline of the top of the grave could not be determined until a depth of seventy centimeters had been reached. The total depth of this grave was one hundred twenty centimeters. The skeleton was tightly flexed, lying upon its right side, head to the west or southwest, and face to the north. The skeleton was in extremely fragile condition. Three vertebrae which were missing from the adult skeleton were found intermixed with the bones of the infant. The sketch which accompanies this description was made prior to the discovery of the second skeleton. Having exposed both skeletons to our satisfaction they were covered with canvas to protect them from the hot sun while we took a few moments out for lunch. Before our return a visitor entered the excavation, using the shelf upon which lay the skeleton of the infant as a convenient step. Needless to say, upon our return, we found both skeletons reduced to fragments of bone. Only the facial bones of the adult were retained for study. No grave goods were present in this grave.

**N/7200** — This is the facial skeleton of a young male with moderately developed browridges, no sutural union in the orbits, and all teeth present at death. The third molar and the left upper central incisor were lost post mortem. Dental wear is not yet marked in the second molars, but slight dentine exposures are seen in the left second premolar and the first molar, and the occlusal edges of the incisors are worn to the dentine. These incisors are slightly shovel ed. The lower incisors are small. The third molars are almost unworn. The nasal profile shows severe arthritic condition were noticeable, especially in the spinal column. It is safe to assume that this was the skeleton of an old male. A small triangular projectile point was found lodged in the lower spine in such a position that it must have penetrated the body from the lower front and severed the spinal cord.

**BURIALS #8 and #8A:**

At a depth of ten centimeters from the junction of humus and sub-soil the top of this grave shaft appeared. It was roughly oval in shape, one hundred seventy centimeters long by one hundred centimeters wide, the long axis being in a northeast-southwest direction. The greatest depth was one hundred thirty centimeters from the present surface, on white sand. The skeleton was in a loosely flexed position with the head to the southwest, facing east, and lying upon its right side. Three of the vertebrae were missing. The bones of the hands lay in front of the face. The skeleton, which was in excellent condition, seemed to be that of a young male. All the teeth were present and unworn. A slight discoloration of the soil on the west side of the shaft led to the discovery of the skeleton of an infant which had been deposited upon a shelf dug into the side of the grave shaft at a level slightly above that of the adult skeleton. This small skeleton lay upon its back with the face turned upward. It was in extremely fragile condition. Three vertebrae which were missing from the adult skeleton were found intermixed with the bones of the infant.
a clear depression below nasion. The nasal sill is still well demarcated. The mandible is in good condition except for loss, after death, of the right condyloid process. The body of this bone is quite rugged with a prominent chin. A moderate torus occurs. The symphysis is quite deep.

**BURIAL #9:**

The top of this grave appeared as a rough circle, one hundred five centimeters in diameter, at a depth of ten centimeters from the junction of humus and sub-soil. A large flat stone lay nearly in the center of the disturbance, and the top of the shaft was slightly convex. In cross-section the shaft had a tendency to be conical with a base diameter of thirty-eight centimeters at a depth of one hundred centimeters from the present surface. Within the shaft lay the skeleton of an infant or a small child. It had been placed upon its back with the head to the south facing east. The lower limbs were folded in characteristic infant fashion while the arms appeared to have been folded across the chest. No grave goods were present. As this skeleton was very fragile it was not removed.

**BURIAL #10:**

The top of the shaft of this burial did not appear until nearly thirty centimeters of soil had been removed. A more recent disturbance near the surface, greater in size than the shaft, together with the depth of one hundred twenty centimeters from the present surface to the bottom of the grave shaft, leads to the belief that the original top of the shaft was much nearer to the junction of humus and sub-soil than our notes indicate. The outline was oval, two hundred centimeters in length and one hundred twenty centimeters wide, the long axis being nearly due east and west. The skeleton of a robust male lay on its right side, loosely flexed, with the head to the west facing south. Most of the rib cage had disintegrated and the small bones of the hands, which had rested before the face, were reduced to powder. A small, stemmed projectile point was found imbedded in the cranium so that almost ten millimeters of the point was exposed within the cranial cavity.

**N/7205** — An incomplete male skeleton with a probable age at death of more than fifty years (late middle or early old age.) The skull is fragmentary with a considerable destruction of the right facial bones. Sutural union has begun externally in the sagittal and lambdoid sutures. This individual was probably dolichocephalic. The nuchal muscular attachments were quite prominent, with a slight occipital torus. The mastoids are fairly large. Fragments of the left side of the face, palate, and mandible reveals that the left upper molars and the second premolars were lost before death, but the front teeth were present in death. The roots of the front teeth were considerably out of line, so that he probably had a considerable anterior malocclusion. A large palatine torus was present. The left lower second premolar was lost before death. Wear on the entire tooth row has exposed dentine everywhere except on the left lower third molar. The left half of the mandible is quite rugged with a slight mandibular torus and a wide ascending ramus. The lower incisors are small. The sternum shows both fusions and perforation. Marginal arthritic exostoses occur on the vertabrae and at the sacroiliac articulation. The glenoid fossa of the left scapular fragment shows lipping except adjacent to the bicipital tuberosity. The innominate show male features, large acetabula, convergent ischiatic spines, narrow sacrosiatic notches, and uneveted pubic rami. No preauricular sulci are present. The symphysis is absent. Stature from the length of the left femur and tibia is estimated to be about one hundred sixty-seven centimeters (about 5 feet 6 inches.)

**BURIAL #11:**

The presence of a large white pine at the southern end of this grave together with a recent disturbance involving the rest of the top of the shaft prevented an accurate determination of the location of the upper portion of this shaft. From the location of the bottom of the shaft, at ninety centimeters from the present surface, it would seem that the top must have been at average depth (ten centimeters below the junction of humus and sub-soil.) The upper portion of this shaft has been represented by dotted lines to indicate this lack of precise information. At a point forty centimeters below the junction of humus and sub-soil two large flat stones were encountered; one at the northern end of the shaft and the other at its southern end between the roots of the pine tree. Beneath each of these stones was a deposit of red oxide of iron (red paint). The skeleton of a middle-aged male lay upon its back with the head toward the south facing upward. The arms had been flexed at the elbows so that the bones of the hands lay on either side of the skull. The legs also had been drawn up and the patellas lay on either side of the pelvis. The bones were in an advanced state of disintegration. A quantity of red paint, perhaps several quarts, had been deposited upon the floor of the grave prior to placing the body within. The earth was stained to a depth of fifty centimeters below the bottom of the shaft by this oxide. At a point eighteen centimeters to the west of the cranium, at a depth of ninety centimeters from
the surface, lay a large triangular projectile point in a small deposit of red paint.

N/7196 — This is the skeleton of a male in early middle age, most of whose bones are in large fragments. The facial skeleton is relatively complete, but crushed flat. Median brow ridges, massive malar, and large teeth confirm it to have been a male with rugged masticatory muscles. Wear on the teeth has exposed the dentine in all of them. The upper molars are absent, but whether this is a result of loss or failure to develop is uncertain. The incisor bearing portion of the mandible is missing. Caries occur on the right lower second molar, and the first was lost before death. This is a very powerful mandible, with unusually broad ascending rami. The cranial fragments show little sutural union, which indicates that early middle age had probably not been reached. The mastoids are large and strong. Of the long bones, the left femur is best preserved. It is four hundred forty-nine millimeters long. The Pearson interracial formula (Up From The Ape.) gives a stature of one hundred sixty-six centimeters. (5 feet 5 inches) The bones of the lower limbs are relatively gracile, with virtually no development of the linea aspera on the femur. The left ulna, however, is somewhat more rugged. An interesting pathological condition in this individual is an ostetitus at the distal end of the right femur near the linea aspera, and proximally and medially on the right tibia. This condition is shown by a bulging on the surface of these bones and a thickening of the cortex.

BURIAL #12:

This grave was at first thought to be a simple hearth, as a deposit of charcoal containing shattered stones covered the top of the shaft at a point fifteen centimeters below the junction of humus and sub-soil. Removal of this charcoal revealed the circular top of the grave shaft with a diameter of seventy centimeters. The shaft was ninety centimeters deep from the present surface. The skeleton of an infant was found in such a position that it appeared to have been dropped into its grave, feet first. The bones were in an advanced state of disintegration and we did not remove them. No grave goods were present.

BURIAL #13:

This burial was partially excavated and covered with canvas preparatory to a complete exposure on the following day. During the early evening hours the skeleton, which was in good condition, was removed by some person unknown to us. Our incomplete records show that the skeleton was flexed on its right side, head to the southwest, facing east. Of the shaft we know only that its top was at a depth of ten centimeters from the junction of humus and sub-soil and that it was oval in shape. It is included in Fig. 4 to show the peculiar arrangement of flat stones on the eastern side of the grave.

BURIAL #14 - 14A - 15:

These burials were excavated under the direction of a staff member of the Robert S. Peabody Foundation. Except for the illustration of the grave goods found, the data is not available to the writer. The skeleton from Burial #15 however, was among those examined by Dr. Hunt whose description follows—

N/7202 — This is an incomplete skeleton of a middle-aged man. The right third of the facial skeleton and most of the brain case is present. The skull is 189 mm. long and 129 mm. wide with a cranial index of 67.9% or dolichocran. The vault is long and ovoid, with both internal and external union of the sagittal suture almost complete. The upper right second and third molars are present and somewhat worn, with a slight dentine exposure on the second premolar. The nasal profile is interesting in that no depression is seen on the nasion. This trait is not unusual in American Indians. The scapula shows an absence of lipping on the glenoid fossa, which indicates the age of the man at death may not have been much over 35 or 40 years. The left innominate bone is fairly complete except for the superior ramus and symphysis of the pubic. The inferior ramus is massive and unerected. The acetabulum is large, the ischiatic spine is convergent medially, and the sacrosiatic notch forms an acute angle. These are all male characteristics of the hip bone. The length of the left femur is 446 mm. and the left tibia is 379 mm. Formula C of the Pearson interracial male calculations of stature yields a value of 167 centimeters (5 feet 6 inches). The long bones of the lower limbs are relatively gracile, squatting facets are seen on the anterior margins of the distal auricular surfaces of both tibia, their proximal ends are retroverted, and show platycene-
mia. These traits indicated a frequent habit of squatting during life, but not necessarily strong leg muscles. The humeri and ulnae, however, are more rugged, and indicate strong arm muscles.

**BURIAL #16:**

This large grave shaft was encountered at a depth of twenty centimeters below the junction of humus and sub-soil. It was oval in shape, one hundred ninety centimeters long by one hundred twenty centimeters wide, the base of the shaft was at one hundred fifty centimeters from the present surface. The long axis of the grave was northeast-southwest. The skeletons of two individuals were found within the shaft. Burial A was tightly flexed and lying on its left side, head to the north. The skull had been rotated in such a manner that it appeared to face upward. The facial bones were detached and intermixed with the ribs and pelvis. It would seem that this skeleton had been disturbed at the time of the second burial. Some of the bones from skeleton A were discolored by red paint but, as there seemed to be little of this paint in the soil beneath the skeleton, it is assumed that this was an accidental staining which occurred at the time of the second burial. Burial B was loosely flexed, lying upon its right side with the head to the southwest facing east. The hands lay before the face. The earth beneath the skull was broken apart at the sutures. Beneath the skull was the stem of a steatite pipe, and a small, stemmed, white quartz point, triangular in shape, was found within the pelvis near the left iliac.

**N/7203** — This is a fairly complete skeleton, probably a man in early middle age. The brain case is fairly rugged, with powerful neck muscles, as shown in its occipital torus. The vault is fairly thick, but with mastoids of only moderate size. Most of the cranial bones are separated at the sutures. A small part of the frontal bones just anterior to the coronal suture was probably separated by a remnant of metopic suture. Slight sutural union has occurred in the obital floor, an indication of probably early middle age at death. The teeth are large, and wear is greatest at the incisors. Peculiar unworn spurs of enamel occur on the lingual occlusal surfaces of both lower first molars. The upper left canine tooth is worn down to the plane of the incisors. The mandible is fairly rugged, with large abturator foramina, rugged ischia, and narrow subpubic arch. The surface of the right pubic bone at the symphysis is at a smooth stage typical of early middle age (39-40 years), with a clearly defined margin. A similar age is indicated by a slight lipping of the glenoid fossa of the scapula. A reconstruction of the stature by Pearson's male formula (e) femure and tibia, yields a stature of one hundred sixty-eight centimeters (5 feet 6 inches). The right femoral shaft shows a probable peristititus in its proximal third on the medial side. The cortex of the bone is thickened and bulging.

**BURIAL #17:**

The top of this grave was oval in shape and was found at a depth of ten centimeters from the junction of humus and sub-soil. The shaft was one hundred thirty centimeters long by one hundred centimeters wide and had penetrated to a depth of one hundred thirty-four centimeters from the present surface. Its long axis was northeast-southwest. Approximately in the center of the shaft was a recent disturbance forty centimeters in diameter and fifteen centimeters in depth. This probably represents the location of a small tree as rotted bark and wood were present. The skeleton within this shaft was loosely flexed, lying on its right side, with the head to the southwest facing east. The hands lay in front of the face. There had been an abrupt displacement of the vertabrae at the seventh lumbar and the skull was broken apart at the sutures. Beneath the skull the stem of a steatite pipe, and a small, stemmed, white quartz point, triangular in shape, was found within the pelvis near the left iliac.
slightly flexed and the arms lay to the east of the skeleton. The bones of both the hands and feet had completely disintegrated. To the east of the pelvis was an object similar in shape to an atlatl weight (Fig. 3).

N/7193 — This is the skeleton of a young child whose sex is uncertain. The skull is in pieces, mainly separated at the sutures, and the metopic suture may have been present in life—a normal occurrence in infants and young children less than three years old. The teeth permit a fairly precise diagnosis of the child’s age. They are present in fragments of the maxilla and mandible. All of the milk dentition had emerged except the four second milk molars. Since these molars emerge at twenty-four months, the probable age of this child is about twenty months. The enamel caps are well formed on the permanent first molars. The macillary sinus is probably unusually large for a child of this age. The exoccipitals were probably separated from the squama in life. The mandible is quite rugged, and there is already a slight suggestion of mandibular torus. Many shafts of the long bones are present, and perhaps 1/3 of adult size.

BURIALS #19 - #20:

The point at which the tops of these two shafts were distinguishable was somewhat lower than that of the rest of the Titicut burials, at twenty-seven centimeters below the junction of humus and sub-soil. The base of these shafts was also deeper, at one hundred eighty-five centimeters from the present surface. It is possible that these graves were located in a depression in the original surface which had since been filled through cultivation of the surface. The top of this combination of shafts was a long oval two hundred twenty-four centimeters by one hundred thirty centimeters, the long axis was northeast-southwest. We became aware of the fact that this was a combination of two shafts only when the slight difference in the level of the two bottoms was noticed. The presence of a disarranged skeleton as well as an undisturbed skeleton served to confirm this fact. It would appear that when the second grave shaft was excavated the presence of a previous burial was discovered and the original skeleton simply pushed aside to make room for the second burial. One might assume from this circumstance that the graves were not marked, or that if such marks were present they were of a temporary nature, so that the precise location of burials were soon forgotten by the Indians. The complete skeleton was found flexed upon its right side, head to the southwest, facing east, with the hands before the face. The skeleton was in poor condition and was left in situ. No grave goods were present. The only clue to the age of this individual at death was that the epiphyses of the long bones were still separate from the shafts, a condition normal in the late teens. The remains of the first burial lay just to the west of the pelvis of the second, and consisted only of a cranial cap, a sternum, pelvis, and one or two of the long bones. These also were left in situ.

BURIAL #21:

The top of this shaft was almost a perfect circle, ninety centimeters in diameter, located at the junction of humus and sub-soil. The base of the shaft was at ninety centimeters below the present surface. The skeleton of an infant or a small child lay on its back with the head to the southwest, its lower limbs folded in characteristic infant fashion. As it lay the skeleton was fifty centimeters in length. No grave goods were present. This skeleton also was left in situ.

BURIAL #22:

This grave shaft appeared at a depth of fifteen centimeters below the junction of humus and sub-soil. The plan was oval, and was orientated in a northeast-southwest line. Its length was two hundred forty-nine centimeters, and its width one hundred twenty-seven centimeters. The greatest depth was at its center, where the shaft had penetrated to the white sand at one hundred twenty-seven centimeters below the present surface. The grave fill was dark in color, probably because of the inclusion of considerable powdered charcoal. There were several lenses of light gravel; and, at the north end of the shaft, about half way from the top, were three large cobble stones which showed the effect of intense heat. The skeleton was tightly flexed and lay upon its right side with the head to the southwest, facing east. The hands lay before the face. Back of and parallel to the spinal column was a large, well-made cylindrical pestle. The skull was broken apart at the several sutures, it was bandaged in situ in order that it might be removed whole.

N/7199 — This is a partially restored cranium with bone fragments of the facial skeleton and skull base, and with the mandible complete except for both condyloid processes. The individual was mesocephalic. The smooth contour of the posterior part of the zygomatic arch suggests that the individual was a female, but the mastoids are fairly large for a female. Sutural union both inside and outside the vault is absent. The teeth of the maxilla and the mandible are worn enough to expose the dentine. All of the mandible molars were probably lost before death, and the alveoli resorbed. The right maxillary first molar has erupted considerably
farther than the adjacent highly worn second premolar, and this molar is markedly carious. A loose right maxillary third molar has almost a crown eroded away by caries, but no abscess formation is present. A small occlusal and lingual carious lesion is seen on the right upper incisor. This, then, was probably a young woman with unusually bad teeth for her age and racial origin.

**BURIAL #23:**

Again we find an oval grave shaft one hundred seventy-five centimeters in length by one hundred twenty-seven centimeters in width, with its long axis in a northeast-southwest line. The base of this grave shaft was at one hundred twenty-five centimeters below the junction of humus and subsoil. The fill was light grey in color and consisted of very fine sand mixed with powdered charcoal. It was quite evident that the earth removed in digging had been discarded, and a quantity of fine sand had been brought from another source for fill. The skeleton was loosely flexed upon its right side, head to the southwest facing east. Upon the uppermost portion of the skull there still remained a fragment of bark, indicating that the body had been protected by a covering of that material. The bones of the left foot and ankle were missing. Among the bones of the pelvis, which was in very poor condition, were the fragile bones of a fetal infant. This burial seems to have been made with special care. The body had been wrapped in bark to protect it from the soil, and the rather heavy gravel removed from the grave was replaced by a quantity of fine white sand brought from some other source. We removed only the cranium from this burial.

**N/7206** — This is the skull of a woman who probably died in middle age. The calvarium is well preserved except for breakage of both zygomatic arches. The vault is dolichocrane (Cranial Index 72.4%), with an ovoid shape, and only a moderate bowing of the zygomatic arches. The nasal profile is virtually flat from the glabella to well below the nasion, and markedly concave. Moderate maxillary alveolar prognathion is present. The mandible is small and gracile with a slight suggestion of mandibular torus. The teeth are worn considerably in the incisor region, but less posteriorly. Both lower first molars were lost a short time before death, and the alveoli are resorbed; but convergence of the adjacent teeth has hardly begun. The incisors, especially the lower ones, are very small.

**CONCLUSIONS**

It is possible to arrive at several interesting conclusions from the data obtained from the excavation of the burials at Titicut. The vertical and horizontal plan of the grave shafts, the position in which the bodies were placed, the care with which the dead were laid away, and the grave goods which were found with some of them, all contribute to our knowledge. The morphological study of the skeletons also makes no small contribution to our knowledge of the physical type and habits of the Titicut Indians.

In view of the respectable antiquity of some of the lithic materials found elsewhere at the site our first problem is to establish the probable age of these burials. Upon the basis of data, reported later in this paper, and obtained at the site at Assawompsett Lake, the cremation burials (#2 and #3) are probably from an archaic period and ante-date the inhumations.

The profiles of the balance of the grave shafts clearly establish the fact that they were all dug from a common surface. A possible exception is Burial #19-20. The slight difference in the depth of the tops of the shafts from the junction of humus and subsoil may be assumed to be a function of erosion and recent disturbance. Of course the original surface of the area was probably an uneven one, and recent cultivation would tend to plane off the tops of the grave shafts and level the entire area. It is somewhat difficult to explain the position of the tops of shafts #18 and #21. In no instance was there any indication of where the earth removed from the original shafts was placed prior to refilling. This fact also tends to indicate that cultivation has planed off the tops of some of the graves and thus destroyed some of the data. The slightly greater depth at which the tops of burials #19 and #20 were found may be explained by assuming that these shafts were located in a depression in the original surface. It is also possible that these were the earliest interments, but there is no direct evidence of greater age. If we assume that all of these burials were made by one of the Indian groups that lived at Titicut, and that they were contemporary within reasonable limits, the character of some of the artifacts found in a few of the graves may be submitted as evidence of the probable age of all.

Artifacts of undoubted European origin were associated with some of the burials. Projectile points, pendants, and beads of copper or brass were taken from Burials #5 and #6. The stem of a European clay pipe was associated with the stone and bone projectile points in Burial #15. The presence in Burial #6 of such perishable materials as birch bark and bundles containing deer skin is an indication of no great antiquity. The presence of
these materials indicates that these burials were made after European contact. It is probable on the basis of historical evidence that Titicut was abandoned by the Indians prior to 1621, so that we may guess that most of these burials were made between 1500 and 1620 A.D. The fact that red paint was present in some of these graves is no longer considered to be, in itself, evidence of antiquity, as it has been amply demonstrated that this material was used by some historic groups.

The plan of the Titicut burials also reveals an interesting trait that was probably a part of the mortuary complex. It will be noted that all of the oval shafts, with the exception of Burial #10 and Burial #7, were orientated along a northeast-southwest line. A majority of the skeletons were flexed, were upon the right side, head to the southwest, and facing east. Even those which rested upon their backs were placed with the head toward the southwest. The exceptions, Burial #10, and Burial #7, which were definitely orientated in an east-west line, serve to emphasize the rule.

We may sum up the burial complex at Titicut during the proto-historic period as follows — Orientation of the grave shaft along a northeast-southwest line, body placed upon the right side, flexed, head to the southwest facing east, with the hands before the face. An alternative position occurred in which the body was placed upon its back with the head to the southwest and hands covering the face. Respect for the dead and a desire to protect the body from the elements is shown in several instances in which a bark covering is present, and the substitution of fine white sand for gravel in Burial #23. We must not omit reference to the dog burial found near Burial #4. This burial resembled those of several infants found, in that the plan of the shaft was round, had a diameter of ninety centimeters and a depth of one hundred centimeters. The body of the dog had been placed upon its right side with the head to the south in a manner similar to that of the humans buried at the site.

MORPHOLOGICAL CONCLUSIONS
BY DR. EDWARD E. HUNT JR.

The Indian skeletons excavated from the Titicut site comprise the remains of about fifteen individuals (this is the number sent to Dr. Hunt for examination), distributed by age and sex as follows:

<table>
<thead>
<tr>
<th>AGE</th>
<th>MALE</th>
<th>FEMALE</th>
<th>SEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young child</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Adolescent</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Subadult (18-20 yrs.)</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Young Adult (21 to 35 yrs.)</td>
<td>1</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Middle Aged (36 to 55 yrs.)</td>
<td>5</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

The individuals in the series above are described morphologically in the text. This series of skeletons is large enough so that the characteristics of the Titicut Indians can be reconstructed from their bones. The Titicut population shows a quite typical aggregate of Indian racial traits. The headform is highly variable, ranging into extremes both dolichocephalic and brachycephalic. The average male stature was medium (probably 165 - 170 cm.). Typical North American Indian racial features found in some of the skeletons include a lack of depression at naison, broad malars, maxillary alveolar prognathism, palatal and mandibular tori, shoveling of the upper incisors, small lower incisors, and rugged attachments of both jaw and neck muscles.

Some conclusions as to the habits and behavior of these Indians may be deduced from their teeth, the shapes of the long bones, and the ruggedness of some of the muscle attachments.

The teeth show rapid wear from early adult life on in most individuals. The diet of these peoples was clearly abrasive, and wore down the front teeth in particular. Some individuals show dental decay and loss in middle life. Peridontal disturbances, however, are not too conspicuous. The long bones in this population are especially revealing of their mode of life. By and large, the muscular attachments of the upper limbs are strong and those of the lower extremities are weaker. This is the kind of musculature to be expected in a people who prefer to travel by boat rather than on foot. Some evidence also exists — in one man especially — of a preference for squatting rather than sitting, and a bent knee shuffle rather than a walk, with the knee extended. These findings are characteristic of human beings outside our urban sphere of life. Finally, pathological disturbances of the leg bones in at least two individuals may have encouraged their owners to walk as little as possible.

Table 1. finally illustrates two demographic characteristics of mortality often found in primitive or rustic populations. One is the high frequency of deaths before middle age. The second peculiarity is the high incidence of female deaths in the young adult, or reproductive span. These findings emphasize the hazards of primitive life, especially to young women as a result of childbirth.