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AT WORK IN THE HARNESS MOUND.

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Certain Mounds and Village Sites in Ohio

ILLUSTRATED

BY

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Curator and Librarian, Ohio State Archaeological and Historical
Society. Curator of the Archaeological Museum,
Ohio State University.

VOLUME I

COLUMBUS, OHIO
PRESS OF FRED J. HEER
1907

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Reprinted from the Ohio Archaeological and
Historical Quarterly.

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P R E F A C E .

The purpose of this volume is to present the results of archæological research in Ohio, under the auspices of the Ohio State Archæological and Historical Society, in a form which will meet the requirements of students especially interested in the study of the mounds and village sites of Ohio and to extend the diffusion of knowledge gained by these explorations, a knowledge which has been secured through great labor and at great expense.

The present volume has been designated "Certain Mounds and Village Sites in Ohio," Volume I, and comprises the following monographs:

"Excavations of Adena Mound."

"Explorations of the Gartner Mound and Village Site."

"Explorations of the Baum Village Site."

"Explorations of the Edwin Harness Mound."

All the parts comprising this volume appeared in the Quarterly Magazine published by the Society. Hereafter additional volumes will be published from time to time as the explorations progress and when pages sufficient to form a volume have been acquired. The subsequent volumes published as prepared will be supplied with table of contents and indexes.

WILLIAM C. MILLS.

*Archæological Museum, Page Hall, O. S. U., Columbus,
Ohio, April, 1907.*

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19. Copper ear ornament. (Two-thirds size.)
20. Copper ear ornament. (Two-thirds size.)
21. Copper ear ornament. (Two-thirds size.)
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33. Copper axe (Length two and seven-tenths inches.)
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36. Decorated pottery.
37. Decorated pottery.
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PART I

Excavations of Adena Mound



ADENA MOUND.

EXCAVATIONS OF THE ADENA MOUND

BY

WILLIAM C. MILLS, B. SC.

(Curator Ohio State Archaeological and Historical Society)

Reprinted from the Ohio Archaeological and Historical Quarterly,
Volume X, Number 4.

COLUMBUS
PRESS OF FRED J. HEER
1902

This report is reprinted from the tenth annual publication of the Ohio State Archaeological and Historical Society, for the convenience of those who are only interested in the Archaeological Department of the Society. The annuals complete are sent only to members of the Society or others especially entitled to them.

E. O. RANDALL, *Secretary*,

Columbus, Ohio.

EXCAVATIONS OF THE ADENA MOUND.

BY WILLIAM C. MILLS, B. SC.

(*Curator Ohio State Archaeological and Historical Society.*)

The Adena mound, so named by Governor Worthington, and owned by his estate until a few years ago, was thoroughly examined by the Ohio State Archaeological and Historical Society under the direction of its curator during the summer of 1901. The mound is located $1\frac{1}{2}$ miles from the northwestern part of the city of Chillicothe, in the valley of the Scioto River. Standing upon the summit of this mound one could see, looking directly to the north, the noted Mound City so named by Squier and Davis, and examined by them in 1846; looking to the south the Chillicothe group of mounds could be seen, which were examined by Fowke, Moorhead and others; directly to the east could be seen the Scioto River, and to the west is the large hill upon which is located the mansion called Adena, which was the home of Governor Worthington. Near the mound, and at the foot of this hill, is Lake Ellensmere, which played a very important part in the construction of this mound. In 1798, when Governor Worthington came to Ohio, he purchased the land upon which this mound was located, and it has since been owned by the heirs until a few years ago, when it was sold to Mr. Joseph Froehlich, consequently the mound had been preserved for more than 100 years. In the course of time the present owner found that it was quite an expense to keep this mound in a good condition, and as it occupied a large tract of fine alluvial bottom land, which was valuable for agricultural purposes, he decided upon its complete removal. On the 21st of June a contract was entered into with Mr. Froehlich to remove this mound, the greater part of the soil of which it was composed to be placed in a cut made by the B. & O. Railroad, which is perhaps fifty yards away. The mound, at the time work began, was 26 feet high measuring from the south side, 26 feet 9 inches measuring from the north side, with a cir-

cumference of 445 feet. The north side of the mound was covered with an undergrowth of small trees and briars, making it almost impossible of ascent, while on the south side the mound was not so densely covered and a path was easily made to the top of the mound, where the work began. Until last year the mound was covered with a growth of trees each ranging in diameter from 6 to 18 inches, but these had been cut down and taken away by Mr. Froehlich, preliminary to the removal of the mound.

The outer surface of the mound was covered with a leaf mould from 3 to 7 inches in thickness. As work progressed upon the mound it was discovered that it had been built at two different periods. The first period represented the original mound which

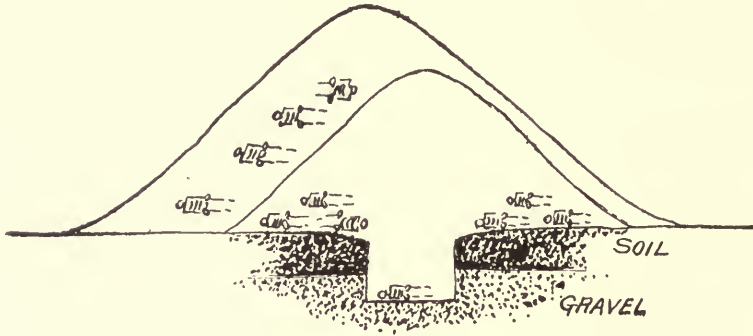


FIGURE 1.

was 20 feet high with a base diameter of 90 feet being composed almost entirely of dark sand, which was no doubt taken from the small lake near by, known as Lake Ellensmere. The second period shows the enlargement of the original mound on all sides. On the south side the mound was only covered with a few feet of soil, while on the north side the base was extended more than 50 feet; this enlargement was carried up the side of the mound changing the apex between 12 and 15 feet. This is shown in Fig. 1. The soil of the second period differed very much from that of the first; while the first was composed almost entirely of sand and was of a dark color; the second part of the mound was composed of sand of a lighter color mixed with the soil of the

surrounding surface. In some places the sand was entirely absent, while in others but very little soil was mixed with it.

The mode of burial in the first period was far different from that in the second. In the original mound no burials were found until within five feet of the base line. The body at the time of its interment was enveloped in bark or a coarse woven fabric and then enclosed in a rude sepulcher made of timbers, ranging in diameter from 3 to 17 inches. The sepulchers varied greatly in size; those above the base line were made by placing large logs on each side of the body with a covering of small logs placed over the top. The sepulchers placed on the base line were usually made of a framework of timber, which had long since decayed away but the cast of which was still retained in the hard sand; this enclosure of timber, measured from outside to outside, was usually from 8 to 9 feet in length and from 5 to 7 feet wide and from 18 inches to 2½ feet high. They were constructed from unhewn logs lain one upon another, and were then covered over the top with logs that were smaller than those at the sides and ends. After a period of time these logs would decay, and the superincumbent earth would drop into the grave; with the sides and ends supported and no support in the center this would naturally form an archway of earth, which was clearly defined at the time the mound was opened. In a number of instances the loose earth was removed from the sepulchers disclosing large rooms, some of which were 10 feet long and seven feet wide, with an arched roof, being high enough for a man to stand upright in them. In the second period the burials were much different, no sepulchers were prepared for the dead and not one of the skeletons was covered with bark, and only one showed any trace of a woven fabric, this being preserved around a copper bracelet.

The skeletons in the first period were much better preserved than those in the second; this was caused by the protection afforded the body, at the time of burial, by the sepulcher.

In the outer mound skeletons were found from the top to almost the bottom, while in the original mound the skeletons were all found within five feet of the base line and below this line. However the implements and ornaments found in both sec-

tions of the mound were similar in every respect, but were more abundant in the first period than in the second. In the first period implements and ornaments were found with all the sepulcher burials, with but one exception, which will be noted later. In the second period quite a number of skeletons were found that had no implements or ornaments of any kind placed with them.

The mound was removed in five-foot sections commencing at the top. In the first section, which includes the apex of the mound, we expected to find intrusive burials, but in this we were disappointed. The earth was carted to the north side of the mound in wheel barrows and thrown down its sides. In the second cut a winding road was made up the side of the mound, so that teams could remove the dirt, which was done by the use of wheel scrapers. The soil was loosened with picks, and the earth carefully examined, it was then shoveled back so wheel scrapers could carry the dirt away. Whenever a grave was discovered competent men were placed at work to remove the dirt from around it with small hand trowels. All the skeletons were photographed in place with the implements and ornaments found with them. All changes in the structure of the mound were also photographed. A total of 33 skeletons was removed from the mound, 21 occurring in the first period, or the original mound, and 12 in the second period.

The first five feet of the apex of the mound was composed of soil taken from the surface surrounding the mound. The soil was first loosened by picks and then loaded upon wheelbarrows and carted to the north edge of the mound where it was thrown down the side. This section was carefully examined for intrusive burials but none were found. Five feet from the edge, and almost on the base line of the cut, was found a chipped hoe, 5 inches in length and $1\frac{3}{4}$ inches in width, which had evidently been lost by the builders of the mound, as nothing was found near it to indicate that it had been placed there intentionally. Near the center of this section was found a small quantity of charcoal scattered through the soil which had evidently been intermingled with the earth at the time of its deposit there. A little past the center to the south side was again found small particles of char-

coal, in this case a little pocket of ashes accompanied the charcoal, and it looked very much as though a small basket of earth, charcoal and ashes had been deposited together. East of the center of the mound, and near the base line of this cut, was found a very large pitted sandstone, pits occurring on both sides. The stone was 8 inches long, 6 inches wide and 5 inches thick. This sandstone was no doubt procured from the hillside near by, as ledges of this rock are exposed in several places. See Fig. 2 which shows first cut of 5 feet.



FIGURE 2.

The second cut of five feet which was commenced at the north side and carried through directly to the south, was far more interesting than the first cut. This cut was composed almost entirely of earth and sand taken from the surrounding surface, with the exception of the center, which was composed of a compact dark colored sand, and so hard that it was necessary to pick it down before it could be removed. Fig. 3 shows a photograph of the dome-shaped sand which proved to be the top of the original mound.

Near the center of this sand portion were found two fragments of human bones consisting of one small piece of the right

femur and one small piece of the left humerus. A little past the center of this sand portion was found a pocket of ashes and char-



FIGURE 3.

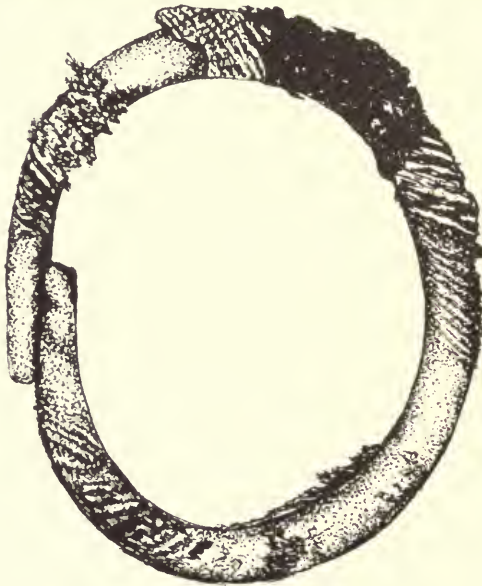


FIGURE 4.

coal; in these ashes parts of the meta carpal bone of the deer and part of the humerus of the wild turkey were found. Just outside of this sand center to the east, and about four feet from the top of the five-foot cut, was found the skeleton of an adult, upon the right arm of which two copper bracelets were found. These bracelets were made from a rounded piece of copper tapering to almost a point at each

end, the ends overlapping each other when bent around the wrist. Around the bracelet was a quantity of well preserved woven cloth.

Figure 4.—Upon a finger of the left hand were found two copper rings, and these were also made of hammered copper, formed into a light copper wire, this wire was then bent twice around the finger and formed what is known as the spiral ring. Figure 5.—



FIGURE 5.

The skeleton was very much decomposed and but very few of the bones could be saved. Around one of the bracelets was found a quantity of woven cloth; this cloth was very nicely preserved, showing the texture, etc. Figure 6.—Five feet to the east of this first skeleton was discovered the skeleton of an adolescent, upon the wrist of which were found two beautiful copper bracelets, similar in every respect to those found upon the first skeleton, and having upon the head a head-dress made of large strips of mica cut into shape and pierced with holes for attachment. Figure 7.—Near the head of this skeleton was found a broken earthen jar which was carefully removed. Near this jar was unearthed a large square block of sandstone with cup-shaped depressions on one side. Figure 8 shows the second cut and the dome of the original mound.



FIGURE 6.

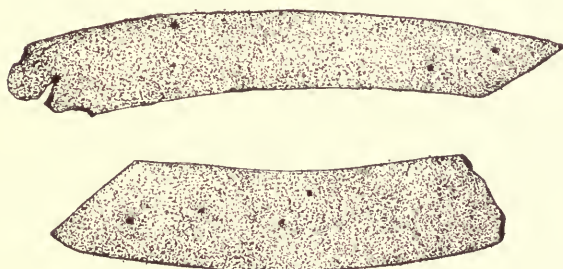


FIGURE 7.

only one foot below the bottom of the second cut. No implements or ornaments of any sort were placed with this skeleton.

The third cut of five feet brought to light one skeleton. This was found near the east side, 12 feet from the edge of the mound and

It was in a bad state of preservation and only small portions of it could be removed. Near the center of this section were a number of deer bones which had evidently been carried there with the



FIGURE 8.

sand. A number of shell hoes made of the fresh water mussel (*Unio plicatus*), were scattered through the central portion of the mound. These shell hoes were made by cutting a hole through the shell for attachment. Figure 9.—

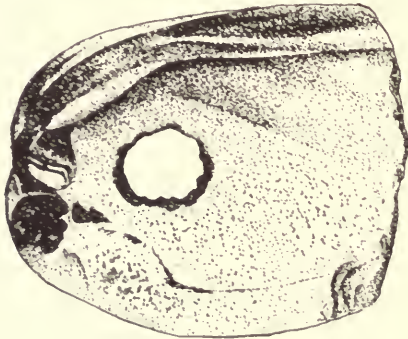


FIGURE 9.

the other a female. No implements or ornaments were placed with these skeletons but both were in a very bad state of decay,

The fourth cut of five feet was very interesting. Five skeletons were removed from this section. Fifteen feet from the north side, and almost upon the base line, two skeletons were found lying side by side; both were adults, the one being a male and the

but the arm and leg bones were removed in a very good condition. A little farther in from the north edge was found another skeleton, upon the wrist of which were two copper bracelets; these were quite small, in fact they had been hammered down so that the wire of which they were made was less than $\frac{1}{4}$ inch in diameter; they were bent around the wrist, the ends overlapping each other, very similar to those found in the second cut; no other implements or ornaments were found with this skeleton. On the east side, and $2\frac{1}{2}$ feet from the base of this cut, was found the skeleton of an adult; it was lying at full length, head to the north; around the loins there was a coarsely woven cloth, but very little of this cloth was saved owing to the advanced stage of decomposition. No implements or ornaments of any sort were found with this skeleton. Not far from the south side of this cut was found the fifth skeleton; this was very near the edge of the mound and might have been an intrusive or secondary burial. The skeleton was in a fair state of preservation, and the skull and bones were carefully removed. No implements or ornaments of any kind were found with this skeleton.

The mound had now been removed to within six feet of the base. Heretofore we had commenced each five-foot cut upon the north side of the mound; this was done to aid the teamsters in removing the earth to the railroad cut. Of the last six feet only two were removed, leaving the mound about four feet high when the work was finished. The object was twofold; first, the expense of removal of the last four feet; second, the owner wished to have left a part of the mound to show at least where it stood; yet all of the dirt comprising the last six feet was carefully examined.

The work of examining the last cut was begun on the east side of the mound. Commencing at the very edge and following the base line it was soon discovered that this line gradually dropped toward the center, showing that the earth had been removed forming a hollow basin, in the center of which was dug a large grave, 13 feet 9 inches long, 11 feet 4 inches wide, and 6 feet 9 inches deep, digging more than three feet into the gravel below, showing that this was the beginning of this great mound. The first skeleton found in this cut was that of an adult, found

within the original mound. This skeleton was placed in a sepulcher made of logs; further examination of this sepulcher disclosed the fact that it contained another burial, the two burials being parallel, but the skeletons being in reversed positions; both were covered with bark, but no traces of cloth were dis-

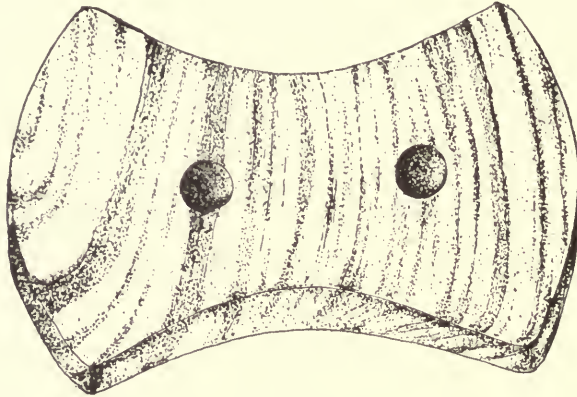


FIGURE 10.

cernable. These skeletons were the largest so far found, the first one measuring 5 feet 11 inches, the second 5 feet 10 $\frac{3}{4}$ inches in length. On the right wrist of skeleton number one was found a slate gorget. Figure 10.—Directly between the two skeletons was found a tube pipe. Figure 11.—The pipe is made of clay, presu-

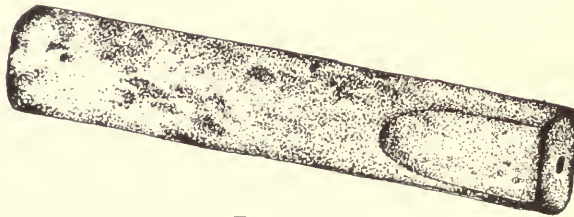


FIGURE 11.

ably fire clay. The whole is $\frac{1}{2}$ inch in diameter, tapering to a point where it is only $\frac{1}{8}$ inch. The pipe is 4 inches in length and $\frac{7}{8}$ inch in diameter. This sepulcher was constructed of un-lewn timbers varying in length from 8 to 9 feet, and in diameter from 6 to 12 inches, although in several graves very much larger

logs were found. These timbers were laid one upon another to a height of $2\frac{1}{2}$ feet, other timbers were then laid over the top and the dirt piled over all; in time these timbers rotted away and the superincumbent earth above would drop into the grave, and as the sides and ends were supported, naturally the center of the grave would drop in first; this finally formed an archway of



FIGURE 12.

earth above. Figure 12. The cast of one of the timbers forming the rude sepulcher is shown in Figure 13. Skeleton number three was found on the north side of the cut, near the base line. It was very much decomposed. The only ornament found with this skeleton was a bracelet made of bone beads. The skeleton was that of an adult male.

Skeleton number four was only a few feet from number three, but had a sepulcher made for it; some of the logs which

composed this sepulcher were 10 inches in diameter. The body had evidently been previously buried in some other place and later transferred to this mound, as the skull was placed in the center of the grave with the foramen magnum turned upward,

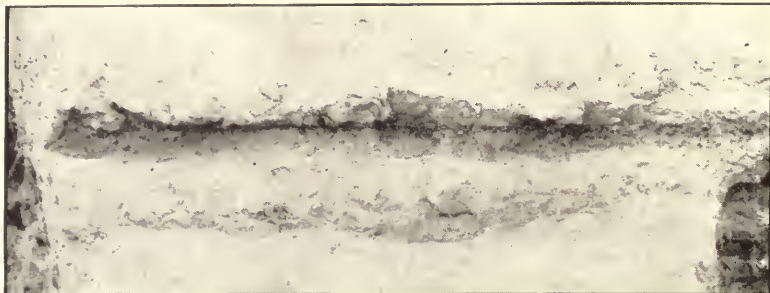


FIGURE 13.

and surrounding it were bones of the leg, arm, and vertebrae. At one end were the cervical vertebrae and bones of the hand and foot; at the other end were the ribs and bones of the arm and lower legs. Throughout the mass upward of 200 beads made of



FIGURE 14.

bone and shell were found. The covering over the top of this burial consisted of three layers of bark the outside layer being very heavy something like oak bark; the next layer was of a thinner bark something like the elm, the inside layer being a very

thin bark very much like the wild cherry or birch. Figure 14 shows a photograph of this skeleton as it was uncovered in the mound.



FIGURE 15.

Skeleton number five was found on the south side of the mound lying at full length, head to the east and $4\frac{1}{2}$ feet from the base of the mound. This skeleton was 5 feet $8\frac{1}{2}$ inches in length, and was that of an adult male. Near the head was a spearhead

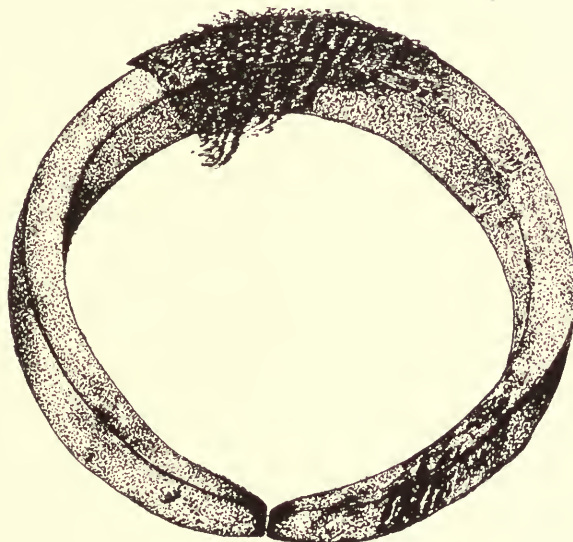


FIGURE 16.

of chalcedony 4 inches in length; this spear is shown in Figure 15. Two very large flat bracelets, made of copper, were found on the right arm; these were partly covered with cloth which was very nicely preserved by the carbonate of copper. Figure 16

shows the copper bracelets. About three feet nearer the center of the mound, and on the same level with number five, was exhumed skeleton number six, which was 5 feet 7½ inches in length, and was that of an adult female. On the right arm were found two bracelets made of copper; these bracelets encircled a boat-shaped ornament pierced with two holes; through these holes were strings which had been preserved by the action of the copper; these strings showed, too, that the gorget had been attached either to the arm or to a woven fabric that was found associated with the bracelets. This boat-shaped gorget is 5¾ inches in length and made of limestone; see Figure 17, which shows the position in which the gorget and bracelets were found. Skeleton number

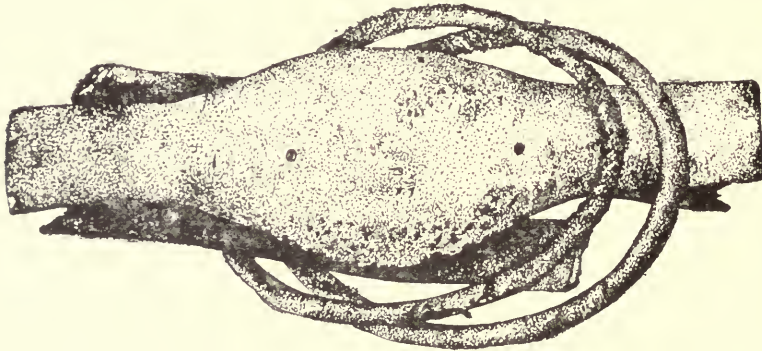


FIGURE 17.

seven was found not far from number six, but nearer to the center of the mound; it was that of an adult. The skeleton was placed about 4½ feet from the base of the mound. No ornaments of any sort had been buried with it and it was without even having a covering of bark. The skeleton was in a very bad state of preservation, and only a very small portion of it could be removed.

Skeleton number eight was that of a child about six years of age. The skeleton was placed in a sepulcher made of unhewn logs, and was 8 feet 9 inches in length, 5 feet 8 inches in width and 2 feet 9 inches high, and was placed on the base of the mound. The bottom of the sepulcher was covered with a bed of fine gravel firmly packed. This gravel, at the south end of the sepulcher, was three inches thick and at the north end 2 inches; over the

top of this gravel was placed a layer of bark; this bark seemed to completely cover the bottom of the grave. The body of the child had evidently been wrapped in cloth from head to foot; over this cloth was also a wrapping of birch bark, and then came long strips of wood which were about one-half inch thick and 2 inches wide; these were placed entirely around the skeleton, and over all was another covering of bark which looked very much like the inner bark of the bass wood. Around the neck of the little child two strings of beads were found. The first string consisted of about fifty beads made of bone and shell from one-fourth to one-half inch in diameter; the other string was very much larger, and contained about 150 beads made of both shell and bone. The cloth found around the skeleton was of two kinds; the greater part consisted of a coarsely woven mat resembling very much the burlap of our present time; the other, which was

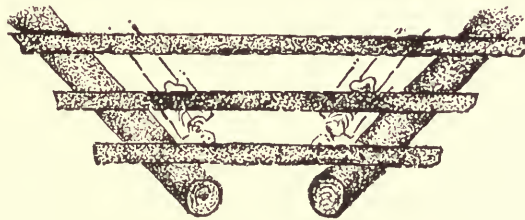


FIGURE 18.

placed around the loins, was made of stronger and heavier material and was not so closely woven.

Skeletons number nine and ten were found on the south side of the mound and were placed together in a sepulcher made of logs which differed somewhat from the other sepulchers so far discovered; see Figure 18. The sides of this sepulcher were composed of large logs 15 and 16 inches respectively in diameter. These logs were placed near together at the head and extended at an angle of 35° as shown in the drawing. The logs placed over the top as a protection to the body when placed in the grave were quite large, none of them being less than 6 inches in diameter, and the largest one 12 inches. The skeletons were those of adults, both being males, and were in a good state of preservation; around the neck of one six beads were found; these were about one-half inch in diameter and made of bone finely polished.

No implements or other ornaments were placed in the sepulcher. Skeleton number eleven was that of an adult male also placed in a sepulcher made of logs, and was 8 feet long 4 feet wide and 18 inches high; the skeleton was 5 feet 7 inches in length. Around the neck was a necklace made of bone beads.

Directly beneath this sepulcher and on the base line of the mound was a great fireplace, the ashes being 14 inches in thickness; this was very near to the grave which was found in the center of the mound. In these ashes was found a great quantity of burned mussel shells, also the bones of various animals; these were all calcined by the heat but enough was left to identify them; those removed from the ashes were the wild turkey, trumpeter swan, Virginia deer, black bear and raccoon; not a particle of charcoal was found in this fireplace, showing that the fire had burned entirely out before it was covered up. This fireplace on the east side of the large central grave corresponded to one found later on the west side of the grave.

Skeleton number twelve was that of an adult male, placed in a large sepulcher made of logs. This sepulcher was 12 feet long, 7 feet wide and 2½ feet high; the largest logs were placed at the bottom and measured 10½ inches in diameter. In speaking of the logs which composed the sepulchers of this mound it will be understood that nothing is left of the logs but the molds. The bottom of this sepulcher was covered with bark which consisted of several layers. The skeleton was perfectly wrapped in bark, the outside being of a coarse quality and resembling very much the bark which covered the bottom of this sepulcher; the next two layers were evidently birch bark. Around the neck of the skeleton was a great quantity of beads made from small ocean shells; around the wrist were also a number of beads, but these were made in the shape of small disks one-fourth inch in diameter, and were made of the leg bones of the deer and elk. This sepulcher was placed on the base line.

Skeleton number thirteen was that of an adult and was placed about 2½ feet above the base line, and very near the sepulcher which was occupied by number twelve. The log molds of the sepulcher showed that only small pieces of wood were used in its construction. No implements or ornaments were placed with this

skeleton. About two feet from the head of this skeleton was found a shell hoe, very much worn and which no doubt had been lost. Further excavations on the base line of the south side of the mound disclosed skeleton number fourteen, which was 5 feet 8 inches in length and badly decomposed. At the head were placed three large stone slabs and at the foot four, and connecting the tops of the slabs were large logs ranging in diameter from 3 to 9 inches. On the right arm of the skeleton were placed four copper bracelets made of heavy copper, several of which were almost one-half inch in diameter; some of these were covered with cloth. On the left arm were also four copper bracelets, identical in every particular with the ones found on the right arm. Around the head was a string of beads made in the form

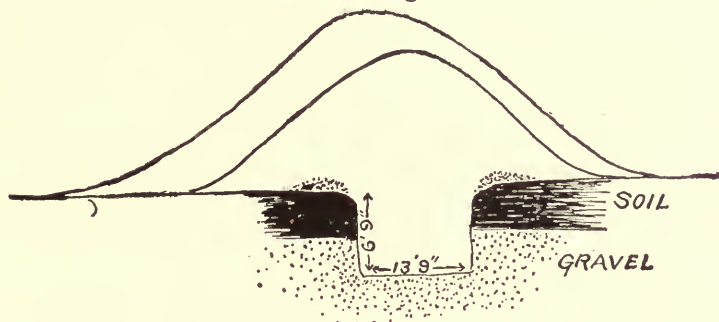


FIGURE 19.

of disks, averaging one-half inch in diameter; these numbered upward of 200. Around the loins was also a string of beads of the same kind; at the feet were some broken pieces of diorite, several of which showed that they had been used while others showed that they were in the process of manufacture of some implement. Approaching the center of the mound it was discovered that a grave was located below the base line, by the appearance of gravel which had evidently been thrown out of the center grave on all sides; see Figure 19. This center grave was quite large, being 13 feet 9 inches long, 11 feet 4 inches wide, 6 feet 9 inches deep, measuring from the base line; this is also shown in Figure 19. The bottom of the grave was covered with a layer of bark which extended up the sides of the grave and over the surrounding surface for ten feet on all sides. Upon

this layer of bark, at the bottom of the grave, was the skeleton of an adult male 5 feet 9½ inches in length, with head to the south. The skeleton had been wrapped in three distinct layers of bark, and was in a fair state of preservation; the skull was badly crushed and several of the arm bones were broken; the tibia and fibula of both legs were painted red; evidently the flesh had been removed from the bones, the paint then placed around them and the whole then covered with a plaster made of mud. Around



FIGURE 20.

the feet and loins was found the remnant of a woven fabric similar to the fabrics already described. Near the feet were nine large leaf-shaped knives made of flint obtained from Flint Ridge; these were finely wrought and ranged in length from three to four inches; see Figure 20. Between the right and left tibias, but nearer to the right, was found a tablet 4 inches long by 2½ inches wide and one-half inch thick. This tablet is made of a fine grained sandstone, the edges all being beveled, both sides being similar. On one side, near the center, are two long inden-

tations, both extending the long way of the tablet; also two other indentations at almost right angles to those extending the long way. This tablet was no doubt used in the manufacture of bone

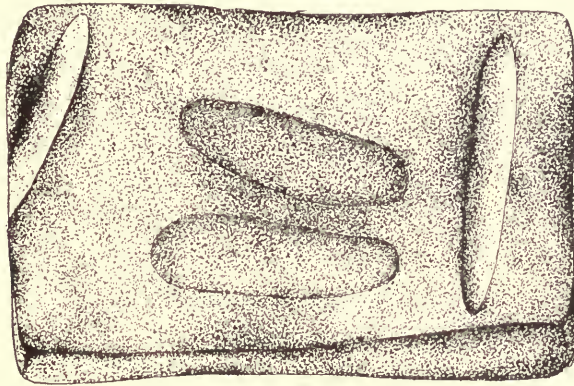


FIGURE 21.

implements and ornaments. Figure 21. To the side of the right tibia and directly opposite the tablet were found two leaf-shaped knives similar in every respect to those found at the feet; a large

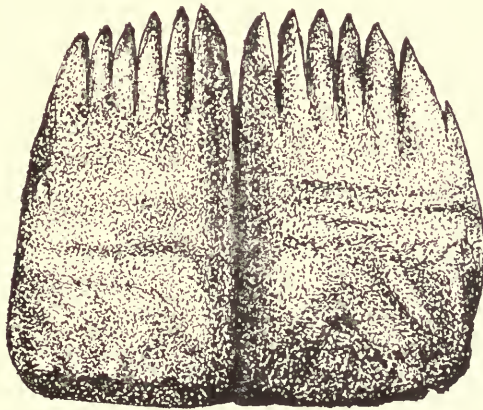


FIGURE 22.

slab of flint broken into shape preparatory to its being manufactured into a knife, and several scrapers made of flint. Near the last mentioned flint pieces three incisor teeth of the beaver were

found; these were not perforated, neither did they show that they had been worked in any way, yet they could have been used as tools. With the beaver teeth were two pieces of rib bones, presumably those of the elk, one end of which had been cut square while the other was cut in the form of a comb, each piece having six teeth. The pieces were no doubt fastened together, as is shown by the drawing Figure 22, as they were in this position when found. They were carefully removed, and it was supposed at the time that the comb had been made of one piece of bone instead of two; each piece is 2 inches long by $1\frac{1}{4}$ inches wide. On the outside of the left tibia were 11 large awls, all made of the shoulder blade of the elk; these were very beautifully wrought; see Figure 23. They range in length from 6 to 11 inches. With these awls was found a needle $7\frac{1}{4}$ inches in length, one end having a very sharp almost round end but gradually tapering and flattening toward the other end, where it was pierced by a small hole $\frac{1}{8}$ inch in diameter; see Figure 24. Around the head of the skeleton but mostly to the left were twelve awls made of the shoulder blade of the Virginia deer; these were in every respect similar to those found near the left tibia, and varied in length from 5 to 6 inches.

On each side of the head were found two perforated canines of the mountain lion; these were no doubt used for ear ornaments. Directly above the skeleton

was placed a large quantity of bark, four



FIGURE 23.



FIGURE 24

layers being distinctly visible, yet from the quantity that was found it is evident that many more layers of bark were placed there at the time of burial. Directly over this bark was a layer of ashes 3 inches in thickness; in these ashes were found the calcined bones of two distinct human skeletons, one being that of an adult while the other was that of a child. Various portions of the skull and of the large bones were found, showing that the human body had been cremated and the ashes and bones that were left had been placed over the grave. With these bones, were also found scattered through the ashes, the remains of the deer, elk, black bear, raccoon, otter, beaver, wild turkey, trumpeter swan and great horned owl; these bones were freely mingled with those of the human bones. The bones no doubt comprise the remains of a sacrifice made near this center grave in the great fireplaces spoken of, after which the ashes and calcined bones were gathered up and deposited over these remains. Immediately above the ashes was placed a layer of logs ranging in thickness from 5 to 7 inches; these were placed in the side of the grave and covered over with small sticks. Upon this covering of small sticks and immediately above the feet of the skeleton placed at the bottom of the grave, and at right angles to it, was the skeleton of a male adult 5 feet 8 inches in length. The skeleton was covered with a layer of bark; no implements or ornaments were placed with this burial. Finding the skeleton placed in this position might lead one to surmise that there had been a human sacrifice, and this sacrifice placed at the feet of the lower skeleton; yet nothing in the burial would show that such was the case. There might have been some little time elapsed between the first and second burials in this grave, yet no evidence was found to verify this fact. Immediately above the skeleton was placed another layer of logs, the logs being covered with small limbs; above this was another layer of logs with brush and small limbs placed over the top. It is evident that no soil was placed in this grave, and only the dirt was placed over the last layer of brush and the mound heaped over all; this is readily seen in the arched roof made by the dropping down of the superincumbent earth above, as the logs and sticks would rot away and leave the earth drop into the grave below.

Fifteen feet directly southwest of the center of the mound was found skeleton number seventeen, which was that of an adult male 5 feet 8 inches in length. The skeleton was placed in a sepulcher made of logs which consisted of two very large logs placed by the side of the body, and smaller logs placed over the top as a covering. This skeleton was noted for its singularly heavy bones. Upon the right arm had been placed a string of bear claws, fifteen in number; these had evidently been used as a bracelet.

Skeleton number nineteen was placed directly west of the center of the mound. It was that of an adult male 5 feet 7 $\frac{3}{4}$ inches in length. Around the neck had been placed a string of beads; these were made of bone one-half inch in diameter and



FIGURE 25.

one-eighth inch in thickness. These disks looked very much as though they had been sawed out, so perfectly were they made.

Skeleton number twenty was that of an adult male 5 feet 11 $\frac{3}{4}$ inches in length, having very large bones. This was the largest skeleton found in the entire mound. Near the right wrist was a gorget, perforated with two holes similar in shape to Figure 10; this is made of limestone. In the right hand was a large spear 5 inches in length, and made of Flint Ridge chalcedony; see Figure 25. Near the left knee was found a tubular pipe 5 inches in length and very well made. The material of which this pipe is composed is clay, presumably fire clay, and is of the same material used in all of the pipes found in this mound. At the right knee was found three round stones which were made from diorite; they were 2, 1 $\frac{3}{4}$ and 1 $\frac{7}{8}$ inches respectively in diameter. It is no

doubt but that these round stones were used in making some implement of warfare.

Skeleton number twenty-one, placed on the north side of the mound, was perhaps the richest of the mound finds. The skeleton was placed in a sepulcher made of very large logs; the one on the outside measured 17 inches in diameter and was 16 feet in length; the log which formed the inside of the sepulcher was $12\frac{3}{4}$ inches in diameter and 19 feet in length. The two logs were placed eight feet apart; the top was covered with smaller logs varying in diameter from 3 to 7 inches; these were placed very close together. Between the larger logs smaller poles and brush

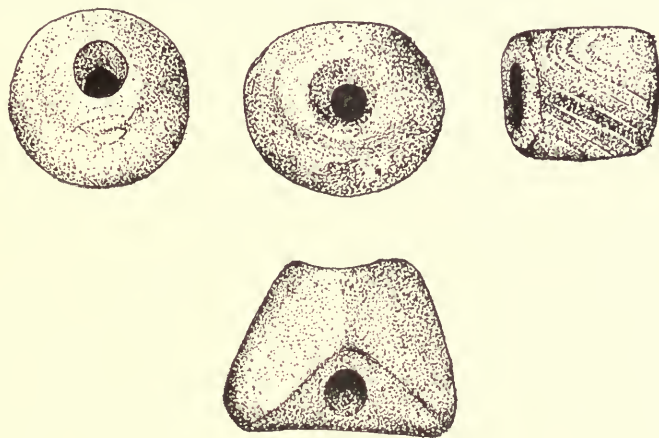


FIGURE 26.

were placed. The skeleton was placed with its head to the east, and upon a covering of bark which seemed to envelope the entire bottom of the sepulcher. Implements and ornaments were promiscuously placed in this sepulcher. The beads were found very near the skeleton; about 500 of these were composed of shell, and about the same number of bone and fresh water pearls. Near the left knee were found very large beads made of shell; see Figure 26.

Here also was found an ornament made of shell, no doubt the effigy of a raccoon; see Figure 27. On the back of this effigy were two counter sunk holes for attachment. Near the head were found three spear points made of the antler of the

deer ; seven arrowheads, and three knives made of chalcedony from Flint Ridge. On the right hand of the skeleton were found three arrowpoints made from the same material as the other seven. The pearl and bone beads were placed around the neck in three strings, while the shell beads were placed near the right wrist and seemed to have been attached to a coarse cloth which evidently

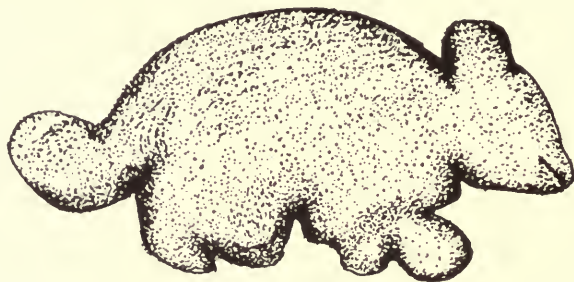


FIGURE 27.

surrounded the loins. Near the left hand was found an effigy pipe; see Figure 28, front view; Figure 29, side view; Figure 30, back view. This pipe is 8 inches in length, and is composed of clay, resembling the fire clay found in Scioto county, which is further south but in the same valley. The pipe is tubular in form, the hole extending the entire length of the body; the large opening is between the feet, having a hole $\frac{5}{8}$ inch in diameter. Within an inch of the top of the head it begins to narrow down to a very small aperture $\frac{1}{8}$ inch in diameter. The mouthpiece formed a part of the head dress of the image. The front part of the pipe is of a light gray in color while the back part is of a brick red. The specimen is covered with a deposit of iron ore; this appears in small blotches over the entire surface of the specimen, the one side of the face and body being more densely covered with it than the other parts of the pipe.

The effigy represents the human form in the nude state with the exception of the covering around the loins; this covering extends around the body and is tied in the back, the ends of the covering hang down and serve as ornaments. On the front of this covering is a serpentine or scroll-like ornamentation. From the lobe of each ear is hung an ear ornament which is quite large in proportion to the ear, and resembles very much the button-



FIGURE 28.



FIGURE 29.



FIGURE 30.

(31)

shaped copper ornaments which are so frequently found in the mounds of the Scioto valley. However, none of these ornaments have been found in this mound, but quite a number have been found in the immediate neighborhood.

The next skeleton found was on the west side of the mound. It was outside of the original mound and was in a fair state of preservation. It was that of an adult male, 5 feet 8½ inches in length. No implements or ornaments were placed with this skeleton.

To the north and outside of the original mound another skeleton was found; this was in a splendid state of preservation and the skeleton was removed in good condition. No implements or ornaments were placed with this skeleton.

PART II

Explorations of the Gartner Mound
and Village Site



AT WORK IN THE GARTNER MOUND

Explorations of the Gartner Mound and Village Site



BY

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Reprint from the Ohio Archaeological and Historical Quarterly
Volume XIII, Number 2.

Columbus
PRESS OF FRED. J. HEER
1904

NOTE.

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E. O. RANDALL, *Secretary*,
Columbus, Ohio.

EXPLORATIONS OF THE GARTNER MOUND AND VILLAGE SITE.

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The Gartner mound, located partly upon the land of Mr. Adam Gartner and partly upon that of Miss Elizabeth Lievy, is situated about six miles north of Chillicothe, on the east side of the Scioto river. The river bank, at this point, is quite high, upward of 70 feet above low water mark, and is very irregular, with here and there spurs running up to the river, which in several instances are almost perpendicular. The mound in question is located upon one of these spurs. However, this particular spur is quite large and the banks are not quite so abrupt as in other places along the river. The north side of the mound, or the part situated upon the land of Miss Lievy and which constitutes about one-third of the mound, had never been disturbed by the plow and was covered with a dense tangle of grape vines and small trees; while the other two-thirds upon the land of Mr. Adam Gartner had been under cultivation for a number of years, consequently that portion had been lowered about ten inches. The mound at the time work began was 7 feet 6 inches in height, having a diameter of 75 feet. Surrounding the mound is the prehistoric village site similar to the Baum village site, which surrounds a large truncated mound*. Around the mound, upon all sides, particularly to the south, are traces of former Indian occupation. Numerous fragments of pottery, similar in texture and ornamental feature to those found in the mound, bestrew the ground. Intermingled with these were the valves of mussel shells, arrow-heads, pitted stones, implements and ornaments made of bone, stone, and shell and the bones of various wild animals, which were used for food.

* The village site is situated along Paint Creek a few miles southwest of the small village of Bourneville, Ross County, Ohio. A preliminary account is given in Vol. X. page 78, of the Society's publications.

6 *Explorations of the Gartner Mound and Village Site.*

The soil from which the mound was made had evidently been collected from the village site and from the subterranean storehouses as they were dug from time to time as evidenced by thin layers of fine gravel and sand placed over a number of the burials which had been procured from the bottom of these pits. But, in every portion of the mound, various implements and ornaments were found intermingled with the soil and gravel. Here also were found animal bones and mussel shells which had evidently been gathered up with the soil from the village, as each successive burial was added to the mound.

The mound was made up of three separate and distinct sections as is shown in Fig. 1. The burials in the first section differed greatly from those in the second and third, which were similar. In the first section the bodies had been cremated and

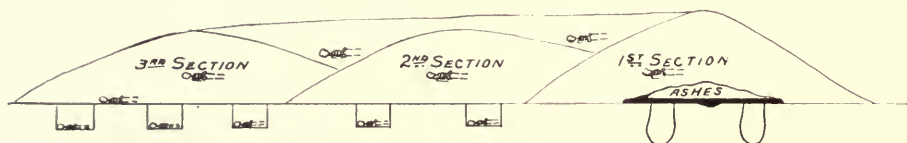


FIG. 1. SHOWS MOUND SECTIONS AND BURIALS.

the ashes with the personal belongings had been deposited upon a prepared platform of earth; while in the second and third sections the inhumation of the bodies were in every portion of the mound as well as below the base. Section No. 1, which is to the north, covers the site of an aboriginal domicile and was begun by carrying earth over an area 34 feet east and west, and 23 feet north and south to a depth of six inches. Over the top of this was placed tamped clay, which had evidently been secured while digging the subterranean pits used for the storage of corn, beans, etc., and which occur in every portion of the village. This clay had no doubt been puddled and then placed in position and made as level as a floor and this served as a platform to receive the ashes of the cremated dead, which ashes irregularly covered the platform to a depth of from six inches to two and one-half feet. With the ashes were unburned animal bones, which had been intermingled with the incinerated human bones as well as implements and ornaments made of bone, stone, and shell,



A MOUND BURIAL.

which were no doubt the personal property of the deceased. The animals identified as they were removed from these ashes were the black bear, beaver, deer, elk, raccoon, wolf, gray fox, musk rat, ground hog, opossum and mink. The bones of various birds such as the wild turkey, great horned owl, trumpeter swan and wild goose, were also found. Quantities of mussel shells, as well as the bones of the fresh water drum, were also removed. Of the implements, the awl, made from the tarsometatarsus of the wild turkey, was perhaps the most frequently met with. These awls were found in every portion of the ashes and in fact every stage in the manufacture of this most useful implement was procured. Scrapers, made of the metapodal bones of the deer and elk were also removed in a perfect state from the ashes. However, the broken halves of these scrapers were very abundant in other portions of the mound, but only a few were taken from the ashes on the platform. Perfect fish hooks made of bone, as well as those in various stages of the manufacture of this implement were found intermingled with the ashes. Shell disks or gorgets, varying in diameter from one to two inches, were frequently found. These were made of shell both foreign and of the common fresh-water mussel shells from the river. They are circular in form, having two small perforations near the edge for attachment and a much larger perforation near the center, which was, no doubt, set with pearls as we were able to find in a grave in section 3 of the mound, a small shell gorget set with a fresh-water pearl.

The mound was entirely removed from the platform previously described and its extent fully known before examination was made of the soil beneath. Fig. 2 shows a photograph of the platform. Beneath the platform, as is shown in Fig. 1, were found the remains of the refuse pits, fireplaces, and even the post molds of their little tepees were visible. The pits, also the implements and ornaments taken from them, were similar in every respect to those found in the village surrounding the mound as well as those found in the Paint Creek valley. No burials, other than those of the cremated, were placed directly upon the platform, and a thorough examination of the ground beneath revealed no burials there, but $3\frac{1}{2}$ feet above the surface of the platform were



FIG. 2. SHOWING LARGE PLATFORM IN SECTION I.

three burials which had been placed there before the second section found, was begun. In the second section the burials were placed below the base line as well as above it, but none were found directly on the base line. An interesting feature of several of the burials was the finding of clay mixed with broken quartz pebbles and broken shell ready to be made into pottery placed in a niche in the grave near the head. Fig. 3 shows one of these graves. In several instances this prepared clay was accompanied by a large mussel shell and perhaps a well-wrought awl; in other instances this clay was surrounded with small river boulders varying in diameter from two to three inches. The small boulders were usually piled in the form of a pyramid over the top of this clay. In one instance sixty of them were removed. The burials that were placed above the base line were usually about $3\frac{1}{2}$ feet above the base. The burials in the third section were mostly below the base line and consisted for the most part of adults, resembling both in stature and mode of burial those of the first and second sections. However, one skeleton measured 5 feet $10\frac{3}{4}$ inches in height, the largest taken from the mound; the average height of adults taken from this mound being 5 feet $7\frac{3}{4}$ inches. The third section excelled in the number and quality of the ornaments and implements placed with the dead. One grave contained a necklace made of 27 perforated canine teeth of the gray wolf and mountain lion; another a shell gorget set with a large fresh-water pearl; another an earthen jar which was removed in a perfect condition, the only whole piece of pottery taken from an Ohio mound in a number of years; from another a number of perforated and worked wild turkey's heads, each containing from three to five small quartz pebbles. The heads were attached to the leg just below the knee and perhaps served as an ornamental rattle. During the explorations at the Baum Village along Paint Creek, these perforated heads of the wild turkey, as well as several specimens of wild duck, were found in goodly numbers and caused much speculation as to their use. However, the find in this mound has practically solved the problem.

The examination of this mound has been of two-fold interest: First, the village existed before the mound was built, as evidenced by the existence of the remains of a domicile beneath



FIG. 3. SHOWING GRAVE CONTAINING PREPARED CLAY.

the platform, which was the first portion of the mound that was built and which was used as a depository for the ashes of the dead; second, that cremation of the dead was practiced for a long period as shown by the great accumulation of incinerated human bones piled upon this platform, which was 23 feet wide by 34 feet long to the height of 2½ feet at the center. Further proof of this method of disposing of the dead was furnished by finding the crematory in which the bodies were prepared for the last sad rites. This crematory was 16 feet wide and more than twice that in length and contained the half-charred remains of a human body surrounded with charcoal and ashes, showing that the work of cremation had been brought suddenly to a close and the crematory with its half-burned human skeleton was covered with earth, and a mound heaped over the ashes upon the platform, blotting out all traces of the practice of cremating the dead, and inhumation in the regular way followed. The question naturally arises, What caused this sudden change in the mode of disposing of the dead? The answer can only be conjecture. It occurred to me that perhaps the first occupants of the village were driven away by an enemy and the newcomers had different rites and ceremonies in disposing of their dead. But a comparison of the artifacts taken from the refuse pits beneath the platform and from the ashes upon the platform, with those taken from the other sections of the mound shows definitely, that they are similar both in design and workmanship. Consequently, this cannot be assigned a reason for the sudden change in the manner of disposing of the dead. However, I am inclined to believe, from the evidence obtained by the explorations, that the inhabitants suddenly left their village either voluntarily or were driven away by an enemy and sojourned for a time with a tribe having a different mode of disposing of their dead and upon their return they continued the practice of their neighbors.

DETAILED ACCOUNT OF THE MOUND EXPLORATION.

The work of examining this mound was begun at the base line on the east side and carried forward due west until the large platform was found and partly uncovered, then the examination continued from the north and west in order to uncover the platform so its extent might be fully ascertained. The portion

of the mound located upon the land of Miss Lievy was covered, near the base, with a leaf mold from seven to ten inches thick. Beneath the leaf mold was a dark earth filled with animal bones, such as the deer, which constituted 75% of all the bones, the raccoon, gray fox, mountain lion, wild cat, beaver, musk rat, opossum, squirrel and Indian dog. Bones of the wild turkey were quite abundant, yet the bones of the wild goose and great horned owl were also mingled with the black soil. This dark earth was also rich in implements such as bone awls, scrapers, celts, flint arrow-points, as well as ornaments made of bone and shell. At the very edge of the mound was found the skeleton of an adult lying upon the right side with the head bent forward and the legs flexed so that the knees were in close proximity to the head. The body had been placed upon the base of the mound and was covered with less than one foot of earth. However, it could not be considered an intrusive burial, as the small layer of gravel which covered the mound about six inches above the burial had not been disturbed. No implements or ornaments of any kind were placed with this burial. It was found in section 2.

Skeleton No. 2 was that of a child about one year old. It was placed directly to the east of the center and on the base line.

Skeleton No. 3 was that of an adult and was placed $2\frac{1}{2}$ feet above the base line. The mound at this point was five feet high. This skeleton was found in section 3 of the mound.

Skeleton No. 4 was placed in close proximity to skeleton 2 in section 2, but was placed in a grave two feet below the base line. It was that of an adult male. In a niche near the head of the skeleton were found a large number of round boulders varying in diameter from two to three inches. These were placed in a pile in regular order around a mass of clay which had been mixed with broken quartz and this clay was, no doubt, intended to be made into pottery. Near the pile of boulders was also placed several valves of mussel shells and a well-wrought awl six inches in length. At the back of the head was placed a fine discoidal stone made of granite porphyry $3\frac{3}{4}$ inches in diameter and 2 inches thick, each side hollowed out and pierced with a hole one-half inch in diameter at the center. The outer edges are convex. The whole specimen is highly polished with the ex-

ception of the concave sides, which seem to have been freshly pecked. This is readily seen on both sides of the stone. See Fig 4. At the right side was placed a large stone implement perhaps a war club, made of limestone. It is $2\frac{1}{2}$ feet long, 3 inches wide and 2 inches thick. The stone is smaller at one end and the edge has been rounded and has the appearance of being water worn with the exception of a few places which show the hand work of man. Fig. 5 shows the skeleton with the discoidal at the rear of the head and the war club lying on the right side of the head. From around the neck of the skeleton was removed

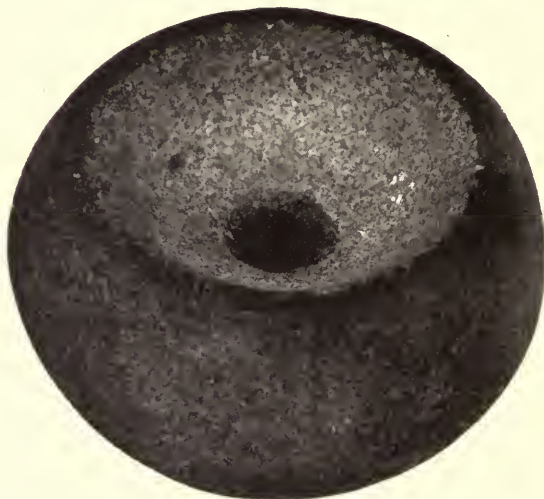


FIG. 4. DISCOIDAL FOUND WITH SKELETON NO. 4.
ONE-HALF NATURAL SIZE.

three perfect crescents made of mussel shells; these are shown in Fig. 6. The largest one, which is pierced with two holes, is $2\frac{1}{2}$ inches in length and is not decorated. The second crescent, which was hung directly below the first, is two inches in length and pierced with one hole, but is decorated with notched edges. The third crescent, which is 1 1-3 inches in length, is pierced with three holes and the edges are also ornamented with notches. Attached to these crescents below were found three triangular pieces of ocean shell perforated for attachment and four beads made of small ocean shells.

Skeleton No. 5 was an adult and was buried in section 2. It was placed three feet below the base line. Around the neck was a crescent two inches in length and pierced with two holes and ornamented with notched edges. The crescent was similar in every respect to those found with skeleton No. 4, differing only in the material from which it is made. Those in No. 4 were made from common fresh-water mussel shells from the river, while the one from No. 5 was made from the body whorl of an ocean shell. Near the left hand were two small arrow-points



FIG. 5. PHOTOGRAPH OF SKELETON SHOWING WATER WORN STONE AND DISCOIDAL PLACED NEAR THE HEAD.

both showing that they were made by a skilled artisan, one being of the triangular form $1\frac{1}{2}$ inches in length and the other having a notched base and being $1\frac{3}{4}$ inches in length.

Skeleton No. 6 was buried three feet below the base line. With it was found puddled and tempered clay ready to be made into pottery. This clay was placed in a niche in the grave near the head of the skeleton and with it were two large mussel shells, a few broken bones of the deer, and the humerus of the wild turkey.



FIG. 7. EFFIGY AWL FOUND WITH SKELETON NO. 8. LENGTH EIGHT AND ONE-HALF INCHES.

Skeleton No. 7 was buried $3\frac{1}{2}$ feet above the base line and was that of an adult. Near the head was placed a fine large awl, 8 inches in length. This awl was decorated with incised lines entirely encircling the awl near the point, and about two inches from the point was an enlargement in the body of the awl. This mode of ornamentation seems to be the usual method of decorating the large awls.

Skeleton No. 8 was that of an adult and was placed four feet below the base line. A large awl was found at the head, this was $8\frac{1}{2}$ inches in length and made of bones, one end of which was ornamented with a carved head representing that of a fox. This is shown in Fig. 7. On the right side of the grave near the head was a quantity of clay mixed with broken shells and a few small boulders placed around it similar to skeleton No. 6.

Skeleton No. 9 was an adult male buried four feet above the base line. The skeleton was in a good state

of preservation. Near the left hand were several small arrow-heads of the triangular type, beautifully chipped and made from flint ridge chalcedony.

Skeleton No. 10 was that of an adult placed $4\frac{1}{2}$ feet above the base line. This was the only skeleton in the mound that I considered an intrusive burial. The grave shows that it was dug through the regular strata of earth, sand and gravel, that was used in the construction of this portion of the



FIG. 6. SHOWS THREE PERFECT CRESCENTS MADE OF MUSSEL SHELL. TWO-THIRDS NATURAL SIZE.

mound. With this burial was a small arrow-point and a few cut bear teeth, placed near the head.

Skeletons Nos. 11, 12, 13, and 14 were all adult burials placed above the base line about $3\frac{1}{2}$ feet. No implements or ornaments of any kind were placed with these burials.

Skeleton No. 15 was an adult male, placed in section 2, four feet above the base line. The skeleton was headless, as shown in Fig. 8. However, a number of fine bone beads were taken from near the left shoulder. Upon the right arm were a number of well-wrought beads made of shell, one-fourth inch in diameter. Near the foot was placed two fine arrow-points made of chalcidony.



FIG. 8. SHOWS HEADLESS SKELETON.

Skeletons 16 and 17 were in section 3; both were adults and placed three feet below the surface. No implements or ornaments were placed with them.

Skeleton 18 was that of an adult male, placed in section 2 and was buried five feet below the base line. Upon the right arm were a number of beads made of ocean shell and near the head was placed a platform pipe; around the neck was a necklace of beads. The platform pipe is far different from any of the pipes found in this section. It is made of a reddish brown compact sandstone with a circular base $2\frac{3}{8}$ inches in diameter, and $\frac{3}{4}$ inch in thickness. The bowl extends from the center of this circular base and is $1\frac{1}{8}$ inches in height and $\frac{7}{8}$ of an inch in diameter at the base of the bowl, gradually tapering to $1\frac{3}{8}$ inch at the top. The diameter of the hole in the bowl is $\frac{3}{4}$ inch, which gradually

tapers to the bottom and is connected with a hole from the platform, which is $\frac{1}{2}$ inch in diameter at the edge of the base and gradually tapers, similar to that of the bowl. The platform is ornamented with three deep cut lines which encircle the outer edge. The bottom of the base is marked with incised lines. The pipe is shown in Fig. 9. The grave showing the skeleton and pipe is shown in Fig. 10.

Skeleton 19 was that of a child about ten years of age. The burial was upon the base line of section 3 and the skeleton was fairly well preserved. Around the neck was placed a necklace consisting of 46 canine teeth about equally divided between those of the dog, raccoon, and wild cat. Fig. 11 shows a few of the teeth.



FIG. 9. PLATFORM PIPE FOUND WITH SKELETON NO. 10. ONE-HALF NATURAL SIZE.

Skeleton 20 was that of an adult female and was buried $2\frac{1}{2}$ feet above the base line in section 3. It was in a good state of preservation. The skull on the left side near the top was crushed in such a manner as to form almost a circular hole $1\frac{1}{2}$ inches in diameter and had the appearance of having been made with some blunt instrument and no doubt caused the death of the individual. Around the neck were a few bone beads made from the wing bones of the wild turkey.

Work was now commenced on the west side of the mound in order to aid the workmen in carefully uncovering the skeletons so that photographs could be made. No burials were found near the western edge of the mound, but as the center was approached, skeleton 21, that of an adult male, was found three feet above the base line. Near the head and at the back was removed a large ocean shell gorget 4 inches in diameter and

made from the body whorl of the massive conch (*Fulgur perversum*). The gorget was pierced at the center with a hole $\frac{1}{2}$ inch in diameter and near the edge two small holes were



FIG. 10. SHOWS POSITION OF PLATFORM PIPE NEAR HEAD OF SKELETON.

placed for attachment. The gorget was not in a good state of preservation, as the portion containing the perforations was near the head and was very brittle, consequently it crumbled slightly in removing it from the burial. Fig. 12 shows a photo-



FIG. 11. SHOWS A FEW OF THE PERFORATED CANINE TEETH FORMING A NECKLACE FOUND WITH SKELETON NO. 19. ONE-HALF NATURAL SIZE.

graph of the gorget. Directly beneath this gorget was a large bone awl 6 inches in length and made of one of the heavy bones of the deer or elk. At the side of the gorget was another awl

of about the same size and shape. The skeleton was well preserved.

Skeleton 22 was that of an adult male placed three feet above the base line and partly over the platform which covers the base of section 1. This skeleton was in close proximity to skeleton 21. Two shell beads $\frac{1}{2}$ inch in diameter were found near the left hand.

Skeleton 23 was that of an adult male placed three feet above the platform, and was in a good state of preservation. No implements or ornaments were placed in the grave.



FIG. 12. SHELL GORGET FOUND WITH SKELETON NO. 21. ONE-HALF NATURAL SIZE.

Skeleton 24 was an adult male placed in section 3. It was buried in a grave four feet below the base line. With the skeleton were two perforated canine teeth of the elk, which are exceedingly rare in the graves of this mound.

Skeleton 25 was an adult male buried four feet below the base line in section 3. One large spear-point was placed upon the right side near the hand. The point was 4 inches in length and made of reddish brown flint.

Skeleton 26 was that of a child and was placed in section 2. It was buried $3\frac{1}{2}$ feet above the base line. Around the lower legs were placed small ocean shell beads, varying in diameter from $\frac{1}{4}$ to $\frac{3}{8}$ of an inch and about $\frac{1}{8}$ of an inch in thickness. All were finely wrought and well polished. Upwards of 700 beads were removed from this grave. On the breast was found a large ocean shell gorget, 4 inches in diameter, made from the apex portion of the massive conch (*Fulgur perversum*). Near one

edge it is pierced with two holes for attachment, the central portion having been removed. This gorget is shown in Fig. 13.

Skeleton 27 is that of an adult found in section 2. It was placed two feet above the base line. No implements or ornaments were placed with this skeleton.

Skeletons 28, 29, 30, and 31 were all placed in graves below the base of the mound in section 3. The graves ranged in depth from 2 to 3 feet. No implements were placed with these skeletons.

Skeleton 32 was placed near the west side of section 3 and was two feet below the surface. It was that of an adult male. At the head were placed two large bone awls 6 and 6 $\frac{3}{4}$ inches respectively in length. These were placed directly under the head and were badly decayed.

Skeleton 34 was that of an adult male and was buried two feet below the base line. From around the neck was removed a necklace made from 27 canine teeth, 19 of which were those of the gray wolf and 8 of the mountain lion. Each tooth was pierced with a hole near the end of the root, for attachment. Each tooth was ornamented by having from 3 to 4 deep lines cut across the concave surface. A representative collection of these teeth is shown in Fig. 14.

At the side of the head were placed two badly decayed bone awls 5 and 5 $\frac{1}{2}$ inches in length, respectively. Near the arm a number of shell beads were found; these were made from small ocean shells,



FIG. 13. SHELL GORGET FOUND WITH SKELETON NO. 26. ONE-HALF NATURAL SIZE.

Skeleton 35 was placed very near 34 and at about the same depth below the base line. Around the neck were a number of cut pieces of ocean shell, made from the body whorl. These were triangular in form. With these were a number of small ocean shells.

Skeletons 36 and 37 were also placed below the base. No implements or ornaments were placed with them.

Skeleton 38 was buried three feet below the base line. The skeleton was placed on the right side, facing the east. Near the



FIG. 14. CANINE TEETH OF WOLF AND MOUNTAIN LION FOUND WITH SKELETON NO. 34. ONE-HALF NATURAL SIZE.

head was found a perfect piece of pottery, $6\frac{1}{2}$ inches high and 7 inches in diameter at the largest part of the bowl. The opening on top is $4\frac{1}{2}$ inches in diameter. The top portion of the bowl is decorated with incised lines made in the form of a scroll which entirely encircles the vessel. Directly beneath the scroll work are two incised lines running entirely around the vessel. The lower part shows the impression of the cloth used in the hands while being fashioned. Fig. 15 shows this vessel. At the side of the vessel was a spoon made of mussel shell. Fig. 16 shows the skeleton and vessel before they were removed from the grave.

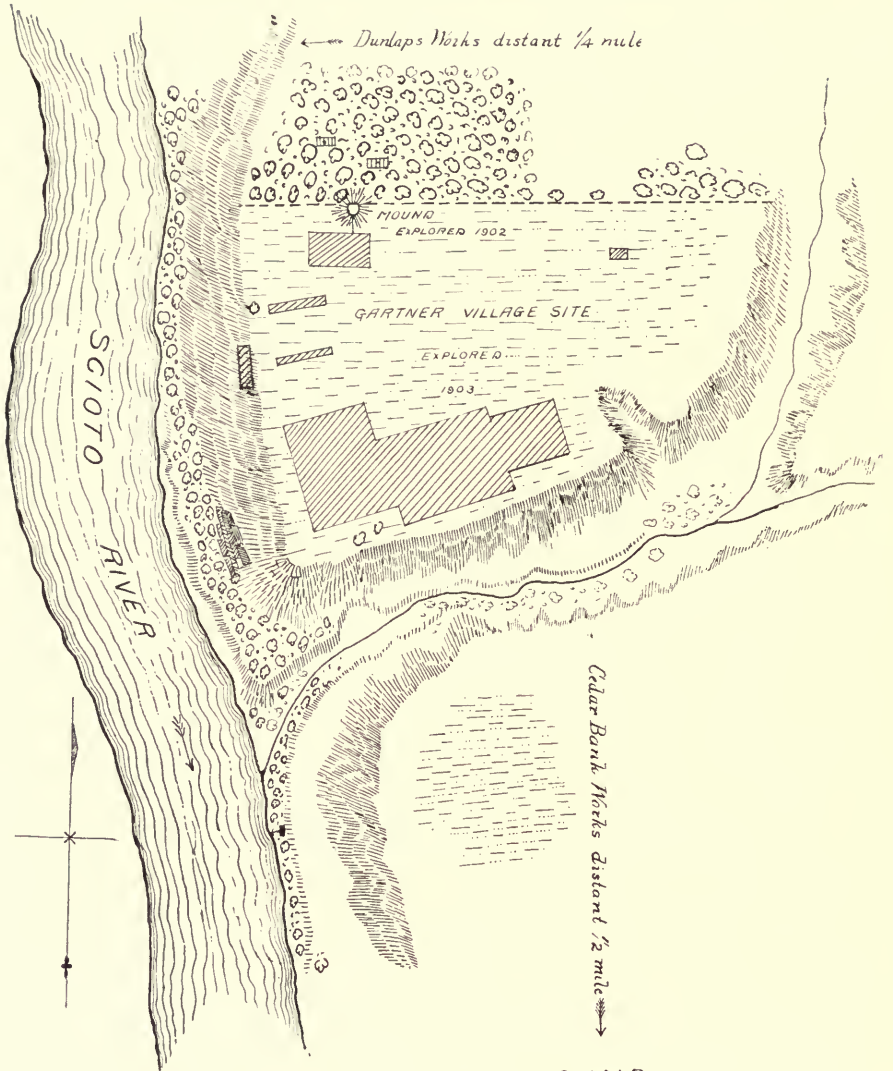
Skeleton 39 was that of an adult female and was buried three feet below the base line in section 3. Around the right leg below the knee were found 14 wild turkey heads pierced with holes for attachment. Inside the heads were found small quartz pebbles, showing that they had been used for rattles. Upon the left leg at about the same place was a turtle back. This was also perforated for attachment and contained 15 small quartz pebbles. Upon the breast was found a small gorget pierced with two holes near the edge and one in the center. This gorget is $1\frac{1}{2}$ inches in diameter and made of mussel shell.

Skeleton 40 is that of an adult female. Around the neck were a number of shell gorgets similar to the gorgets found with skeleton 39. One of these, however, had a pearl setting in the large central hole. The gorget with pearl setting is shown in Fig. 17.

Skeleton 41 and 42 were also adults and were placed below the base, but near the edge of the mound. No implements or ornaments of any kind were placed with these skeletons,



FIG. 15. PERFECT POTTERY FOUND WITH SKELETON NO. 38. SIX AND ONE-HALF INCHES HIGH.



GARTNER MOUND
AND
VILLAGE SITE
ROSS COUNTY, O.
SCALE
100 feet

GARTNER VILLAGE SITE.

The village site which surrounds the Gartner mound, just described, was examined during the summer of 1903. Fig. 18 is a drawing of mound and village site, showing the extent of the field explorations during 1903. The village site proper, occupies between three and four acres of land and entirely surrounds the mound. However, directly south and southeast of the mound, surface indications are richest; for here our examination showed the earth was intermingled with the refuse from their homes to the depth of from one foot to twenty inches, indicating that they occupied this place for a long period. Directly to the south and less than one-half mile is what is known as the Cedar Bank Works, which has been described by Squier and Davis on page 52, in "Ancient Monuments of the Mississippi Valley." We made a thorough search of this enclosure of 32



FIG. 16. SHOWS POSITION OF EARTHENWARE NEAR HEAD OF SKELETON.



FIG. 17. SHELL GORGET WITH PEARL SETTING. ONE-HALF SIZE.

they occupied this place for a long period. Directly to the south and less than one-half mile is what is known as the Cedar Bank Works, which has been described by Squier and Davis on page 52, in "Ancient Monuments of the Mississippi Valley." We made a thorough search of this enclosure of 32

acre as well as the immediate surrounding territory, in search of a village, but found no evidences of a former habitat other than the Gartner village. Therefore, it seems reasonable to believe that the inhabitants of the Gartner village were the builders of the Cedar Bank Works. However, no explorations have been made within the works to verify this statement. Upon a spur of the hill between this village and the Cedar Bank Works are also indications of a former habitat, as flint implements, broken pieces of pottery and animal bones of various kinds are sparingly scattered over the surface. As the examination progressed it was soon discovered that the inhabitants of this village lived in small clans or family groups. Although only fifteen skeletons were unearthed in the examination of this village, there is no doubt but that burials were made along the hillside which surrounds the village on three sides.

The refuse pits, which are so abundant in the villages of the Paint Creek valley, were present in great numbers and distributed over the village site surrounding the habitats of the various families. Fig. No. 19 shows ten of these pits open at one time. During the examination in the village, more than 100 pits were found and thoroughly examined. The evidence produced by this examination shows that 20% of the pits examined were originally used for storehouses for grain, beans and nuts, and perhaps for animal food. These pits were lined with straw or bark and in some instances the ears of corn laid in regular order upon the bottom; in other instances the corn was shelled and placed in woven bags; in others shelled corn and beans were found together; in others hickory nuts, walnuts, chestnuts and seeds of the pawpaw were present in goodly numbers. All this was in the charred state, accidentally caused, no doubt, by fire being blown into these pits and the supplies practically destroyed before the flames were subdued. Fig. 20 shows charred cobs and lumps of charred shelled corn. The burning of these supplies must have been a great loss to these primitive people and may have caused them great suffering during the severe winters, but it has left a record of their industry which never could have been ascertained in any other way. The great number of pits found, which show conclusively by their charred remains their early uses, would lead

one to believe that all the pits found were used originally for underground storehouses and by spring time, when the supplies were likely consumed, a general forced cleaning up of their domiciles and surroundings would occur and the empty storehouse would serve as a receptacle for this refuse, which was henceforth



FIG. 19. SHOWING REFUSE PITS.

used for that purpose until completely filled. During the autumn, when the harvest time came, a new storehouse would be dug and the grain and nuts gathered and stored for winter use. The examination of the pits has brought out the above conclusions as evidenced by the refuse found therein. Near the bottom of the pits will invariably be found the heads of various animals such

as the deer, with antlers attached, black bear, raccoon, gray fox, rabbit and the wild turkey, as well as the large, heavy broken bones of these animals such as would likely be found around a winter camp. Further, some of the large bones showed that they had been gnawed in such a manner as to indicate the presence of a domesticated dog, whose presence was further corroborated by

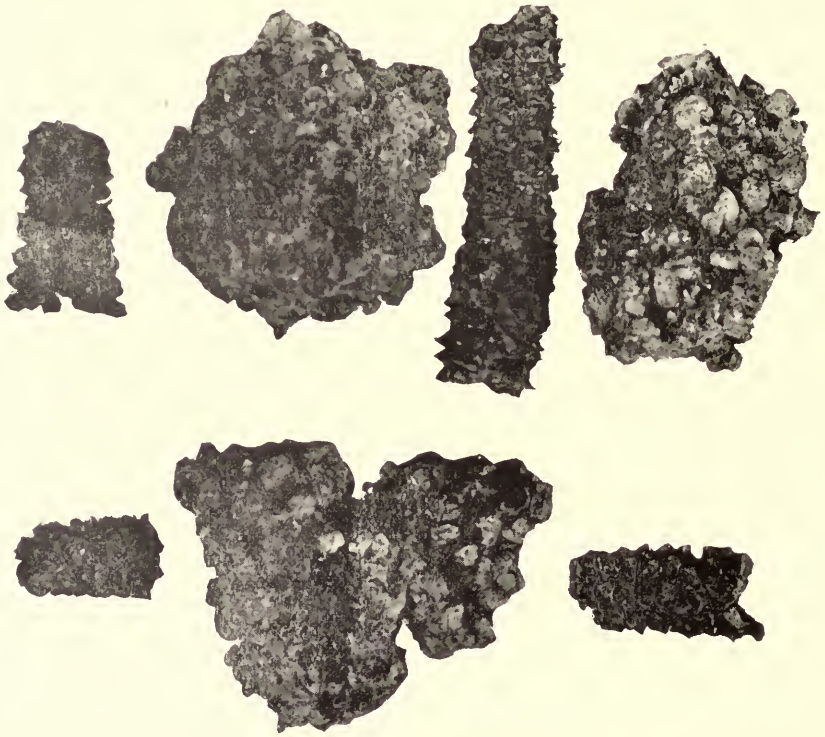


FIG. 20. SHOWING COBS AND LUMPS OF CHARRED CORN.

finding his remains in every part of the village. Therefore, taking all these facts into consideration, one must necessarily infer that the spring cleaning took place and animal bones, broken pottery and the general refuse was thrown into the pits. Further, the remains of fish are seldom ever found near the bottom of the pits, but usually occur from the top to about the middle. Mussel shells are never found at the bottom of the pits, but are usually

found near the middle or half way between the middle and top of the pit. Fig. 21 shows how mussel shells are sometimes present in the refuse pits. We know that fish and mussels must be



FIG. 21. SHOWING MUSSEL SHELLS IN REFUSE PIT.

taken during the spring, summer and autumn and are certainly very hard to procure during the winter. A drawing representing a cross section of the village site showing the location of the

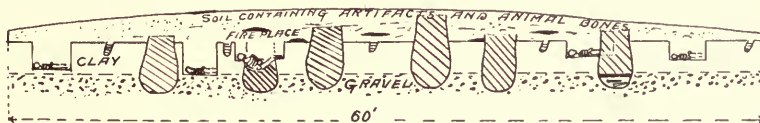


FIG. 22. SHOWING CROSS SECTION OF VILLAGE SITE.

tepees, fireplaces, refuse pits and burials is shown in Fig. 22. This represents a cut of sixty feet which was carried forward in the examination of the village. This drawing shows the fireplaces

to have been made at different periods of time. Some of these fireplaces are directly above the refuse pits and it is also shown that in digging the pits, that they dug down upon previous burials, but even this did not cause them to abandon the pit, but to remove the bones and dig on to the necessary depth and place the dislodged bones in the bottom of the pit and cover them slightly with soil. In some, the burial was made directly over an old pit and the refuse in the pit being porous the body would naturally sink into the pit, leaving the legs and head higher than the other portions of the body. The accumulation of bones of various animals and the implements and ornaments of these primitive people found through the soil was caused by the covering up, from time to time, of the debris in the tepees and surroundings which would naturally be greater during the winter season.

Another interesting feature of this village was the finding of the remains of two mussel bakes. One only will be described, as they were similar in every respect. These bakes were made by digging a hole in the ground 5 feet deep and 4 feet in diameter. A fire was built in the bottom of this pit; so great was the fire that the clay forming the sides of the pit was burned to a deep red and several inches in depth. Four hundred and fifty small river boulders varying in diameter from 3 to 10 inches were thrown upon this fire and then the fresh-water mussels of small size were piled upon the stones and the entire pit filled with these mussels. The top was then, no doubt, covered over with grass and the mussels left to bake. After the feast, for it was no doubt a feast, the shells were thrown back into the pit as well as into a number of surrounding pits that were open. We made a careful estimate of the number of mussels required in these mussel bakes by counting the mussel shells in a given space, and found that more than 10,000 mussels were used in the two bakes. They were all of small size and in the two bakes only a few large shells were present. The mussels had, no doubt, been procured from the Scioto river, only one hundred yards distant. Fig. 23 shows one of these pits. In the rear is a pile of charcoal taken from the bottom of the pit, at the side are the boulders. In one of the refuse pits we found evidences of a great animal feast, as the pit was filled for several feet with a mass of broken bones, showing

that they had used the deer, bear, elk, beaver, raccoon, opossum and wild turkey in this great feast. A number of individual animals of each were used, but more especially the deer, as seven jaw bones of this animal were removed from this great pile.

Another interesting feature of this village site was the finding of a great fireplace or crematory, over 40 feet in length and varying in width from 16 to 17 feet. It was directly south of



FIG. 23. SHOWING REMAINS OF MUSSEL BAKE.

the mound, not far from the edge of the bank, which gradually descends to the river below. The fire had evidently been kindled on this hearth for a long time, as the earth was burned to a depth of 14 inches. The crematory occupied a slight depression in the ground, no doubt caused by the careful removal of ashes from time to time. Not a particle of ashes, charcoal or burned bones was present in this fireplace except at the west end nearest

to the river, where the portions of a half-charred human skeleton surrounded with charcoal and ashes were found, showing that the cremation had been brought to a sudden close and the partially incinerated skeleton, as well as the crematory and its surroundings, was covered with about 6 inches of earth as if to remove from sight all traces of a once practiced mortuary custom. Gradually, as our explorations show, a little home was installed near the edge of the crematory, to the north, and in due time the site became covered with the refuse which accumulates about their domicile.

FOOD RESOURCES.

Animal Remains. — In all, the remains of 17 different animals were procured in this village. The most abundant was that of the Virginia deer, which constituted fully 50% of the animals taken from the pits and which were used for food. The other animals identified were the raccoon, rabbit, black bear, beaver, gray fox, wild cat, mountain lion, gray wolf, opossum, mink, musk rat, elk, skunk, groundhog, otter, and Indian dog. The small box turtle (*Cestudo virginia*) was in great abundance. The wild turkey constituted fully 80% of the birds taken from the refuse pits while the trumpeter swan, wild goose, great horned owl, bald eagle and bittern were found in small numbers. The Scioto River, near by, teeming with fish and fresh water mussels must have been an excellent source of animal food as shown by the presence of fishbone and mussel shells. The Indian dog found in this village resembles in every respect the remains of the Indian dog found at the Baum village site, which is described in Vol. X, page 81, of the Society's publications.

Vegetable Food. — The vegetable substances usually found in the bottom of the refuse pits and which had been preserved by being charred, consisted of corn, beans, hickory nuts, walnuts, butternuts, hazelnuts, and the seeds of the wild plum and pawpaw. Of this, the corn (*Zea mays*) was the most abundant and was always found in the bottom of refuse pits that had, no doubt, served as storehouses until destroyed by fire. These pits were usually lined with bark or straw and the corn was frequently scattered through the charred remains. However, in a number of instances the corn and beans had been placed together in a

SECTION OF THE MOUND SHOWING SIX BURIALS EXPOSED AT ONE TIME ALL ABOVE THE BASE.



heap and were removed in large lumps. In a number of instances corn and beans had been placed in earthen vessels that had become broken and the charred corn was still clinging to the sides of the vessel. Burned corn was also found in a vessel that had been broken, no doubt, by the action of the fire, as the corn was in a charred mass in the pieces of a broken vessel which had been scattered through the refuse pit, showing that the burning of this corn had taken place outside of this pit. Beans (*Phaseolus*, sp.,) were also found in quantities in the bottom of the storehouses. From the quantities of these two food articles found, there is no doubt but that corn and beans were a staple article of food for this primitive people. Hickorynuts were very abundant; three species were found, *hicora minima* (Marsh.) Britt., *hicora ovata* (Mill.) Britt., and *hicora laciniosa* (Mx.) Britt. Only small quantities of butternuts (*juglans cinera*, L.) and black walnuts (*juglans nigra*, L.) were found. In some places great quantities of the charred pawpaw seed (*asimnan tribola*, L.) Dunal, were found, stored in connection with corn and nuts. In several other pits the wild hazelnut (*corylus Americana*) Walt., and the wild red plum (*prunis Americana*) Marsh., were present in small quantities.

Preparation of Food. — In every portion of the village were found stone pestles, which served for crushing the corn and beans and were, no doubt, also used in crushing the dried meats, berries, etc. Many of these pestles are merely natural pebbles slightly changed by a little pecking or rubbing, or perhaps both. Some have been pecked into shape and resemble a conoid body with an enlarged and flattened base, bell-shaped, and running to a point at the top. None of the pestles are ornamented, but are all quite plain. Large stone mortars made from slabs of sandstone, from 12 to 14 inches in length, from 10 to 12 inches in width, and from 4 to 6 inches in thickness with a depression on one side, several inches in depth, were taken from the pits. The mortar must have been universally used in this village, as great numbers of the broken and perfect ones have been found in the pits and tepee sites. Another article that was, no doubt, universally used in the preparation of food is the pottery. Broken pieces of this domestic utensil are found everywhere in the village and refuse

pits. In many instances hundreds of pieces were taken out of one pit and they were universally abundant around the fireplaces. There is no doubt but that the potters' art was practiced by each clan or family in the village, for the broken pieces of pots found in these clans were similar in every respect, but differing slightly in ornamentation from those of the neighboring clans. The earth from which the pottery was made was procured while excavating for the large storehouses, as the clay found in the pits, which had been tempered with broken shells and crushed quartzite, were identical with the clay thrown from the pits. The majority of the pottery was made by crushing shells and tempering the clay, but now and then a piece would be found, which had been tempered with crushed quartzite and pebbles. However, near the west side of the village a small quantity of the broken pottery was made from clay tempered with broken quartz. Only one perfect piece of pottery was found in the mound and none in the village site, except the small vessels which had been molded in the hand. Yet broken pieces, resembling in every way, the perfect pieces, were found in abundance in the village. The size of the pottery varied greatly, one piece especially that was taken from the refuse pits, if perfect, would measure $14\frac{1}{2}$ inches in diameter, while several very small pieces that had been molded in the hand were found in various sections of the village. The small pieces of pottery varied in size from that of a thimble to a small cup 2 inches in diameter. These small vessels were without ornamentation and were of common use, for a number have been found, both perfect and broken, in all sections of the village. These are shown in Fig. 24. The marks on the pottery differ somewhat in the different clans and practically all of the pottery had textile marks upon the side. In several instances, impressions of a woven fabric, which had, no doubt, been used in the hands while fashioning the plastic clay, were found. In other instances the marks of the textiles were evidently made by modeling paddles which had been wrapped with cord, as this is plainly shown upon the handles of the vessels as the handle is usually fashioned and put in place after the vessel is practically formed. A further ornamentation of a number of vessels is made by incised lines. Some of these encircle the vessel, while others appear in scrolls; this

is shown in Fig. 15. Still other vessels are ornamented with small round indentations made by a blunt instrument, as is shown



FIG. 24. SHOWING SMALL POTTERY. ONE-HALF NATURAL SIZE.

in Fig. 25. Other vessels show indentations made with a reed or some hollow instrument; this is shown in Fig. 26. The aborigines of the Gartner village seem to have possessed the artistic faculties attributed to the early races in America, for rude forms of art in clay decorated their pottery as shown in Fig. 28. This effigy of a lizard was executed

with considerable fidelity to nature and perhaps served as a handle as well as to ornament the vessel. However, the majority of the pieces have plain tops ornamented now and then with indentations.

Practically all of the larger vessels were supplied with handles which were invariably ornamented with incised lines and indentations. In size the handles



FIG. 25. ORNAMENTATION BY SMALL INDENTATIONS.

were usually in proportion to the vessel. The larger handles were attached at one end by first piercing the vessel with a hole

and inserting a small plug of clay which was carefully clinched upon the inside of the vessel. On the outside the handle was moulded to this plug; this is shown in Fig. 28. In Fig. 29, several pieces of pottery are shown which represent a few of the many examples of native ceramic art.

Implements.— The implements used for the procuring of food and for domestic purposes were made of bone, stone, and shell and are found in great abundance in the village site. These implements were in proportion of about ten of those made from

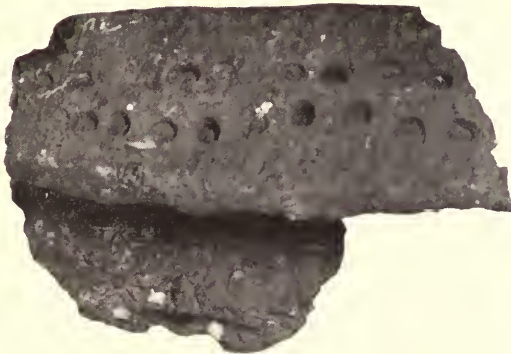


FIG. 26. INDENTATIONS MADE WITH HOLLOW INSTRUMENT.

bone to one made from shell or stone. In fact, many of stone were duplicated in bone or horn, such as scrapers, arrow-points, spear-points, and large celt-like forms made from elk horn.



FIG. 27. EFFIGY OF A LIZARD.

Stone Implements.— The chipped implements were, no doubt, made from flint, procured from the Flint Ridge locality. The chipped points for arrows were, for the most part, of the triangular form and plainly shows that the peo-



FIG. 28. SHOWS MANNER IN WHICH HANDLES ARE ATTACHED TO VESSELS.

ple inhabiting this village were versed in the art of flint chipping. A typical series of these arrow-points is illustrated in

Fig. 30. The chipped implements used for spears and knives were also made of Flint Ridge material; these are of all colors,



FIG. 29. SHOWING POTTERY DECORATIONS.

from the perfectly semi-transparent waxy, yellow, chalcedony, to the red and variegated jasper forms. These are shown in Fig.

31. Numerous caches of roughly fashioned implements made of this same material were found throughout the village. These caches would number from 10 to 25. Some of these show that they were large flakes from the manufacture of implements. However a number of them show secondary chipping along one or more of the edges. In a number of graves these pieces were



FIG. 30. TRIANGULAR ARROW-POINTS. ONE-HALF NATURAL SIZE.

placed near the head of the skeleton and were undoubtedly used in the manufacture of the numerous bone implements which are so abundant throughout the entire village.

Celts. — Stone celts were found in every portion of the village. They were made, for the most part, of granitic boulders, however, a few were made from banded slate and flint.. They



FIG. 31. SPEAR POINTS. ONE-HALF NATURAL SIZE.

varied in length from 2 to 6 inches and were highly polished. None were grooved, but many were roughly pecked for the attachment of a handle. These implements, as all others, were found in all stages of manufacture. Specimens were found where the pecking had just begun, in all cases boulders that were near the form of the object to be made, were selected. In other specimens the pecking was completed on one side, while the other had not been

touched. In other specimens the pecking had been finished, while in others the grinding had just begun and so on up to the perfect specimens. These were found more numerous in the sites of their tepees. However, in a number of graves they were placed by the side of the skeleton; in one instance four were taken from the same grave. Fig. 32 gives a good illustration of the celt procured from this village.



FIG. 32. TYPICAL CELT FROM VILLAGE SITE. TWO-THIRDS NATURAL SIZE.

Hammer Stones. — The hammer stones were very abundant in the village. Some of these are quite small and battered at one end, others at both ends, while still others are battered at both sides and ends. A number of these hammer stones are quite smooth upon one side, while on the other side they are slightly polished, showing that they were used in pounding some soft material, or had been covered with a skin and perhaps used as a club head. But the greatest use to which this hammer stone was, no doubt, placed was the breaking up of the various animal bones, for it is a very rare thing to find a perfect bone of any animal in this village, even to the very smallest.

Net Sinkers. — A number of specimens have been found which were merely pebbles that had been notched or grooved on two edges. These do not show any battered ends, as there is no doubt but that they were used as sinkers for the nets used in fishing.

Hoes. — A number of large pieces of slate broken into form with notches or grooves cut on the sides were frequently found. These were, no doubt, used for agricultural implements. However, the shell hoe, as shown in Fig. 33 is found in abundance

and must have been universally used. The shell selected was that of the *Unio plicatus*, a very thick and heavy shell.

Bone Implements. —

Points for arrows and spear-heads made from the tips of horn and the toe bones of the deer, as shown in Fig. 34, were very common, in fact more numerous than the chipped flint points. However, the majority of those found had been broken, but many perfect pieces, as can be seen in the illustration, as well as specimens showing every

stage of the manufacture of this useful implement, were found. Although well versed in the art of flint chipping these people

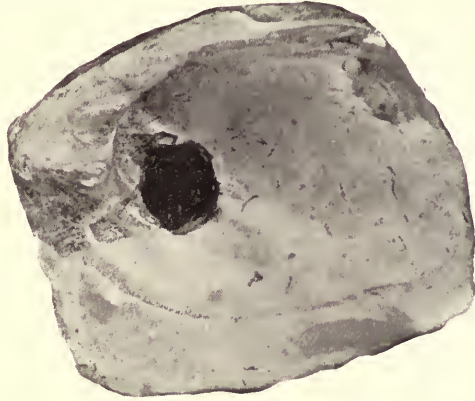


FIG. 33. SHELL HOE. ONE-HALF NATURAL SIZE.



FIG. 34. BONE ARROW POINTS. ONE-HALF NATURAL SIZE.

were a considerable distance from the source of supply of this much valued article, flint, and were compelled to resort to the supply of deer horn, that was brought to their very door. This would necessarily be procured during their hunting expeditions as well as finding them scattered over the surface during the season of the year when the deer shed their horns. Although more difficult to make, requiring to be

drilled, dressed and polished to make a perfect point, they were more numerous than the flint-chipped points. Small caches of the tines of deer horns occur in various portions of the village,

showing that these were collected and kept in store to be made into arrow-points as required. The tines are shown in Fig. 35 (a). The size of the point varies greatly, from $\frac{1}{2}$ inch to 3 inches in length and is made by taking the broken tine and cutting a crease about 1-32nd of an inch in depth entirely around the horn at the desired length and then breaking off the point. This is shown in Fig. 35 (b). The first step after procuring the end of the tine was to drill a hole for the attachment of the wooden arrow-shaft. No work in fashioning the point seems to have been done until after this drilling was completed. The hole for the attachment of the shaft varied in depth from one-half to two-thirds the length of the point, see Fig. 35 (c), and always pyramidal in form with a base diameter averaging about one-third of an inch. The majority of unfinished specimens show that the fashioning into form was done by cutting away the superfluous horn with a heavy piece of flint, as shown in Fig. 35 (d). Some writers have expressed the opinion that this cutting was done with a steel knife, but a careful examination by means

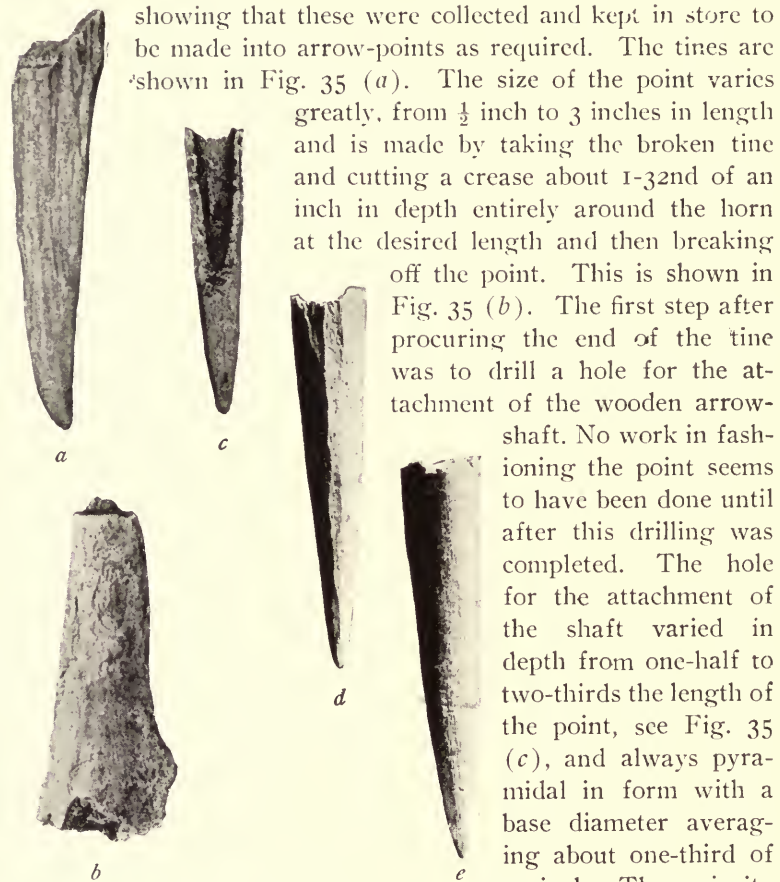


FIG. 35. *a.* SHOWING TINE. *b.* CUTTING OF TINE. *c.* DEPTH OF HOLE DRILLED. *d.* CUTTING AWAY OF SUPERFLUOUS HORN. *e.* PERFECT POINT. ONE-HALF NATURAL SIZE.

was done with a steel knife, but a careful examination by means

of a good hand glass will reveal the concave appearance of the cuts and the small scratches caused by the uneven fracture of the flint. The final finish upon the arrow-point was done by rubbing the arrow-point upon a piece of fine-grained sandstone, thus removing all traces of cutting as is shown in Fig. 35 (*e*), which shows a symmetrical and well-wrought point.

Bone implements were found which, no doubt, served in the preparation of skins and in the manufacture of their wearing apparel. Of these implements, the scraper, as shown in Fig. 36 (*a*), and made of the anterior and posterior metapodal bones of the deer and elk were found in small numbers in a perfect state. However, the broken parts were found throughout the entire village in great numbers, showing that this implement was universally used. Illustration Fig. 36 (*c*) shows a perfect anterior metapodal bone, and I may here state that this is the only perfect bone of the kind found in the village, as all others had either been broken or showed some stage in the manufacture of the scraper. Fig. 26 (*b*), shows a process in the manufacture of this implement and by careful examination of the specimens showing these stages, I am convinced that they were made by using a blunt-pointed flint implement. Scrapers made from the shoulder blades of the elk were also found. The spine of the shoulder blade was usually sharpened into a knife-like form, while the posterior and anterior border and the postscapular, as well as the prescapular portions, were entirely removed. In several instances instead of the spine being sharpened, it was removed and the suprascapular border would be sharpened into a knife-like edge. Very few perfect specimens of the shoulder blade of the elk were found, as they were universally used in the manufacture of scrapers or awls. The shoulder blades of the deer were sparingly used for scrapers. However, they were finished very much like the scrapers made from the shoulder blades of the elk. A few very fine and perfect scrapers made from the antlers of the elk were found in various portions of the village. These were made from the heavy portions between the beztine and the trestine of the elk antler. They vary in length from 3 to 6 inches and in width from $1\frac{1}{2}$ to 3 inches. These are of two kinds, those sharpened at both ends, which were, no doubt, used in the hand



FIG. 36 *a.* PERFECT SCRAPER. *b.* PROCESS IN MANUFACTURE OF SCRAPER. *c.* PERFECT METAPODAL BONE. TWO-THIRDS NATURAL SIZE.

and were usually from 4 to 5 inches in length (see Fig. 37), and those sharpened at one end which were usually from $2\frac{1}{2}$ to 4 inches in length. A number of them have notches cut on the side at the unfinished end, showing that they were hafted in a wooden handle (see Fig. 38. Scrapers made from the heavy

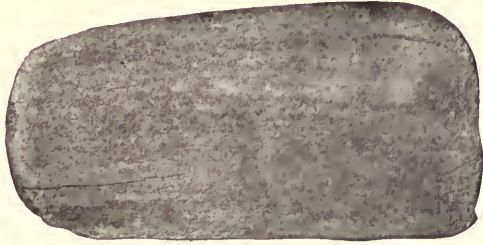


FIG. 37. DOUBLE BITTED SCRAPER. ONE-HALF NATURAL SIZE.

metapodal bones of the elk were also found, these were made similar to those made from the antlers. A specimen of this implement is shown in Fig.



FIG. 38. NOTCHED SCRAPER. ONE-HALF NATURAL SIZE.

39. These are from 2 to 3 inches long and were, no doubt, hafted in wooden handles.

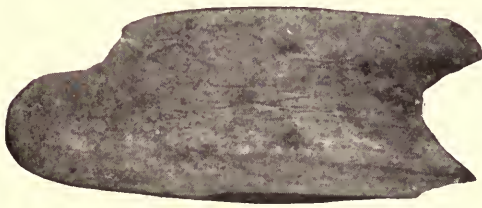


FIG. 39. SCRAPER MADE FROM METAPODAL BONE OF THE ELK. ONE-HALF NATURAL SIZE.

Awls were required for the manufacture of garments. Fig. 40 (a) is made of one-half of the distal end of the metapodal bone of the deer. This specimen was, no doubt, manufactured

from a broken scraper. The awls made of this bone are very similar; none of them have sharp points, but gradually taper, as

is shown in the illustration. Fig. 40 (*b*) is an awl made from the ulna of the deer. Awls of this kind are invariably sharp pointed and are found in every portion of the village. Fig. 40 (*c*) is an

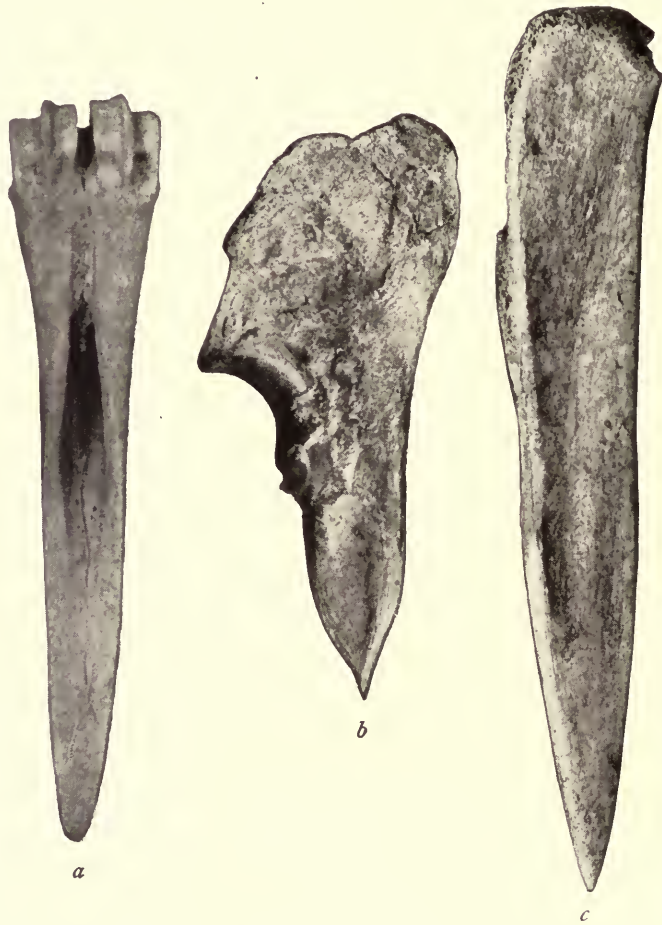


FIG. 40. *a*. AWL MADE FROM METAPODAL BONE OF DEER.
b. AWL MADE FROM ULNA OF THE DEER. *c*. AWL MADE
FROM ULNA OF THE ELK. ONE-HALF NATURAL SIZE.

awl made from the ulna of the elk; this was highly polished, as is shown in the specimen. Fig. 41 shows four awls which may be taken as types found in every portion of the village; these are

made from the shoulder blades of the deer. Fig. 42 is a good representation of awls made from the tarsometatarsus of the wild turkey. These awls are beautifully made and highly polished. Some of them are ornamented with incised lines and grooves, while others are perfectly plain. Awls made from this bone are the most common and are found in the graves, refuse pits and sites of the tepees. In the mussel bakes, previously described, scattered promiscuously among the shells were found a great

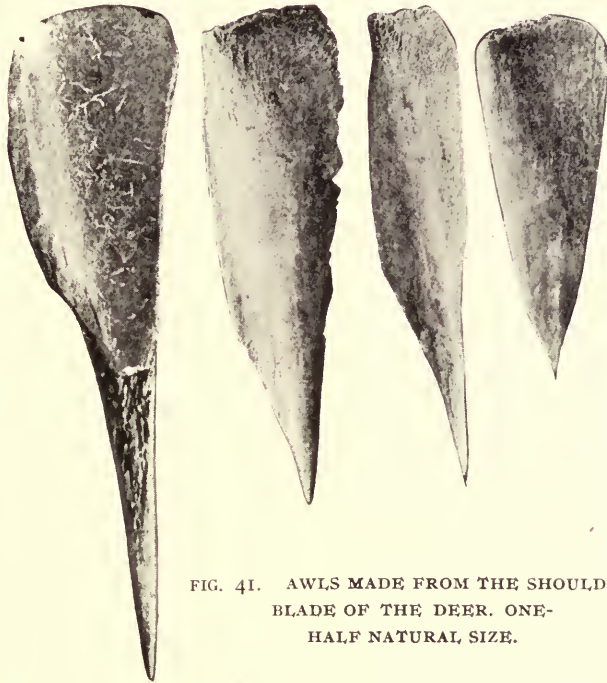


FIG. 41. AWLS MADE FROM THE SHOULDER
BLADE OF THE DEER. ONE-
HALF NATURAL SIZE.

number of these bone awls and I am inclined to believe that these awls, as well as those shown in Figs. 7 and 43, may have been used for awls, but at the same time served a double purpose of awls and forks. Fig. 7 shows a large awl taken from a grave in the mound which is upward of $8\frac{1}{2}$ inches in length and is decorated at one end with a carved head of a fox or some closely allied animal. These large awls are very abundant and found in every portion of the village. Fig. 43 shows specimens which are

quite numerous, both in the graves and tepee sites. One of the most interesting of the bone implements found in the village site and graves is the double pointed awl. These vary in length from $1\frac{1}{2}$ to 6 inches. All are beautifully wrought and highly polished. The larger ones may have been used as perforators or hair pins. Fig. 44 (*a*, *b* and *c*) were taken from graves. These were invariably found directly beneath the skull; (*a*) is made from the tibiotarsus of a bird; (*b*) is made from the heavy leg bone of the



FIG. 42. AWLS MADE FROM THE TARSO-METATARSUS OF THE WILD TURKEY. ONE-HALF NATURAL SIZE.

deer and (*c*) is made from antler. Fig. 45 shows two large double pointed awls which may have been used for spear-points; these two specimens were evidently made from the heavy leg bone of the elk or like animal. Fig. 46 shows two specimens which were no doubt used for pins. From one grave seven were taken from around the head and in another five, still others from two to four. In one of the refuse pits was found a concretion with seven of these small pins placed in regular

order on the inside; with these were placed three bone beads. This is shown in Fig. 47. These pins are found in every portion of the village in great numbers and must have been generally used. Needles, in the perfect state, made of bone are sparingly found in the village site. However, many broken needles were in evidence, especially in the refuse pits. All are provided with a circular eye, which is always placed at the largest end of

the needle. Fig. 48 illustrates a very fine needle, which is $11\frac{1}{4}$ inches in length and made from a rib of the elk, from which most



FIG. 43. LARGE BONE AWLS. ONE-THIRD NATURAL SIZE.

of the needles are made. However, the greater part of the needles found are perfectly plain and highly polished; a few are orna-

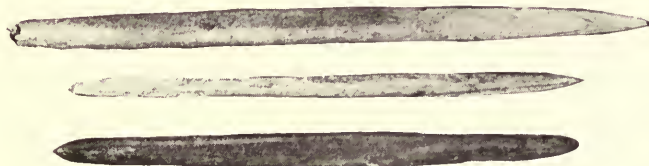


FIG. 44. DOUBLE POINTED AWLS. ONE-HALF NATURAL SIZE.

mented with incised lines. Another implement of bone found in this village is the knife. This is invariably made of the shoulder



FIG. 45. LARGE DOUBLE POINTED AWLS. ONE-HALF NATURAL SIZE.

blade of the deer and elk. However, a few have been found made of the posterior portion of the metapodal bone of the deer,

Fig. 49 (a). Fig. 49 (b) shows a knife from the shoulder blade of the deer, the spine is cut away and the poscapular and pre-

scapular portion are sharpened into a blade-like double edge knife. These were found in goodly numbers in various portions of the village and were, no doubt, commonly used, Many bone tubes, made from the

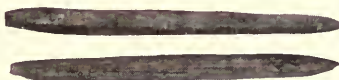


FIG. 46. DOUBLE POINTED PINS. NATURAL SIZE.

wing bones of the various large birds are found in refuse pits. Fig. 50 shows the cut wing bones of the trumpeter swan. These

specimens were found together within a tepee site. Fig. 51 shows the end of one of these bones which had been cut off and thrown into one of the refuse pits some ten feet away.

Fish Hooks. — The remains of fish, such as bones and scales found in the refuse pits, shows that fish formed one of the articles of food of these primitive people, and further that they employed

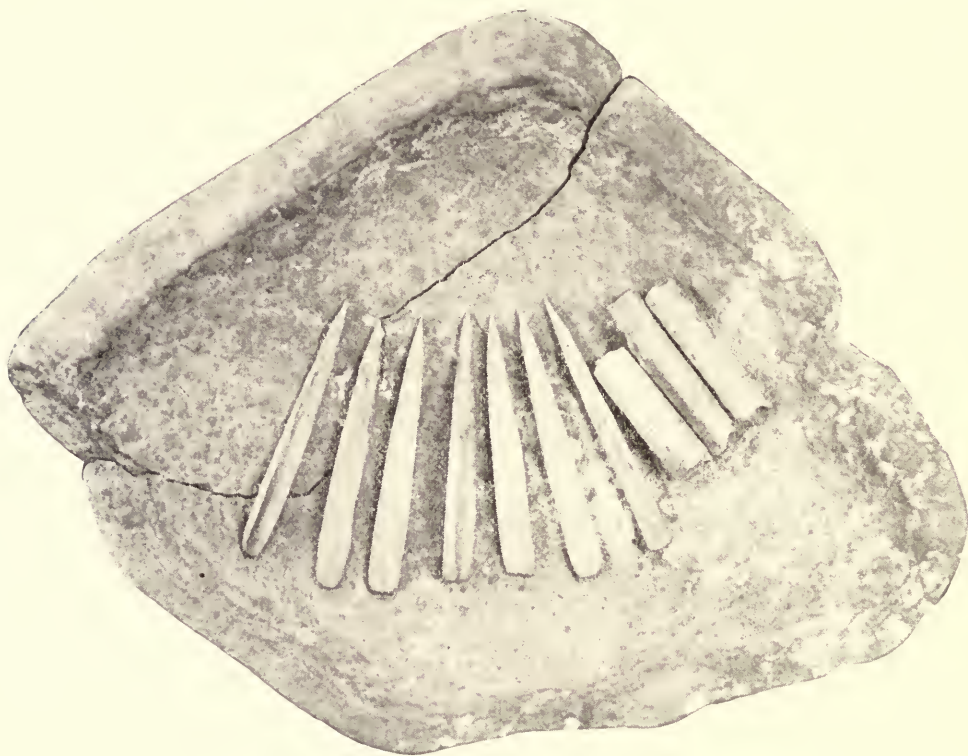


FIG. 47. SHOWING IRON CONCRETION, CONTAINING PINS AND BEADS.
NATURAL SIZE.

fish hooks, made of bone, as one means of procuring food, as evidenced by the finding of perfect and broken hooks in this village. Less than one dozen perfect hooks have been found, while more than a score of broken ones were taken from the village as well as every stage in the manufacture of this implement. The hooks are similar in every respect, the only noticeable difference being

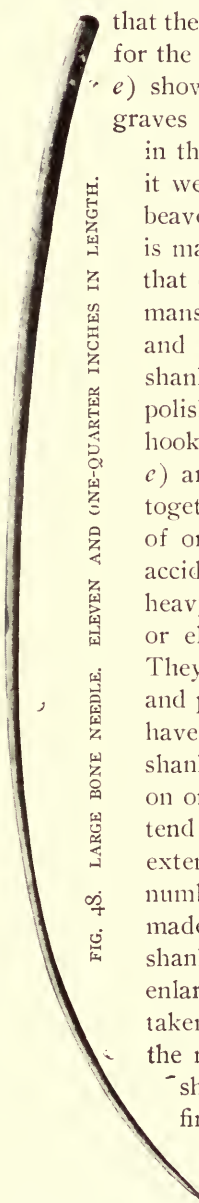


FIG. 48. LARGE BONE NEEDLE. ELEVEN AND ONE-QUARTER INCHES IN LENGTH.

that the end of the shank is usually enlarged or grooved for the attachment of the line. Fig. 52 (*a*, *b*, *c*, *d*, and *e*) shows five fish hooks. These were taken from the graves and refuse pits; (*a*) was taken from a burial in the village; it was placed near the head and with it were placed a number of the incisor teeth of the beaver and pins made of bone and horn. The hook is made from the tibiotarsus of some bird, perhaps that of the wild turkey. This hook is of fine workmanship and well polished. It has a round shank and two well-cut grooves in the upper end of the shank. The point of the hook is sharp and finely polished. Viewed horizontally from the end, this hook shows the marrow cavity of the bone. (*d* and *e*) are two finely wrought hooks which were found together. They were taken from near the center of one of the refuse pits and had, no doubt, been accidentally lost. These hooks are made from the heavy bone of some animal, perhaps that of the deer or elk, as neither side shows the marrow cavity. They are perfectly finished, of fine workmanship and perhaps excel in that particular any that we have so far found in the village. The top of the shank, as shown in (*d*) has five well-cut grooves on one side and four on the other; these do not extend entirely around the shank. In (*e*) the grooves extend entirely around the shank and are three in number. (*b*) shows another well-wrought fish hook, made from the tibiotarsus of some large bird. The shank is flat and apparently unfinished, the top is enlarged for the attachment of the line. This was taken from the ashes which covered the platform in the mound. (*c*) is a very small hook with a long shank and enlarged top. The base of the hook is finely wrought and highly polished, while the upper part of the shank is practically finished, but rather rough and is not so highly pol-



FIG. 49. BONE KNIVES. TWO-THIRDS
NATURAL SIZE.

ished as other specimens found in the village. This was found with a burial from the village site. Not only were the broken and perfect hooks found, but

every stage in the manufacture of this implement was brought to light. In Fig. 53 (*a*) is a piece of the tibiotarsus of the wild turkey, which may be considered the first stage in the manufacture of this hook; (*b*) is the second stage when the work of cutting out the center has begun; (*c*, *d*, and *e*) are the next stages when the work has proceeded farther; (*f*) might be considered the next stage when the center has been practically cut away; (*g*) has entered the stage when one end has been practically finished; (*h*) is the last stage before the bone is cut and the hook made. Here the hooks are practically finished with the exception of the top of the shank for the attachment of the line and the point. By cutting the bone at the proper place at each end of this prepared bone, two hooks could be made instead of one. The hooks found in this village compare very favorably with those found at the Baum village, which is situated on Paint Creek, a tributary of the Scioto.* Of the fish hooks found in the Baum village all can be

*A description of the fish hooks found at the Baum village site with a comparison of those found at Madisonville and other places was given, by the writer, in a short paper before the American Association for

readily duplicated at the Gartner village, as well as the various stages in its manufacture.

Woven Fabrics and Ornaments.—Fragments of fabrics woven from vegetable fibre were found in the graves, but more especially in the storehouses, where it had been charred and thus preserved. This woven fabric was, no doubt, used for clothing as well as pouches, mats, etc., and in no case was any found except those that were charred so that the fabrics found were too fragmentary to determine the fibre from which they were made. In the bottom of the storehouses great quantities of corn, beans, and hickorynuts, were stored, with them would invariably be found portions of pouches, used for carrying and collecting nuts and grain, and mats which, no doubt, covered the bottom of the storehouses. Closely associated with the fabrics was the pottery, for upon almost every fragment of this much used domestic utensil was the imprint of a woven fabric. However, this is characteristic of the pottery of the Scioto valley. Personal ornaments of great variety were found in the graves and throughout the entire village, but more especially in the refuse pits, where they were, no doubt, accidentally thrown. For the most part they were made of shell, which consisted of two kinds, the common mussel shells obtained from the river, and the



FIG. 50. CUT WING BONES OF TRUMPETER SWAN. ONE HALF NATURAL SIZE.

the Advancement of Science, which met in Baltimore, December 28, 1901, and was published in Vol. 7 of the Ohio State Archæological and Historical Society publications.

large and small ocean shells, no doubt obtained by barter. The larger ocean shells were cut and formed into gorgets, beads, and pendants, while the small ocean shells were usually pierced with a hole for attachment and no other work done upon them. The larger ocean shell gorgets which are shown in Figs. 12 and 13

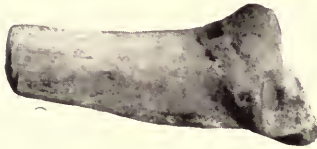


FIG. 51. CUT BONE. TWO-THIRDS NATURAL SIZE.

were found with burials in the mound previously described. However, these gorgets were evidently highly polished originally, as in several places this polish still remains. The larger size is always made from the ocean shell and the smaller ones, as in Fig. 54 are about equally divided between the fresh-water mussel and ocean shells and vary in diameter from $\frac{3}{4}$ to $1\frac{1}{4}$ inch. The gorget to the left in Fig. 54 is made from ocean shell and found with a skeleton in one of the mound burials. The other gorget, in the same figure, is made from the fresh-water mussel shell and was taken from a burial in the village site. These are invariably pierced with a hole in the center which varies from $\frac{1}{8}$ to $\frac{1}{4}$ inch in diameter. These holes were, no doubt, set with pearls or stone, as is shown in Fig. 17. These gorgets are found throughout the entire village as well as every stage in the manufacture of this ornament. The crescent, as shown in Fig. 55, was taken from a grave in the village. The crescents made from

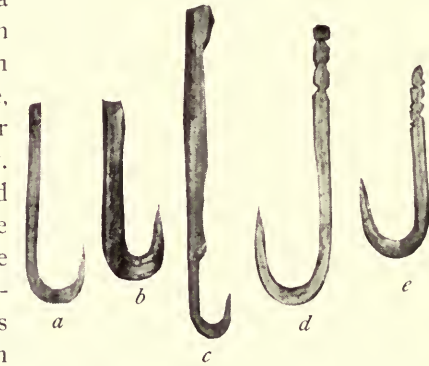


FIG. 52. PERFECT FISHHOOKS. TWO-THIRDS NATURAL SIZE.

shell are quite common in the burials of the Gartner mound, as well as those of the village. But as far as I have been able to ascertain they have not been found in any great numbers outside of this particular place. During the three seasons of explorations at the Baum village, not a single perfect or broken

crescent was found, while every other ornament made of shell can readily be duplicated at the Baum village.

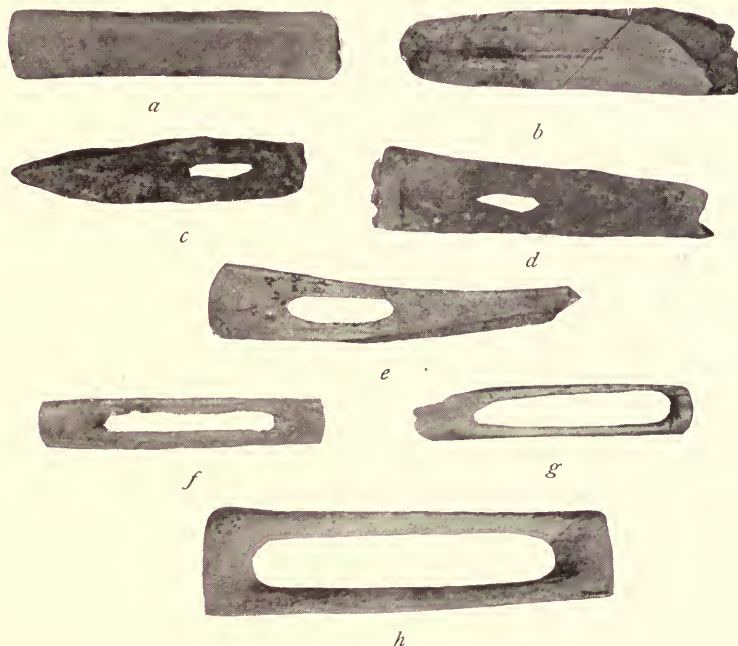


FIG. 53. STAGES OF FISHHOOK MANUFACTURE. TWO-THIRDS NATURAL SIZE.

Shell Beads. — The beads made of shell and averaging from $\frac{1}{4}$ to $\frac{1}{2}$ inch in diameter with a hole in the center, were very abundant, in some instances between seven

and eight hundred were found with a single skeleton. The most of these beads were made from ocean shells. They are highly polished and show a high degree of skill in their manufacture.

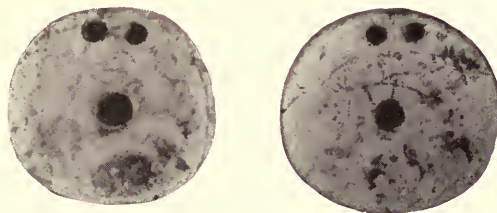


FIG. 54. SHELL GORGETS. TWO-THIRDS NATURAL SIZE.

Shell Pendants. — The pendants were frequently made from shell, both ocean and fresh water, but the majority of them were

made from the fresh-water mussel shell. They were cut into long strips averaging from 2 to 3 inches, and were pierced with a hole



FIG. 55. SHELL CRESCENT. $\frac{2}{3}$ NATURAL SIZE.

at the top for attachment. However, a number of them were triangular in form. These were usually from 1 to 1½ inches in length and pierced with two holes at the top for attachment. The greater number of these were found in the graves.

Pendants and Beads Made of Bone.— Fig. 56 shows pendants made from the digits of the wild turkey.

These occur in great numbers and are associated more particularly with the burials. Fig. 57 is an illustration of a necklace found in one of the refuse pits. It is made up of six canine teeth and six incisor teeth of the elk. Three of the canine teeth are perforated with two holes and three with one hole; three of the incisor teeth are perforated with one hole, while three have a crease cut entirely around the root of the tooth for attachment. The canine and incisor teeth of the elk were invari-



FIG. 56. PENDANTS MADE OF DIGITS OF WILD TURKEY.



FIG. 57. NECKLACE OF ELK TEETH.

ably used for ornaments and in a number of instances bone beads and shell were combined to form a necklace, and invariably

the incisor of the elk formed the pendant to this necklace. The canine teeth of the black bear (see Fig. 58) are found in abundance in this village; they were used for pendants and the perforations are drilled from side to side through the base of the root. Many of them are much worn from long use. The most common of the ornaments used is the bone bead. These occur in great numbers everywhere and are associated with almost every necklace taken from the graves. They are usually made from the wing bones of the bird and especially that of the wild turkey and vary in length from 1 to 5 inches. In several instances as many as forty beads have been taken from a single refuse pit. These

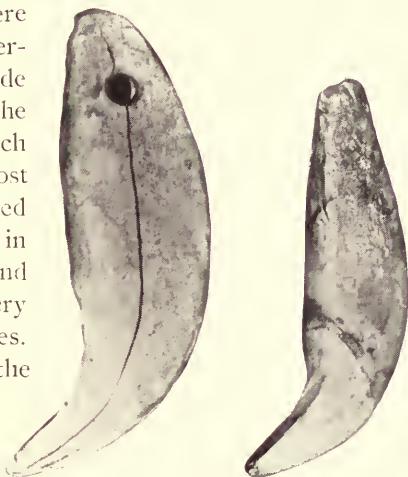


FIG. 58. PENDANTS MADE OF CANINE TEETH OF BLACK BEAR.

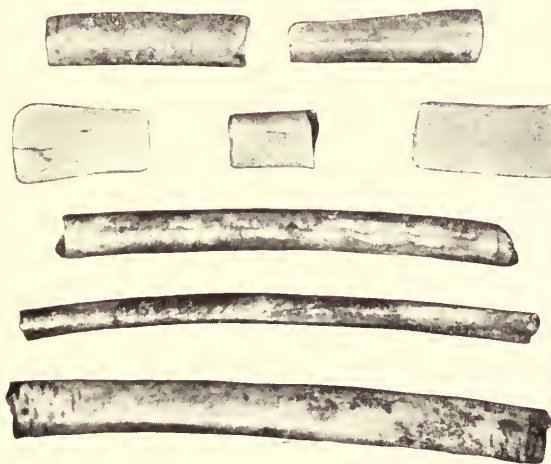


FIG. 59. BONE BEADS.

were scattered promiscuously through the debris and were, no doubt, lost from time to time. A good illustration of the beads is shown in Fig. 59. Fig. 60 is an illustration of the humerus of the wild turkey. Near the head

of the humerus are three perforations on each side. To these, no doubt, were attached rattles or ornaments, which were carried in the hand.

The perforated humeri of the wild turkey are occasionally met with in all sections of the village. They are not found in the graves, but usually occur in the refuse pits. Fig. 61 shows digit

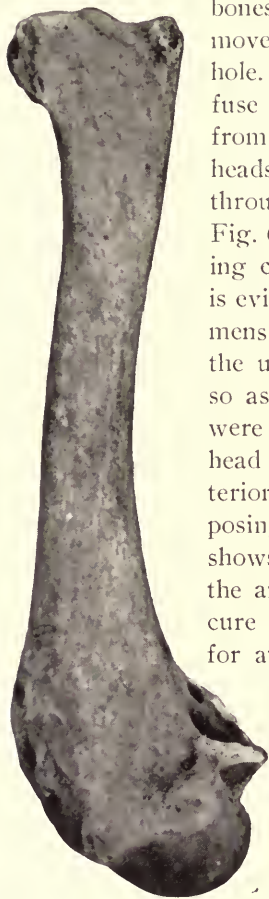


FIG. 60. PERFORATED
HUMERUS OF WILD
TURKEY.

bones of the deer, one end of which has been removed and the other end perforated with a small hole. These are found in abundance in the refuse pits, but none of them have been taken from the graves. Fig. 62 shows cut jaws and heads of various animals. These are found throughout the village, but none in the graves. Fig. 62 (*a*) is a cut jaw of the gray wolf showing carnalial tooth, and the two molars. This is evidently an unfinished piece, as perfect specimens are found in the village which show that the upper part of the jaw had been cut away so as to expose the ends of the roots. These were used for ornaments; (*b*) of Fig. 62 is the head and lower jaw of the mink. The posterior part of the skull has been cut away, exposing the brain cavity. The top of the skull shows deep cuts as well as the lower jaw, near the angle. These were, no doubt, made to secure the lower jaw to the skull and perhaps for attachment as an ornament. These specimens were taken from one of the refuse pits. The skull of the dog was also found in one of the refuse pits which had been treated in the same manner. Fig. 62 (*c*) is part of the left ramus of the mandible of the deer. In this specimen the jaw has been cut at the posterior end of the symphysis, while at the posterior extremity the condyle and coronoid process has been broken away preparatory to the manufacture into some ornament. Fig. 62 (*d*) shows the anterior portion of the ramus containing the incisor teeth. Fig. 62 (*e*) is the right ramus of the mandible of the wild cat, which has been cut similar to that of the deer just described. Fig. 62 (*f*) is a skull of the

wild turkey. These are found in abundance everywhere in the village. The upper surface of the skulls are usually perforated with one or more holes and were, no doubt, used for rattles, as they were found in the graves, where they encircle the lower limbs just below the knee. These heads usually contain from one to five small round pebbles.

Pipes. — The practice of smoking is indicated by the presence of stone pipes, finished and unfinished, found in every section of the village. The pipes were made for the most part of fine grained sandstone; yet several were found made of greenish argillyte, while still others were made of clay resembling very much the clay used in making their pottery.

The peculiar platform pipe shown in Fig. 9, taken from the mound, has not been duplicated in the village. However, another form of platform pipe is shown in Fig. 63, which seems to be the prevailing type of platform pipes. This specimen is made of greenish compact argillyte. The bowl is placed near the larger end, which is decorated with incised lines. In this particular specimen the bowl has been broken, but it fully illustrates the type and the labor necessary in the manufacture of this aboriginal artifact. Fig. 64 is another type of pipe found in this village. It is made of compact sandstone, while Fig. 65 taken from one of the refuse pits, is made of clay. The unfinished pieces found in this village show that a great amount of work has been required in their manufacture and that the work of pecking and rubbing is done first and the hole is drilled in the bowl next, and lastly the hole is drilled in the stem.

Whetstones. — Whetstones are very common in the village site. They are simply pieces of fine grained sandstone which have been used to sharpen objects made of bone and in the manufacture of ornaments made of shell. The majority of these specimens are flat and have grooves cut into them caused, no doubt, by sharpening the needles and awls. However, some of these whet-



FIG. 61. CUT DIGITS OF DEER.

stones are symmetrically cut, having edges and sides perfectly smooth, while others were simply finger-shaped pieces of fine-grained sandstone, which had been used upon all sides.

METHOD OF BURIAL IN THE VILLAGE.

The dead were evidently buried in close proximity to the habitat of these people and were similar in every respect to the



FIG. 62. CUT JAWS AND HEADS.

burials in the Baum village site, along Paint creek. Each family apparently had their own burial ground, which was in close proximity to the home. No evidence was found that the bodies had

been placed upon scaffolds and afterward reinterred. In the majority of the graves the body was placed at full length, as is

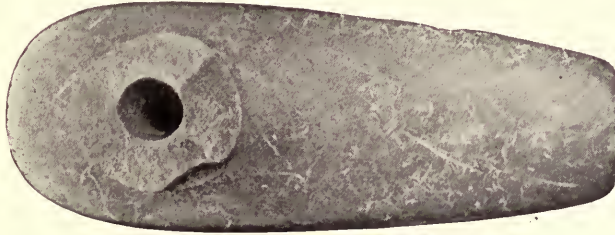


FIG. 63. PLATFORM PIPE.

shown in Fig. 66 and with it was placed implements and ornaments which, no doubt, represented the property of the deceased at the time of death. However, a single burial was found in the bottom of a refuse pit; a photograph of this burial is shown in Fig. 67, which shows that the body was made to conform to the size of the pit. The head is bent forward and the legs are flexed so that the feet are very near the pelvis; one arm is flexed parallel to the body with the hand near the head, while the other lays across the body. However, not many burials of this kind are found and it occurred to me that perhaps this was an emergency burial, occurring during the winter when the ground was frozen so that excavations could not be made, consequently the storehouse was cleaned out and the body placed therein and covered with a few inches of soil. It was afterward used as a refuse pit. Fig. 68 shows a double burial. By referring to this figure one can readily see that the legs and head are higher than the body. This was caused by

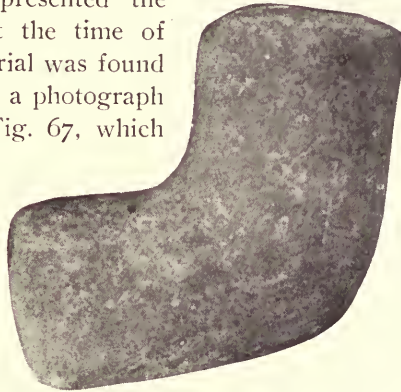


FIG. 64. UNFINISHED SANDSTONE PIPE.



FIG. 65. PERFECT CLAY PIPE FROM REFUSE PIT.

not many burials of this kind are found and it occurred to me that perhaps this was an emergency burial, occurring during the winter when the ground was frozen so that excavations could not be made, consequently the storehouse was cleaned out and the body placed therein and covered with a few inches of soil. It was afterward used as a refuse pit. Fig. 68 shows a double burial. By referring to this figure one can readily see that the legs and head are higher than the body. This was caused by

digging the grave over a refuse pit. The head and feet extending beyond the confines of this pit, and as decomposition took place, the body would naturally sink, with the loose material, into the pit, leaving the legs and head higher than the other portions of the body. In this particular burial, which represents two old people, male and female, the bodies were buried side by side. The male to the right with the right arm under the skull of the female.



FIG. 66. ONE OF THE BURIALS IN THE VILLAGE.

With them were buried two finely-polished celts, which can be seen near the pelvic region and near the head two more were found similar to those just mentioned. Only one can be seen in the photograph. At the back of the head and between the two skeletons were placed a number of beads, ornaments of shell, fish hooks, beaver teeth, awls, pins, etc., which were, no doubt the property of these individuals.

No remains of the cremated dead or evidence that cremation was practiced outside of the large crematory was discovered,

which shows that the majority of the dead of the village were cremated and placed in the mound.

The explorations of the Gartner mound, during the season of 1902, followed by the investigation in the village, which surrounds the mound, in 1903, have successfully proven that the primitive inhabitants of the village were the builders of the mound, as evidenced by the artifacts found in the ashes of the cremated

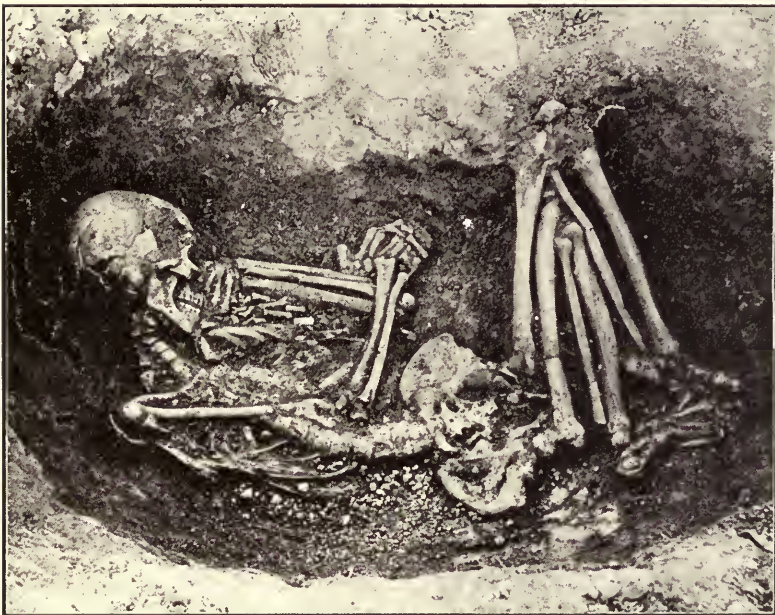


FIG. 67. SHOWS BURIAL IN REFUSE PIT.

dead and the regular burials of the mound, being similar in every respect to those found in the village. Further, that the culture of these primitive people was quite uniform and resembles in all the essential points the culture of the prehistoric inhabitants in the Paint Creek valley at the Baum village site. In the manufacture of their pottery and especially in reference to their designs and shapes, their products were quite similar. In the manufacture of their implements, such as the fish hooks, scrapers, awls, and needles, and various implements in stone, as shown by the



FIG. 68. SHOWS DOUBLE BURIAL.

various stages in the manufacture of these implements that they were in every respect similar to those at the Baum village. The ornaments of bone and shell taken from the mound and village can readily be duplicated at the Baum site with but one exception, namely, the shell crescent, which was found only at the Gartner site. The examination further shows that these people were agriculturists, depending upon the products from the soil to tide them through the long winters, as shown by the storage of corn and beans in the subterranean storehouses dug for that purpose. Further that there was inter-tribal trade, as evidenced by the ocean shells and mica found in almost every portion of the village. This investigation has also brought out the fact that these primitive people had a domesticated dog, whose osteological character accords with that of the dog found at the Baum village site.



SHOWS POTTERY DECORATIONS.

PART III

Explorations of the Baum Village Site



AT WORK IN THE VILLAGE SITE.

Explorations of the Baum Prehistoric Village Site

BY

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(Curator Ohio State Archaeological and Historical Society)

Reprint from the Ohio Archaeological and Historical Quarterly
Volume XV, Number 1.

Columbus
PRESS OF FRED. J. HEER
1906

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E. O. RANDALL, *Secretary*,
Columbus, Ohio.

BAUM PREHISTORIC VILLAGE.

WILLIAM C. MILLS.

The Baum Prehistoric Village site is situated in Twin Township, Ross County, Ohio, just across the river from the small borough of Bourneville, upon the first gravel terrace of Paint Creek.

The Paint Creek valley is drained by Paint Creek, a stream of irregular turbulence, flowing in a northeasterly direction, and emptying into the Scioto River, south of Chillicothe. The Valley, at the site of this village upwards of two miles in width, is surrounded on the east and west by high hills which are the landmarks of nature, but little changed since the days of the prehistoric inhabitants.

Spruce Hill, Fig. 1, with steep slope covered with a dense forest, towers above the surrounding hills on either side. The top of this hill is made a veritable fortress by an artificially constructed stone wall, enclosing more than one hundred acres of land. This fortress would no doubt furnish a place of refuge to those who might be driven from the extensive fortifications in the valley below, which are in close proximity to the mounds and village of those early people.

Looking to the south and east from the village site, one can see lofty hills rising in successive terraces, no longer covered with the deep tangled forest, but transformed by the woodman's axe, and now under cultivation, producing the golden corn, which is our inheritance from primitive man who inhabited the Valley of Paint Creek many centuries ago.

The village extends over ten acres or more of ground, which has been under cultivation for about three-quarters of a century. Almost in the center of this village, near the edge of the terrace to the west, is located a large square mound. This mound and the earthworks which are directly east of it, have been known since early times as the landmarks of the early settlers in this section of Ross county. The mound was first described by Squier

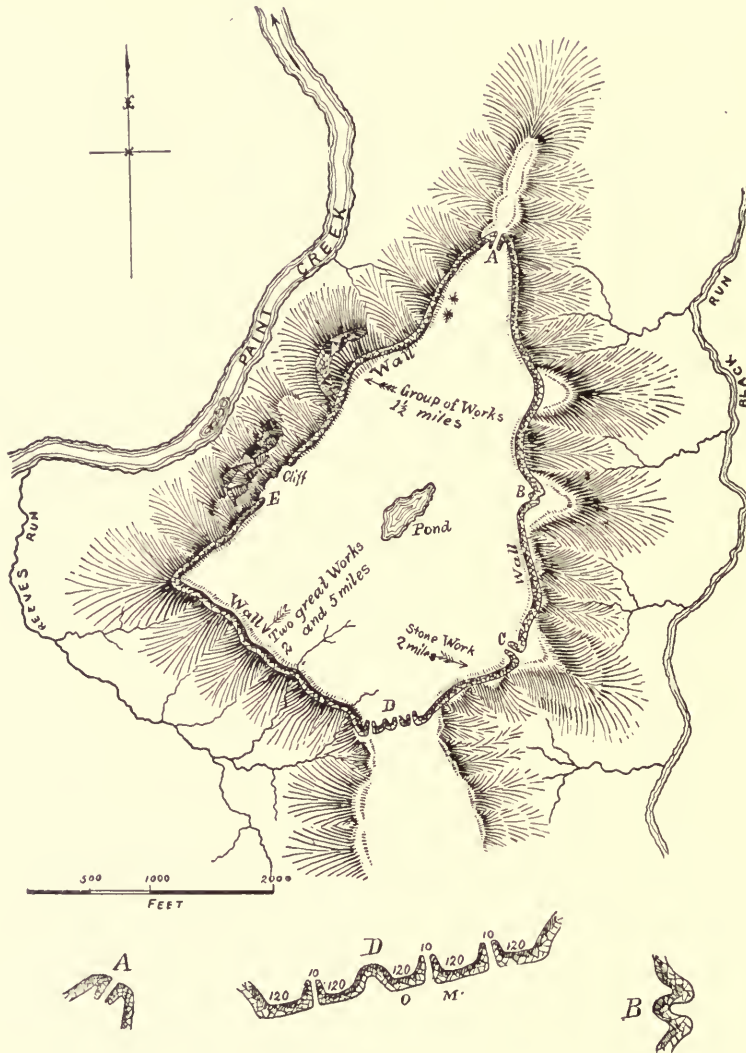


FIG. 1 — Spruce Hill,

and Davis in 1846, in their *Ancient Monuments of the Mississippi Valley*, page 57, where they give a description and drawing of these works (Fig. 2). However, Squier and Davis do not mention the fact that a village was present, nor that they knew of the village, as is shown by their description. "This work is situated on the right bank of Paint Creek, fourteen miles distant from Chillicothe. It is but another combination of the figures composing the works belonging to this series, just described;

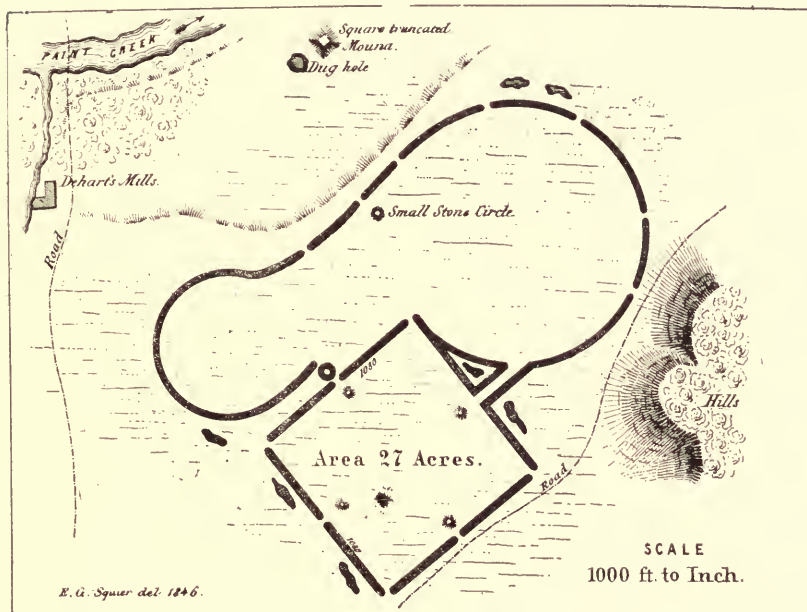


FIG. 2 — Baum Earthworks (After Squier & Davis). The village site surrounds the square truncated mound marked on the drawing.

from which, in structure, it differs in no material respect, except that the walls are higher and heavier.

It is one of the best preserved works in the valley; the only portion which is much injured being at that part of the great circle next to the hill, where the flow of water has obliterated the wall for some distance. The gateways of the square are considerably wider than those of the other works—being nearly seventy feet across. A large, square, truncated mound occurs at

some distance to the north of this work. It is one hundred and twenty feet broad at the base, has an area fifty feet square on the top, and is fifteen feet high. Quantities of coarse, broken pottery are found on and around it. A deep pit, or dug hole, is near, denoting the spot whence the earth composing the mound was taken." This description, though meager, attracted the attention of the Bureau of Ethnology, and they sent a field party, under the direction of M_r. Middleton, to explore the mound, and I herewith quote from the twelfth annual report of the Bureau of Ethnology, 1890 and 1891. "The mound was composed for the most part of clay, mottled considerably with black loam and slightly in some places with patches of a grayish, plastic lime. Cross trenches were run due north and south and east and west, respectively. The breadth of these at the side was from five to six feet, but as they penetrated inward they widened gradually, so that at the center the excavation became thirteen feet in diameter. Considerable lateral digging was done from these trenches to uncover skeletons and other indications appearing in their sides.

"Two series of upright postmolds, averaging five inches in diameter equidistant ten inches, and forming a perfect circle twenty-six feet in diameter, constitute a pre-eminent feature of this mound. Within these circular palings the mound was penetrated systematically by thin seams of fine sand, sagging in the center and averaging one foot apart. Resting upon the natural black loam at the bottom, timbers averaging eight inches in diameter radiated from the center, and in the south and west trenches were noticed to extend continuously to the posts. These timbers were detected, for the most part, by their burnt remains and also by the molds of dark earth in the yellow clay, produced by the decomposition of wood. Directly over these timbers was a horizontal line of decayed and burnt wood, but mostly decayed, averaging half an inch thick. The upright postmolds of the lower series were very distinct and measured five feet in vertical height. In one was found a small sliver of what appeared to be black walnut. Several of them contained the burnt remains of wood, and in many of these instances the black bark was clinging to the sides.

"Separating this from the superstructure, as will be seen by

reference to Fig. 3, was a thin, sagging streak of burnt clay. Here and there upon its surface scant traces of black wood ashes were seen, while a small quantity of white bone ashes lay scattered upon its western border. This burnt streak overlaid a thin sand seam, below which it seems it could not penetrate. The postmolds of the superstructure consisted of a double row, the outer one being uniformly directly over the lower series in a vertical line, and separated from the latter entirely around the circle by a solid line of gravel. The two rows of the upper structure

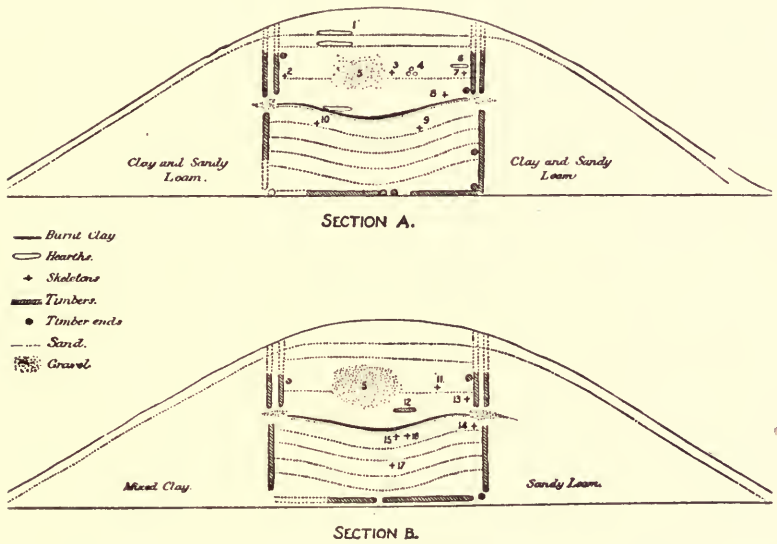


FIG. 3 — Cross sections of the Baum Mound. (Middleton, B. E. Report 12.)

averaged eighteen inches apart. Both might have extended originally above the surface of the mound, since they were discovered between one and a half and two feet beneath the surface, which had been considerably plowed. Horizontal timber molds a little smaller in diameter, filled, in places, with charcoal, could be distinctly seen lying against the side of each line of posts at the points shown in the figure. These appear to have been cross beams or stays used for bracing purposes. In the eastern trench a gap, three feet wide and two inches deep, was noticed by the absence of postmolds in both upper and lower series.

"All the skeletons discovered were in the area inclosed by these posts. The skeletons unearthed were all in a remarkably good state of preservation. None of them could have been intrusively buried, for the stratification above them was not disturbed. All excepting Nos. 15, 16 and 17 lay upon one or another of the thin seams of sand.

"With skeleton No. 1 a bone implement was found at the back of the cranium, and an incised shell and fragments of a jar at the right side of it. With No. 3, which was that of a child about ten years old, a small clay vessel was found five inches behind the cranium. At the left hand of skeleton No. 8 was a shell such as is found in the sands of Paint Creek. A bone implement was at the back of the cranium of No. 9. With skeleton No. 11, were found a lot of small semi-perforated shell beads, and two bone implements directly back of the cranium. By the right side of the cranium were the perfect skull and jaws of a wolf, and beneath these were two perforated ornaments of shell. In the right hand was a shell, such as is found in the creek near by, while in the left was a pipe fashioned from stone.

"At the right of the feet of this skeleton was the extremity of an oblong ashpit, about four feet long and two feet broad and one foot ten inches in depth. It was filled with white ashes which were evidently those of human bones, since none but human bones could be identified. In these ashes and compactly filled with them, was an earth pot. It lay at the right of the feet of skeleton No. 11. It was lifted out of the ashes with great care, but the weight of its contents and its rotten condition caused it to break in pieces before it could be placed upon the ground. Numerous other pieces of pottery of a similar character were found in these ashes, and it is not improbable, from the indications, that all these ashes were originally placed in pots before interment. A perforated shell disk, two inches in diameter, and a lump of soggy sycamore wood were gathered from the ashes. Neither wood nor shell bore any signs of having been burnt.

"Skeleton No. 15 lay seven feet deep and a half foot below the general burnt streak. It was originally covered with a wooden

structure of some kind, for the cores of two red cedar timbers were resting lengthwise upon the body and the burnt remains of probably two others could be plainly seen on each side, placed parallel to those upon the body. This red cedar was still sound, but the white wood which envelopes the red cores seemed to be burnt entirely to charcoal. The indications are that these timbers were originally one foot above the body, for the earth to that extent over the whole length of the body was very soft. The timbers were noticed to extend slightly beyond the head and feet, while the head upon which they lay was upon its right side. The earth above them was a mixture of clay and fine sand and peculiarly moist. The length of this skeleton to the ankle bones was six feet and one inch. Two bone implements were found at its head, and at its right side near the head were two fragments of polished tubes and a hollowpoint of bone, which appears to have been shaped with a steel knife. Three bone implements were found beneath the right elbow of skeleton No. 13."

I have quoted at some length from the Report of the Bureau of Ethnology, because it is the only account we have of the material taken from the mound, which is located almost in the center of the village site.

However, the contents of the mound are not available for inspection, at the U. S. National Museum, and we are compelled to rely upon the description and drawing given by the explorer, Mr. Middleton, both in regard to mode of burial and the artifacts placed in the grave. So far as I am able to judge by having before me the description of the explorations of the mound and the implements, ornaments and pottery found in such profusion with the burials in the village, I would say that the builders of the mound were isochronological with the dwellers in the village. The bone arrowpoint mentioned in the latter part of the quotation as having the appearance of having been shaped with a steel knife, was duplicated many times in every section of the village, and was simply an unfinished arrowpoint, having been worked with a heavy piece of flint used as a scraper, and not as one would use a steel knife. An ordinary pocket glass will reveal the concave appearance of the cut, and at the same time show the scratches made by the uneven fracture of flint. I have dis-

cussed at some length the making of arrowpoints, from the tips of the tines and the toe bones of the deer in the Explorations of the Gartner Mound and Village site, Ohio Arch. and Hist. Quarterly, Vol. XIII, No. 2.

In 1897 Dr. Loveberry, under the direction of Prof. Moorehead, examined a small portion of this village, and I herewith quote from the conclusions of Prof. Moorehead, which are found in Vol. 7, page 151, of the publications of the Ohio State Archaeological and Historical Society.



FIG. 4—The village site, mound in the distance to the left.

“With other village sites of the Scioto this has much in common. While larger than the average, yet it can be said that it presents somewhat of a lower culture than others connected with great earthworks. It will be observed that there is not a great number of burial mounds within or without the enclosure. Those two to four miles west, along Paint Creek, may have been used by the occupants of the enclosure for their interments, but one cannot say positively. The character of the relics and the lack of evidence of high aboriginal art at this place are taken as evidence of the primitive character of the villagers. I do not

think that they were the same people who erected the earth-work, or of the same tribe. At Hopewell's, Hopetown, Harness's and the Mound City fragments of elaborately carved shells, rings, polished pipes, both effigy and platform, etc., have been found. None of these truly polished, ceremonial, or artistic objects were found in the ash pits or on the habitation sites of the Baum village site. The place is interesting in that it shows a lower degree of culture than that evinced on the sites above mentioned. This naturally brings forward the question — Is this a later occupation? Is it an earlier one? I am convinced that it antedates the construction of the works. I do not think it is of the historic period, and if Indian, of some tribe which knew little or naught of agriculture. No pestles were found. The bones of animals and the unios from the creek, found in such profusion, would indicate the presence of a hunting tribe. No foreign substances were present. Flint Ridge material was absent. Neither the effigy of the fox, nor the rude sculpture upon the pipe can be classed with the beautiful carvings of other Scioto Valley culture-sites."

From the above quotations it will be seen that the Baum Mound and Village Site has had some attention from the Archæologist and was considered by them of more than ordinary importance.

In the following pages I give a detailed account of the work of three seasons in the village, bringing to light forty-nine tepee sites which were more or less the permanent abode of the dwellers, one hundred and twenty-seven burials which surrounded the tepees and two hundred and thirty-four subterranean storehouses, in which were stored the winter supplies and which were afterwards used for refuse pits.

During the summer of 1899, I examined a section of the village which lays directly south of the mound, extending the work to the west, and finally ending the work of the season directly north of the mound. During the summer of 1903, I examined a large portion of the village directly east of the mound, and during the summer of 1902, sections were examined northeast of the mound, extending along the edge of the gravel terrace, directly southeast of the mound.

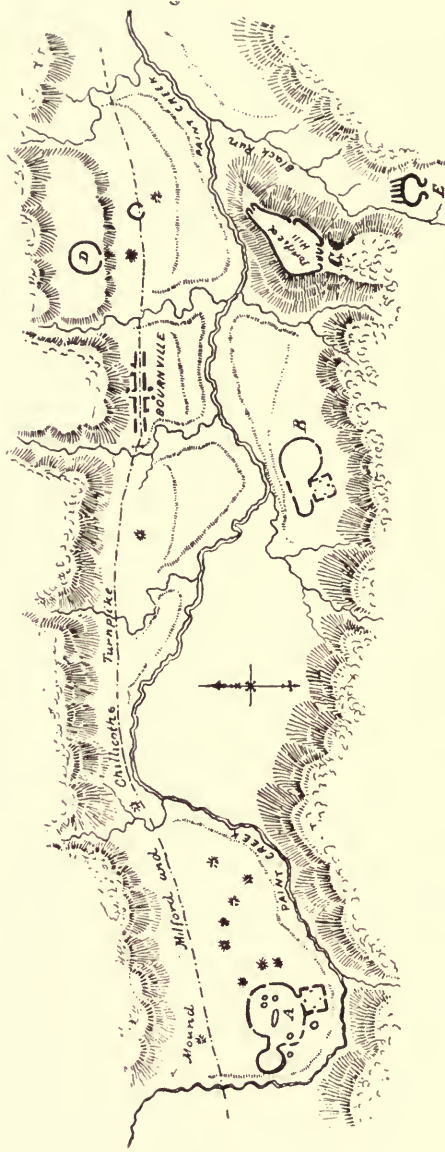


FIG. 5— Six miles of the Paint Creek Valley (Squier & Davis). (A) Scip group of mounds and earthworks, (B) Baum group of mounds and earthworks, (C) Spruce Hill.

The examination of these various sections were made to discover, if possible, the extent of the village, as well as to ascertain the mode of life in the various sections, and whether the same people inhabited the village in all its parts.

The land upon which this village is situated has been owned by the Baums for more than three quarters of a century. At the present time the land upon which the village proper is situated is owned by Mr. J. E. Baum and Mr. Pollard Hill, and through the kindness of these gentlemen, I was not in any way restricted in my examination of the village; in fact, they assisted me in many ways to make the work pleasant and profitable. About three quarters of a century ago, Mr. Baum's grandfather cleared this land, which was then covered with a growth of large trees of various kinds, such as the black walnut, oak sycamore, and ash, and it has practically been under cultivation ever since. The top surface consists of from twelve to thirty-six inches of leaf mould, and alluvial deposit, which overlies a thin stratum of compact clay. Directly beneath this clay or hardpan, is found gravel.

During the entire examination of this village, something less than two acres of ground was dug over, and examined inch by inch by the aid of the pick, spade and small hand trowel, bringing to light the habitations and burial places of these early people.

No one living in this section, not even those cultivating the soil for the three quarters of a century mentioned, knew that the remains of a buried city of a prehistoric people lay only a few inches beneath the surface. As the examination progressed it was evident that a few pages, at least, of the history of remote time, were being revealed in the deep pits, which served as subterranean storehouses for the early agriculturists. A few more pages were brought to light when deep down in the clay, the burial grounds for each family were discovered, and still a few more pages when the tepee, with its fireplace, stone mortars, implements and ornaments, lying in profusion upon the floor of the little home, partially told in silent language of the great drama of life, enacted by those early people.

† herewith present a drawing, Fig. 6, of a portion of the

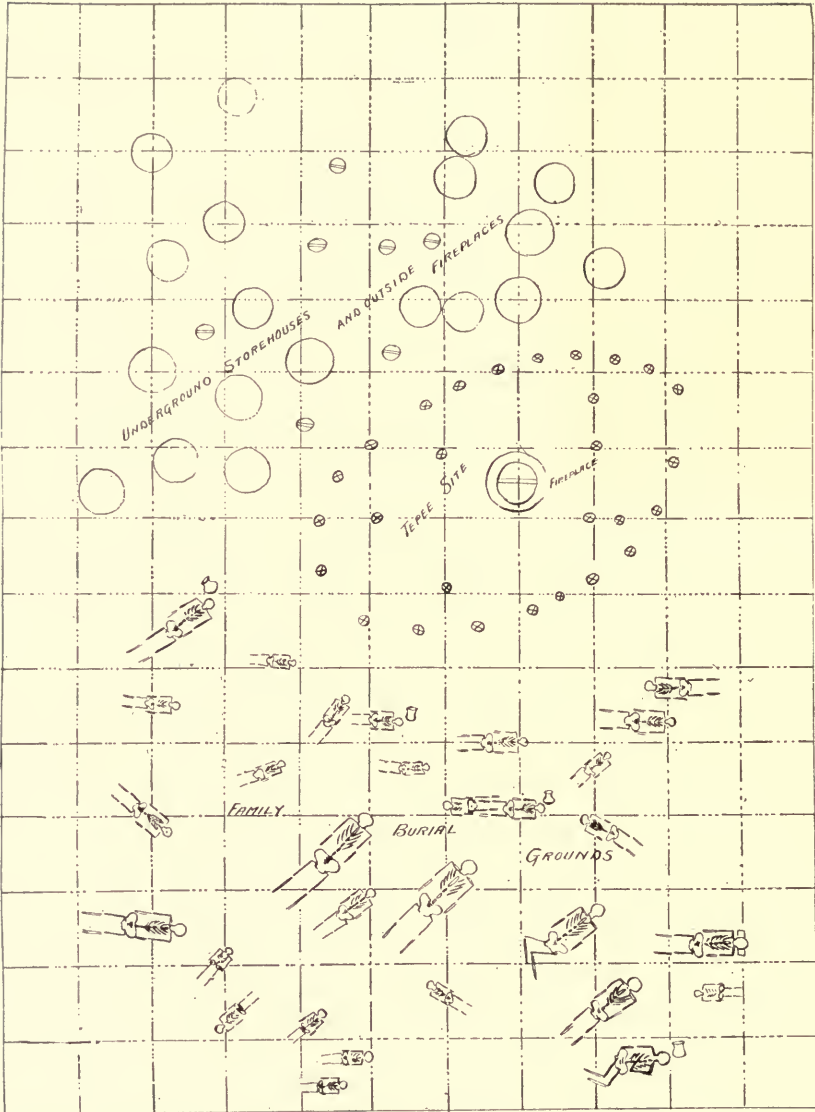


FIG. 6 — Tepe site, surrounded on one side by the burial ground and on the other by underground storehouses.

village farthest to the northeast of the mound, which shows the site of a large tepee, the largest found during the explorations and, perhaps, the most interesting in this, that this tepee was never changed and always occupied the exact ground upon which it was originally built, while in many other instances the tepee was shifted from place to place, even occupying the ground used for burial purposes, and the deserted tepee site afterwards being used for the burial of the dead, or for subterranean storehouses. As I have stated, this tepee was the largest found in the village; of oblong construction and measuring upwards of twenty-one feet in length by twelve feet in width inside of the posts. The posts were large, as shown by the postmolds, and consisted of twenty-one set upright in the ground, the smallest being five inches in diameter and the largest nine and one-fourth inches. On the inside seven other posts similar in size to the outer ones were promiscuously placed, presumably for the support of the roof. The posts for the most part consisted of the trunks of small trees, with the bark attached, placed in the ground. The imprint of the bark was quite visible, but the trees all being young it would be impossible to identify from the bark the kind of trees used in the construction of the tepee. The posts were made the proper length by the use of fire, and no doubt the trees were felled by fire, for at the bottom of the postmolds charcoal was invariably found. The covering of the tepee evidently consisted of bark, grass or skins, as no indications were found pointing to the use of earth as a mud plaster in the construction of the sides or top. The fireplace was placed in the center of the tepee and was about four feet in diameter, six inches deep at the center and three inches deep at the edge, and had very much the appearance of having been plastered from time to time with successive layers of clay. The earth beneath the fireplace was burned a brick-red to the depth of eight inches. The original floor of the tepee had been made fairly smooth, but almost six inches of earth had little by little and from time to time been placed upon the floor. This earth had scattered through it implements and ornaments, both finished and unfinished, polishing

stones, broken pottery, hammer stones, a large stone mortar, and many animal bones, especially of the deer, raccoon, bear, and wild turkey. As the animals named were most likely killed during the winter season, one must infer that the tepee was the scene of domestic activities during the winter, and that during



FIG. 7— Animal bones, mussel shells, broken pottery, mortars, hammer stones and implements of bone, stone and shell taken from the refuse pits.

the spring, summer and autumn the preparation of food was mostly done outside of the tepee at the large fireplaces marked upon the drawing (Fig. 6). However, the tepee described above is not typical of the village as far as size and shape and surroundings are concerned. The average tepee is about one-half the size and invariably circular in form, and the posts used in

their construction much smaller. The inside of the tepees are practically all the same. The surroundings of the tepee, such as the subterranean storehouses and the burial places, depend upon the size of the tepee. Surrounding the large tepee just described, to the south was the burial ground where thirty burials were unearthed, the largest in the village. Of these burials twenty had not reached beyond the age of adolescents, showing that sixty-six and two-third per cent. of the family group never reached the adult age. Fourteen of the twenty were under six years of age, showing that the mortality among small children was very great, being fully seventy per cent., not taking into account the four small babies found in the refuse pits which surrounded the tepee. The mortality of the young under the adult age in this family is greater than in any other individual family discovered in the village. Out of one hundred and twenty-seven burials unearthed in the village, seventy-four were under the age of sixteen, showing that fully fifty-eight per cent. of the children never reached the adult age. Of the seventy-four children under the age of sixteen, fifty-six were under the age of six years, showing that fully seventy-five per cent. of the children born to these early peoples died before they attained the age of six years, not taking into account the twenty-four very small babies found in the ashes and refuse in the abandoned subterranean storehouses in various parts of the village.

The burials of this wigwam group present another interesting feature, found in only one other part of the village, that of placing perfect pieces of pottery in the grave. Four burials representing five individuals, had each a pottery vessel placed near the head. All were carefully removed, but were more or less broken by freezing. The vessels have been restored and will be described elsewhere in this monograph. Two of the vessels were placed with adults and each contained a single bone awl made from the shoulder blade of the deer; a few broken bones of the deer and wild turkey were found in one, and quite a number of mussel shells with a few deer bones were found in the other. The other two vessels were placed in the graves of children.

One with a double burial, as shown in Fig. 6, a few broken bones of the wild turkey were found in the vessel, together with two mussel shells worked into spoons. The vessel was placed near the head of the older child, whose age would not exceed four and one-half years. Two large bone awls made of the heavy leg bones of the elk were placed outside of the vessel and near the head, while in all the other burials where pottery was found, the awls were placed inside of the vessel. The other vessel contained



FIG. 8 — Headless skeleton, with a large pottery vessel placed at the head of the grave.

bones of fish and a few small mussel shells, together with an awl made from the tibiotarsus of the wild turkey.

Another interesting feature of one of the burials of this group and which was not found in any other section of the village, was the finding of a fine-grained sand-stone slab, nineteen and one-fourth inches long by five inches in width by one inch thick placed under the head of the skeleton. The slab had the appearance of having been water worn, but had received an ad-

ditional polish by rubbing, the effect being noticeable over the entire surface of the stone. One side is perfectly plain; the other side, finely polished, contains three indentations about one-eighth of an inch deep, and three-fourths of an inch in diameter.

Another feature of this interesting group is the finding of a few copper beads associated with shell beads in one of the burials. This find is the only instance where copper was found during the entire exploration in the village. However, it shows that the denizens were familiar with and possessed this very desirable metal.

The refuse pits surrounding the tepee to the north were perhaps the most interesting in the village, for here abundant evidence was found showing that the refuse pits were originally intended and used for a storehouse for corn, beans and nuts, and perhaps, for the temporary storage of animal food, etc., and afterwards used as a receptacle for refuse from the camp. For some time I was of the opinion that the large cistern-like holes were dug for the express purpose of getting rid of the refuse, but as the explorations progressed I soon discovered their real purpose by finding the charred remains of the ears of corn placed in regular order on the bottom of the pit; and I was further rewarded by finding pits in various sections of the village containing charred corn, beans, hickory nuts, walnuts, etc., which had been stored in the pit and no doubt accidentally destroyed. Since completing my examination of the Baum Village I examined the Gartner Mound as well as the village site which surrounded the mound, and find that the two villages had very much in common. The family grouping and the subterranean storehouse were identical in every respect with those at the Baum Village, therefore, I quote from my report upon this village site, Vol. 13, page 128, publications of the Ohio Archæological and Historical Society, including a photograph of explorations at Gartner's showing the close proximity of the pits and the large number exposed at one time: "The refuse pits, which are so abundant in the villages of the Paint Creek valley, were present in great numbers and distributed over the village site surround-

ing the habitats of the various families. Fig. No. 9 shows ten of these pits open at one time. During the examination in the village, more than one hundred pits were found and thoroughly examined. The evidence produced by this examination shows that twenty per cent. of the pits examined were originally used for storehouses for grain, beans and nuts, and perhaps for animal food. These pits were lined with straw or bark and in some instances the ears of corn laid in regular order upon the bottom; in other instances the corn was shelled and placed in woven bags; in others shelled corn and beans were found together; in others hickory nuts, walnuts, chestnuts and seeds of the pawpaw were present in goodly numbers. All this was in the charred state, accidentally caused, no doubt by fire being blown into these pits and the supplies practically destroyed before the flames were subdued. The burning of these supplies must have been a great loss to these primitive people and may have caused them great suffering during the severe winters, but it has left a record of their industry which never could have been ascertained in any other way. The great number of pits found, which show conclusively by their charred remains their early uses, would lead one to believe that all the pits found were used originally for underground storehouses and by spring time, when the supplies were likely consumed, a general forced cleaning up of their domiciles and surroundings would occur and the empty storehouse would serve as a receptacle for this refuse, which was henceforth used for that purpose until completely filled. During the autumn, when the harvest time came, a new storehouse would be dug and the grain and nuts gathered and stored for winter use. The examination of the pits has brought out the above conclusions, as evidenced by the refuse therein. Near the bottom of the pits will invariably be found the heads of various animals such as the deer, with antlers attached, black bear, raccoon, gray fox, rabbit and the wild turkey, as well as the large, heavy, broken bones of these animals such as would likely be found around a winter camp. Further, some of the large bones showed that they had been gnawed in such a manner as to indicate the presence of a



FIG. 9.—Refuse pits at the Garner Village Site.

domesticated dog, whose presence was further corroborated by finding his remains in every part of the village. Therefore, taking all these facts into consideration, one must necessarily infer that the spring cleaning took place and animal bones, broken pottery and the general refuse was thrown into the pits. Further, the remains of fish are seldom ever found near the bottom of the pits, but usually occur from the top to about the middle. Mussel shells are never found at the bottom of the pits, but are usually found near the middle or half way between the middle and top of the pit. We know that fish and mussels must be taken during the spring, summer and autumn and are certainly very hard to procure during the winter." The same conditions as described above were found at Baum Village.

Another notable feature in this village was the finding of the Indian dog, and I quote from my preliminary report, page 81, Vol. X, Publication of the Ohio Archæological and Historical Society: "The bones of the old Indian dog were found in great numbers, and there is no doubt but that this dog was one of their domestic animals, for it is known that dogs were domesticated long before the earliest records of history, their remains being found in connection with the rude implements of the ancient cave and lake dwellers all through Europe. However, the history and description of the Indian dog, in the ancient times, is yet a subject far from solution. The remains of the dog found in this village site were described by Professor Lucas, of the Smithsonian Institute at Washington, as being a short-faced dog, much of the size and proportions of a bull terrier, though probably not short-haired. Professor Lucas says he has obtained specimens apparently of the same breed from the village sites in Texas and from old Pueblos. Professor Putnam, of Harvard University, for more than twenty years has been collecting bones of dogs in connection with pre-historic burials in various parts of America, and a study of the skulls of these dogs found in the mounds and burial places in Florida, Georgia, South Carolina, Ohio, Kentucky and New York, and from the great shell heaps of Maine, show that a distinct variety or species of dog was dis-

tributed over North America in pre-Columbian times. Apparently the same variety of dog is found in the ancient site of the Swiss Lake dwellers at Neufchatel, also in the ancient tombs of Thebes in Egypt. Professor Putnam further says: "This variety of dog is apparently identical with the pure-bred Scotch Collie of to-day. If this is the case, the pre-historic dog in America, Europe and Egypt and its persistence to the present time as a thoroughbred is suggestive of a distinct species of the genus canis, which was domesticated several thousand years ago, and also that the pre-historic dog in America was brought to this continent by very early emigrants from the old world."

He further states: "That comparisons have not been made with dogs that have been found in the tribes of the Southwest, the ancient Mexicans, and with the Eskimo."

In the latter part of the fifteenth century Columbus found two kinds of dogs in the West Indies and later Fernandez described three kinds of dogs in Mexico, and as Professor Lucas has been able to trace the Baum Village dog into the far Southwest, it is very likely one of the kinds described by Fernandez. However, it must be admitted that comparisons have not been made with sufficient exactness to place the Baum Village dog with any of those described by the early writers.

During the entire exploration fifty bones of the dog were removed, representing perhaps as many individuals. Some of the bones showed marks of the flint knife upon them, others were made into ornaments, while others were broken in similar manner to bones of the deer and raccoon. Seven skulls were found, but all had been broken in order to remove the brain.

During the explorations at the Gartner Village, which is located six miles north of Chillicothe, Ohio, along the Scioto River, remains of the Indian dog were found in the refuse pits similar to those at the Baum Village, and their osteological character accord in every respect with the dog found at the Baum Village site.

FOOD RESOURCES.

From our examination of this village and the evidence revealed by the refuse pits and the sites of their little homes shows that these early inhabitants were not savages depending entirely

upon the wild food for their subsistence, but were barbarians having a settled place of abode, a developed agriculture, the storage of food supplies for future use, and the domestication of at least one animal, namely, the Indian dog, which of all animals would best show adaptation to his master's wants and pleasures.

ANIMAL FOOD.

It is evident from the large quantity of animal remains found in the pits, that the inhabitants of Baum Village site depended upon the chase for a very large part of their subsistence. Everywhere about the village, especially in the abandoned storehouses and in the sites of wigwams, the broken bones of various animals, that were used as food, were found in abundance. The abandoned storehouse was a veritable mine for animal bones. A memorandum of all the bones taken from one pit was made. The pit measured three feet and seven inches in diameter by five feet ten inches in depth and contained 375 bones and shells, some of which were mere fragments, while others, such as the leg bones of the beaver, groundhog and raccoon were in a perfect state. A summary of all the bones and shells is as follows: Virginia deer, thirty-five per cent.; wild turkey, ten per cent.; two species of fresh water unios, ten per cent.; gray fox, ten per cent.; raccoon, five per cent.; black bear, five per cent.; box turtle, five per cent.; the remainder of the bones being divided about equally between the groundhog, wild cat, elk, opossum, beaver, rabbit, wild goose, and great horned owl. By far the largest number of bones were those of the Virginia deer (*Odocoileus virginianus*). Out of twenty barrels of bones brought to the museum, fully thirty-five per cent. were of this animal. It will therefore be safe to say that thirty-five per cent. of all the animals used for food by these aboriginal inhabitants of Baum Village were the Virginia deer. At the Gartner Village, six miles north of Chillicothe, this animal constituted fully fifty per cent. of all the animals used for food.

The general characteristic of the deer at Baum Village was similar to the modern species. The antlers have a sub-basal snag beyond which the beam is curved forward and soon after forks

dichotomously, the lower fork again forking, presenting a beam with three practical vertical tines rising above it, thus demonstrating that the Virginia deer has remained practically unchanged since the time of these aboriginal inhabitants.

During the explorations three hundred and fifty lower jaws were removed from the refuse pits, which would represent about that number of individual animals. Of this number only one jaw has been removed in perfect condition, the others being more or less broken. Out of the three hundred and fifty jaws examined, fifty seven were from young deer under the age of maturity, and sixty-two were those of old animals having their teeth very much worn. In the remainder the teeth were in a perfect condition, and showed that the animal had reached the age of maturity.

Fifty skulls of this animal were procured from the refuse pits, and only two, or four per cent. of the fifty were females, and the remaining forty-eight or ninety-six per cent. were males. Seventy-four per cent. of the males were killed during the Fall and Winter seasons, while only twenty-two per cent. were killed during the Spring and Summer. The small per cent. of female skulls shows that aboriginal man, in the killing of animals, made a selection with reference to the perpetuation of the source of supply. Moreover, the great quantity of animals killed during the Fall and Winter, shows that the huntsman depended largely upon animal food to tide him through the Winter. In the other seasons, corn, beans and nuts of various kinds furnished him his subsistence.

Elk (*Cervus canadensis*) — Is the largest mammal found in the village. The bones of this animal are not abundant in the refuse pits, perhaps on account of the difficulty in securing such a large and fleet animal. Almost every pit would reveal a few bones, and these were broken into small pieces, not a single perfect large bone being found, as all had been broken into small fragments in order that every particle of attached food might be obtained. The large pieces of the heavy leg bones were made into awls and other implements, and the metapodal bones into scrapers; likewise every portion of the large antlers were utilized in the manufacture of celt-like scrapers, flaking tools and spear points.

Black Bear (*Ursus americanus*) — Appear in goodly numbers in every section of the village. Twenty-three broken skulls were removed from the pits, all having the posterior portions broken away in order that the brain might be removed. Seventy lower jaws were found, but all were imperfect, the defects being caused by the removal of the canine teeth, which necessitated destroying the jaw. The canines of the bear are the only teeth used for ornament, and are usually perforated with a small hole near the end of the root for attachment.

Wolf (*Canis occidentalis*) — Is another large animal found very sparingly in the refuse pits, and must have been very difficult to capture. During the entire exploration only one head was found with the teeth in place, although quite a number of upper and lower jaws cut into ornaments were found. The large leg bones were also broken into fragments or made into implements. The canine teeth were perforated near the end of the root for attachment. The posterior premolars were invariably removed from the jaw and perforated for attachment.

Mountain Lion (*Felis concolor*) — The bones of this animal are not met with in abundance in this village, although several of the large leg bones have been found as well as various portions of seven skulls. The broken bones are sparingly found in every portion of the village, and the teeth, such as the canines, the upper posterior premolars and the lower molars were perforated and used as ornaments.

Wild Cat (*Lynx rufa*) — The bones of this animal are found in great abundance in every section of the village. Portions of thirty skulls and parts of one hundred and twenty-five lower jaws were secured. Only a few perfect leg bones were found and these showed plainly the marks of the flint knife in removing the flesh from the bones. The canine teeth were much sought after for ornament and not a single lower jaw taken from this village has the canine teeth in place.

Raccoon (*Procyon lotor*) — The bones of the raccoon are more abundant in this village than any other animal belonging to the order Carnivora, although every family of the order is represented. The bones for the most part were broken and not more than ten perfect femurs were secured. Thirty-five frag-

mentary skulls, one perfect skull and two hundred and twenty-seven parts of lower jaws were taken from the pits. The perfect skull was that of a very old animal. The upper canine teeth seem to be the only teeth selected from the raccoon for ornament. Many of the leg bones were made into beads, and the fibulas were invariably made into awls or perforators.

Gray Fox (*Urocyon virginianus*) — This animal was certainly plentiful in this section of the Paint Creek Valley, as the bones are found in every part of the village. During the explorations over two hundred lower jaws and over twenty fragmentary skulls were secured.

Indian Dog (*Canis*) — This animal was found in every section of the village and I have described this dog at some length in the preceding pages.

The dental formula is as follows:

$$I. \frac{3-3}{3-3} \quad C. \frac{1-1}{1-1} \quad P. \frac{4-4}{4-4} \quad M. \frac{2-2}{3-3} = 42.$$

The canine teeth of the lower jaw are quite large and strong, the inner edge of each being quite sharp. The first molar is large with chisel-shaped cones upon the surface of the anterior part of the tooth, while the posterior part is very large and flattened, but has a number of small cusps arising from the edge of the tooth; this molar is much larger than the second and third combined. In the upper jaw the first, second and third premolars are very much alike, although the first is single-rooted and not so large. The fourth premolar is very large, with cone-shaped cusps arising from the crown, the inner part chisel-shaped in form. The two molars are very different, although in general character alike, as the first is very much smaller than the second, and both set at right angles to the premolars. The outside of the anterior molar is made up of two large cone-shaped cusps, while the inside of the tooth is very large and flattened and the crown low; likewise the second molar has two cone-shaped cusps upon the outside of the tooth, but much smaller in size.

There is no doubt but that this dog was a domesticated animal and lived in the village, as proof of his presence is manifest in almost every section of the village by finding many large pieces of bones that had been gnawed. This discovery led

me to believe, even before the remains of the dog itself were found, that his presence in the village would be discovered. The dog was also used for food, as his bones were broken in a manner similar to those of other animals employed for food.

Skunk (*Mephitis mephitica*) was not found in abundance in the village, though almost every tepee site would reveal some broken bones of this animal. During the examination five imperfect skulls, two perfect skulls, and twenty lower jaws were found. The skulls were broken similar to other animals, in order to remove the brain, which was no doubt used for food.

Mink (*Putorius vison*) — The bones of this animal were occasionally met with in every section of the village. The bones of such a small animal would readily be destroyed by the Indian dog. Three perfect skulls, ten imperfect, and thirty-one lower jaws were secured during the explorations.

Otter (*Lutra canadensis*) — The remains of this animal are met with quite frequently. Twenty fragmentary skulls and parts of 23 lower jaws were secured. Not a single perfect specimen of the larger bones was found.

Fisher (*Mustela pennanti*) — The remains of this animal are sparingly met with and only two broken parts of the upper jaw with a portion of skull attached, and five lower jaws, were found among the entire explorations in the village.

Opossum (*Didelphs virginianus*) — The remains of this animal are found in more or less abundance in the village, although but few remains are found in the refuse pits. Twenty imperfect skulls and twenty-five parts of lower jaws were found. The upper canine teeth were much sought after for ornament, perhaps on account of their size and general appearance, being long and gracefully curved.

Ground Hog (*Arctomys monax*) — The remains of this animal were found in abundance in the refuse pits. One perfect skull, thirty imperfect skulls and one hundred and five parts of the lower jaw were secured.

Beaver (*Castor canadensis*) — The beaver is well represented among the animal remains found in the village. Fifty parts of skulls and about the same number of parts of lower jaws were secured. The incisor teeth were highly prized by aboriginal man

when cut and made into ornaments and cutting tools. The large leg bones were also found unbroken and might be considered the best preserved in the village.

Musk Rat (*Fiber zibethicus*) — The bones of this animal are not found as frequently as either the Ground Hog or the Beaver. One perfect skull and parts of three imperfect skulls were taken from the refuse pits.

Rabbit (*Lepus sylvaticus*) — The remains of the rabbit are found in all parts of the village. Two perfect, and parts of two imperfect skulls were found, but the large bones of the skeleton were everywhere abundant.

Gray Squirrel (*Sciurus carolinensis*) — The remains of the squirrel appear in great numbers, although but parts of two skulls were secured during the explorations, and then only in the last season's work in the village, however, the various bones of the squirrel were abundantly found in almost every tepee site.

Weasel (*Mustela vulgaris*) — The bones of this small animal are occasionally met with in the village, though it is reasonable to believe that the bones of this animal, as well as those of other small animals, would be totally destroyed by the Indian dog. Portions of three skulls and five lower jaws were found.

Rice Field Mouse (*Oryzomys palustris*) — The rice field mouse is found in great numbers in the refuse pits, attracted there evidently by the grain and nuts stored for food.

Box Turtle (*Cestudo virginea*) — The bones of the common box-turtle are very abundant in the village. From one pit alone fifty-nine carapaces were removed, which no doubt represented a turtle feast. The carapaces were frequently cut and made into drinking vessels and spoons.

Snapping-turtle (*Chelydra serpentina*) — This turtle is also found in all parts of the village, but not so plentiful as the box-turtle.

Wild Turkey (*Meleogris gallaparo*) — Fully eighty per cent. of all the bones of birds found in the village site belong to the wild turkey. The flesh of this bird was certainly highly prized for food. The large leg and wing bones were made into implements and ornaments and the skulls into rattles.

Great Horned Owl (*Bubo virginianus*) — The bones of this bird are sparingly met with, as they were highly prized for making ornaments, and the majority of the large bones were cut into beads.

Barred Owl (*Syrnium varium*) — The bones of the barred owl are occasionally met with. As with the great horned owl, the bones were made into ornaments.

Canada Goose (*Branta canadensis*) — The humerus of this bird was found quite frequently, but the other large bones were manufactured into implements and ornaments.

Trumpeter Swan (*Olor buccinator*) — Like the Canada Goose, only humeri of this large bird are found, and those sparingly.

Great Blue Heron (*Ardea herodias*) — Only a few bones of this bird were found.

Bald Eagle (*Haliaeetus leucocephalus*) — Only a few bones of the Eagle have been found — one skull, several ends of large wing and leg bones that were left from the manufacture of some ornament, and a few claws.

Mallard Duck (*Anas boschas*) *Pintail* (*Dafila acuta*) and *Canvas-back* (*Aythya vallisneria*) are found frequently in the refuse pits. Several skulls of each were found.

The presence of great numbers of mussel shells, both in the pits and surrounding the tepee sites, would indicate that this shell fish was much used for food. At the Gartner Village the remains of large mussel bakes were found,* but the large pits used in the preparation of the mussels for feasts were not found at the Baum site. However, large holes, from which earth had been taken, perhaps for use in the construction of the mound, were filled with the shells, and surrounding pits also contained great numbers of the shells, indicating that a great feast had taken place, and that the mussels were prepared in a way similar to those at the Gartner mound.

* Accounts of the mussel bakes are given in the Pub. of the Ohio State Archæological and Historical Society, Vol. XIII.

PLANT FOOD.

In order to secure data of certain cultures in each country, historical records are quite important and help to determine the origin of certain agricultural products. These records show that agriculture came originally from three great regions which had no communications with each other, namely, China, South West Asia and Egypt, and inter-tropical America, and from these three regions began great civilizations based upon agriculture. However, we find that history is at fault in giving us much early data concerning the third great center of civilization which does not even date from the first centuries of the Christian era, but we know from the widespread cultivation of corn, beans, sweet potatoes and tobacco, north and south of the center of the American civilization, that a very much greater antiquity, perhaps several thousand years, must be given for the perfection of these plants up to the time when history begins.

The finding of charred corn, beans, nuts and seeds of fruits, and even the remains of dried fruit, in the subterranean storehouses in various parts of the Baum Village, leads one to believe that the early inhabitants were agriculturists enjoying a certain degree of civilization. The most important product raised was corn—*Zea mays*.* At the time of the discovery of America in 1492, corn was one of the staples of its agriculture, and was found distributed from the La Plata Valley to almost every portion of Central and Southern United States. The natives living in this vast region had names for corn in their respective languages. A number of eminent botanists have made careful explorations to find corn in the conditions of a wild plant, but without success.

The corn unearthed in the village was always in the abandoned subterranean storehouses and invariably at the bottom of the pit. When any quantity was found the charred lining of the storehouse was present, which lining frequently consisted of long grass and sometimes bark. The corn, when found in

* The identification of the corn, beans, nuts and seeds from the Baum Village was made by Professor J. H. Schaffer of the Dept. of Botany, Ohio State University.

the ear, was laid in regular order, devoid of the husk, and consisted of two varieties, an eight rowed and a ten-rowed variety. The eight-rowed variety had a cob about half an inch in diameter and short, while the cob of the ten-rowed variety was larger and longer. The grains and cobs having been charred, were in a good state of preservation.

In other pits the corn had been shelled and placed in a woven bag and the charred, massed grains were removed in large lumps with portions of the woven bag attached. Therefore it seems reasonable to believe from the presence of so many storehouses for the care and preservation of their most nutritious agricultural product, that corn was the one staple upon which prehistoric man depended to tide him through the cold winters, and until the harvest came again.

Kidney Bean (*Phaseolus vulgaris*)—According to J. S. Newberry, who published the first flora of the State (1859), the wild bean occurs generally throughout the State. This bean is found in abundance in the pits, sometimes mixed with shelled corn and placed in a container, and sometimes placed in the storehouse along with nuts and dried fruit of the wild plum, and was no doubt one of the agricultural products of aboriginal man of the Baum Village Site. According to the latest discoveries, in the Peruvian tombs of Ancon and other South American tombs, the origin of the bean was perhaps in the intertropical American civilization, and no doubt spread northward to the Mississippi Valley similar to maize. Beans were found also in the storehouses at the Gartner Village,* and in some of the burials of the Harness Mound explored in 1905. Three species of hickory nuts were found in abundance in the storehouse. *Hicoria ovata* (shell bark) was taken from almost every pit where the shells were found. Some of the perfect, charred nuts were found in the bottom of pits associated with corn and beans, but the ashes thrown into the pits from their fire-places usually contained many charred shells of this nut.

Hicoria minima (Bitter-nut) and *Hicoria laciniosa* were also found in the ashes, but not so plentiful as the shell-bark.

* Explorations of the Gartner Mound and Village Site, Vol. XIII.

Butternuts (*Juglans cinera*) and *Walnuts* (*Juglans nigra*) were both found in the perfect charred state in the storehouses and the ashes from the fire-places contained many shells.

Papaw seed (*Asimina triloba*) and *Hazelnut* (*Corylus americana*) were also found in the bottom of the storehouse.

Chestnut (*Castanea dentata*) found in small quantities in various parts of the village.

Wild Red Plum (*Prunus americanus*) — The seeds were found in the ashes and the charred remains of the fruit with seed were taken from one of the storehouses.

Wild Grape (*Vitis* (sp.)) was found sparingly in a few of the pits.

PREPARATION OF FOOD.

Food, for the most part, both animal and vegetable, was prepared by cooking, as evidenced by the large fireplaces, the innumerable pieces of broken pottery, and the mortars and stone pestles used in crushing the corn, dried meats, fruits and berries. The fireplace was always present within the tepee, and several of them could always be found outside of the tepee and in close proximity to it. The fireplaces often show repair. When the hollow in the ground became too deep by long use it was filled up to the proper depth by mud plaster. The necessary precautions were not taken to remove all the ashes from the fireplace before the plaster was applied, consequently when the fire was again placed in the fireplace it soon cracked loose, and portions of burned clay were removed with the ashes from time to time as the fireplaces were cleaned, and the ashes with the broken lining were thrown into the pits. The large stone mortars, as shown in Fig. 10, were found in every section of the Village, and were made from slabs of fine-grained sandstone, averaging in size from ten to fifteen inches in length, from seven to twelve inches wide, and from four to seven inches in thickness, with a depression on one side, in many cases only about one inch deep, while in others the depression would be several inches. The stone pestles used in crushing corn and preparing food to be cooked, were not selected with any great care nor was very much labor expended in their manufacture, as many of them were merely natural pebbles, suitable as to size

and weight, slightly changed by a little pecking or rubbing, while others were natural flat and rounded pebbles, having a small depression cut on each side. None of the bell-shaped pestles found at the Gartner Village were found at the Baum Village, although the preparation of food products was the same.

The use of pottery in the preparation of food was universal.

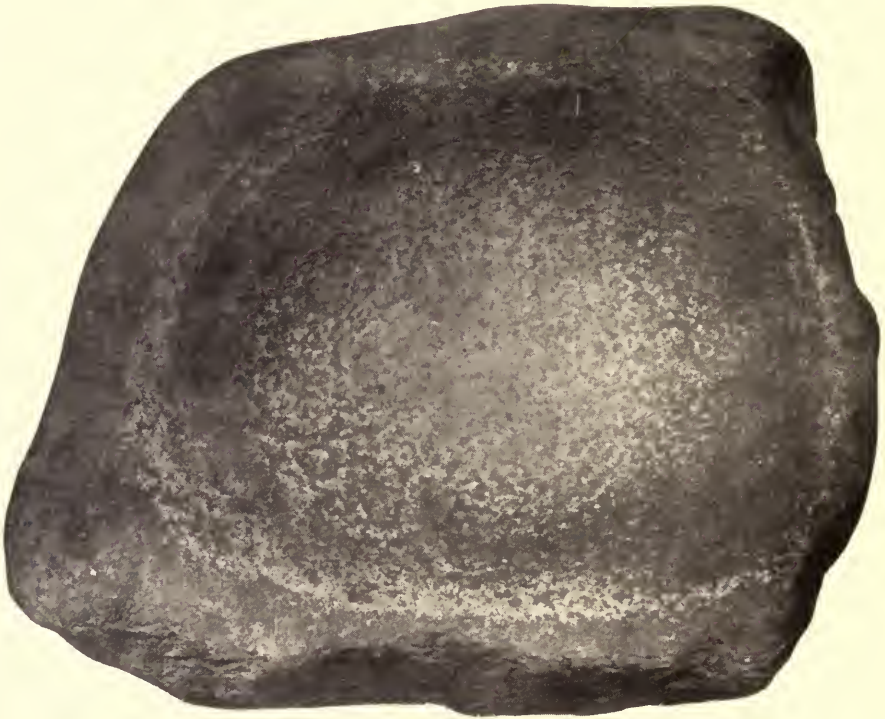


FIG. 10—Stone Mortar, fifteen inches long, twelve inches wide and five inches thick, with a cavity three inches in depth.

Everywhere in the village fragments of broken vessels, as shown in Figs. 11, 12 and 13, were found. Around the fireplaces both in and out of the tepee, pottery fragments were always present, showing that the pottery was broken while being used as a cooking utensil. The large pieces were gathered up and thrown into the open refuse pits near at hand, and here we find them quite often with particles of the charred food clinging to the sides of the broken vessels. The potter's art seems to have been



FIG. 11 — Pottery fragments showing decoration of rims.



FIG. 12 — Pottery fragment showing scroll decorations.

known and practiced by each family group. They became expert in successfully tempering clay to strengthen it, and in then carrying it through all the stages of modeling, ornamenting,



FIG. 13 — Pottery fragments showing decorations and handles.

drying, and at last burning. Referring to Fig. 14, found with one of the burials, and which represents the highest type of fictile art found at the Baum Village, one can see the result of the pro-

gressive operations of a very delicate and difficult nature which required skill, foresight, patience, and wide experience in the



FIG. 14—Restored Vase found with one of the burials (six and one-half inches high).

Ceramic art to produce such symmetry and grace as is displayed in this vessel. The decorations were those made by textile markings, and occur over the entire surface of the vessel. The impressions were no doubt made with a paddle around which cords had been wrapped. The handles are decorated by indentations.

Fig. 15 represents a vessel taken from another burial in the same family group. This vessel is also symmetrically made and the markings were made evidently with a pliable cloth, as they are uniform over the entire surface, including the handles. Fig. 16 shows a vessel placed near the head of the skeleton and which has been broken by freezing, as the burial was less than twenty-eight inches deep. Consequently all the pottery found in the burials of the Baum Village is more or less broken, but by carefully preserving the pieces, the vessel may usually be restored.



FIG. 15—Restored Vase found with one of the burials (five and one-half inches high).

Fig. 17 is another restored vessel taken from the bottom of one of the storehouses in another section of the Village. The vessel had evidently been used as a container for grain and was accidentally broken in the pit and left there. Fortunately we secured all the pieces and were able to fully restore the beautiful vessel. It is the largest one that we have been able to restore, although many others that were very much larger lacked only a few pieces to fully restore them. The restored vessel

is nine inches high, with a diameter of nine and one-half inches at the largest part of the bowl.

Fig. 18 is of a very plain vessel taken from a grave in another part of the village. This vessel has also been restored, and is seven inches high and eight inches in diameter at the widest part of the bowl. The vessel is perfectly plain, which is characteristic of about all the pottery fragments taken from this particular family group.



FIG. 16—Burial with Vase placed at the head of the grave.

Fig. 8 shows this same vessel before it was removed from the grave. The skeleton is headless, and the vessel is placed where the head should have been when the body was placed in the grave.

Fig. 19 is another vessel found with a burial. The vessel was fully restored with the exception of a piece of the rim, which had been broken out before being placed in the grave. The dec-

orations are textile markings, and the impressions are very pronounced over the entire surface.



FIG. 17 — Restored Vase taken from one of the refuse pits (nine inches high).

chase and for domestic and agricultural purposes were found in great numbers in the abandoned storehouses and the sites of the tepees. For the most part they were made from bone and horn, but implements made from flint and granitic boulders were in evidence in all sections of the village. The implements used for agricultural purposes and for excavating for the storehouses were made for the most part of large mussel shells. Implements made of wood were no doubt

Fig. 20 shows very small vessels which were occasionally found in the perfect state; however, the broken pieces were found in every section of the village. The smallest of these vessels have the appearance of having been moulded over the end of the finger, while the largest is about the size of a small teacup. They were all rudely made and undecorated.

Implements: The implements used in the



FIG. 18 — Restored Vase placed with one of the burials (seven inches high).

largely used, as charred remains of digging sticks and pieces of wood that had been polished were frequently met with.



FIG. 19 — Partially restored vessel taken from a grave (six and one-fourth inches high).

It is made of fine-grained blue granite rock, seven and one-fourth inches long, three and one-fourth inches wide. The surface shows the pecking, which had not been entirely obliterated by

Stone Implements —

The largest of the stone implements, with the exception of the stone mortars previously described, were the grooved axes, which were sparingly found in the pits and tepee sites, two specimens having been found during the entire explorations, one in a tepee site and one in a refuse pit. The stone axe found in the tepee site is shown in Fig. 21. It

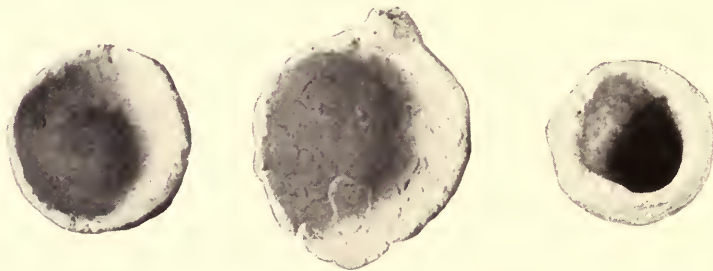


FIG. 20 — Very small, perfect vessels, made of the same material as the larger vessels (half size.)

the grinding and polishing necessary for its completion. An interesting feature of this axe is the angle at which the groove

is cut to the blade. This type of axe is quite rare in Ohio, and not over four specimens are on exhibition in the museum of the Society. The other axe found in one of the pits is an entirely different type, the groove extending entirely around the axe. It is made from the same compact stone as the axe described above, and is finished much in the same manner.

Celts — This most useful implement was frequently met with in all sections of the village, and ranges in size from two to six inches in



FIG. 22 — A typical celt of the village (three-quarter size).



FIG. 21 — Rare type of grooved axe (length seven and one-fourth inches, width three and one-fourth inches).

length. All are finely polished. Fig. 22 shows a typical celt found in the village. The celts were made for the most part from compact granite bowlders; others of banded slate and flint. Specimens illustrating the various stages in the

manufacture of the celt were secured during the explorations. Celts were frequently placed with the burials. One was the usual number placed in the grave, though in several instances two were found, and in the grave of a large adult male, three celts were placed in different parts of the grave — one at the feet, left hand and head, respectively. The pits revealed many broken celts, showing that the implement was in general use.

Hammer Stones — The hammerstones, if abundance is to be taken into account, were perhaps, the most useful stone implements found at the Baum Village. In the site of a single tepee twenty-five to thirty would be unearthed, and very often as many would be taken from a single pit. They were made of small, water-worn boulders, with a diameter of two to four inches, and the only evidence upon some of the specimens showing that they were used as hammerstones was the battered ends or sides; while others were artistically smoothed and polished on various sides, and perhaps covered with a skin and used as a club-head. However, it was not necessary for aboriginal man to expend unnecessary work upon an implement when a natural boulder from the river near at hand would answer the purpose. Therefore it seems natural to believe that all the boulders of proper size found in the village were more or less utilized in preparing meal, cracking nuts, breaking bones of animals used for food, etc.

Grinding or Polishing Stones — Very good examples of this most useful implement are shown in Fig. 23. They are usually made of a fine-grained sandstone,* but numerous pieces of coarse grained sandstone taken from the top of the hills, southwest of the village were also found. The grinding stones were indispensable in the manufacture of the great variety of bone implements found in the village, and varied in size from a slab of sandstone one foot in length by a few inches in thickness, to a small piece of sandstone only a few inches long and one inch in thickness.

Chipped implements of flint were found in every section of the village, both the finished and unfinished specimens, and were

* Waverly group.



FIG. 23 — Whetstones used in making bone implements (one-third size).

made, for the most part, from flint procured from the Flint Ridge section, and showing about all the grades secured at this famous prehistoric quarry. The colors also varied from the white or gray hornstone through the various shades of chalcedony to the variegated and banded jasper forms. The greater part of the flint was brought to the village in large pieces, and there worked into implements, as several large pieces of flint

were found and the chips were everywhere present. The most abundant of all the objects made from flint were the small, triangular arrowheads, as shown in Fig. 24, which represents all the small triangular forms found in the village. Points with smooth edges were more abundant than those with serrated edges, and points having their edges both serrated and smooth are not uncommon. The triangular form also predominates in the larger forms of spears, as shown in Fig. 25. The spear to the left is a type found in every section of the vil-



FIG. 24 — Typical triangular points (two-thirds size).



FIG. 25 — Large triangular spear (half size).



FIG. 26 — Deeply notched spear point, blade very thin. Length two and four-fifths inches.



FIG. 27 — Typical drills found in the village (two-thirds size).

lage. The beautiful spear point shown in Fig. 26 shows that the inhabitants of Baum Village were able to make points other than the triangular forms. This spear point is made of dark flint, having a



FIG. 28 — Flint Knives made of red and yellow jasper (two-thirds size).

very thin blade, deep notches, and an indented base, two and four-fifth inches long, and one and nine-tenth inches wide.

Flint Drills, varying in length from two to four inches, were also abundant. Two kinds of drills were found: those having one point and usually small, and those having two points and much larger, but all have the same general appearance. Fig. 27 shows specimens which may be considered typical drills found in the village.



FIG. 29 — Flint Cores. Specimen to left, red and yellow jasper. Specimen to the right, maroon colored jasper (half size).

Flint Knives —

The flint knives flaked from the large jasper cores are also present. The knives are not large, and vary in length from one and one-half to three inches. Fig. 28 shows representative spec-

imens made from banded and variegated jasper, showing several facets on the convex face, while the concave face is perfectly plain and always regular and smooth — due to the fine grain of the chalcedony and jasper. Very few, if any, knives found in the village present any chipping, and all have the same general curve from end to end. The cores from which the knives are flaked are shown in Fig. 29, which represents the two types of cores found in the village, the conical core from which knives are flaked from all sides, and the flat core from which knives are flaked from one side only. The latter type prevails in the village. A large number of angular pieces of flint from one to one and a half inches in diameter were found in small caches near the site of the tepees, and quite frequently these angular pieces were found in the burials and were perhaps used to cut bone and horn, which were used in the manufacture of bone implements.

Discoidal Stones — Both perfect and broken specimens were frequently met with in the refuse found in the abandoned storehouses. All of them were of small size, the largest not exceeding four inches in diameter, and the smallest less than one inch in diameter. Three types were found, the bi-concave, perforated at the center with a circular hole, the bi-concave unperforated, and discs with perfectly flat sides. The bi-concave

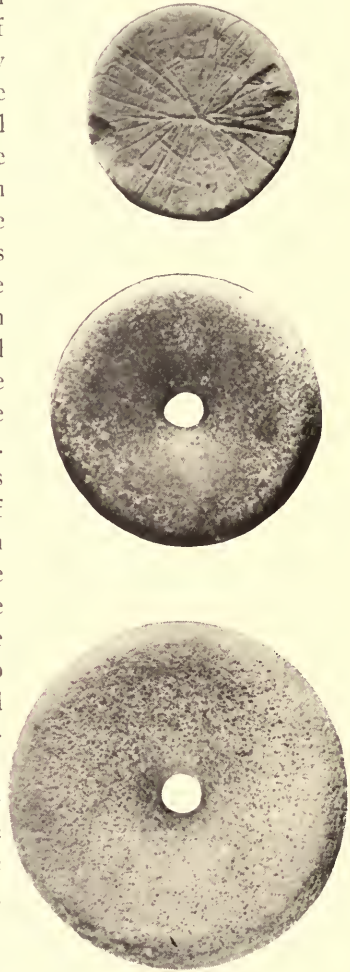


FIG. 30 — Typical discoidal stones found in the village (two-thirds size).

with perforation, is the most abundant, and is made for the most part of diorite, and highly polished. The perforations are usually circular, but the finest specimen found in the village and made of quartzite had an oblong perforation. The specimen is shown in No. 2 of Fig. 30. Other specimens of this type were moulded out of tempered clay, the same as used in making pottery, but apparently were too fragile to be of great use, as all were broken. The second type, bi-concave unperforated, were larger than those that were perforated, but in every other respect similar. The third type or flat disc, which is also shown in Fig. 30, is of two kinds, plain and decorated. The plain are usually made of finegrained sandstone or pieces of pottery cut into form,



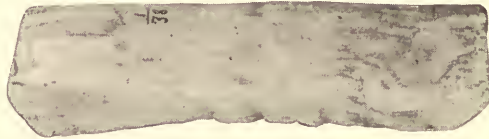
FIG. 31 — Typical shell hoe, found in great numbers in the refuse pits (half size).

while the decorated specimens are invariably made of finegrained sandstone. The decorations consist of lines cut into the stones and radiating from the center of the disc; some of the lines extend to the edge while others only part way. Several lines usually encircle the flat face. The decoration usually occurs on both sides. This type is also shown in No. 3 of Fig. 30.

Hoes — The hoes found in the village were made, for the most part, of shells of the fresh water unios, but hoes made from the Waverly black slate were frequently met with. The hoes made from slate were roughly cut from slabs of about the desired size, but hoes made from mussel shells were very abundant. A typical specimen is shown in Fig. 31. The shells selected were usually those of *Unio plicatus*, which are of good size, and the shell meets the requirements of being thick and heavy. The majority of the specimens are greatly worn, showing that they had served their purpose. The imple-

ment, when useless, was thrown into the refuse pits or left on the surface within the tepee, to be covered with soil the same as other implements, and the bones of various animals.

Bone Implements — Bone implements, such as arrow points, scrapers, awls, needles, fish hooks, etc., were very abundant everywhere in the village, especially in the abandoned storehouses and in the sites of their habitats. Here were also found specimens showing all the stages in the manufacture of any one implement; bone objects, such as bones that gave promise of meeting the requirements for a certain implement, but after work had continued to a certain stage were found defective. Small caches of deer tines, probably collected during a hunting expedition, were found hidden for future use in some part of the tepee site. Bones of about all the animals used for food were



used in the making of implements of all kinds, and very rarely would any of the large bones of such animals as the deer, elk and bear be found in a perfect state, as all were used in the industrial arts of these early inhabitants.

For a long time it was thought that prehistoric man had only stone tips or points for his arrows, but when their tumuli and villages were examined points were found made of bone, and during the examination at the Baum Village the bone and stone points taken from the pits were about equally divided as to numbers. The bone points, for the most part, were made from the tines of deer horns. The horns were found in numbers, but the tines were always removed. Fig. 32 is a good example of the horns as they came from the pits. The perfect and well-wrought arrow points made from horn are shown in Fig. 33. The methods of manufacture of the arrow point at

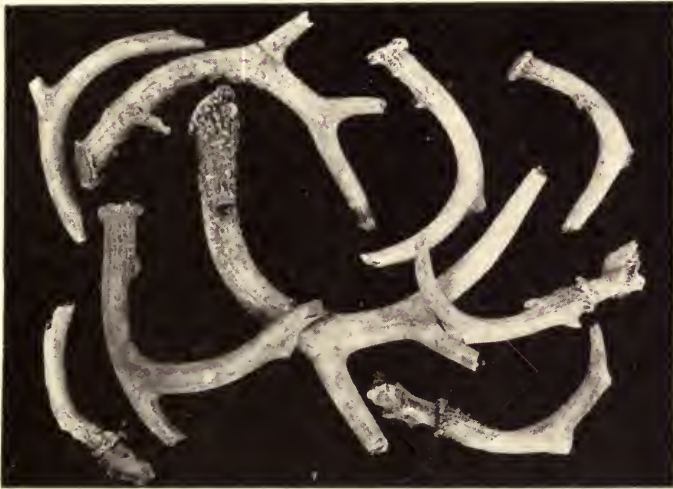


FIG. 32 — Deer horns with tines removed.

the Baum Village are identical with those at the Gartner Village Site, and I quote from my report upon this village site: "The size of the point varies greatly, from one-half to three inches in length, and is made by taking the broken tine and cutting a crease about one-

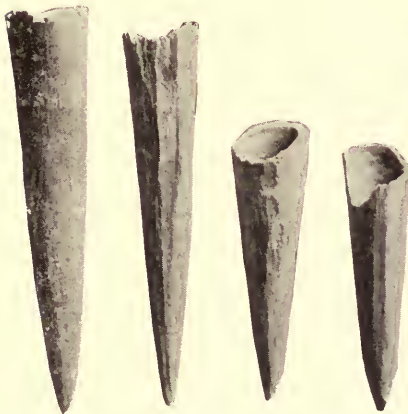


FIG. 33 — Arrow points made from the tines of deer horns (two-thirds size).

thirty-second of an inch in depth entirely around the horn at the desired length and then breaking off the point. This is shown in Fig. 34 (b). The first step after procuring the end of the tine was to drill a hole for the attachment of the wooden arrow shaft. No work in fashioning the point seems to have been done until after this drilling was completed. The hole for the attachment of

the shaft varied in depth from one-half to two-thirds the length of the point, see Fig. 34 (c), and always pyramidal in form, with a base diameter averaging about one-third of an inch. The

majority of the unfinished specimens show that the fashioning into form was done by cutting away the superfluous horn with a heavy piece of flint, as shown in Fig. 34 (d). Some writers have expressed the opinion that this cutting was done with a steel knife, but a careful examination by means of a good hand glass will reveal the concave appearance of the cuts and the small scratches caused by the uneven fracture of the flint. The final finish

upon the arrow point was done by rubbing the arrow point upon a piece of fine-grained sandstone, thus removing all traces of cutting, as is shown in Fig. 34 (e), which shows a symmetrical and well-wrought point."

The majority of the bone arrowheads were attached to the shaft by having the shaft fitted to the hole drilled in the base of the point, but a number of points were found having secondary holes drilled into the side of the point, as shown in Fig. 35. All the points thus drilled were finely

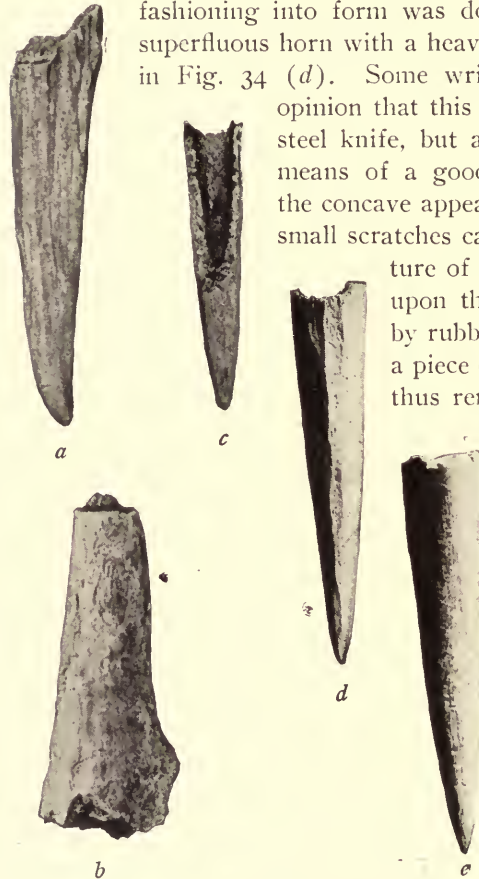


FIG. 34 — Arrow point making, as illustrated by specimens taken from the Cartner Village: (a) Tine from deer horn, (b) Cutting of tine, (c) Depth of hole drilled, (d) Cutting away of superfluous horn, (e) perfect point (two-thirds size).

made, perhaps to serve as harpoons, by being attached to the shaft with a cord. Another short and small point made from the tone bones of the deer was also found. A good illustration

of this point and the stages in its manufacture is shown in Fig. 36. The first specimen to the right is a deer toe with a hole drilled in the base for the attachment of the shaft. The drilling of the hole for the attachment to the shaft was likewise the first step in making the arrowpoint from the tines of the deer horn, as illustrated in Fig. 34. The cutting away of the superfluous bone of the deer toe was accomplished in the same manner as shown in the cutting of the deer horn.



FIG. 35— Arrow points made of deer horn with a perforation for attachment to the shaft (two-thirds size).

Bone Scrapers—Of all the bone implements found in the village, the bone scraper, made from the metapodal bones of the deer and elk, is the largest bone specimen found, and varies in length from eight to fourteen inches.

Fig 37 shows a representative collection of the perfect scrapers. During the explorations fifty perfect specimens were removed from the refuse pits, together with several hundred broken halves, showing that this implement was universally used in every section of the village examined. No record was made of finding a single perfect scraper in a tepee site, but frequently the broken pieces were found within the habitat; but for the most part the broken and the practically worn-out perfect scrapers were thrown into the refuse pits. The scrapers were invariably made from the metapodal bones, and very frequently the specimens were found showing that the foot of the animal was attached to the implement when it was discarded. Specimens showing the stages in the manufacture of the implement

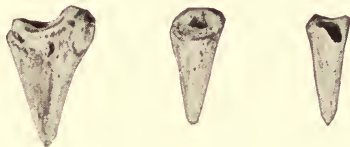


FIG. 36— Arrow points made from the toe bone of the deer (half size).

were occasionally met with. Fig. 38 shows three specimens. The first specimen to the left is a perfect metapodal bone, only two being found during the entire exploration. This bone was seldom found except in a condition showing that it had served as

some implement. The specimen in the center of Fig. 38 shows a process in the manufacture of this implement. In this case the work had not advanced very far, but it shows plainly the small parallel grooves which were no doubt made by a blunt-



FIG. 37 — Perfect scrapers, made from the metapodal bones of the deer.
(Average length of scrapers, ten inches).

pointed flint implement. The specimen to the right in Fig. 38 is a perfect scraper, worn to a very thin edge from use. The surface of the bone at the ends shows a high polish. Scrapers were also made from the shoulder blades of the deer and elk,



FIG. 38 — Specimens showing stages in the manufacture of the scraper. (Average length of scrapers, ten inches.)

especially of the elk. The spine was frequently removed and the supra scapular border would be sharpened into a cutting edge, and frequently specimens were met with in which the spine was sharpened to form a cutting edge and the posterior and anterior border and the post scapular and prescapular portions were removed. The shoulder blade of the elk was always converted into this most useful implement, for not a single specimen was found that did not show this use. The shoulder blades of the deer were not always converted into implements, but very frequently they were met with; occasionally from a single pit a half dozen or more would be taken, not a single one showing any marks upon it indicating it had been used for any purpose, while in other pits the same number might be taken and all show use as a scraper.

One of the most interesting of the implements found in the village is the celt-like scrapers made from the heavy portions between the beztine and the trestine of the elk antler. From the standpoint of utility, this implement used as a scraper would meet the needs to a better advantage than any of those just described; however, when the labor necessary to produce specimens as shown in Fig. 39 is taken into consideration, we do not wonder at the abundance of the simpler forms. The cutting of such a large and thick horn into the proper lengths, which was done by burning a ring around the horn at the point to be cut off, to a depth of perhaps one-fourth of an inch, and then breaking the piece off, required much patience as well as skill. After the proper length had been obtained, in order to secure the large, flat pieces of the horn the desired size, they were cut off with a piece of flint, chipped to the proper edge and used to plow a groove one-fourth of an inch in depth lengthwise of the horn. A second groove was made at the proper place and the slab of horn split off. The work of grinding and polishing would take place later, but all requiring an unusual amount of labor, perhaps more than any implement made of bone found in the village. Three types of these scrapers are found in the village: those having both ends made into a cutting edge, those having one end made into a cutting edge with one end sharpened, and those having notches cut on the side for attachment to a handle.

All three types were about equally represented, although only a small number were found (fifteen specimens). The average length of the horn scrapers would not exceed four inches, though one was found eight and one-half inches long. The lower specimen in Fig. 39 is a scraper having two ends sharpened to a cutting edge; it is four and three-quarter inches long and two inches wide, while the upper specimen is of the notched type.

Bone Awls — Bone awls may be considered the most abundant of the many bone implements found in the Baum Village,

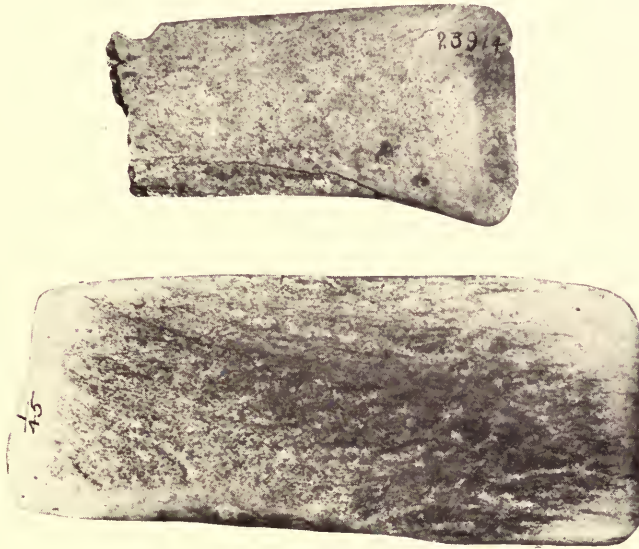


FIG. 39 — Celt-like scrapers made of elk horn (two-thirds size).

and the bones of about all the animals and birds used for food were used in the manufacture of the various types of awls. Many of them were manufactured from the heavy leg bones of the elk. Very good examples are shown in Fig. 40. These awls show a great amount of patience and labor in working down this thick bone, as shown by the enlarged portions, while others made from the same kind of bone are worked down to three-sixteenths of an inch in diameter and eight inches in length, with a well-wrought head sometimes carved representing the

head of some animal. Awls showing much labor and skill in their manufacture were found in every section of the village associated with others that required but little labor to furnish a very serviceable implement.

The awls found at Baum Village may be considered under three classes: First, awls with blunt points, such as shown in Fig. 41 and Fig. 42. These awls for the most part came from the burials and were found associated with bones of animals placed in the grave as a food offering, and several were found in the pottery placed with the dead. Awls shown in Fig. 43 and Fig. 44 would always be found with mussel shells and animal bones where any quantity was placed together. Summing up all the points observed concerning the blunt-pointed awls, one must believe that they served as forks in the preparation of food, and in conveying food to the mouth, such as meat, mussels, and vegetables. Many of the large and heavy awls may have been used in the manufacture of cloth and pottery. The second class of awls may be considered as bone perforators, all having sharp and long points. The best examples of this class are shown in Fig. 45, and are made from the tarsometatarsus of the wild turkey. This class are very abundant. Out of two hundred and thirty-four pits examined there were very few that did not produce a perfect or broken awl of this class. Many awls of this class were made from the fibula and other bones of the raccoon. Fig. 46 shows an awl made from the lower jaw of the deer. With



FIG. 40.— Large bone awls, length eight and one-half and eight and two-fifth inches, respectively.

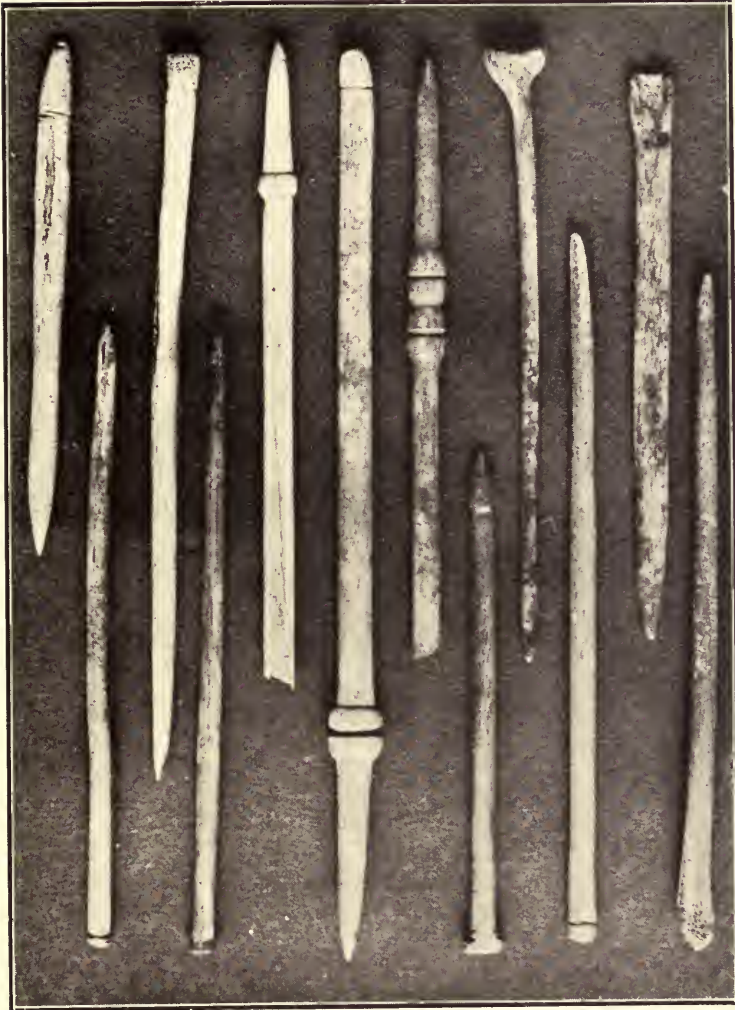


FIG. 41 — Typical bone awls with blunt points (five-eighths size).

many of the burials in the village this class of awls are found. Fig. 47 shows five large awls of this class, four around the head and one between the legs near the feet. Beneath the mussel shells at the back of the head a large, well-wrought awl of the first class was found. The third class of awls are the double-pointed, sometimes called pins. They range in size from one inch in length for the very small awls to six inches in length for the largest. Fig. 48 gives a good illustration of the double-pointed awls. This class is the most abundant in the village, especially in the refuse pits. They are also frequently met with in the graves, and are always near the head. But little work is required in the manufacture of the small pins, as they are quite frequently made of splinters of bone having the desired size and shape, and require but little rubbing to remove the sharp edges and fit them for a serviceable implement. However, the large specimens have equally as much work upon them as the awls of the first class.

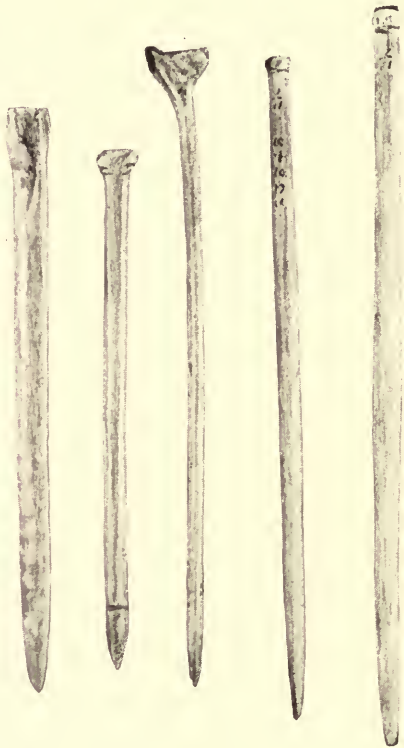


FIG. 42—Blunt-pointed awls found with burials (two-thirds size).

Needles—Perfect needles are not found in abundance in the village, although the broken pieces are frequently met with. The needle is made for the most part from the rib of the elk, which is cut off at the desired length, and then the rib is split and both pieces are manufactured into needles. The pieces are worked down to a little less than one-sixteenth of an inch in thickness and the average length being

about six inches. They frequently curve throughout their entire length, while others curve more near the point. The needle from this village is uniform throughout with the exception of a slightly enlarged head, which is pierced with a circular eye, the point being not sharp or pointed, but an oval. Fig. 49 is an illustration of the needle, but does not do justice to this well-wrought and highly-polished implement.

Bone Knives—



FIG. 43—Bone awls made from the ulna and metapodal bone of the deer (five-eighths size).



FIG. 44—Bone awls made of the shoulder blades of the deer (half size).

Another useful implement found at the Baum Site is the knife made from points of the shoulder blade of both the deer and elk, and not infrequently the bones of other animals whose bones would in any way be suitable for such an implement. The bone knife could not take the place of the flaked flint knife with its sharp cutting edge.

Bone Tubes — A number of bone tubes, made from various bones of animals and birds were frequently met with. Fig. 50 shows two examples of tubes. The specimen to the left is made from the femur of the mountain lion. The distal extremity has been cut away and the inside of the bone removed. The outside part of the shaft has been cut and polished. The head of the femur has also been cut away and the large trocator slightly polished. The specimen to the right in Fig. 50 is made from the humerus of the Trumpeter Swan. The two extremities of the shaft are cut away and the shaft shows cutting and polishing in various places over its surface. Tubes are also made from the femurs of the deer and the tibiotarsus of the wild turkey.



FIG. 45 — Bone awls with sharp points, made from the tarsometatarsus of the wild turkey (half size).

Implements Made of Beaver Teeth — The bones of the beaver were seldom used to make implements or ornaments, but the incisor teeth, both upper and lower, were used in making implements. The three lower specimens shown in Fig. 51 have

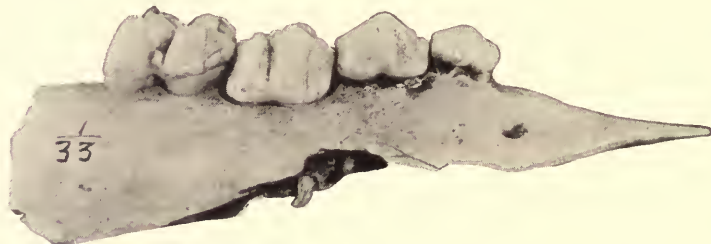


FIG. 46 — Awl made from a part of the lower mandible of the deer (full size).



FIG. 47 — Burial showing five large awls made from the tarsometatarsus of the wild turkey.

been shaped into desired implements which may have been serviceable as chisels in cutting bone and wood. The three upper specimens were no doubt used as ornaments when their usefulness as implements were destroyed, as a number of beaver teeth



FIG. 48 — Double-pointed bone awls (half size).

like the above were found associated with beads and pendants in one of the burials.

Spear Points Made of Horn — Spear points made of horn, as shown in Fig. 52, were sparingly met with. They vary in

length from two and one-half to four inches, and the implement shows but a small amount of labor in its manufacture. All are roughly and unsystematically made from flat pieces of deer and elk horn.

Implements Used in Flaking Knives—The specimens shown in Fig. 53 were no doubt used in flaking the large flint knives so common in the village. The flaking tools were always made of deer and elk

horn, and varied in length from one and one-half inches to four inches, and in diameter from one-half inch to three-fourths inch. One end is square, while the other end is oval, the longest point being in the middle of the specimen. The square end on almost all the specimens shows a splintered and battered condition, indicating that the implement had been struck with a heavy blow. The oval end also frequently shows a splintered condition, caused by improperly placing the tool against the flint, and striking the blow. The flaking tools are found everywhere in the vil-



FIG. 49—Typical needle, length six and three-eighths inches.



FIG. 50—Bone tubes, specimen to the left made from the femur of the Mountain Lion, one to the right humerus of the Trumpeter Swan (half size).

lage, especially in the sites of the tepees and in the graves.

Fish Hooks—This implement is one of the most interesting of the great variety of bone implements found in the village,



FIG. 51 — Cutting tools made of beaver teeth (two-thirds size).



FIG. 52 — Spear point made of horn (half size).

because of the great care and patience necessary in the manufacture and because the finished hook in many ways is the exact counterpart of our modern hook, devoid of the barb. See Fig. 54. Baum Village, in comparison with other villages in Ohio, is very rich in fishhooks, broken and perfect hooks being found in every section, some large, being over two and one-half inches in length, while some were quite small, not exceeding one inch in length. Beside the perfect hooks, every stage in the manufacture of

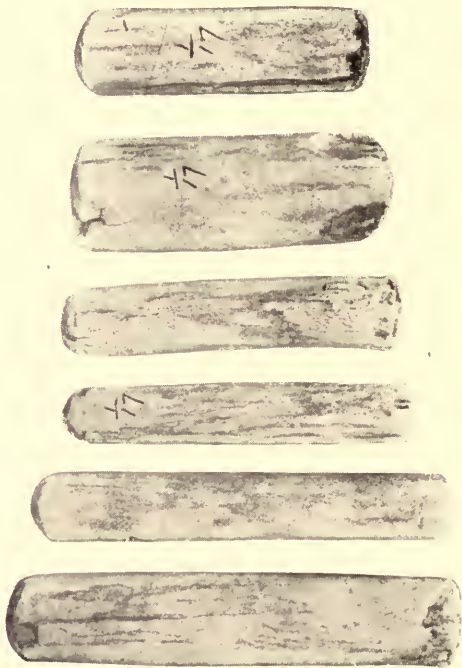


FIG. 53 — Flaking tools made of elk horn (two thirds size).

the hook was also found. This is valuable because of the comparisons that can be made with those found in other places in Ohio. Referring to Fig. 55, we find No. 1 representing three perfect specimens of fish-hooks made from the tibiotarsus of the Wild Turkey, and many of the unfinished specimens show that this bone was used. All three hooks have been carefully made and two are highly polished, and all have straight and rounded shanks. Two of the hooks have grooves cut in the upper part of the shank, and the third has the shank enlarged at the upper end. All of the hooks have sharp points, and owing to the curvature of the bone, which shows the marrow cavity, the



FIG. 54—Typical fish-hooks found in the village (full size).

points are not in the same plane as the shank. No. 1 was taken from a refuse heap and Nos. 2 and 3 from the refuse pits. No. 2 of Fig. 55 shows three specimens made of bone entirely different from that in No. 1. On one side of the hook the spongy character of the rib bone has not been entirely cut away, as shown plainly in No. 3, and the bone from which all three are made is presumably the rib of the deer. No. 1 has a very long shank in proportion to the size of the hook. The upper part of the shank has a crease cut entirely around for attachment. No. 2 is the smallest hook found in the village. No. 3 is quite a large hook and well wrought, but shows the cellular structure of the bone from which it was made. No. 3 of Fig. 55

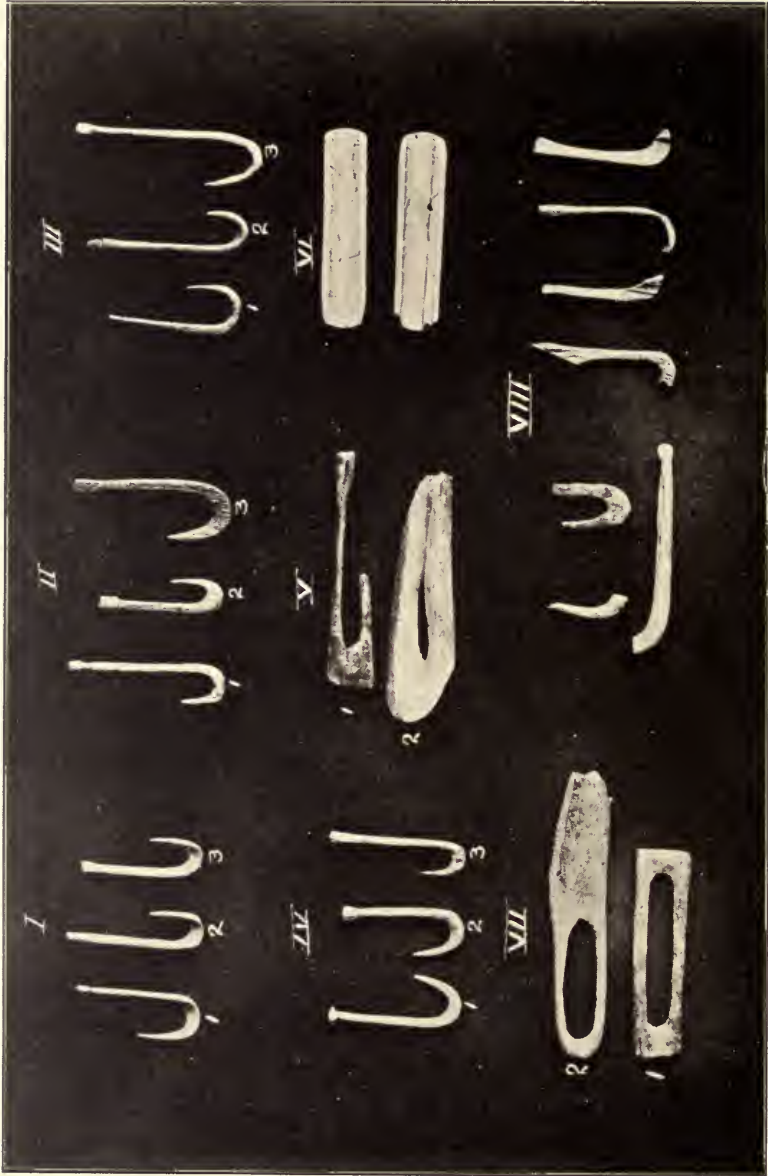


FIG. 55 — Fish-hooks and the stages in their manufacture (two-thirds size).

shows three hooks. Nos. 1 and 2 represent masterpieces in the art of fish-hook making. No. 1 has a perfectly fresh appearance, is of fine workmanship and well polished. The shank is flat with well-rounded edges and a perfectly cut groove for the attachment of the line. The curve of the hook is symmetrical and the point is very sharp. No. 2 is another well-wrought specimen and perhaps excels in general workmanship any of the hooks found in the village. It has a round shank and a well-cut groove in the upper end; the point of the hook is sharp and nicely polished. No. 3 is quite a large hook with a slim, round shank, enlarged at the upper end. The point of this hook is not in the same plane with the shank, owing to the curvature of the bone. No. 4 of Fig. 55 shows three finely-wrought hooks. No. 1 has a round shank with an enlarged end and the point, which is gracefully curved and finely polished, does not extend parallel to the shank, as in the majority of hooks found in the village. No. 2 is similar to No. 1 in general outline, differing only in being made stronger. No. 3 has a very slender shank with an enlarged top, and differs from 1 and 2 in having the point parallel with the shank. All three hooks were found in the refuse pits. Beside the masterpieces in the art of fish-hook making found in the village, specimens showing the various stages in the manufacture of the implement were found, and it seems that the ancient artificer had in mind a well defined plan and proceeded to work it out in bone to the best advantage. No. 5 of Fig. 55 shows two specimens illustrating certain stages in the making of the fish-hook. No. 1 shows a shank almost complete with an enlarged top, but the base and point show but little work. In No. 2 the base has been practically finished and the cutting away of the bone forming the shank and point begun. No. 6 of Fig. 55 shows two specimens representing the very early stages in the manufacture. The two bones are cut the desired length and made ready to remove the center. When this is done the bone will have the appearance of one in No. 7 of Fig. 55 and is ready to be cut into two parts and made into hooks. This could be done by cutting one side for the point which would be nearer one end, and then cutting the other side in a similar manner, thus producing two hooks instead of one.

No. 2 also shows that the maker had in view the same object as shown in No. 1, but had not so nearly completed the work.

Throughout the village various portions of fish-hooks were found, such as points, bases and shanks, and in No. 8 of Fig. 55 a number of these pieces are shown. Fully ninety-five per cent. of the hooks are broken at the curve between the point and the shank.

Fish-hooks found at the Gartner Village site* were similar in every respect to those found at the Baum Village, even to the details of their manufacture, while at Madisonville, Prof. Putnam found that the aboriginal fish-hook makers proceeded to make their hooks in a very different manner — by first boring a hole through the bone, and the hole was the beginning of the inside of the curve of the hook. The point and shank were worked out from this hole. Prof. Putnam has described the stages of fish-hook manufacture at Madisonville in an article on "The Way Fish-hooks Were Made in the Little Miami Valley," which appears in the Twentieth Annual Report of the Trustees of the Peabody Museum. In no instance have I found at the Baum Village Site any bone intended to be fashioned into a fish-hook that had been perforated by drilling. In the article referred to, Prof. Putnam also describes two perfect fish-hooks and one in the process of manufacture, which were taken from an ancient burial place along the Little Miami River by Dr. Metz, which differ from those found in the ash pits at Madisonville, but agree in every respect with those from the Baum Village Site.

Shell Spoons — Spoons made of the mussel shells are frequently found in the refuse pits, but the graves furnish three-fourths of all found in the village. Very often a large amount of work in shaping the shell to the proper proportions is required, while in others very little work is needed. Fig. 56 is a good illustration of the average spoon.

Spoons — Spoons made from the carapace of the common box turtle — *Terrapene Carolina* — are found in all sections of the village. Fig. 57 is a very good illustration of the turtle-shell

* Fishhooks described Vol. XIII, Gartner Md. & Village Site, Pub. of the O. S. A. & H. Society.

spoon, though many of them have but little work upon them, but where they were in constant use the carapace was cut and trimmed entirely around the edges. They were also found in the graves, but the majority of the turtle-shell spoons found in the refuse pits were broken.

Woven Fabrics — Evidences of woven fabrics were found in the refuse pits where the cloth had been charred. Associated with the cloth was corn, beans and nuts of various kinds, and perhaps the woven fabric at one time served as a container for the care of the agricultural products until needed for use. The bags may have been used for carrying and collecting stores of various kinds. No



FIG. 56 — Shell spoon (two-thirds size).

fabrics were found in the graves, as all the dead were buried in the usual way of placing the body at full length in the grave, and no fire was used in connection with the burial ceremony. Consequently, if a woven fabric was used for clothing, and this clothing placed with the dead, not a single thread or imprint of the cloth remained.

Ornaments — In the beginning of our study of the primitive ornaments secured at the Baum Village site, both in the burials and those found scattered in the tepee sites and the refuse pits, I at once saw the similarity of the primitive forms to those of civilized forms. Our pen-

dants, necklaces, bracelets and mounted pearls—all these forms were found in abundance in the village, and the difference lies not so much in the form as in the material and the workmanship. However, a primitive pearl necklace taken from one of the graves would differ but little from a modern pearl necklace, and that only in the matter of selection of the pearls. The drilling, the manner of mounting and the wearing were identical!

with those of to-day. At the Gartner Mound* a gorget was found with a hole cut in the center and a pearl cut and mounted to properly fill it.

The ornaments for the most part were made of shell, bone and stone, and were abundant in the refuse pits and burials. Out of the one hundred and twenty-seven burials unearthed in the village, only nine were devoid of ornaments of some kind.



FIG. 57—Spoon made of the carapace of the common land turtle (half size).

The ornaments made of shell were of two kinds: those made from the fresh water mussel, so abundant in the streams, and those made from ocean shells, perhaps secured by barter. The fresh water mussel, on account of the size, would only furnish the smaller gorgets and beads, such as are shown in Fig. 58, while the large shell gorgets, as shown in Fig. 59, were made from the body whorl of an ocean shell. The gorgets shown in Fig. 58 are of three kinds: those perforated with one hole, which is placed

at the center of the disk and range in diameter from one-half inch to one inch, the small size being more abundant; those perforated with two holes, which are placed near the edge of the gorget and about one-fourth inch apart; and those perforated with three holes, one at the center, which is usually the largest of the

* Exploration of the Gartner Mound and village site, pub. of the Ohio State Arch. & Hist. Society, vol. XIII.

three, and two near the edge about one-fourth inch apart. The central hole is usually quite large in proportion to the holes near the edge, and no doubt was set with pearls and other objects. The large shell gorget, as shown in Fig. 59, was found in the grave of a child about ten years of age, and is the only large gorget found during the entire explorations in the village.

Shell Pendants — Pendants made of shell, as shown in Fig. 60, were found in every section of the village, especially in the burials. For the most part they were made of ocean shells, oc-

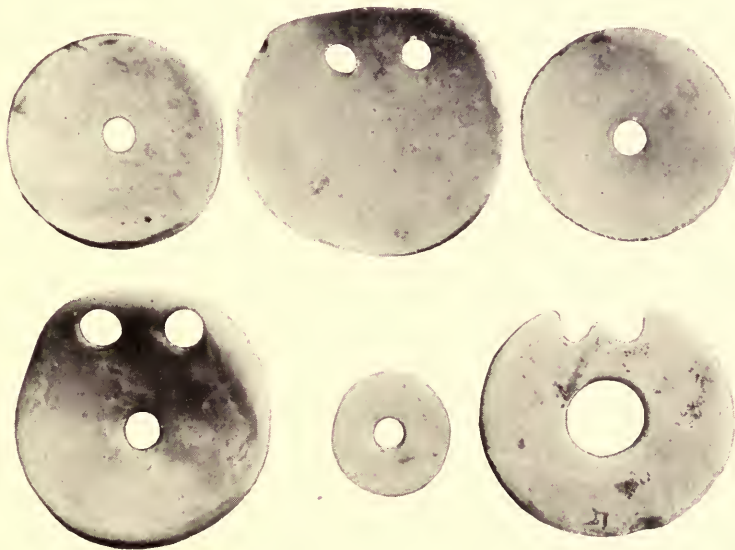


FIG. 58 — Typical shell gorgets (full size).

asionally one being found made of mussel shell. Those made of ocean shells were usually an irregular strip of shell, unevenly polished, and pierced at one end for attachment, and varied in length from two inches to three and one-half inches.

Shell Beads — Beads made of shell were for the most part made of ocean shells, and were of two kinds, those made from the large body whorls of *Fulgur perversum*, never exceeding one-fourth of an inch in diameter, highly polished and perforated with a hole at the center and representing a high degree of skill

in their manufacture. The other kind was made from a small ocean shell, *Oliva literata*, which was slightly altered by cutting away the apex and producing a passage for a string, which may be introduced through the natural aperture. Another small ocean shell, *Marginilla conoidalis*, was frequently met with, and they were cut and ground in the same way as the *Oliva*.

Pearl Beads—Beads made from the fresh water pearls are frequently met with in the graves. The pearls are all small, usually irregular in shape, and have no doubt lost much in size by exfoliation, as the thin decayed lamellae drops off in concentric scales, showing beneath the iridescent nacre. The pearls

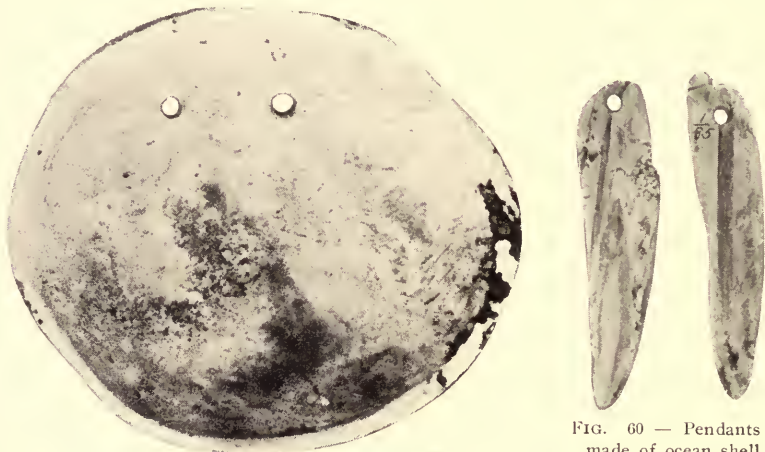


FIG. 59—Shell gorget made of ocean shell (two-thirds size).

FIG. 60—Pendants made of ocean shell (two-thirds size).

were no doubt secured from the fresh water mussels found so abundantly in the river.

Bone Beads—Beads made of bone were present in almost all the graves where ornaments were placed, and they were also abundant in the tepee sites and refuse pits. Fig. 61 shows a necklace of bone beads made from the femurs of small animals, and the wing bones of birds. This necklace was found in the grave of an adolescent. Bone beads were made in two ways, by cutting a crease entirely around the bone with a flint and then breaking, and afterward polishing to remove the rough edges. Fully 75 per cent. of the beads are made in this way. Another

way of making beads was by the use of fire, perhaps resorted to when flint was not at hand, and was accomplished by burning a ring around the bone at the point desired, and then breaking and afterward grinding off the rough edges. By this process a part of the charred bone remains and takes a high polish, which no doubt added to the ornamental value of the beads. The necklaces found at the Baum Village for the most part consisted of a strand of beads, small toward the ends and increasing in size toward the middle, where a central bead of unusual size or design is placed. Sometimes this central bead takes the

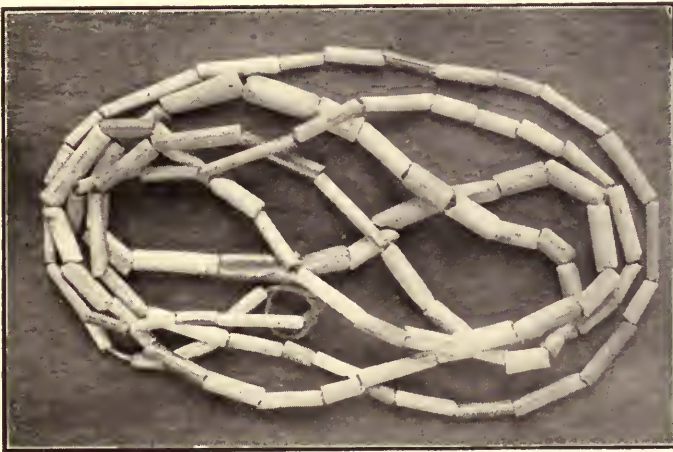


FIG. 61 — Beads made of bone.

form of a pendant, which may be made of bone as shown in Fig. 62, or a perforated canine of the black bear or a large piece of polished shell. Further indications were found in the graves that beads were also used to ornament their hair, and even hung as pendants from the hair. Other burials show that beads were used as bracelets and anklets.

Pendants Made of Teeth — Canine teeth of the bear, wolf and elk were invariably used for pendants in necklaces, and quite often formed the entire necklace. Fig. 63 is the canine tooth of the Indian dog, perforated at the base for attachment. Fig. 64 shows three canine teeth perforated at the base for at-

tachment. The two teeth to the left, an upper and lower canine, are those of the black bear; the one to the right is the canine of the gray wolf. None of the large teeth found in the Village had any work done upon them other than a hole drilled through the base. Fig. 65 shows the upper carnassial of the



FIG. 62 — Pendants made of bone (half size).



FIG. 63 — Perforated canine tooth of the Indian dog (two-thirds size).



gray wolf which was invariably used for pendants. The three roots have a groove cut around them for attachment. No other teeth of this animal were used separately for ornament, but portions of the lower jaw with teeth attached were used.



FIG. 64 — Perforated canines of the bear and wolf (half size).



FIG. 65 — Upper carnassial of the wolf, grooved for attachment (4/5 size).

The incisor teeth of the elk, as shown in Fig. 66, were highly prized for ornament, and quite often formed the pendant of necklaces found with the burials. The majority of the teeth had a groove cut around the end of the root for attachment. However, quite a number were perforated with a hole for at-

tachment. The incisor teeth of the deer, although much like the elk, were not used for ornament. The canine teeth of the elk, as shown in Fig. 67, were always used for ornament. From one grave a necklace composed of nine teeth was found; in another two teeth were found, one on each side of the head of the skeleton, and were presumably used as ear ornaments, while in other instances a single tooth was found in a position to indicate its use as a pendant suspended from the neck unassociated with any other ornament. The teeth for the most part had a single hole for attachment, the drilling being done from both sides of the tooth through the base of the root. Occasionally a tooth would be met with having two holes for attachment.

Another interesting pendant and found in many burials, was that made from the digits of the wild turkey and other large



FIG. 66—Pendants made of the incisor teeth of the elk ($\frac{2}{3}$ size).

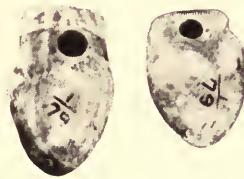


FIG. 67—Perforated canine teeth of the elk ($\frac{2}{3}$ size.)

birds. They were made by drilling a hole in the posterior end of the digit to the depth of about one-fourth of an inch, and then drilling a hole from the side until a connection was made with the first hole drilled. No other work was done upon them. Pendants made of claws of various animals and birds, such as the bear, wolf, mountain lion and eagle were found sparingly in all parts of the village examined. The majority of the claws were not perforated for attachment, but invariably those of the mountain lion were perforated with one hole.

Cut Jaws Used as Ornaments—The cutting into form of animal jaws to be worn as ornament was a very prominent feature in ornament making of the inhabitants of Baum Village. The upper and lower jaws of the Gray Wolf (*Canis occidentalis*) were always made into ornaments. Fig. 68 shows a very frequent way of cutting the jaw in the desired form.

The inferior dental canal is entirely cut away, and the ends of the roots of the teeth are also cut away. The incisors and premolars are gone, but the canine remains. Another form of cutting the jaw is shown in Fig. 69, where two molars and two premolars are left. Fig. 70 shows the manner in which the jaw



FIG. 68—Cut jaw of the wolf (half size).

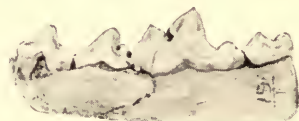


FIG. 69—Cut lower jaw of the wolf (half size).

was cut. Bear jaws cut into ornaments were not found in the village, though in other sections of the county ornaments made of the jaws of this animal were frequently met with. At the Baum Village nothing but the gray wolf was found.

Deer jaws cut into implements or ornaments are not abundant in the village, although the perfect and broken jaws are

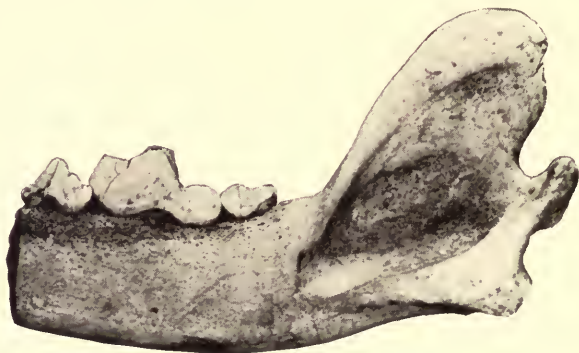


FIG. 70—Cut wolf jaw, showing a stage in the manufacture of an ornament (half size).

present everywhere. Fig. 71 shows a very interesting cut jaw. The posterior part is entirely cut away, and the symphysis is greatly reduced by cutting and afterward polishing. The perfect set of teeth shows no artificial wear. So far I have not been able to suggest its use.

Wild turkey heads perforated with from one to three holes were abundant in the refuse pits, but none were found in the graves. However, at the Gartner Mound, in one of the graves, fourteen heads were found which had served as rattles. The heads were perforated with holes for attachment, and each con-

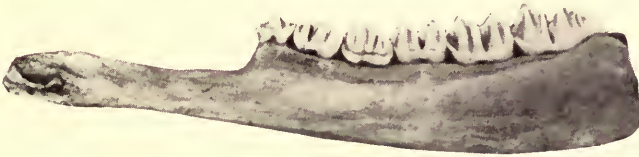


FIG. 71 — Cut lower mandible of the deer (two-thirds size).

tained small quartz pebbles. The heads found at Baum resembled in every way those found at the Gartner Mound.

Pipes — Both perfect and broken pipes were found in every section of the village, though not many were found in the graves. Out of one hundred and twenty-seven burials only two had pipes placed in the grave, one had a single pipe as shown in Fig. 72, and the other had two, both made very much alike, one of which is shown in Fig. 73. For the most part, pipes without stems were the prevailing type found.



FIG. 72 — Ovoid pipe found in one of the burials (2/3 size).

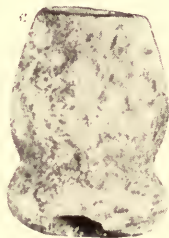


FIG. 73 — Pipe made of limestone found with one of the burials (two-thirds size).

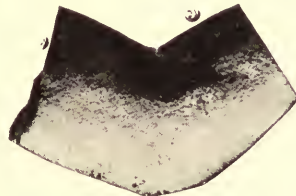


FIG. 74 — Pipe with short stem (half size).

A type of pipe with a short stem is shown in Fig. 74, as well as a tubular pipe made of clay, was also found. The tubular pipes were apparently made of the same kind of tempered clay used in making pottery. The average length was four and one-half inches, and the greatest diameter one inch.

The tube at the largest end would average almost three-fourths of an inch, gradually tapering to the small end, where it is about one-fourth inch or less in diameter.

The egg-shaped or oval forms were more abundant than any other form. They were made of limestone, quartzite, slate and sandstone. Pipes showing all the stages of manufacture were found from the roughly pecked form to the polished quartzite with the hole in the bowl half completed.

Method of Burial in the Village—The manner of burying



FIG. 75—Skull taken from one of the burials in the village.

the dead, as shown in Fig. 6, may be considered as the typical method at the Baum Village. Each family group had their own private burial ground, and it was very close to the tepee. In several instances the graves were less than three feet from the tepee site and seldom would the graves be more than ten feet away. In close proximity to the mound the family groups were quite near each other, and the family burial ground so restricted that the dead would necessarily be buried close together, and the subterranean storehouses would be dug near the burial grounds. This condition is shown in Fig. 76, where three chil-



Fig. 76.—Family burial ground; four adults and three children exposed at one time, as well as one of the underground storehouses.

dren and four adults were exposed and photographed together with one of the largest storehouses found in the village. Three more children were found to the right of those shown in the photograph, making ten in this family group, four adults and six children. The tepee site was to the left of the burials and so close that the head of the adult to the left was very much less than three feet from the post molds which show the outline of the tepee. While no pottery was placed in the graves of this group, the fragments show perhaps the most elaborate decorations and the remains of the largest vessel found in the village. The subterranean storehouses were also unusually large and the contents were very rich in animal remains and imple-



FIG. 77 — Burials encircling a tepee site.

ments and ornaments of various kinds. In another group the burials were in a circle around two sides of the tepee. Three of these burials are shown in Fig. 77, while two more to the right constitute the family group. For the most part the bodies were placed in the grave with a perishable covering, though three graves were exhumed which were covered with slabs of slate. The covered graves pertained to three different families, and each was in close proximity to other graves. Fig. 78 shows a covered grave of an adolescent; on the left is an adult and between the two is the skeleton of a very small child. The adolescent's grave, as is shown by the photograph, was carefully covered with the slabs of slate, showing more than ordinary care for the dead. The three covered graves contained two adoles-



FIG. 78 — Covered and open graves in the same burial ground.

cents, and one child. Another form of burial occasionally met with in the family groups was where the interment was made in one of the abandoned storehouses. A photograph of this mode of burial is shown in Fig. 79. The head is bent backward and the legs are flexed so that the feet are very near the pelvis, and the whole body made to conform to the size of the pit. During the entire exploration only four skeletons were taken from the bottom of refuse pits, showing that perhaps the burials were



FIG. 79—Burial in one of the refuse pits.

emergency burials, the death occurring during the winter when the ground was frozen, making it a very difficult task to excavate the frozen earth with the primitive digging implements. However, the pit burials may have only been temporary burials, and the re-interment would take place when conditions were favorable for making the proper excavations. In two of the burials in the pits the indications point to a permanent burial after the bodies had been placed in the pits, which were quite deep. The clay forming the sides of the pit was used to cover the body to

the depth of four inches, and afterwards the pit was filled with refuse the same as other pits in the village. The other two burials had been placed in the pits after they had been about one-fourth filled with refuse, and the bodies were covered with ashes to the depth of three inches, and the pits afterwards filled with refuse. These two may have been temporary burials and left by accident in the pits.

The inhabitants of Baum Village, according to the measurements, would average for adult males about five feet seven and one-half inches in height and adult females five feet four inches, only one man being found that would measure six feet. His skeleton as shown in Fig. 80. The bones of the skeleton are perfect, and are large in proportion to the height of the individual. He died before reaching the age of thirty years. Sev-



FIG. 80—The largest skeleton found in the village.

eral skeletons of adult males found in the village have strong, heavy and perfect bones and prominent muscular attachment, indicating that they were strong and muscular, and lived to a ripe old age. A photograph of one of these skeletons, which measures five feet six and three-quarter inches in height, is shown in Fig. 81.

Out of forty-nine tepee sites explored, ten had no burials surrounding them, and only a few storehouses, showing that the tepee had not been occupied for any great period. All the burials in the entire village were practically the same, being placed in a grave with their implements and ornaments, unattended by any ceremony of fire.

As I have stated elsewhere in this paper, fifty-eight per cent. of the children never reached the adult age. I also made an estimate from my field notes of the fifty-three adults and find

that ninety-two per cent. died before reaching the age of fifty, and that fifty-six per cent. died before reaching the age of thirty. I also found that twenty-one skeletons of the one hundred and twenty-seven exhumed had diseased bones, and I requested Mr. S. T. Orton, then a student at the Ohio State University preparatory to his course in medicine and one of my assistants in the field, to take up the study of the diseased bones when the proper time came. Accordingly, after finishing his scientific course at the Ohio State University, he entered the Medical Department of the University of Pennsylvania and devoted much of his spare time for three years to the microscopical study of the diseased bones procured from the graves of the Baum Vil-



FIG. 81 — The skeleton in the foreground represents the strongest and oldest person inhumated in the village.

lage Site, and in April, 1905, published in the Medical Bulletin of the University of Pennsylvania the results of his investigation in a paper entitled "A Study of the Pathological Changes in Some Mound-Builders Bones from the Ohio Valley, With Especial Reference to Syphilis," and I quote at some length from this article.

"As will be seen below the lesions of the bones examined are such as to lead to the diagnosis of syphilis as their etiological factor. The reader of works on the history of syphilis will find interest in the discussions of many syphilographers and historians on the origin of this now almost universal disease. The French writers especially have taken up the argu-



FIG. 82 — Skeleton with diseased tibia and humerus, which were used by Dr. Orton in his study of the pathological changes with especial reference to syphilis.

ment, and we find opinion divided between three possibilities: (1) That the disease was endemic both in this continent and the old world before communication was established across the Atlantic. (2) That the origin of the infection was in the American races, and that it was carried to Europe by the sailors of Columbus' expedition on their return; and (3) the reverse of the



FIG. 83 — The large skeleton in the center was used by Dr. Orton in his investigations.

latter theory — *i. e.*, that its place of endemicity was in Europe, and that it was brought westward to this side of the Atlantic by Columbus' men and so implanted here.

It will be readily seen that the results of the present investigation have no bearing on the two former hypotheses. If the diagnosis given is correct, in view of the undoubted pre-Colum-

bian time of these remains, it is entirely incompatible with the third explanation. It may well be added here, however, that the supporters of this theory are comparatively few.

A vast amount of literature has been published in discussion of this question, and strong arguments brought to bear on all sides.

The work of Buret in support of the universal pre-Columbian distribution brings up some very strong proofs. These volumes, while of only a semi-scientific nature, gives a resume of a great amount of evidence of various worth. Early in the first volume is an account of lesions found on human osseous remains exhumed at Soultrè in the Department of Sàone-et-Loire in western France. These bones, found buried with those of the horse and reindeer and cut flints, etc., belonging to the Gallo-Roman or Merovingian epochs, were referred by anthropologists of the best authority to the Stone age, and, the author adds, "examined by Broca, Ollier, Parrot, and Virchow, the lesions were, by common consent, pronounced syphilitic." Then follow reports of examinations of several Peruvian prehistoric skulls showing evidences of acquired and hereditary syphilis and, by way of contrast, lesions which from their description seem identical, on bony remains from the caverns and dolmens inhabited by "tribes who peopled the Gauls during the Stone Age and in the druidical times before the Frankish dynasties." In another chapter is given an abstract of translations from Chinese documents collected by the Emperor Hoang-ty, 2637 B. C., and forming the volume *Hoang-ty-mi-King* or the *Medical Treatise of Hoang-ty*. Quotations of this translation give very apt descriptions of the two main varieties of venereal ulcers with reference to the connection between the Hunterian sore and the secondary eruption, with an account of the varieties of the latter which is easily recognizable, and as treatment advise mercurial frictions, aided by an oily mixture and a powder composed of mercury.*

* It is of interest here to mention also the account of vaccination against variola practised by the Hindoo physicians 1000 years B. C., by taking the liquid of the pustule of the cow's teat or from the arm of a human being, placing it upon the point of a lancet and introducing it into the arm of the patient to be vaccinated, mixing the fluid with the blood, etc.

In support of the existence of syphilis in Biblical times, during the ascendancy of the Greeks and Romans and in the Middle Ages, is quoted a mass of documents, largely secular, which show beyond doubt that venereal diseases of some kind were rampant then, and would seem to indicate the probability of the existence of lues venerea, but hardly prove the point.

On the other side the discussion was headed by Astruc, the early French syphilographer. His articles, while able, were written before the discovery of many important pieces of evidence, and hence are not of such worth as the work of Bloch, which is among the most recent writing on the subject.

Bloch credits the appearance of the disease in Europe to the return of Columbus' first expedition and its rapid dissemination to the debauchery of the troops of Henry the VIII. of France on his expedition against Naples and their widespread dispersion, carrying the infection with them, at the end of the siege. He uses the malignency of the epidemic of Naples as an argument in support of his theory that European peoples were before that outbreak free from the disease and consequently lacked that immunity which would obtain through long exposure of the race to infection. To quote directly: "Wenn der Syphilis schon Jahrtausende bestanden hätte, dann hätte doch im Laufe dieser langen Zeit ein so grosse Immunisirung der Völker des Orbis antiquus gegen das syphilitische Gift eintreten müssen dass die Ereignisse am Ende des fünfzehnten Jahrhunderts einfach unmöglich gewesen wären.

He asks how else can the early appearance of the secondary lesions, the high fever, the pain, the high mortality, etc., in the Neapolitan outbreak be explained. It seems not untenable to believe that the infection had been present on both sides of the Atlantic for thousands of years and that in this way the virus may have become attenuated in each continent—so much so in Europe as to have been overlooked during the dark era of the Middle Ages, or to have been confounded with leprosy or other current diseases—and to have owed its virulence in the epidemic of 1495-6 to a transplantation of the infection of American origin on to what might be for it a favorable soil. Evidences of this variability in infective agencies is seen some-

times in cases where inhabitants of a notorious typhoid centre remain free from infection for indefinite periods only to succumb to the disease on removal to another endemic focus. Here also may be mentioned the severity of the venereal infections brought back by our own troops from the Philippines. One author has spoken of the organism of gonorrhœal infection from this source as the micrococcus gonorrhœae malignus.

With regard to the pathology of the specimens under examination a considerable handicap is apparent in that the cellular constituents of the bones are long since disintegrated, but the lesions of the resistant parts are sufficiently characteristic to permit of diagnosis. These changes in the hard parts in syphilitic diseases exclusive of the cellular study are reviewed here for comparison with the results to be shown presently.

All authors agree on the subject that the bones most frequently the seat of syphilitic changes are those which are most exposed to trauma, which seems to act as a focalizing factor for the morbid process. The order of preference given is: the tibia, clavicle, cranium, ulna, sternum, ribs, etc. This is notoriously the distribution of lesions found in the mound-builders. One particular skeleton is recalled in which the gross changes were apparent in both tibiæ, the vault of the cranium, one clavicle, and one ulna, and this was noted before the sites of election of the syphilitic processes were known to the observer, and, indeed, before syphilis was suspected as being a factor in the case. The following figures, furnished by Mr. Mills, will show something of the distribution: Of one hundred and twenty-seven skeletons exhumed at the Baum Village site, twenty-one were diseased. Fully sixty per cent. of those affected show the lesions worst upon the tibia, the ulna coming next perhaps, then the cranium and then the sternum. But few ribs were affected.

“The gross changes brought about by the syphilitic process in long bones consist of one or more large exotoses (rarely a hyperostosis) in the diaphysis. In the tibia, for instance, the exotosis is usually single when well advanced and is a large, ovoid hypertrophy, most frequently in the upper half of the shaft, although sometimes the whole of the diaphysis is involved. This new growth of bone, to be typical, shows both in the gross sec-

tion and microscopically the condition of rarefying osteitis side by side with one of condensing osteitis which may be far enough advanced to justify the term 'eburnation.' In any given specimen, however, the lesions may be chiefly confined to any one of these three types, dependent on the progress of the disease — but the other types are always present to a greater or less degree. There may be also on the surface of the bone small osteophytes either of intense hardness when they are, as a rule, more or less regular and polished, or when they occur in the line of origin or insertion of a muscle roughened, irregular projections.

"Sometimes the exostosis, which is nearly always on the anterior aspect of the bone (that part exposed to trauma), may involve the entire length of the diaphysis, giving a curve of large radius with convexity forward and distorting the whole of the bone except the epiphyses, which seem to be entirely normal. This gives rise to the condition called 'sabre-blade' deformity when occurring in the tibia, where it is most frequently seen. The lumen of the medullary canal may be enlarged through absorption of the bone surrounding it. This may be greater or less than, or equal to, the deposition of bone from the periosteal side, thus giving a large canal with thin walls or thick walls with an increased lumen, or an increased lumen with walls of about normal thickness. Sometimes deposition of bone takes place from the endosteum, encroaching on the medullary canal either through the formation of dense bone or through a mesh of very fine interlacing spicules of osseous material, almost or entirely filling up the original canal. The external surface of an exostosis of a long bone may be as smooth as, or even smoother than, the normal bone surface, in which case the condition of sclerosis will usually be found to be the predominant one, or it may be marked with irregular lines or depressions more or less parallel with the long diameter of the shaft, or deeply grooved with branching channels in which lay the enlarged periosteal vessels, or filled with small holes running into the body, which on section prove to be enlarged Haversian canals perpendicular to the shaft.

"Differential diagnosis is here made from tuberculosis, chronic osteomyelitis, and osteitis deformans. The pathological

changes of bone syphilis are so clear and well defined, however, as not to require elaborate differentiation. Osteitis deformans, while a rare disease, now, is included in view of the fact that so little is known of the diseases prevalent at the time from which our material has come. In the osseous lesions of tuberculosis and chronic osteomyelitis the formation of an involucrum with sequestra and cloacæ is usually a prominent feature. In the tuberculous bone affections the disease is very often manifested in the epiphyses and joints and leaves there unmistakable traces of its ravages. Lazarus-Barlow is quoted here: 'Tuberculous disease of bones differs in the fact that sclerosis is almost characterized by its absence. * * * It is never found that a focus of tuberculous disease shows a considerable formation of new bone in the neighborhood of the principal seat of the disease. The utmost that we see is the presence of a few osteophytic growths.' Again, the same author says of osteitis deformans: 'All bones are usually affected and the whole bone is involved.' This is a true hyperostosis of general distribution rather than exostosis on certain selected bones as is the case in syphilis.

"The microscopic picture of bone syphilis exclusive of the cellular changes is directly comparable to the gross lesions — *i. e.*, concurrent rarefying and condensing osteitis. Cornil and Ranvier, in describing the result of rarefaction by enlargement of the Haversian canals, says: ' * * * The canals communicate and by their junction form irregular spaces filled with marrow of an embryonal type.' Simes and White, in their translations of Cornil's *Syphilis*, describe the sclerotic changes as follows: 'When under the influence of appropriate treatment or following the natural course of the malady, the inflammation ceases and the disease retrogrades, there is seen a reparation of the diseased and partially destroyed bone. * * * There result new lamellæ with new osteoblasts, and these form several series parallel one with another, or follow the irregular arrangement of the Haversian canals. This exuberant formation of new osseous lamellæ may constitute beneath the periosteum exostoses of varying size and in the bone a parenchymatous exostosis or eburnation.'" Again in Shakespeare and Simes' translation of Cornil and Ranvier's work appears the following: 'A transformation

which has taken place in consequence of the formation of osseous tissue which being deposited in the interior of the canals has narrowed them. The new osseous layers may be so arranged that the lumen of the canal does not correspond to the centre of the original canal. This process continuing, the canal may be completely obliterated, so that at the centre of the concentric layers, instead of a canal there is found one or more bone corpuscles.'

"A rough qualitative analysis of the material under examination showed large amounts of calcium and magnesium, some aluminum, a trace of iron, the carbonic, sulphuric, and hydrochloric acid radicals, and considerable organic matter. On complete incineration of a portion of bone in the oxidizing flame, reducing it to an amorphous white powder, a loss of seventeen per cent. by weight was noted. After heating until the mass charred and then lost its black color (becoming gray and not white as above, and leaving no residue on solution with dilute hydrochloric acid) the percentage of weight loss was on an average ten. Although the conclusions here are reached by a very rough method and are probably far from accurate, ten per cent. weight loss is taken to represent approximately the amount of organic matter and the additional seven per cent. accounted for by the breaking up of the carbonates and the evolution of carbon dioxide. The source of the organic matter here is a question — whether remains of the original animal matter of the bone, or vegetable replacement during their stay in the soil. The latter possibility seems more reasonable and is supported by the finding of small roots in the medullary cavity of some of the bones sending their finer branches into the cancellous structure and enlarged Haversian canals.

"RESUME — The material under examination is from a source undoubtedly pre-Columbian and the lesions are such as to justify the diagnosis of syphilis by the following pathological evidence: Changes affecting chiefly the diaphyses where long bones are concerned, showing a predilection for those bones which are most exposed to trauma, consisting of large exostoses and osteophytic overgrowths, and characterized by the concurrent presence in the same specimen of both a rarefying and con-

densing osteitis as demonstrated by gross and microscopic examination. Of one hundred and twenty-seven skeletons from one series of excavations, twenty-one showed traces of disease, sixty per cent. of the affected showed the changes most upon the tibia with the ulna, cranium, and sternum following in order. Of the specimens examined rarefying osteitis was grossly manifest in all but two, one of which (ankylosed metatarsal and cuneiform) was probably of traumatic or septic nature, and the other (a clavicle) was not examined in cross-section. Grossly sclerosis was evident in three of the ten, while on microscopic examination only one of six from which sections were taken failed to show condensation in some areas."

The explorations of the Baum Village site have brought to light many points of interest concerning the home life of a prehistoric people who had risen above the level of mere children of the forest, depending upon wild wood for their subsistence. They had established homes, a developed agriculture, made the collection of and provided storage for food supplies for future use. Therefore the Baum Village site culture in all essential points resembles the culture of the Gartner Village site along the Scioto, and the Ft. Ancient and other culture sites along the Miami; establishing the fact that at one time the valleys of southern and central Ohio were peopled by a culture which was quite uniform throughout the entire section, and for convenience I have termed these early inhabitants the Ft. Ancient Culture. The manufacture of their implements, such as scrapers, awls, needles and fish-hooks, as well as the many implements in stone, as shown by the various stages in the manufacture of these implements, were in every respect similar throughout the entire region. In the manufacture of their pottery, and especially in regard to their designs and shapes, they were quite similar, and it would be impossible to distinguish the Ft. Ancient pottery from the Baum, and the Baum from the Gartner Village Site pottery. In the same valleys occupied by the Ft. Ancient Culture we find evidence of a higher culture, and for my convenience I have designated this culture the Hopewell Culture, taking the articles secured by Prof. Moorehead from the Hopewell Mounds as the type. The Ft. Ancient culture occupied

portions of the valleys which were later occupied by the Hopewell culture, as was evidenced by the results of the explorations of the Harness Mound group during the past summer (1905). After completing the explorations of the Harness Mound, the articles taken therefrom being of the higher culture, I examined a mound located outside of the great circle and not far distant from the Harness Group, directly to the south, and found this mound to be a burial mound of the Ft. Ancient Culture. At the center of the mound, and a few feet under the surface, was found an intrusive cremated burial, similar in every respect to the cremated burials of the Harness Mound. The artifacts of the Hopewell Culture can in almost every object used in common by the two cultures readily be distinguished from those of the Ft. Ancient Culture by the portrayal of the esthetic ideas of the artisan.

My conclusions are, as I have stated elsewhere in this paper, that the builders of the Baum Mound were isochronological with the dwellers in the Baum Village. As in all the sites of the Ft. Ancient Culture examined, the inhabitants had an inter-tribal trade, as evidenced by the copper, ocean shells and mica there found; that the dwellers in this village were pre-Columbian, as no objects showing European contact were met with and the village was occupied by the same culture in all its parts.

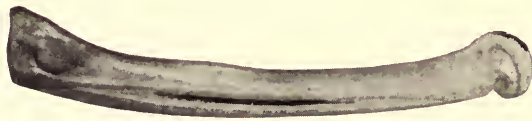
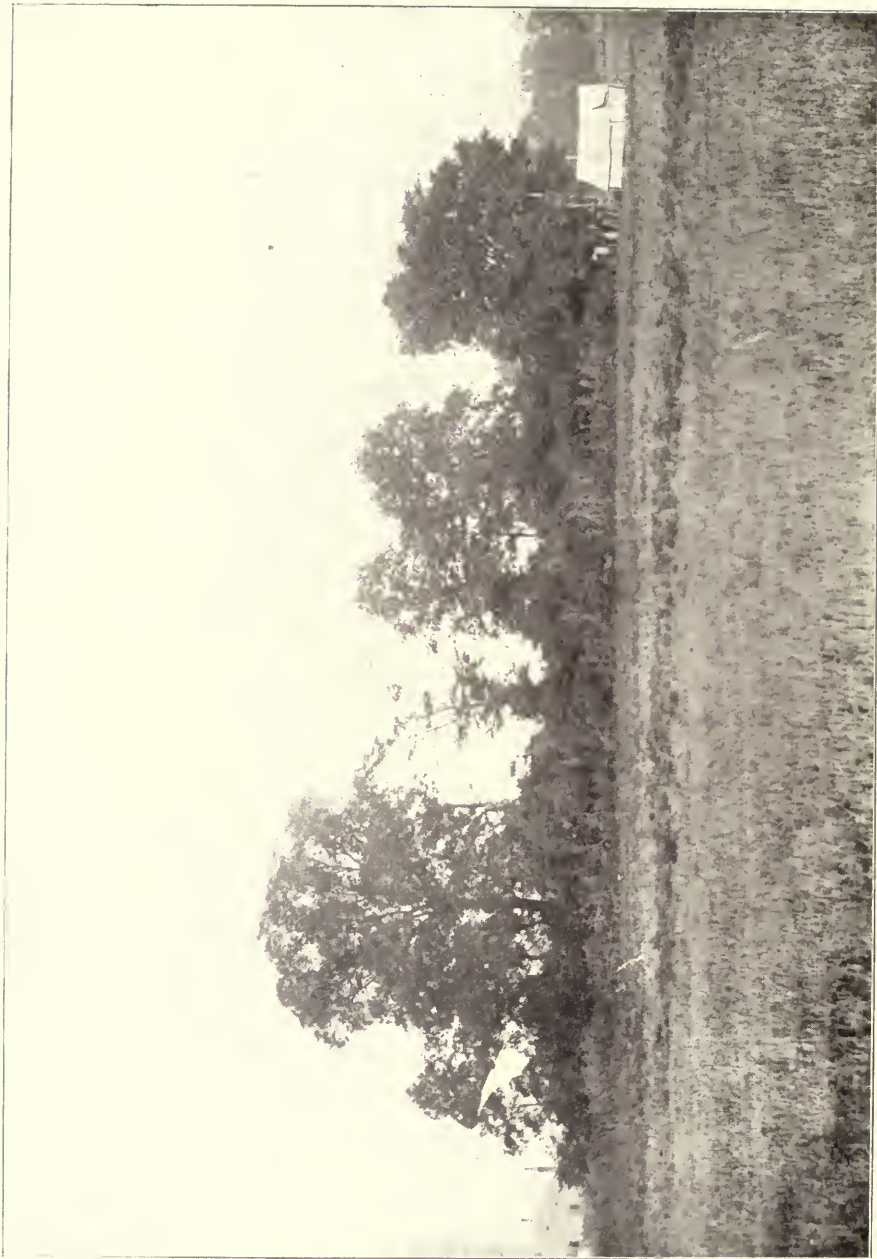


FIG. 84 — Cut metatarsal of the Mountain Lion (three-fourths size).

PART IV

Explorations of the Edwin
Harness Mound



THE EDWIN HARNESS MOUND.

Explorations of the Edwin Harness Mound



BY

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Reprint from the Ohio Archaeological and Historical Quarterly
Volume XVI, Number 2

Columbus
PRESS OF FRED. J. HEER
1907

NOTE.

This report is reprinted from the sixteenth annual publication of the Ohio State Archæological and Historical Society, for the convenience of those who are only interested in the Archæological Department of the Society. The annuals complete are sent only to members of the Society or others especially entitled to them.

E. O. RANDALL, *Secretary*,
Columbus, Ohio.

THE EXPLORATIONS OF THE EDWIN HARNESS MOUND.

WILLIAM C. MILLS.

The Edwin Harness Mound is the largest of the fourteen mounds which are located within the earthworks of the Harness group¹ and in close proximity to them, and it would equal in dimensions more than all the other mounds of this group combined, and perhaps the largest mound in the Scioto Valley proper, although not equal in size to the great Hopewell Mound, located on the north fork of Paint Creek and the Seip Mound located in the western part of the county along Paint Creek.

The Harness group, consisting of burial mounds and a combination of circles and a square, is located in Liberty Township, Ross County, Ohio, eight miles south of Chillicothe, and is situated on the east bank of the Scioto River and occupies the third bottom and is fully a mile from the present river channel.

Portions of the earthworks and the large mound of the group can be seen from the Chillicothe and Richmondale Pike which crosses the works directly in front of the large mound.

The ground upon which the Harness group is situated is level, and the earth used in the construction of the large mound and of the earthworks was taken from the surface in close proximity to the earthworks.

Squier and Davis in their account give a very good description of the appearance of the earthworks, mounds and surroundings at the time of their survey, and the following quotation is from their published report.² "The walls of the entire work are unaccompanied by a ditch, and are slight, nowhere more

¹ Described by Squier and Davis as "Ancient Works in Ross County," on page 56 of "Ancient Monuments of the Mississippi Valley."

² "Ancient Monuments of the Mississippi Valley," page 56, Squier and Davis.

than four feet in height. The embankment of the square is perceptibly heavier than that of the small circle, which is also heavier than that of the larger one. The square work measures 1,080 feet upon each side; and its walls are interrupted at the corner and upon the middle of each side by gateways thirty feet in width. The central gateways are each covered by a small mound, of about the same height with the embankment, and placed forty feet interior to it. The manner in which the circular works are connected with the square enclosure are accurately shown in the plan, precluding the necessity of a long and intricate description. It will be observed, that while the wall of the larger circle is interrupted throughout,—a feature for which it is, of course, impossible to assign a reason. Besides the small mounds at the gateways, there are three others within the works, two of which are inconsiderable, while the other is of the largest size, being 160 feet long by not far from 20 feet high. There are also a few other mounds outside of the walls, reference to which is had elsewhere. Numerous dug holes occur in the vicinity of the great mound. Most of these are interior to the works,—a very unusual circumstance. In fact, the whole work appears to have been but partially finished, or constructed in great haste. The mounds at the gateways and those outside of the walls are formed by carelessly scooping up the earth at their base, leaving irregular pits near them. In most of the regular works the material seems to have been taken up evenly and with great care or brought from a distance.

“No one would be apt to ascribe a defensive origin to this work, yet it is difficult to conceive for what other purpose a structure of such dimensions, embracing nearly one hundred acres could have been designed. The great mound is anomalous in its character, and throws no light on the question. That there is some hidden significance, in the first place in the irregularity, and secondly in the arrangement of the various parts, can hardly be doubted. Nor can the coincidences observable between this and the other succeeding works of the same series be wholly accidental.”

Mr. Gerard Fowke in his “Archæological History of Ohio”

discusses at some length the discrepancies in the surveys of Squier and Davis.³

I have prepared a drawing of the works, Fig. 1, following the suggestions and corrections of Mr. Fowke and have verified his statements by a personal examination of every portion of the earthworks available.

Many changes have taken place since the survey by Squier and Davis. At that time almost the entire works were covered with the native forest, but now only a part of the small circle shows the original form as it was a half century ago, and a greater portion of the land has been under cultivation for more than a quarter of a century.

A railroad,—The Cincinnati, Hamilton and Dayton,—has cut through a portion of the earthworks on the east side of the pike, and Mr. Harness has built a large house and barn on a portion of the site of the small circle.

The land upon which the earthworks are located was formerly owned by two brothers, Messrs. Edwin and Daniel Harness. The line separating their farms extends almost east and west about twenty-five feet south of the large mound.

Since the survey by Mr. Fowke Mr. Daniel Harness has died, and his estate has been apportioned among his heirs, and Mr. Edwin Harness has divided his land and the part now occupied by the greater portion of the mounds and earthworks belongs to his son, Mr. John M. Harness, who aided in many ways to make our examination of the earthworks pleasant and profitable.

THE EDWIN HARNESS MOUND.

The Edwin Harness mound has been a noted one since the early examination in 1846 by Squier and Davis. During the last half century many attempts to explore the large structure have been made by various institutions and by private individuals, and as a consequence the various artifacts taken from the graves of this mound are greatly scattered. The specimens taken by Squier and Davis during their examination in 1846 are in the Blackmore Museum, Salisbury, England. Peabody Museum,

³“Archæological History of Ohio,” by Gerard Fowke, page 184.

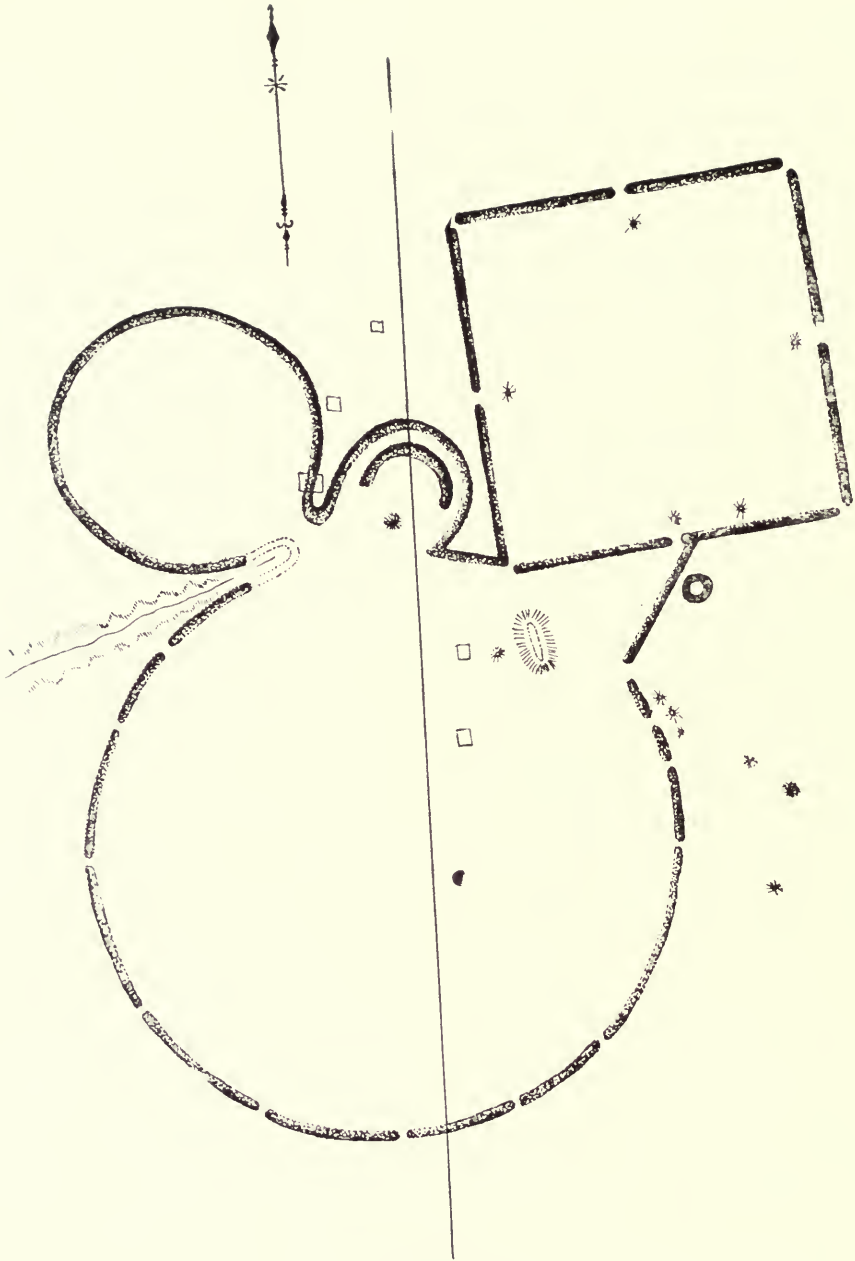


FIG. 1 — The Harness Group.

Harvard University, contains some 278 recorded specimens taken from this mound and the two small mounds outside of the inclosure, the results of the explorations by Prof. F. W. Putnam in 1885. Our own museum contains more than 12,000 specimens secured by the two expeditions sent into the field by the Society, the first in 1896, by Professor Moorehead, who secured several hundred specimens, and the last expeditions by the writer in 1903 and 1905, when the remainder of the 12,000 specimens were secured and the examination of the mound was completed.

Outside of the specimens accounted for in the various museums of the country some four or five private individuals, who were school boys in the early fifties, each have in their possession from two to ten copper pieces taken from the mound during their school days,⁴ and at one time there was scarcely a home in the neighborhood that did not have from one to a dozen artifacts of various kinds from this mound, but these specimens are now so scattered that they will probably never be recovered.

In the following pages I propose to give a detailed account of the final explorations of this mound, and the recital would not be complete without including all the explorations made in connection with this mound.

EXPLORATIONS BY SQUIER AND DAVIS.

Squier and Davis in their classification of the mounds⁵ recognize four distinct features based upon position, form, structure and contents, and in this classification they distinguish —

First — "Altar mounds which occur either within, or in the immediate vicinity of the inclosures; which are stratified, and contain altars of burnt clay or stone; and which are places of sacrifice.

⁴The school house is near and for years the school boys would spend much time in digging holes into the mound in search of relics, and some of the most interesting specimens were secured by these boys as shown by the Report of Prof. Putnam which will be noted in this monograph.

⁵"Ancient Monuments of the Mississippi Valley," by Squier and Davis, page 142.



FIG. 2 — The Mound cleared of underbrush and ready for examination.

Second — “Mounds of sepulcher, which stand isolated or in groups more or less removed from the inclosure, which are not stratified; which contain human remains; and which were the burial places and monuments of the dead.

Third — “Temple mounds which occur most usually within but sometime without the walls of the enclosure; which possess great regularity of form; which contain neither altars nor human bones; and which are ‘high places’ for the performance of religious rites and ceremonies, the site of structure, or in some connected with the superstitions of the builders.

Fourth — “Anomalous mounds including mounds of observation and such as were applied to a double purpose or of which the design and objects are not apparent. This division includes all which do not clearly fall within the three preceding classes.”

Squier and Davis have placed the Harness Mound in the fourth class or anomalous mound group, basing its classification upon its form as being both a sepulchral and an altar mound, and I quote at some length concerning their collections and finds:

“Besides the mounds already described,⁶ the purpose of which seem pretty clearly indicated, there are many which will admit of no classification. Some of them possess features in common with all classes, and seem to have been appropriated to a double purpose; while others, in our present state of knowledge concerning them, are entirely inexplicable.

“As these mounds differ individually from each other, it is of course impossible to present anything like a general view of their character. We can therefore only describe a few of the more remarkable, dismissing the remainder with the single observation that their features do not indicate any specific design, and are not sufficiently distinct or uniform to justify or sustain a classification.

“One of the most singular of these mounds, and one which best illustrates the remark that certain mounds were probably made to subserve a double purpose, is situated within a large enclosure on the east bank of the Scioto river. A plan and section of the mound are herewith presented (Fig. 3). It is an irregu-

⁶ Squier and Davis “Ancient Monuments of the Mississippi Valley,” page 178.

lar oval in form, and is one hundred and sixty feet long, ninety broad at its larger end, and twenty feet in height. Excavations were made at the points indicated in the section. The one towards the right or smaller end of the mound disclosed an inclosure of timber, eight feet square, and similar, in all respects, to those found in the sepulchral mounds, except that, in this instance, posts eight inches in diameter had been planted at the outer corners, as if to sustain the structure. These posts had been inserted eighteen inches in the original level or floor of the mound. The holes left by their decay were found filled with

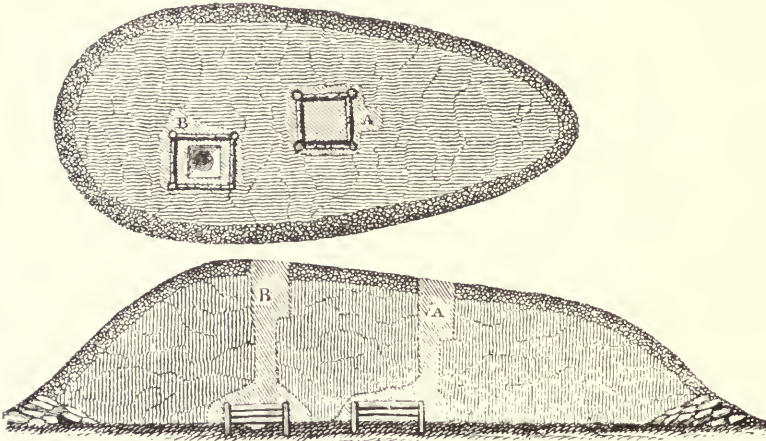


FIG. 3. - A plan and section of the Harness Mound after Squier and Davis.

decomposed material; when this was removed, they exhibited perfect casts of the timbers. The casts also of the horizontal timbers were well retained in the compact earth, and one of the workmen, without much difficulty, was enabled to creep more than half of the way around the enclosure which they had formed. Within this chamber the earth was as firm as in any portion of the mound. Upon removing a portion, a skeleton partly burned was found, and with it a thin copper plate seven inches long and four broad, perforated with two small holes; also a large pipe of bold outline, carved from a dark compact porphyry (Fig. 4). The bones seemed to have been enveloped in a species of matting, which was too much destroyed to be distinctly made out. The

floor of the mound, it should be mentioned, as far as explored, was composed of clay, was perfectly level, and had been burned to considerable hardness.

"The second excavation (B) was made in the larger end of the mound, somewhat to one side of the centre, at a spot marked by a depression in the surface. At the depth of twenty feet was found an altar of clay of exceeding symmetry. This was sunk, as shown in the section, in the general level or floor of the mound, and had been surrounded by an enclosure in all respects similar to the one above described, except that the timbers had been less in size. A fine carbonaceous deposit, resembling burned leaves, was found within the altar. Amongst the decayed materials of the surrounding enclosure were found several skewers, if we may so term them, in lack of a better name, made of the



FIG. 4—Pipe from the Harness Mound, after Squier and Davis.

bones (tibia) of the deer. They were finely tapered to a point, and had evidently been originally highly polished. Some were not less than nine or ten inches long. Though apparently sound, they were found to be exceedingly brittle, retaining little if any of their animal matter. Drifts were carried in the course shown in the section, and the evidences of another enclosure discovered. The excavation was suspended at this point, in consequence of heavy and continued rains. The holes soon became filled by the caving in of the loose earth near the surface; which discouraging circumstance, joined to the extreme difficulty of digging,⁷ pre-

⁷The difficulty of carrying on investigations in the large mounds cannot be appreciated. The earth is always so compact as to require, literally, to be cut out. It has then to be raised to the surface,—a

vented a resumption of the investigation. It is very certain that another, perhaps several other chambers are concealed by this mound.

"The surface of this mound was covered with the layer of pebbles and coarse gravel already mentioned as characterizing the mounds of the first class; but the sand strata were absent. Around the base had been laid, with some degree of regularity, a large quantity of flat stones, constituting a sort of wall for the better support of the earth. These stones must have been brought from the hills, which are here nearly half a mile distant. Why the altar as well as the skeleton had been enclosed, and why the floor of the mound had been carefully leveled, cast over with clay, and then hardened by fire, which will probably remain unanswered and unexplained unless future investigations serve further to elucidate the mystery of the mounds. At any rate, this singular mound can prove no greater puzzle to the reader than it has to the authors of these inquiries."

EXPLORATIONS OF PROFESSOR PUTNAM.

In 1885 Professor F. W. Putnam, of Harvard University, examined a portion of the mound by beginning a trench at the north end and extending it with a varying width, averaging about 18 feet at the top with a gradual slope to the bottom. The trench extended into the mound about one-third of its length.

I quote at some length from Professor Putnam's Report,* as he includes an examination of several small mounds outside of the great earthworks and proves by the contents of the smaller that the builders belong to the peoples who constructed the large mound.

"Squier and Davis represent five small mounds inside the great square of twenty-seven acres. These have been leveled by cultivation, but we could trace the outlines of three at least, one

task of great labor, and only accomplished by leaving stages in the descent and throwing the earth from one to the other, and finally to the surface. Four industrious men were employed not less than ten or twelve days in making the excavations in this mound alone.

* Eighteenth and Nineteenth Annual Reports of the Peabody Museum, Vol. 3.

of which we thoroughly examined, and found that it had been a simple mound of earth thrown up inside of one of the 'gateways' of the square. Three mounds, one twice the size of the others, are represented on the plan as just outside one of the 'gateways' on the eastern side of the great circle of forty acres' area. All three have been much reduced in height by ploughing over them, but probably only the superficial portions have been disturbed. These three mounds we examined with care, and found that the small one to the westward contained only a small bed of ashes. The other two proved to be burial mounds of considerable interest. The human bones were much decayed. We found in these mounds various objects made of copper, stone, shell and mica, of the same character as those found in the large one of the group, consisting of copper plates, spool-shaped ear ornaments, a crescent-shaped ornament cut out of slate, another small stone ornament, a few large beads covered with copper, and a smaller one, covered with silver over the copper, shell beads and numerous other small articles.

"Another mound in the corn field, north of the three above mentioned, was also dug over completely.

"In this we found a large bed of ashes and charcoal about at the level of the natural surface upon which the mound was made. This ash bed covered nearly the whole area occupied by the mound, and in it we found many fragments of pottery and cut pieces of mica, some of which were circular. A large piece of grass matting and a mass of burnt seeds, nuts and acorns, were found in the bed of ashes. In one place the charcoal matting was in several layers, making a thickness of an inch or more. Near the centre of the mound, extending to the south, was a long, narrow pit, about nine by two feet, which was a foot in depth. At the bottom of this pit were burnt stones, and over them ashes and charcoal, fragments of pottery and a few burnt bones.

"Thus it will be seen that the several mounds connected with the extensive earthwork were erected for different purposes and vary considerable in their structure.

"Near the eastern corner of the part of the earthwork which we have called the 'great square,' and within the line of the cir-

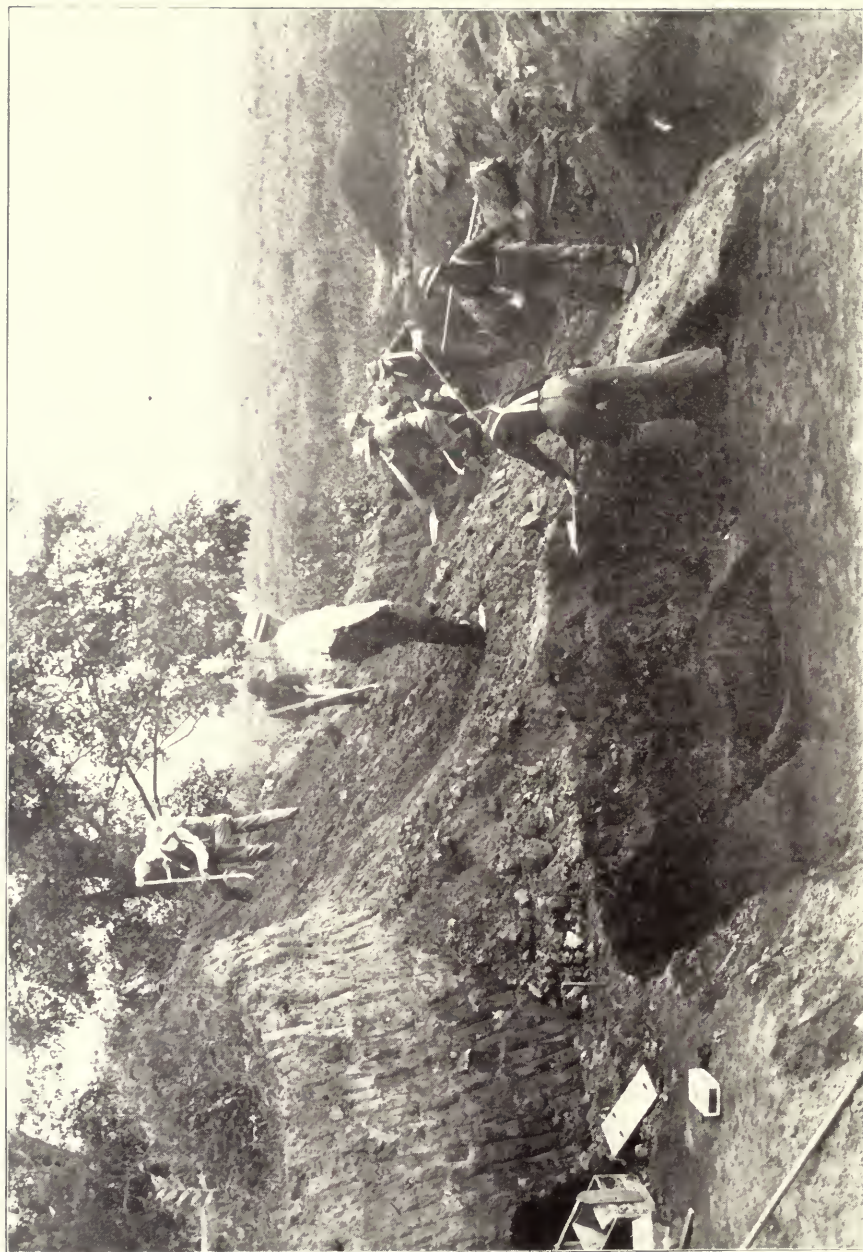


FIG. 5 — The manner of exposing to view the graves.

cular embankment forming the 'great circle,' stands the largest mound of the group, which is known as the 'Edwin Harness Mound.' This mound proved to be of great interest, and unlike any other mound which we have explored. It is 160 feet long, from 80 to 90 feet wide and from 13 to 18 feet high along the central portion, which rises gradually from the southern to the northern part. Up to this time we have made a thorough exploration of about one-quarter of the mound, and have ascertained that it is a burial mound of a remarkable character. In the northern portion, forty feet from the center, we discovered the first of the burial chambers, of which we found a dozen in all. These chambers were made by placing logs, from five to six inches in diameter, on the clay which forms the lowest layer of the mound, in such a way as to make enclosures six to seven feet in length, and from two to three in width, and about a foot in height. In these the bodies were placed, evidently wrapped in garments, as indicated by the charred cloth and mats found in several of the chambers. With the bodies were buried various objects, such as copper plates, ear-rings, shell beads, and, in one instance, long knives chipped from flint. In two instances, the skeletons were found extended at full length within the chambers, the outlines of which could be traced by the imprint of the logs in the clay, the logs themselves having decayed, leaving only a dark dust. On the breast of one of the skeletons was a thin copper plate or ornament. The chemical action of the copper had preserved the texture of the finely woven cloth lying between the plate and the bones of the chest. In other chambers, the bodies had been burned on the spot, as conclusively shown by the relative positions of the bones, and the fact that, in two instances, portions of the body had fallen outside of the fire and escaped burning. It became evident, as our explorations progressed, that these chambers were covered by little mounds of gravel and clay, and that, in those where the burning had taken place, the coverings of earth were placed in position before the bodies were consumed, shown by the small amount of ashes and the reduction of the logs to charcoal in their position on the clay floor of the chamber, which was burned to a thickness varying with the amount of heat. It is probable that the burials and cremations

did not occur at one time, and that, after all these mounds had been made, earth was brought from various surrounding places and heaped over all. Then the mound was finished with a covering of gravel and a low border of loose stones was placed around its base.

It is of interest to note that Squier and Davis, in 1840, dug two pits in this mound. At the bottom of their pit A, which was just south of the center of the mound, they opened one of the burial chambers, and they state that the skeleton in it was partly burned, that it was enclosed in a framework of logs, and that with it were a copper plate and a pipe carved out of stone. They remark that the body seemed to have been enveloped in matting. Their pit B, about twenty feet northwest of the centre, and there they came to another burnt skeleton, as shown by their exploration, although, deceived by the imperfect examination which the caving of the pit compelled them to make, they thought they had found an 'altar,' and mention the burnt burial chamber as such. They state that they found at this point several implements made of bone. At the side of their excavation we took out about half a dozen pointed implements made from the leg bones of deer. Several months before our work was begun, as already referred to, the school boys, under the lead of Mr. Wilson, dug two pits in the mound, one of which was between those made by Squier and Davis over forty years ago, and the other at the side of Squier and Davis' pit B. In each of these many remarkable objects were found. So far as 'relics' are concerned, the boys made a lucky hit and took out more objects from one of their pits than were found in all our explorations. The larger part of these we have been able to secure from the boys, and from Mr. Daniel R. Harness, who very kindly gave to the Peabody Museum all that he had purchased from the boys at the time, realizing that they would be of more importance and value to science if placed in the museum with other objects from the mound, than if held in private hands as mere curiosities. Among the specimens thus obtained were two copper celts and three or four copper plates, also several copper ear ornaments, some of which were covered with meteoric iron in the same way as those from the Turner Mounds in the Little Miami Valley, and a celt

made of meteoric iron. Thus we have an important link, connecting the people who built this great mound and the earthworks about it in the Scioto Valley, with the builders of the singular group on the Turner farm, in the Little Miami Valley.

“Burnt human, animal and bird bones; shells of different kinds, some of them perforated; cores and chipped points of flint; ornaments made of stone; hammer-stone and discoidal stone; beads of pearl, bone and shell; canine teeth of large bears, some of them perforated; teeth of deer and a shark’s tooth; ornaments made of copper; ear ornaments of copper, a few covered with a thin layer of silver and others with meteoric iron; small hemispheres of stone and of pottery, covered with silver, copper and meteoric iron; fragments of silver ornaments; a celt of meteoric iron and one of copper; ornaments and fragments of mica; portions of a pipe carved out of stone; a large mass of galena; cloth, seeds, nuts, corn and grass, all charred; fragments of matting partly burnt; balls of clay; fragments of pottery; bone handles, awl points and other implements of bone; braided grass; charcoal, ashes and burnt clay, some of the latter still bearing the impress of logs of wood; portions of burnt and unburnt human skeletons; all from the mounds belonging to the Liberty group on the land of Edwin Harness, Esq., in Liberty Township, Ross County, Ohio.”

EXPLORATIONS OF PROFESSOR MOOREHEAD.

In 1896 Professor Warren K. Moorehead, under the auspices of the Ohio Archæological and Historical Society, examined the south part of the mound, beginning where Professor Putnam left off. His examinations were for the most part carried on by means of tunnels, and I quote from his report:⁹

“Our work upon the mound was begun July 22d and ended the evening of August 9th. We first cleaned out the end of the trench abandoned by Professor Putnam, and measuring the mound thence to its end, ascertained the distance to be about eighty feet, at least sixty feet of which should be excavated. We

⁹ Publications of the Ohio State Archæological and Historical Society, Volume 5.



FIG. 6. A row of graves exposed at one time.

started in with a trench some thirty feet in width, being a little wider than the excavation he had conducted. We had proceeded twelve or fifteen feet when we ascertained that burials followed each other pretty much the same distance apart on either side of the mound, and that there were few burials in the main or central portion. Most of the burials in these rows occupied little domes or pits, varying from three to five feet in diameter and three to five feet in height.

"We decided to explore the mound by means of tunnels, which should follow the lines of the burial, and, at short distances, to run side branches from the main tunnels toward the center, and, if necessary, toward the edges of the mound. As the work proceeded the scheme was found to be practical, and the whole base of the mound was thoroughly covered at much less expense than would have resulted had we attempted to remove the entire structure. The total length of tunnels and branches was 253 feet, the main tunnels 98 feet, the branches 155 feet. It occupied the time of from four to five men continuously for sixteen days. They were five feet wide at the base and about four and one-half feet high.

"In the end of the mound opened by Professor Putnam a number of entire skeletons were found, accompanied by various objects. In the end which we explored were a total of twenty-seven interments, but two of which were uncremated skeletons, a child and an adult. All the others were more or less burnt. In Fig. XVII all skeletons with which relics were found are numbered, and the brief description accompanying the illustration will acquaint readers with the find. Skeletons Nos. 4 and 5 had some of the copper objects with them. No. 10 had the best copper plate. Eight of the bodies had objects buried with them. Every one of these skeletons had been cremated, and even some of the beads and copper showed marks of fire. The total interments in the mound numbered 27.

"Nearly all of the skeletons were on little raised platforms of burnt earth, varying in height from four to ten inches. The platforms were usually about two by three feet. Such relics as accompanied the remains were placed in no special order and many of them were partly burnt up. The looseness of the earth

above the skeletons, or the little domes to which we have referred, is probably due to small structures of poles having been built about the remains. The supports remained in position sufficiently long for the earth to become somewhat packed, and after their decay just enough earth fell upon the remains to cover them loosely. Frequently there was a space of about a foot between the top of the dome and the loose earth below. The good copper plate found in No. 10 is nine inches long and five inches wide. It had two small perforations. With No. 5 was a burnt plate, three-fourths of which we took out entire, beads and bear tusks, etc.

"The skeleton incremated (and placed by itself) was found as indicated by No. 12 in Fig. XVII. These individual interments, at a distance or isolated from the other burials, are often observed in the large mounds of the Scioto.

"In the heavy layer of charcoal and carbonized wood accompanying skeletons Nos. 7 and 3, were fragments of cloth, which we preserved in order that the texture and manner of weaving might be carefully studied."

FINAL EXPLORATIONS.

On the 14th of August, 1903, I commenced the final explorations of the mound, by exposing to view from time to time as the work progressed, the entire site of the mound, recording and photographing the burials and other important features of the mound.

The mound at the time work was begun, was covered with a dense tangle of underbrush and trees (See Frontispiece). A deep cut beginning at the north end of the mound extended almost to the center, while dug holes extending down to the tunnels below made the place very unsightly, and to say the least, not very promising of results.

After the underbrush and trees were removed the surface of the mound was examined and measured. The results of the measurements are as follows: Length of mound, 160 feet; width of mound, at the north end, 85 feet; at the south end, 70 feet, with a height of $16\frac{2}{3}$ feet at the north end, which gradually tap-



FIG. 7 - View showing tunnels made by Prof. Moorhead.

ered to $11\frac{1}{4}$ at the south end, the mound containing approximately 4,700 cubic yards of earth.

The mound for the most part was constructed of loam or surface soil, secured in close proximity to the mound, however, a hard, compact clay, overlying the gravel, and which clay is found to a depth averaging from 3 to $4\frac{1}{2}$ feet, and which was used in constructing nearly all the well prepared graves, which latter will be described at some length later on, was also used.

The clay used in covering the graves would average in thickness from a few inches to fourteen inches and was secured from deep holes which are quite noticeable a few hundred feet east and north of the mound.

The flat stones described by Squier and Davis as placed upon the sides of the mound were found at three different points upon the mound. At the west end of the mound stones were found extending up the side of the mound to the height of about six feet. These stones consisted of slabs of sandstone averaging in length from a few inches to several feet, and in thickness from one to four inches. These had been laid with some degree of regularity and placed upon the mound in the form of a circle forty feet in diameter, the highest point being near the center of the mound, and then gradually tapering toward each end. On the east side, two of these circles were present, one near each end of the mound. The stones on the east side were different in size, none of them being large, and all less than a foot in length, averaging in thickness from one-half to one inch. The greater number of these flat stones showed use as a digging implement, and were no doubt employed in digging the soil used in the preparation of the graves and the building of the mound.

SPECIAL FEATURES OF THE INTERIOR OF THE MOUND.

Many interesting features were brought to light in the examination of the mound.

First. The object of the mound was for burial purposes only.

Second. The site of the mound was an enclosure consisting of large posts placed in the ground to the depth of two and one-

half to three feet, as evidenced by the post molds; the posts having been burned off to the surface of the ground when the charnel house was filled and ready for the mound to be heaped over all.

Third. All the burials in the mound had graves carefully prepared for the reception of the dead.

Fourth. The burials were of two kinds, cremated and uncremated.

Fifth. The cremation for the most part took place away from the grave and the ashes and charred bones of the deceased were gathered together and placed in the prepared grave, though a few bodies were evidently cremated at the grave.

Sixth. A final ceremony was performed when the cremated dead were placed in the grave. The uncremated dead were placed in graves similar to those for the cremated.

Seventh. The builders of this mound were representatives of the highest culture of the aboriginal man found in Ohio.

I shall attempt in the following pages to discuss all the special features of the mound, including a detailed account of the artifacts taken from the graves.

THE OBJECT OF THE MOUND.

Squier and Davis in their discussion of this mound, previously referred to, describe it as an anomalous mound, namely, that it was used for a double purpose and describe that double purpose as a sepulcher and altar mound. In my examination of the mound I was fortunate in finding the shaft B which Squier and Davis describe and figure, and is reproduced in Fig. 3 of this article.

Professor Putnam states that he took from the side of the excavations half a dozen of the large bone implements made from the leg of the deer. These were described by Squier and Davis as the "skewers" found in the altar enclosure.

I cleaned out the shaft made by Squier and Davis and found the grave described as an altar, but it was similar in every respect to the hundred or more other graves found in the same mound. The charred remains of the cremated dead were remaining in the grave, but had been greatly disturbed, and four

more of the large bone implements, one large perforated canine of the bear and two copper ear ornaments were left in the grave.

One of the most interesting features of this grave was the finding of a large number of bone implements stuck in the clay layer which immediately covered the grave. All of these implements were so placed as to point toward the center of the grave, and twenty-six were taken out in a perfect condition, while innumerable pieces of these implements were found in the loose dirt which had been handled by Prof. Putnam, so there is no way of telling how many of these artifacts were placed with this burial, and was the only instance in which the large bone implements, made from the metapodiale bone of the deer and elk, were found in the entire mound.

One of the conditions, according to Squier and Davis, characterizing the altar or sacrificial mound is a stratification of the different soils, but this condition occurs practically in all mounds, and this change in the earth was easily discerned whenever the sides of the mound were sufficiently exposed. This stratification was caused by a variation in the soil as it was taken from its original bed and placed upon the mound. When the gravel, or in some cases sand, was encountered it was placed over the mound, and at various places in this mound the gravel was several inches thick and seriously annoyed the workmen.

At the Seip Mound, on Paint Creek, a layer of gravel, in some places thirty inches in thickness, was encountered, so that I fear it would be impossible to characterize a mound as being stratified to signify a certain definite type, for all mounds show different layers caused by a difference in the soil.

It seems probable that Squier and Davis imagined that in the two burials, or as they characterized them, a burial and an altar, they had secured about all the great mound revealed, though they said, "It is very certain that another, perhaps several other chambers, are concealed by this mound."

Professor Putnam in his investigations removed twelve burials, two of which were uncremated and ten cremated.

Professor Moorehead secured twenty-seven burials, of which twenty-five were cremated and two uncremated, and our present investigation secured one hundred and thirty-three burials. Five

FIG. 8.—View showing a row of the various kinds of graves.



were uncremated and one hundred and twenty-eight cremated, which shows a total taken from this mound of ten uncremated and one hundred and sixty-four cremated, still it is known that quite a number were destroyed by the school children in their search for relics, as Professor Putnam states that the school children secured more relics from one pit than he secured in all their explorations, hence it is safe to say that at least ten graves were destroyed in this way. Therefore it seems to me that this mound must be considered purely as a burial mound; that no altars occurred in the mound; that all burials had prepared graves; that for the most part cremation took place at the charnel house where eight great fire places were found, which were perfectly devoid of ashes except in one, where a small charred piece of human skull was found, thus indicating that these fire places were used for the crematory. After the cremation took place the ashes and charred bones were gathered together and placed in a grave near by. In a number of instances the cremation took place at the grave. These are all characterized by finding portions of the unburnt skeleton intact. The uncremated were placed in regular order with the cremated, and in no instance were two uncremated burials side and side, but were invariably followed by a cremated burial.

CHARNEL HOUSE.

The site of the great mound had been properly prepared and its beginning was at the south end of the mound, marked by large posts set in the ground at a depth varying from two and one-half to three feet. The south end of the enclosure was made in the form of a semicircle, and the sides continuing in a straight line north for sixty feet, when the line of posts was turned at right angles to the east wall and running across toward the west side, where an opening was left for an entrance. This enclosure of sixty feet in length measuring, from the center of the circle on the south to the row of posts running across the mound at right angles to the outside walls, forty feet in width at the north end, was no doubt the first structure or enclosure for the reception of the dead.

The second enclosure was merely a continuation of the out-

side walls of the first, extending some seventy feet directly to the north, when another wall at right angles to the east wall was run directly to the west, and similar in every respect to the opening at the south part of the mound; however, the posts were not in a straight line in the north section of the mound, and the inside of the mound at the north end measured fifty-one feet. It is impossible to tell whether the two enclosures were built at the same time or not, but I am inclined to believe from a careful observation, that the portion to the north was not constructed until the south portion had been filled with the dead, though I feel assured that the south portion was not completed, and a mound heaped over it until the north portion had been also filled and the entire site was ready for the building of the great monument.

On the interior of the mound at irregular points large post molds were found, and in the north section of the mound one of these posts extended above the floor of the mound a few inches more than ten feet, indicating that perhaps other posts, as evidenced by the post mold, extended above the graves, and therefore might have supported a covering or roof for the charnel house.

I am inclined to believe that such a roof existed, although no definite proofs of such a roof, other than the uprights to support it, were found in the mound. The posts forming the outer row varied in size from six to ten inches, however, a very great number of the upright supports consisted of a combination of smaller posts placed together, and this was evidenced by the post molds showing a number of smaller posts placed together. In a number of instances these posts had been split, and in several cases posts seven inches in diameter were split and used for support. After the posts were placed in position the base of the mound was carefully prepared by the formation of a clay floor which gave great evidence of having been puddled before being placed in position. This clay floor extended from a few to fifteen inches beyond the posts on the outside of the enclosure. After the floor had been carefully prepared there was placed over it a layer of fine sand, varying in thickness from one-half to three quarters of an inch, and so compact was this sand at the time of our examination that where it was the thickest it could be taken out in

large slabs. The clay floor was also dug up by us and examined from one end of the mound to the other. This floor varied in thickness. In some places it was only three or four inches in thickness, in other places from ten to twelve. This, like the sand layer, could be taken out at the time of examination in great blocks, as the original surface of the site was covered with ashes and charcoal which readily separated the clay floor from the original surface, and showed that the site had been carefully cleaned of all debris by burning. Nowhere were there evidences of any prolonged fire on the original surface, rather only the burning of small limbs as was evidenced by the charcoal remains. After the charnel house was filled with the dead, the final preparation for the erection of the mound was completed by burning off the superstructure and exposing to view the graves as they had from time to time been made.

We know that the graves were covered before the superstructure was destroyed as the covering of many of them, which were placed near the outer row of posts, extended around these posts, and when the superstructure was burned the charred remains of the top of the posts were three and four inches and sometimes more, above the other posts which were not so covered. The charred tops of the posts were always present, these were never destroyed, but the portions of the posts that extended into the base below had entirely rotted away, leaving the exact mold of the post. Very frequently these molds would contain broken animal bones, mussel shells and occasionally a piece of mica, but we have never been able to find, in the great number of molds examined, any implements or ornaments.

BURIALS.

All the burials, whether cremated or uncremated, were placed in a prepared grave and great care and some degree of skill was displayed in their construction. The graves of the cremated were similar to each other so far as the outside construction was concerned, but unlike in the general make up of the inside of the grave. Out of one hundred and twenty-eight graves unearthened,

four different types¹⁰ were found, and these were many times duplicated during the explorations.

First. The plain elevated platform made of clay and usually elevated from three to six inches above the prepared platform. In a number of graves this clay had the appearance of being puddled and then used in constructing the platform, while in other cases the clay did not have that appearance, but seemed to have been used in making the platform in the dry state. This plain elevated platform grave was invariably higher at the center, gradually sloping to the sides and ends where small logs, averaging in diameter from three to six inches had been placed, usually in the form of a parallelogram, but often very nearly in a square. These plain platforms averaged in length about four feet and in width two and one-half to three feet. The logs were usually made the exact size of the graves. In a few instances they extended over at one end or the other, and not a single grave was found on the base of this entire mound that did not show the use of logs as an outline for the grave. In many instances the logs were put in place upon the platform and plastered over with this clay, and then the inside of the grave was made. Fig. 9 is a good illustration of the prepared grave of the plain platform type.

Second. The next type of grave was similar to the first and apparently made in the same way, with this difference: the top of the platform was cut out and made in the form of a basin, varying in depth at the center from two to four inches. A good illustration of this platform is shown in Fig. 10.

Third. Elliptical shaped grave. In this form of grave the platform was similar to the other graves, but the timber used in the construction of the outside portion was made of small pieces of logs and the clay plastered over them, forming a regular elliptical grave. This type is shown in Fig. 11. This form of grave

¹⁰ The four types of graves mentioned above were similar in every respect to the altars described by Squier and Davis, and I quote from "Ancient Monuments of the Mississippi Valley," page 143 as follows. "The altars or basins found in these mounds are almost invariable of burned clay though a few of stone have been discovered.

They are symmetrical but not of uniform size and shape, some are round, others elliptical and others square or parallelogram."

would vary in depth from four to eight inches, and required much skill and labor in its construction.

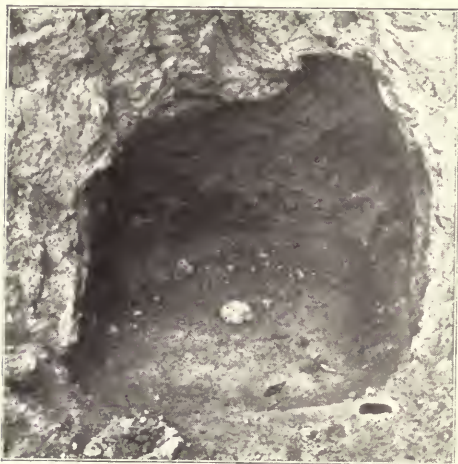


FIG. 9—Typical platform grave.

illustrated in Fig. 12, which shows one of the graves and its contents.

For the uncremated similarly prepared platform graves inclosed by logs were made, and the body was placed at full length within the inclosure. Fig. 13 is a good illustration of this form of burial, and represents the one hundredth burial unearthed. All the remains placed in the graves described above were cremated and uncremated. The

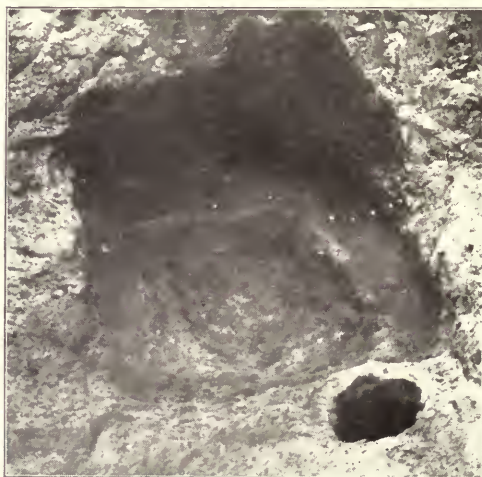


FIG. 10—A typical basin shaped grave.

cremated remains for the most part were brought to the grave, the cremation of the body taking place away from the grave, and

Fourth. The grave made in the form of a parallelogram. This form of grave was found in various portions of the mound and was constructed similar in every respect to the other types, the logs being put in place and plastered over, while the inside was removed to a depth varying from four to twelve inches. This grave is best illus-

as previously stated, I have great reason to believe that the cremation took place at the eight great fire-places found within the charnel house. In only one was there left anything to show for what purpose these great fire-places were intended. In the one in question a portion of a human skull was found, indicating that the cremation took place after which the remains were gathered up and removed to the grave. In all of the other great fire-places found, not even a small amount of ashes could be secured, as all had been gathered and carried away, though a number of the bodies were undoubtedly cremated at the grave.

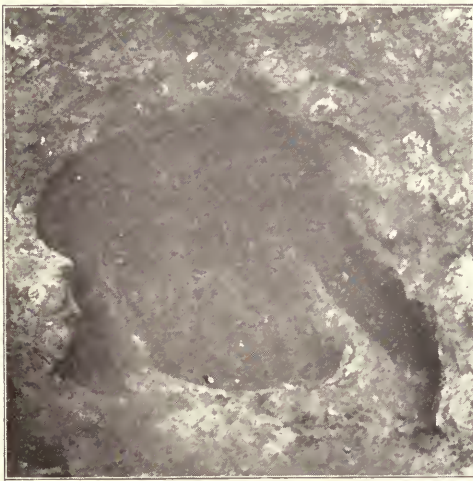


FIG. 11.—A typical oval grave.

By careful examination I found that out of the nine burials which occurred in this way, all had a grave of the first type with the exception of one, where a grave had been prepared of the type of No. 3. It did not show that fire had been used any great length of time, consequently it was not a crematory prior to the time the body was placed there to be cremated. In all of the graves where cremation took place at the grave a portion of the fleshy part of the body would not be wholly destroyed, consequently the innominate and parts of the femur would be in place while the other portions would be destroyed. One of the singular features of the cremations which took place at the grave was that the implements and ornaments would be almost totally destroyed, while in the cremations which took place away from the graves the implements and ornaments were placed in the grave in a perfect state with the ashes and the incinerated bones of the body. After these remains were deposited in the grave they were frequently covered over with mat-

ting or some woven fabric, and then a covering of grass and twigs, and as a last ceremony this covering was set on fire, and while it was thus burning clay was carried and covered over the fire, thus preserving the cloth, the grass and twigs in a charred state. The covering of these graves, as heretofore stated, was of



FIG. 12 — A typical rectangular grave.

clay similar in every respect to the clay used in making the platform and in forming the grave. This covering of clay would vary in thickness from a few inches to fourteen inches, the average being very close to ten inches, and was the temporary covering for all the graves as they were placed in the charnel house.

The uncremated graves were prepared in the same way as

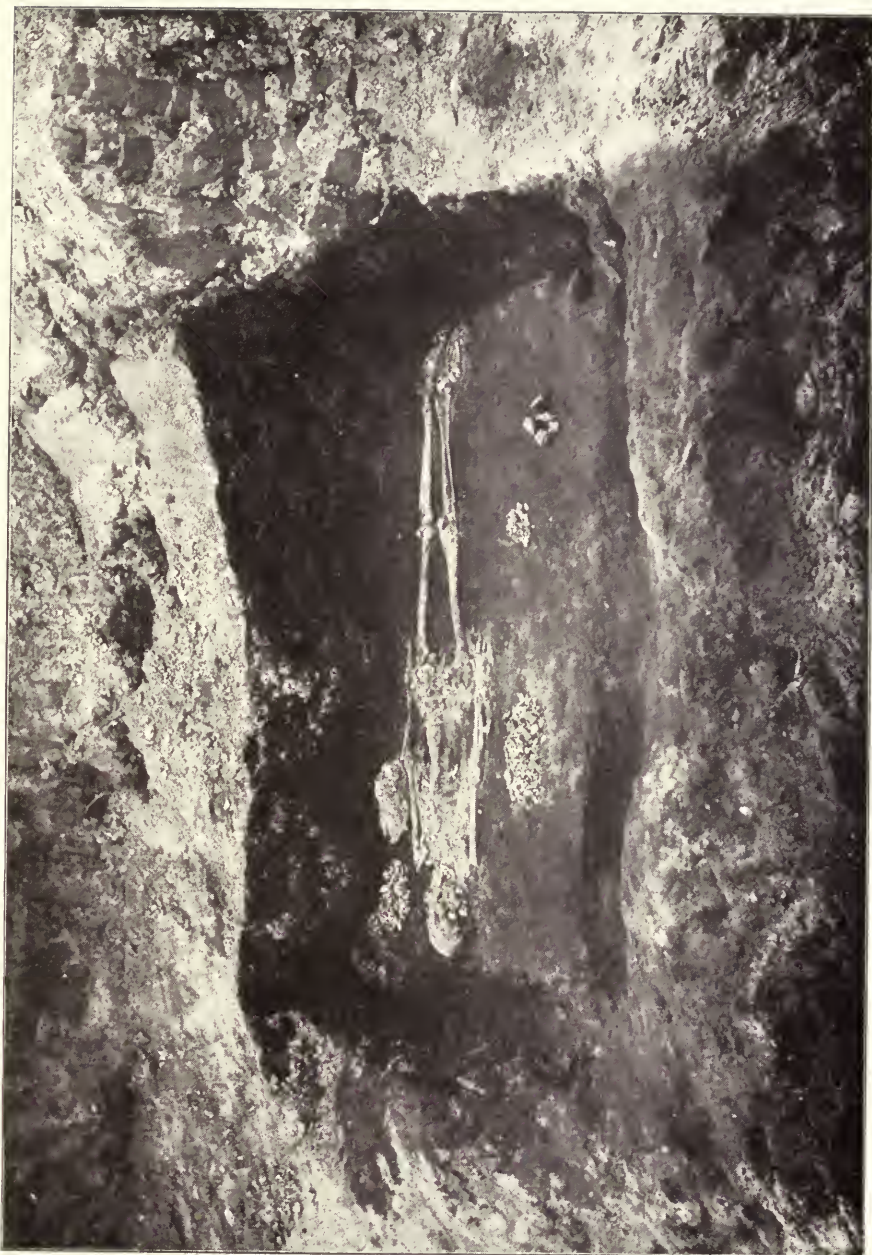


Fig. 13 — An uncremated burial.

shown in the illustration, Fig. 13. This individual was placed in the grave at full length, with him were ornaments of copper, such as the ear ornaments, which can be seen at the side of the head, and a great copper plate which is under the loins. The ornaments are similar to those found in the cremated graves. On the right hand side of the body, as it lay in the grave, was placed the incinerated remains of an adult, on the left hand was a human skull, and near the head on the left side of the body, was placed another cremated skeleton; near the knees on the right side of the body, was placed the skeleton of a little child, and near this skeleton were two human jaws, perforated, and which no doubt had been used for ornament..

ARTIFACTS FOUND WITH THE BURIALS.

The articles taken from the burials of this mound were most interesting as to quantity and quality and represent the highest art of prehistoric man in Ohio. From the 133 burials, upwards of 12,000 specimens, including implements and ornaments of copper, shell, bone and stone were removed. Some of the copper pieces contained small nuggets of silver, showing that the copper came from the Lake Superior region. Large ocean shells that were made into drinking cups and ornaments of various kinds were unearthed, which came evidently from the region of the southern gulf. There were also found great quantities of mica, some pieces representing the original blocks as they were quarried, other pieces had been cut into geometrical forms and used for decoration. This mica no doubt came from North Carolina. Again we found crystals of galenite as well as large lumps of the lead ore, which came from the north Illinois region. Obsidian was also found, and this no doubt came from the far west, perhaps the Yellowstone region. The finding of so much material of this sort, whose source of supply was so far from the site of the mound, indicates that the prehistoric inhabitants of this section had an inter-tribal trade, for it certainly would have been impossible for the Ohio tribes to visit those distant points mentioned.

The artifacts were made into various forms of implements and ornaments. The most interesting of these are the large cop-



FIG. 14.—View showing two rectangular graves and one platform.

per plates of which ten were found, the largest one being ten inches in length by five and one-half inches broad. It was made of very thin copper one-eighth of an inch in thickness, in the form of a parallelogram, with the ends cut concave. It was pierced with two holes near one edge. Of the ten copper plates removed, all showed contact with some woven fabric.

The next largest copper plate is shown in Fig. 15, and this may be taken as a type of the plates from this mound. As shown in the figure, the entire surface is covered with the remains of a woven fabric. This plate is nine inches in length by four and three-quarters in width, and would average about one-eighth of an inch in thickness. Some of these plates show contact with fire, which in this instance, doubtless burned a little longer than usual during the last ceremony at the grave.

A good illustration of the copper thus burned, the incinerated bones of the dead clinging to it can be seen in Fig. 16. This copper plate is perfect with the exception of one corner, which entirely crumbled when the plate was removed from the grave, and with the further exception of a small piece broken out of the side. This specimen is about one-eighth of an inch in thickness. When the copper plates were placed in the cremated grave they were usually placed upon the bottom, and the calcined bones and ashes of the dead were placed immediately over the plates. In two instances plates, found with the uncremated had been placed directly under the loins, while in another the plate was placed upon the breast. A great number of these plates were taken from this mound. As near as I can learn, one was taken out by Squier and Davis, three by Professor Putnam, and two by Professor Moorehead, and four others owned by as many individuals living in various parts of the country, making a total of twenty taken from this entire mound.

Another interesting specimen of copper is shown in Fig. 17, which represents a thin piece of this metal about one-eighth of an inch in thickness, ten and one-half inches in length by three and one-quarter inches in width at the larger end and two inches at the smaller end. Three specimens of this character were found, and all fairly well preserved. The other specimens were perhaps more curved than the one shown in the illustration and somewhat

FIG. 15.—Typical copper plate from one of the graves. (Length nine inches.)





FIG. 16. Copper plate showing contact with fire. (Two-thirds size.)

FIG. 17. Crescent shaped copper ornament. (Length ten and one-half inches.)



larger. The larger end of these specimens was invariably square or nearly so, and perforated with three holes, one at each corner and one in the center. The other end is invariably oval, more so in the other specimens than in the one shown. This end is perforated with two holes near the center of the specimen, and is concave upon the inside, and looks in every respect as though it might have been used for a head-dress, although this is only conjecture, as all the specimens found came from the cremated burials, and no specimens, as far I know, have been found with the uncremated.

EAR ORNAMENTS.

Ornaments designated as "spool shaped" ear ornaments were more abundant than any of the copper pieces found in the mound, as more than fifty perfect pieces were taken from this mound during the last explorations. These objects were found with all of the uncremated burials, with the exception of one, and were placed invariably on each side of the head close to the temporal bone.

which would indicate that they were used for ear ornaments.¹¹ The ear ornaments taken from this mound exhibit a degree of skill in their manufacture and show the high degree of advancement made in ornamental art, as many of these ornaments were overlaid with a thin covering of iron, presumably meteoric, and a few had a thin covering of silver and copper hammered together.

Fig. 18 shows a specimen covered with iron, and Fig. 19 shows a specimen covered with a thin layer of copper and silver mixed. This silver and copper layer was hammered very thin and resembles very much the thickness of ordinary writing paper. Four different types of these ornaments are found, and all were many times duplicated during the explorations.



FIG. 18—Copper ear ornament. (Two-thirds size.)

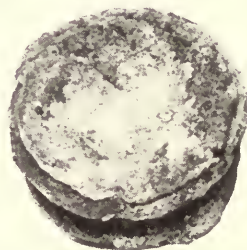


FIG. 19—Copper ear ornament. (Two-thirds size.)

The form of manufacture of the various types was similar and consisted of two concavo-convex plates connected by a central cylindrical column. These plates varied in diameter from one and one-half inches to two and one-quarter inches. As a rule, one of the plates forming the ornament was larger than the other, in a number of cases the plates were alike on each side.

¹¹ Professor Putnam in his account of the Marriott Mound No. 1, describes specimens of the "spool-shaped" ornaments and proves beyond a doubt that they were used as ear ornaments. In this connection he speaks of these same ornaments taken from the Liberty Group, now known as the Harness Group.

The concavo-convex plates were evidently made over a wooden pattern and the copper hammered into form.¹²

Fig. 20 shows one of the types frequently met with. It is made of four plates of copper, two of which are circular plates, pierced at the center with a hole, and these two plates are connected together with a small cylinder of copper about three-quarters of an inch in length passing through the holes and clinched on the inside. The space between the two circular disks varies from a quarter to half an inch. The next process in the manufacture of the ornaments is the putting in place of the concavo-convex disks. Before this is done the concavo-convex disk at the center of the concave portion is extended by hammering so as to fit into the cylindrical column and is then perforated.

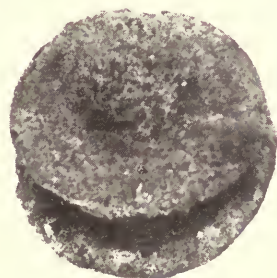


FIG. 20—Copper ear ornament. (Two-thirds size.)

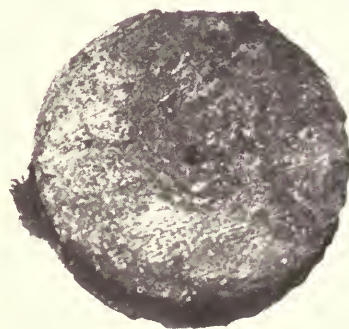


FIG. 21—Copper ear ornament. (Two-thirds size.)

The convex portion of the concavo-convex disk is filled with a yellow clay and the concavo-convex plate is then fitted to one of the circular pieces which has been attached to the cylinder connecting the two sides of the ornament and the edges of the outer concavo-convex plate are turned over the inner circular plate, and is firmly held in place. The other side is made in the same way, and frequently when the ornament is finished the two outside plates are connected to the cylindrical column so that a cord could be readily passed through the hollow column from one side to the other.

¹² Professor C. C. Willoughby of Harvard University describes the process of making the copper ear ornaments in *American Anthropologist*, Volume 5, 1903.

Fig. 21 shows the next type of ear ornament. These are made from two circular pieces of copper hammered into the concavo-convex forms and connected together by a cylindrical column.

This again shows great skill employed in connecting these two pieces, as in the first type the concave portion is greatly extended so as to fit in the column and apparently held in place by being pressed firmly to the side of the cylinder, and the cylinder wrapped with a cord to hold the various parts together.



FIG. 22—Copper ear ornament. (Two-thirds size.)

Type No. 3 is shown in Fig. 22, and like the last type described, consisted of two concavo-convex plates connected together by a cylinder extending through the hole cut in the concave portion and then clinched upon the outside, and as in type No. 2, only three pieces of copper are used in their construction.

Type No. 4. This type is very much like the other three only it is made of four pieces of copper. One side of the concavo-convex part is double, while the outer piece extends down through the central cylinder and is there fastened while the cylinder extends through the opposite side of the concavo-convex cylinder and is clinched on the outside. Many of these ear ornaments when placed in the burials of the cremated dead show contact with woven fabrics, while others show contact with ornaments made of feathers, while still others show contact with human hair. Many of the ear ornaments have a string wound around the central column. I am inclined to believe from my examination of a number of these ornaments that the string wrapped around the central column served to hold together the various parts of the ear ornament.

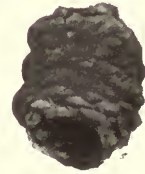


FIG. 22a—String used to fasten the plates of the ear ornament. (Full size.)

Fig. 22a shows one of the columns wrapped with a string and tied, the knot showing in the photograph.

COPPER COVERED ORNAMENTS.

It is quite apparent from the extensive use of copper in connection with aboriginal ornamentation that it was greatly

prized by the ancient artificer, and that he soon learned to know its malleable nature, and could readily adapt it to his use and wants. He made molds in the shape of hemispheres out of the wood, perhaps, and hammered the copper to fit these molds, and afterwards by attaching two of these hemispheres together almost a perfect ball was formed. One of these is shown in Fig. 23. The specimen is almost a perfect ball three-quarters of an inch in diameter and filled with yellow clay. The specimens have been found attached to charred woven fabrics,

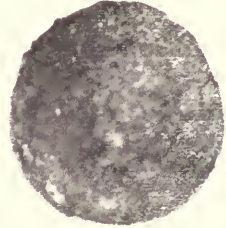


FIG. 23—Round ball of copper. (Two-thirds size.)

indicating that they were used for ornamental purposes. Copper was also used as a setting for pearls.¹³ Large and select pearls were flattened upon one side by grinding, and then placed upon a circular disk of copper a little larger than the pearl. The edges were then turned around the pearl holding it in place. This is shown in Fig. 24. Not only were pearls set in this way, but various pieces of shell cut in a circular form were thus set in copper.



FIG. 24—Pearl set in copper. (Full size.)

Fig. 25 shows one of the copper pieces with the edges turned. The setting was lost out.

Another of the interesting objects used for ornament were small hemispheres made of wood and covered over with iron, presumably meteoric,¹⁴ and then set in copper. These are perhaps the most interesting of the many artifacts found in the mound.

The manner of attachment of the hemispheres is shown in Fig. 26, which shows that two small holes were drilled into the copper setting,



FIG. 25—A copper setting pearl having been removed. (Full size.)

¹³ Large quantities of fresh water pearls made into beads were found in every section of the mound. In one instance more than 2,000 of these beads were found with one burial, and these will be noted later.

¹⁴ Implements of meteoric iron were found in this mound by Prof. F. W. Putnam. Peabody Museum Report, Vol. 3.

and the set having been prepared before hand by cutting a crease into the wood so that a cord could be passed from one hole to the other in order that the ornament could be attached.

Associated with the small hemispheres covered with iron were a few tubular beads from one-half to three-quarters of an inch in length.

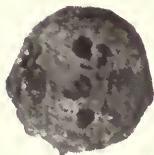


FIG. 26 -- Shows the manner in which the copper settings were attached. (Two-thirds size.)

With one of the burials was found a small ornament made of thin copper representing a leaf shaped arrow point, being one and five-eighths inches in length, one and one-eighth inches in width at the widest part. It is very finely wrought, the edges being perfectly smooth and the convex top nicely rounded. No holes are found for its attachment or suspension, but as the surface is greatly corroded perhaps the holes have been entirely filled. This specimen is the only one of the kind found in the mound, and is shown in Fig. 27.

IMPLEMENTS OF COPPER.

The implements made of copper were not numerous in this mound. Most of the copper employed in this section seems to have been used for making ornaments, yet four copper axes and one copper needle were found with the burials. One fine axe, larger than any one of the four taken out during our explorations was presented to us by Mr. Vause Harness, who secured the specimen from the mound some twenty-five years ago. This specimen is shown in Fig. 28.

The axes for the most part are small, and all are practically one type and made from masses of native copper by hammering into form. The surfaces of the axes are very much corroded, but they plainly show the irregularities in the surface so characteristic of the specimens found in the Scioto Valley. Several of the axes show the remains of a woven fabric plainly imprinted upon their face, and the meshes of some of this cloth are so



FIG. 27 - Copper pendant. (One-half size.)

firmly attached to the copper that it cannot be removed without destroying it entirely, while in another instance the cloth covering one side of the axe was readily separated and the cloth was well preserved by the salts of copper.

The pole or blunt end of the axes was invariably square, and one side perfectly flat, the width gradually enlarging from the blunt end to the cutting edge, which shape was produced by pounding from the flat side. The cutting edge, which was very much expanded at the bit, is fairly sharp, and has the convex curve of modern axes. The other side of the axe is an oval gradually tapering from the center or thick portion to the edges. This rounded portion of the axe is very smooth, showing that much care and labor had been expended in fashioning the implements, and since we have learned that the concavo-convex portions of the ear ornaments, previously described, were no doubt formed in a mold expressly prepared for that purpose, I am inclined to believe that plano-convex axes were made in the same way, and that a mold was made out of stone the size required for the individual lump of copper and then the annealing and hammering into form would go rapidly forward. Again, I am inclined to believe that when the partly hammered copper was placed in the fire to be annealed it was returned to the mold while hot and rapidly hammered into shape.

Fig. 28 shows the large copper axe presented by Mr. Vause Harness. This axe was taken from the mound by Mr. Harness when he was a boy attending the school, some twenty-five years ago. When Mr. Harness secured this axe a number of other specimens were taken from one of the graves. Mr. Harness also presented us two parts of an ear ornament, a perforated bear canine and several pieces of mica. The axe is five and one-half inches in length, two and a quarter inches in width at the blunt end and three and three-eighths at the cutting edge, and seven-tenths of an inch in thickness, and weighs one and one-half ounces short of two pounds, and is decidedly of the plano-convex type. Mr. Harness tells me that this axe was taken from near the center of the mound, and as near as he can recall, was not on the base line.



FIG. 28 — Copper axe. (Length five and one-half inches.)

Fig. 29 is another axe of this same general type, both sides of which are greatly corroded and covered with a finely woven fabric. Beneath the fabric there seems to be a skin of some animal with short hair. This can be seen in the figure in the right hand corner of the cutting edge. On the opposite, or flat side, a covering of bark lies directly over the cloth. The axe is five



FIG. 29--Copper axe covered with cloth. (Length five inches.)

inches in length, one and one-half inches in width at the blunt end. One side gradually tapers to the bit, but the other side is cut off at an angle of forty-five degrees, and one inch below the blunt end the axe is two inches wide and then gradually tapers to the cutting edge, where it is three and one-half inches in width. It weighs one pound and ten ounces. The axe was found near the left knee of one of the uncremated burials.

Fig. 30, although small, is one of the most beautiful axes taken from the

mound. Like the others, it is corroded, and one side is covered with the imprint of cloth, while the cloth itself was removed and preserved. The axe is three and one-tenth inches in length, one and one-tenth inches in width at the blunt end and one and six-tenths inches at the cutting edge. Like the other two, this axe is of the plano-convex type. This specimen was found with a cremated burial.

With this burial were also two copper ear ornaments, two large copper plates and one human skull, which was no doubt a trophy. The position of this axe in reference to the burial and skull can be seen in Fig. 31.

Fig. 32 is another one of the small axes. By a glance at this cut one can readily see the inequalities of the surface, and in several places the copper is distinctly laminated, and at one corner of the blunt edge a piece of copper is separated from the main mass. The specimen is two and eight-tenths inches in length, one and two-tenths inches in width at the blunt end, and one and six-tenths inches wide at the cutting edge.

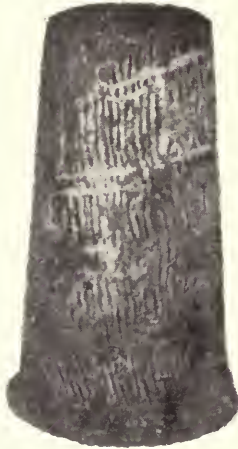


FIG. 30—Copper axe covered with a reticulated textile. (Length three and one-tenth inches.)

Fig. 33 is one of the most interesting of the axes found in this mound. It was taken from the fourth grave found in the mound at the extreme south end. It had been wrapped in bark, though but little of the bark can be seen adhering to the implement. It is slightly oxidized. It is two and seven-tenths inches wide at the blunt end and one and eight-tenths inches wide at the cutting edge. It is also of the plano-convex type, but also shows some hammering on the cutting edge from both sides, which is not noticeable in the other specimens.

The other copper implement found in this mound is the needle, and only one was discovered. The needle is three inches in length and slightly over one-twentieth of an inch in diameter, and is perfectly symmetrical throughout from the point to the end which is slightly curved and flattened. The eye is broken out.

The needle is a little short of the bone needles which were found in this mound, but resemble the bone needles in every respect.

POTTERY.

The use of pottery for the preparation of food was universal among the prehistoric peoples of Ohio, and the builders of Har-

ness Mound were no exception, for in every portion of the mound fragments of broken pottery, representing a high type of fictile art were found. These fragments had been gathered up with the soil as work progressed upon the mound and were carried to the mound and deposited as so much material necessary for its construction.



FIG. 31 — Burial showing copper axe, copper plate and a human skull placed with the cremated bones.

The unearthed potsherds were large enough to show that the shapes were those of simple pots with wide mouths, and the necks but slightly constricted, while the rims were sometimes developed in a wide collar and uniformly made as shown in Fig. 34, while in others the rims were small, plain and undecorated, still in others the rims were slightly enlarged and decorated with incised

lines and indentations. The symmetry and grace displayed by the discarded sherds show that the early ceramic workers displayed much skill and patience as well as experience in their art.

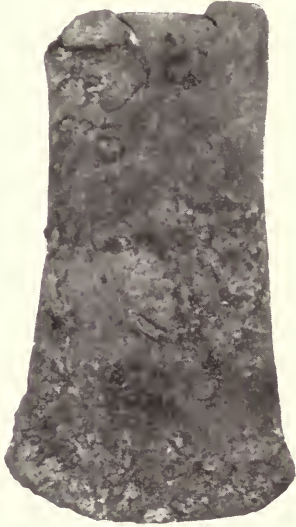


FIG. 32 - Copper axe. (Length two and four-fifths inches.)



FIG. 33 - Copper axe. (Length two and seven-tenths inches.)

No potsherds or perfect pots were found in any of the burials, but a perfect piece had been placed upon the clay covering of one of the uncremated dead about eighteen inches above the body.

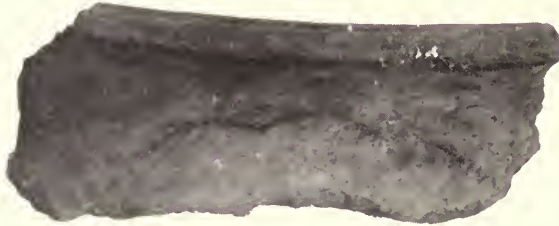


FIG. 34 - Rim of pottery.

and was accidentally broken by being struck with a digging tool by one of the workmen, and the vase shattered, but we hope to be able to restore it. The clay used in the manufacture of this

pottery was evidently secured from the clay pits near at hand, and resembled the clay used in the preparation of the graves.

The tempering of this clay was mainly with angular sand derived from the pulverized rock.

A number of the unearthed sherds also show that small pieces of mica, sometimes a quarter of an inch in length, would be used in conjunction with sand.

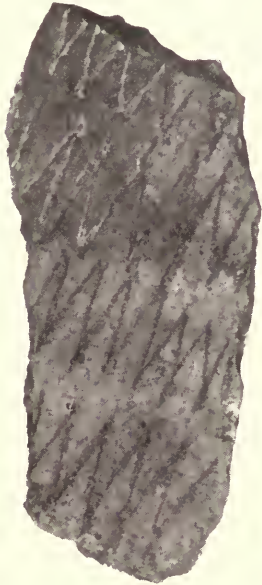


FIG. 35 - Decorated pottery.

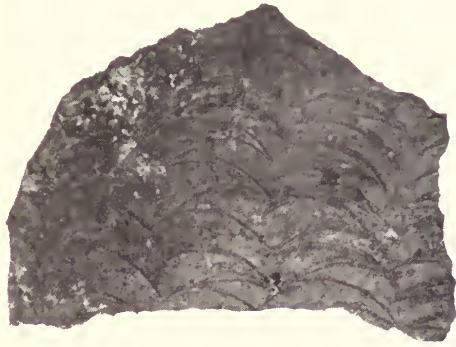


FIG. 36 - Decorated pottery.

in other instances pieces of limestone and mussel shells that had been broken into very fine particles were used. The decoration of this pottery presents some very striking features. In some instances modeling tools covered with a cord were used in decorating the lower portions of the vessels and the upper portions were decorated with a stamp and stylet used in making the straight lines. In other instances a stamp was used over the body of the entire vessel, as shown in Fig. 35.

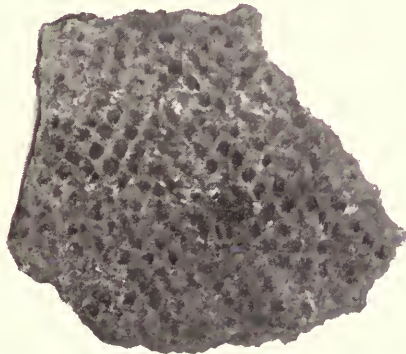


FIG. 37 - Decorated pottery.

A specimen with markings over the body of the vase similar

to this was taken from the Hopewell Mounds.¹⁵ Another specimen similar to Fig. 35, is shown in Fig. 36, only the lines are curved.

Figure 37 shows a potsherd decorated with a diamond shaped stamp, and the decoration evidently extended over the body of the vessel.

BONE OBJECTS.

The articles of bone which played an important part in the daily life of the builders of this mound may be grouped under two heads, utilitarian and ornamental. The first comprises bone implements, such as needles, awls, etc.

The second group represents the beads, carved bone pendants and ornaments made of human as well as animal jaws.

BONE IMPLEMENTS.

Bone implements were not abundant with the burials of this mound, although a few of the graves produced a number of very fine specimens of needles and awls in perfect condition, but the greater number had been calcined by the action of fire after the cremated bones and ashes, together with their implements and ornaments, had been placed in the grave, so that restoration of many of the bone implements would be impossible. Fig. 38 shows a representative collection of the largest bone implements found in the mound, the length of these respectively, varies from eight to ten inches. The implements were made from the metapodiale bones of the deer by splitting the bone lengthwise and sharpening the anterior end. Two kinds of this implement were found in the mound, those having sharp points and the body of the implement likewise cut in proportion. No. 1 of Fig. 38 is a good example of the first class which were perhaps used as bodkins.

The second kind of implement were those having blunt points, the body of the implement being heavy throughout its entire length. A good example of this implement can be seen in Fig. 38, No. 2. These implements were very likely used for domestic purposes, taking the place of our modern fork.

¹⁵ Twentieth Annual Report of the Bureau of Ethnology, Plate CLXXII, by W. H. Holmes.



FIG. 38— Bone awls made from the metapodiale bones of the deer. (Length ten inches.)

Another variety of the bone implements found sparingly in the graves were the bone awls made from the tarso-metatarsus of the wild turkey. They vary in length from two to four inches, and the points are made very sharp. The anterior part of the bone is cut away almost to the center,



FIG. 39— Bone awls made from the tarsometatarsus of the wild turkey. (Length four inches.)

FIG. 40. Bone needles. (Length four inches.)

and this cut is carried through to the posterior end of the bone, which is sharpened into a well tapered point. Fig. 39 shows a good example of these awls, which were invariable in form as found throughout the entire mound.

BONE NEEDLES.

This useful implement was likewise found sparingly in the burials, and when found usually appeared in lots from three to seven placed together. Fig. 40 is a good illustration of this finely wrought needle. The needles were usually from three to four inches in length, gradually tapering from the head to the well sharpened point. The head is usually flat, as shown in the illustration and pierced with a small hole near the end. The hole is bored from both sides of the needle, and many gave evidence of having been much used. The bone usually employed in making the needle was the metapodiale bone of the deer and elk. The making of the needles from this bone required much labor and even skill to produce the gradual taper and symmetry of the implement.

ORNAMENTS OF BONE.

Ornaments of bone were frequently found in the burials in perfect condition, though many had been destroyed by fire, so that their identity could not be determined. Those that could be identified consisted of gorgets, carved bone, bear teeth, shark's teeth and ornaments made from animal and human jaws. The most interesting of these ornaments were the human jaws. The lower jaw was usually selected, but occasionally the upper was detached, perforated and used for ornament.

In one of the graves (No. 46) the cremated remains were placed in the grave together with implements and ornaments. The implements consisted of two arrow points and the ornaments consisted of two copper ear pendants and a human inferior maxillary bone. This jaw when taken from the grave was considered perfect, but upon examination, it was found to be an adult jaw with three incisor teeth gone. The loss had been replaced by three incisor teeth of the deer. The deer teeth have very long roots, but these were cut and properly fitted into the socket of the human jaw to replace the lost human teeth and make the ornament appear perfect, as only jaws with a perfect set of teeth were used.

Fig. 41 shows a front view of the jaw. Different parts of the jaw show polishing and cutting. The symphysis is cut and

some work in polishing done. The sigmoid notch also shows by notches cut into the bone near the neck that the ornament was attached at this point. The coronoid process is also slightly polished, and parts of the body of the jaw show polishing and cutting. The rami of the jaw is colored green from the copper ear ornaments which were placed in the grave in contact with the jaw. Fig. 42 shows two jaws taken from an uncremated grave (No. 100). The burial is shown in Fig. 13. The jaws are those



FIG. 41 — Human jaw in which deer teeth replace the human incisor teeth. (Two-thirds size.)

of adults, and the rami of both jaws are entirely broken away leaving only the body of the jaw with the teeth inserted. Two holes on each side of the symphysis perforate the jaw, and were no doubt used for attachment.

Another interesting ornament is shown in Fig. 43, which is made of the upper jaw or superior maxillary bones, and was made by cutting the bone from the face above the alveolar process and leaving the palate intact. The jaw is perfect with the exception of the last molar on each side, which has been cut away. The

attachment was made through the posterior palatine canal which

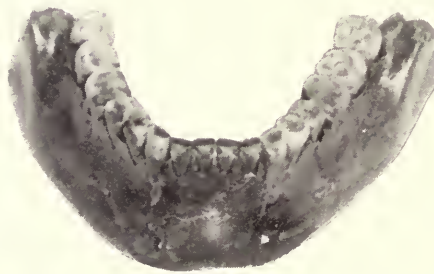
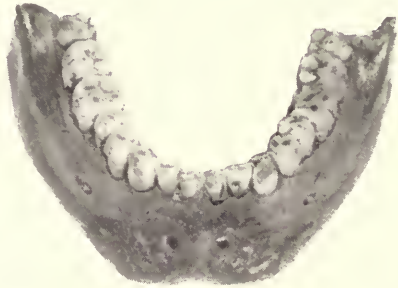


FIG. 42 — Perforated human jaw. (Two-thirds size.)

had been enlarged by boring. Not only were human jaws utilized for ornament but those of the mountain lion, wild cat and bear were frequently met with. Fig. 44 shows a lower jaw of the mountain lion which was taken from one of the burials. The rami of this jaw has been cut away, leaving the body of the jaw with all of the teeth inserted.

Fig. 45 shows a lower jaw of the wild cat. The under portion of this jaw has been cut away and polished. It was taken from a cremated burial. (No. 107). Fig. 46 shows the lower jaw of the bear, which had been cut and

polished, leaving only the canine and the premolars inserted in the jaw.

PENDANTS OF BONE AND TEETH.

One of the most interesting of the many ornaments from this mound is the effigy pendant made from bone which is shown in Fig. 47. No. 1. This pendant is similar to No. 2, which is made of stone, perhaps argillite. These specimens represent

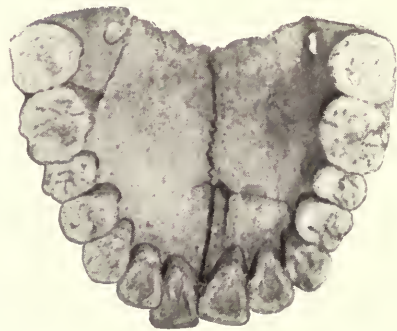


FIG. 43 — Upper jaw worn for an ornament. (Two-thirds size.)

the claw of an eagle. They are well-wrought and highly polished.

They are both perforated at the base, the hole being bored from both sides. The perforated teeth of the shark, as shown in Fig.



FIG. 44—Lower jaw of the Mountain Lion worn for ornament. (One half size.)

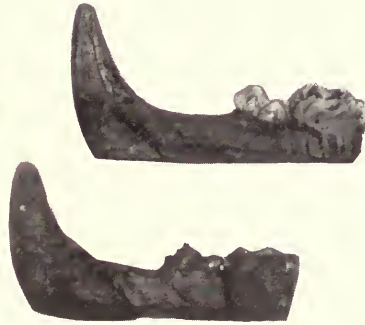


FIG. 46—Lower jaw of the Black Bear worn for ornament. (Two-thirds size.)

48. were frequently met with in the burials, although they are limited in number in each burial, seldom more than two, sometimes only one were found.

They were all perforated with one hole, which was drilled from both sides. All of the perforations are made in every way similar to those shown in the illustration.



FIG. 45—Lower jaw of the Wild Cat worn for ornament. (Two-thirds size.)

ORNAMENTS OF BEAR TEETH.

Canine teeth of the bear, Fig. 49, were a favorite ornament, and were found in many of the burials. They perhaps were not used as pendants, as most of them show three or four perforations, and many of the holes are counter sunk, and perhaps served to attach the tooth to a belt or wearing apparel. The perfect

canine teeth outside of the perforation showed but little work in



FIG. 47— Effigy claws, No. 1 made of bone,
No. 2 of argillite. (Two-thirds size.)

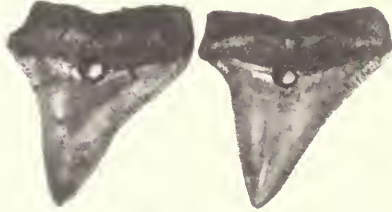


FIG. 48— Perforated teeth of the Shark.
(Three-quarter size.)



FIG. 49— Perforated teeth of the Bear. (Three-fourths size.)

the way of polishing and dressing, although in one grave, Fig. 12, twenty (20) cut and polished halves of the canine teeth were found. These teeth are shown in Fig. 50. The two specimens to the left in the figure show a highly polished outside surface of the tooth, and the three specimens to the right show the inside of the tooth, exposing the pulp cavity. The specimens are perforated with two holes, one on each side of the center. For the most part these holes were drilled from the outer surface of the tooth, although a number show the enlargement of the holes from the opposite side. These ornaments were placed with the cre-

mated burial as shown in Fig. 12, and associated with them were copper ear ornaments, knives and a platform pipe, Fig. 62, made of steatite.

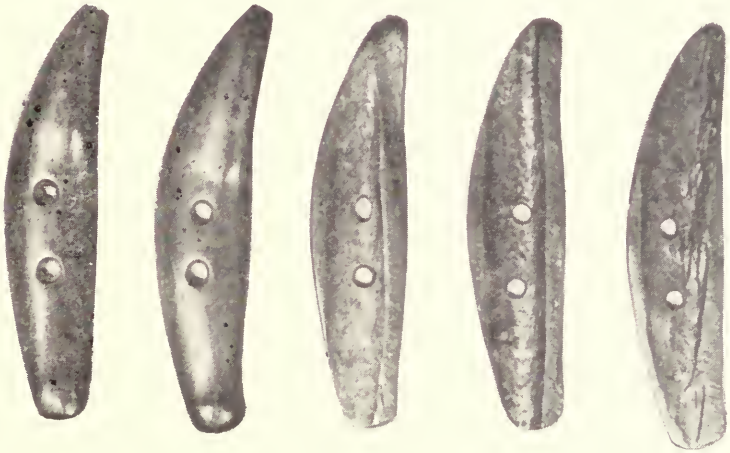


FIG. 50—Cut and perforated teeth of the Bear. (Three-fourths size.)

Necklaces made of perforated canine teeth of the raccoon and opossum were abundant, and several hundred of these teeth



FIG. 51—Teeth of the Opossum and Raccoon. (Three-fourths size.)

were secured, but many of them were in a charred state. A good illustration is shown in Fig. 51. Fig. 52 shows another



FIG. 52—Claws of the Gray Wolf. (Two-thirds size.)

interesting necklace made from the toe nails of the gray wolf (*Canis occidentalis*). These ornaments were evidently highly prized as they occur quite frequently in the graves.

As previously stated, many of the ornaments found in the cremated graves were also calcined and their identity entirely



FIG. 53 -- Restored ornament of bone. (Two-thirds size.)

lost, and in Fig. 53 one of these ornaments partly restored, is shown. It was made of the outside part of the horn of the elk, which had been carefully cut and perforated with holes as shown in the illustration.

Among the most interesting specimens found with a burial in this mound were the carved and polished bones shown in Fig. 54. The two bones are shown in the illustration as they appeared in the grave. The decoration upon them is in every way uniform, and was made by cutting away the bone by grinding and polishing, thus leaving the decorated portion in relief. At one end the beak of a bird is shown, the nostril and eye being quite plain, but the

decoration at the other end is not apparent. The opposite side of the bone is not decorated, but is highly polished. The bones used for this ornament are perhaps the leg bones of the bear,



FIG. 54 — Engraved bone. (Three-fourths size.)



FIG. 55 -- Ornament cut from mica. (Three-fourths size.)

as is suggested from their size and general shape, but they have been so cut and polished that the bones at present show but little resemblance to the original form. At each end the bone is perforated with three holes bored from the polished side of the bone. The marrow cavity is greatly enlarged throughout the entire length, and at the larger end the bone is cut very thin, consequently making that portion of the ornament very fragile.

OBJECTS OF MICA.

Blocks of mica and various figures and objects cut from the detached thin sheets were found in many graves as well as every part of the mound. The mica pieces not found in the graves had evidently been lost from the clothing of the workers while they were engaged in building the mound, as the pieces were very thin and in many instances would represent only a portion of a design. In one of the cremated graves, No. 89, more than one hundred sheets of mica

in various designs were found. The largest design is shown in Fig. 55. The specimen is ten inches in length and three inches wide, and is cut from one sheet of mica in the form of a spear point. The diamond shaped base is very unusual, and is perhaps a fancy form for decoration. The point of this spear was lost in removing the specimen from the grave.

Fig. 56 shows a number of forms found in this grave, and they are many times duplicated, especially the scrolls and the



FIG. 56 — Designs in mica. (Three-fourths size.)

long narrow strips of mica. Circular pieces of mica, as shown in Fig. 57, were not found in abundance in the mound, although quite a number were taken from this particular grave. All of the mica is pierced with small holes, apparently for attachment. The cutting into these various forms was no doubt done with a flint knife, as a careful examination of the specimens will show. I do not think that they used a pattern in making these objects as several pieces of mica were found which show the object partly cut out, while none of the scrolls found in this grave were like

each other. While the pieces exhibited the same design of decoration the size varied. The edges are jagged and rough, and many of them exhibit irregularities, and none of them are geometrically correct.

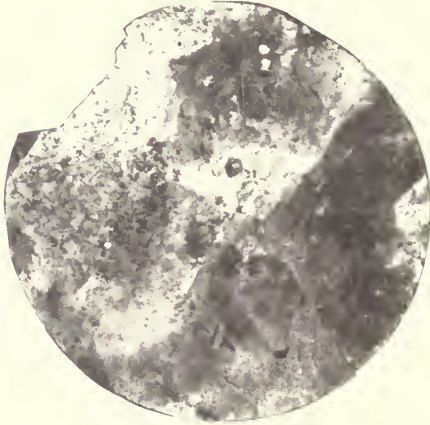


FIG. 57-- Circle of mica. (Two-thirds size.)

PIPES.

During the explorations of this mound four platform pipes were found in as many graves. As far as I am able to ascertain, pipes were not exhumed by any of the previous explorers of this mound except Squier and Davis who found a pipe in shaft A. A drawing of

this pipe is shown in Fig. 4. Consequently only five pipes were found in the burials of this large mound.

The first pipe found is shown in Fig. 58. It was taken from the cremated grave No. 20. Associated with the pipe were three



FIG. 58-- Large platform pipe from a burial. (Length five and one-fifth inches.)

copper ear ornaments and several hundred beads made of ocean shell. A fire of grass and twigs had been kindled over the grave, and as the pipe was deposited on top of the cremated remains it

suffered most and was broken into a dozen pieces, but all of the pieces were secured and the pipe is now fully restored, as shown in the photograph, Fig. 58. The pipe is made of limestone, platform in design, with a slightly curved base, bold and symmetrical in outline. The bowl rises from the center of the slightly curved side of the platform and slightly increases in diameter to the middle of the bowl, where it gradually decreases, forming a symmetrical concave depression around the entire bowl, which again increases in diameter at the top of the bowl, where it is the same diameter as the base of the bowl. That platform of the pipe is five and one-fifth inches in length, one and one-half inches in width, and three-fourths of an inch in thickness. The bowl measures one and one-tenth of an inch in height from the plat-



FIG. 59—Platform pipe of limestone. (Length four and one-tenth inches.)

form, and is one and one-half inches in diameter. The hollow of the bowl is six-tenths of an inch in diameter. A small hole is drilled from one end of the platform and connects with the hollow of the bowl. The most symmetrical and beautiful of the pipes found in this mound is shown in Fig. 59. This pipe is made of limestone with a curved base, which is slightly shown in the figure, as the pipe is so placed that the hollow in the bowl can be seen. The platform part of the pipe is four and one-tenth inches in length, one and one-tenth inches in width at the center, gradually tapering at each end to one and three-fourths of an inch in width. This platform is very thin, being four-tenths of an inch in thickness and highly polished throughout. The bowl, like Fig. 58, rises from the center of the platform and

is one and four-tenths inches in height by one and three-tenths in diameter. The crease is cut on each side of the bowl parallel to the platform at the point where the bowl joins the platform. Near the center of the bowl the diameter is greatest. Just above the center a crease encircles the bowl and the top is flaring, being wider than other parts of the bowl. The hollow in the bowl is three-fifths of an inch in diameter, which is the same

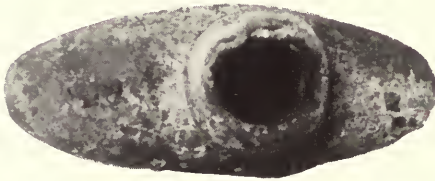


FIG. 60 — Small platform pipe. (Length three inches.)

from the top to the bottom of the bowl. A small hole is drilled from one end of the platform and connects with the hollow of the bowl.

Another interesting pipe is shown in Fig. 60. This cut does not do justice to this little pipe, as the bowl does not show to any advantage in the cut, yet it is six-tenths of an inch in height and nine-tenths of an inch in diameter. The platform of this pipe is only slightly curved, being three inches in length and one inch in width at the broadest part, which is the center, and gradually tapering to each end. The bowl rises from the platform furthest from the end where the small hole is bored, which connects with the hollow of the bowl. The pipe shows much use, and the hollow is seven-tenths of an inch in diameter, and the walls of the bowl are very thin, apparently from continued use.

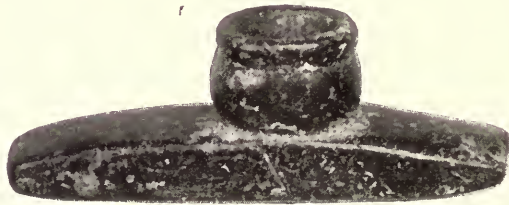


FIG. 61 — Small platform pipe made of steatite. (Length three and one-half inches.)

Fig. 61 shows a beautiful steatite pipe taken from burial shown in Fig. 12. It is also a platform pipe, the platform being almost straight, and is three and one-half inches in length, eight-tenths of an inch in diameter and one-half inch in thickness. The pipe is highly polished throughout. The bowl rises from a slightly convex top nearest to the end where the small hole is

drilled into the platform and communicates with the hollow of the bowl. The bowl is oblong, being one inch in its longest diameter and two-fifths of an inch in its shortest diameter. The hollow in the bowl is made on a similar scale, being six-tenths for its longest diameter and one-half inch shortest diameter. The bowl is contracted near the base, and near the top of the bowl a small crease extends entirely around the bowl.

STONE IMPLEMENTS.

The largest of the stone implements found in the mound outside of the large digging implements mentioned in connection with the flat stones found on the sides of the mound were the stone celts, and these were seldom met with, only two being found during the entire explorations. Those two were indiscriminately placed in the mound. None were placed with the burials.

A good illustration of this implement is shown in Fig. 62. It is made from a compact granite of a dark green color and is symmetrically made, finely finished and polished. The celt measures four and four-fifths inches in length, two and one-fifth inches in width at the cutting edge, gradually tapering to a blunt point at the pole.

FLINT AND OBSIDIAN IMPLEMENTS.

Flint implements found in the burials consisted mostly of knives, as shown in Fig. 63. The material for these knives was evidently secured from the flint ridge district, and is the best grade of chalcedony found here, such as the variegated and banded jasper grades, which qualities are capable of being flaked into fine and sharp knives found so abundant in the graves. The knives were not large, the largest measured only three and one-fourth inches in length, but they were seldom less than one and one-half inches in length; the average length would exceed two inches, and the average width would be about three-fifths of an inch. The knives had the same general curve as shown in the figure. These were made from banded and variegated jasper, and the specimens show several facets on the convex face, while the concave side of the specimen, on account of the compact structure of the flint, is plain and very smooth, with sharp cut-

ting edges on both sides. The knives show no chipping, and all were flaked from cores.

Twenty of these knives were found in one burial, and it was a very common occurrence to find ten or twelve. A few of the cores mentioned above were also found in the burials, invariably in close proximity with the knives. The best example of a core is shown in Fig. 64, which is made of a variegated and banded jasper, and shows several facets from which knives have been flaked.



FIG. 62—Celt. (Length four and four-fifths inches.)

and one-fifth inches, and the width at the largest end is one and one-half inches. It is well-wrought, and the chipping was done by one experienced in the art.

Arrow points were found sparingly in the graves. Fig. 65 shows the type of points found. All are stemmed and finely chipped. The points were also made of flint ridge material, but the fine jasper was not used in the making of arrow points, but a white variety shading into a light dark was used.

Obsidian arrows and spears are frequently met with upon the surface throughout the entire valley of the Scioto, but the greatest find of obsidian specimens in Ohio were those taken from the Hopewell Mounds by Professor Moorehead in 1892. The only specimen found in the Harness Mound is shown in Fig. 66. The specimen is broken, but it no doubt represents one of the large curved knives characteristic of the Hopewell culture.

STONE GORGETS.

Stone gorgets, as shown in Fig. 67, were not found in abundance, though evidently many had been destroyed by fire. All

shown in the figure have been more or less subjected to fire, and several have been broken, but we were fortunate in most cases to secure the pieces, and thus restore many of the gorgets. The largest piece perforated with one hole, as shown in the figure, was found in a grave associated with cut mica. This piece is four inches in length by one and three-fourths inches in width, and a little less than one-fourth of an inch in thickness. It is made of slate and highly polished.

The next gorget shown in the figure is of an oblong boat shape, made of slate and perforated with two holes, one on each side of the center. The perforation is made from one side. The general surface is plano-convex, and three and one-half inches



FIG. 63-- Flint knives. (Average length two inches.)

in length and one and one-fourth inches in width at its widest part.

The next gorget shown in the cut is beautifully made, also of the plano-convex type almost diamond shaped, perforated with one hole, which is at the center of the gorget, and pierced from the concave side. It is three and one-fourth inches in length and one inch in width at its widest part.

Throughout the mound and scattered promiscuously were found large and small pieces of galenite, and all show some work upon them in the way of polishing and grinding. The largest piece weighs seven pounds and six ounces, and is cut and polished into the form of a roughly shaped ball. A few of the isometric crystals were found in the graves, and were no doubt

prized for their shining, metallic lustre. Many of the large pieces of galenite are associated with limestone, indicating that the galenite came from the upper Mississippi region.



FIG. 64—Flint core.
(Two-thirds size.)

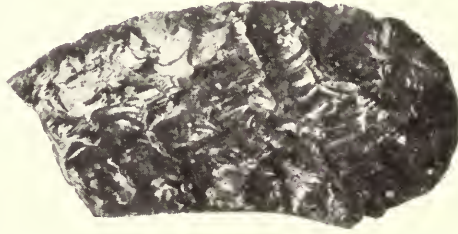


FIG. 66—Obsidian knife. (Two-thirds size.)

GRAPHITE.

In several of the burials quantities of graphite in the granular form were found. The graphite had been placed with the



FIG. 65—Flint arrow points. (Two-thirds size.)

burial in small bags made of woven fabric. The graphite probably comes from the North Carolina district.

OBJECTS MADE OF SHELL.

Objects of shell, for the most part, were made of ocean shells, though the shells of the fresh water mussels were used in making spoons with small handles, which were beautifully and symmetrically made. The pearls taken from the mussels were also used as ornaments. For some reason the ocean shells supplied their aboriginal wants and needs better than the shells found at their very door. The ocean shells were doubtless

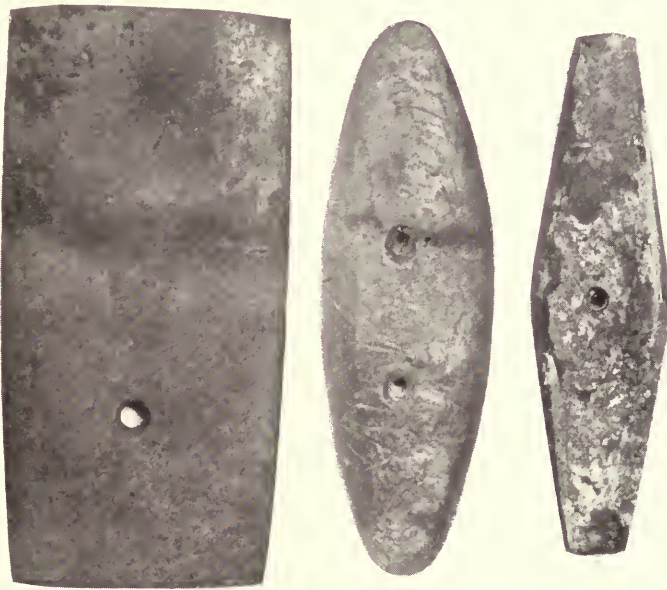


FIG. 67 — Gorgets made of argilite. (Two-thirds size.)

brought to their settlements in the rough state, and they were then made into such objects as were needed.

Large containers, or drinking cups, were made from these shells as shown in Figs. 68 and 69. The shell shown in Fig. 68 is known as the *Fulgur Perversum*, and was made by cutting away a portion of the body whorl and removing the columella. The beak was carefully rounded and made into a wide spout to aid in emptying the vessel or to serve as a place to drink from

the vessel. This shell container is quite large, measuring eight and one-half inches in length by six inches in width at the widest part. The apex, sutures and periphery are cut and polished so that the vessel appears perfectly smooth both inside and out.



FIG. 68 — Drinking cup made of Ocean shell. (Length eight and one-half inches.)

These drinking vessels were always placed in the cremated burials upsidedown, the orifices resting upon the bottom of the prepared grave, indicating that nothing in the way of food or drink had been placed in the container when it was deposited

with the incinerated remains which were placed around and over the vessel. Three of the perfect containers were secured, and one which was badly broken by the action of fire which was used in the last ceremony before the grave was covered with



FIG. 69.—Drinking cup made of Ocean shell. (Length ten inches.)

earth. The container as shown in Fig. 69 was made from *Fulgur Perversum*, and is prepared a little different from the one shown in Fig. 68. The beak was left almost intact. The aperture had been enlarged by cutting away the body whorl similar in every respect to the last one described. A portion of another shell was made into a drinking cup of a form known as the "horse conch" — *Fasciolaria gigentia*. This vessel was badly broken by fire, but the greater part of the apex remains.

PEARL BEADS.

Most abundant of all objects found in the mound were beads of shells and pearl. The pearl beads were pierced with holes and strung for attachment around the

neck or wrist. A string having some twenty-one hundred beads was found with burial No. 100. A section of a case in which these beads are now kept is shown in Fig. 70. They are all small, some of them being perfectly round. While the majority are small several hundred of them were found of a size which would

vary in diameter from one-fourth to one-half of an inch. Some of the large pearls are shown in Fig. 71.

In several instances the large pearls had been flattened upon one side and set in copper, as shown in Fig. 26. Again, the pearls were often flattened, as shown in Fig. 72, and pierced with

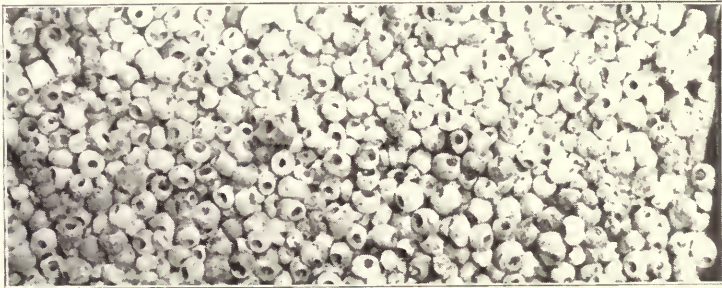


FIG. 70 — Pearl beads. (Two-thirds size.)

holes for attachment. The pearls shown in Fig. 71 are all full size, and all exceed one-half inch in diameter.

IMITATION OF PEARL BEADS.

Associated with the pearl beads were beads of clay, modeled in exact imitation of the pearls with which they were found.

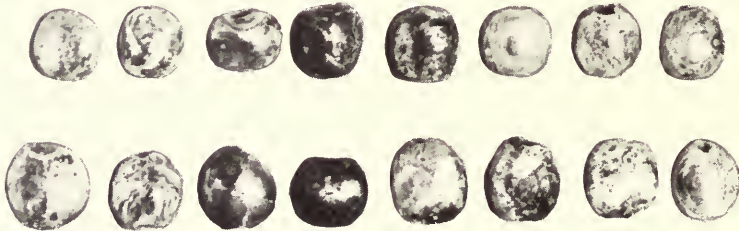


FIG 71 — Large pearls. (Full size.)

The clay beads were burned and afterwards covered with a flexible mica. No doubt the beads were made to imitate the true pearls.

Beads were made of small ocean shells, such as the *Oliva literata* and the *Nerita rumphia*, as shown in Fig. 73. More than

three thousand of these shells were found with one burial. A glance at the cut will show how these were made. The *Oliva* are slightly altered by cutting away the apex so as to permit of the passage of a string which was introduced through the natural aperture; the *Neritas* were ground away so as to show the columella, which would also permit of a string being passed around it, so in that way it could be readily strung.

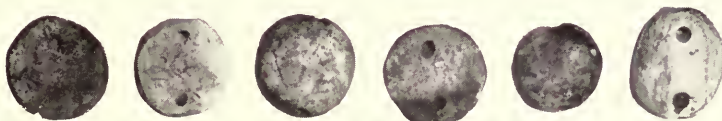


FIG. 72 Large pearls flattened on one side. (Two-thirds size.)

A great number of round beads made of the columella of the large shells are shown in Fig. 74. These beads vary in size from one-fourth to three-fourths of an inch in diameter, and so perfect are they that they resemble beads that have been made by machinery. The small hole is bored from both sides.

Another form of bead is shown in Fig. 75. This bead is an



FIG. 73 — Small Ocean shells. (Two-thirds size.)

oblong one, varying in length from one-half inch to one and one-half inches, and is also made of the columella and pierced with a hole for attachment.

TEXTILES.

One of the primitive industries of the builders of the Harness Mound was the weaving of fabrics, and we find the charred remains of the simplest to the highest art in primitive weaving.

In almost every burial where the final ceremony consisted of setting fire to the covering of straw and twigs, which were placed over the cremated remains, we find the charred remnants of cloth or coarse matting.

It is fully known that the textile art appeared early in primitive culture, and it is generally believed that the association of esthetic concepts with it came first and it became quite a factor in personal adornment.

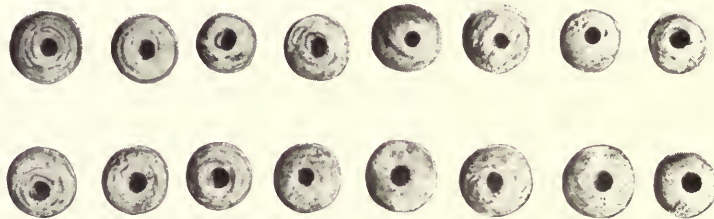


FIG. 74 — Round beads made of Ocean shells. (Two-thirds size.)

Thus we find in the graves of the Harness Mound woven fabrics embellished with copper ornaments and cut designs of mica, showing a high degree of advancement in personal adornment.

Fig. 76 is a good example of the coarse matting so frequently found in the burials. No. 1 is made of coarse straw closely twined, and No. 2 is made of bark and straw mixed and woven in the same way.



FIG. 75 — Beads made from Ocean shells. (One-half size.)

Several different textiles with ornaments of copper and mica attached were found, as shown in Fig. 77, but the coarse reticulated patterns were more abundant. The finer patterns of reticulate weaving were found wrapped around the copper pieces which were preserved by the salts of copper. The textile shown in Fig. 77 is made by twining, and is a very closely woven fabric. When the charred remains of the cloth were removed the

mass appeared to be about one-half an inch in thickness, and upon examination it was found to contain fourteen layers of cloth, covered by a piece of very thin iron made in the form of a circle.¹⁶

After finishing the explorations of this mound I received permission to examine a small mound in the field in front of Mr. Robert Harness' house. This mound is located upon the same



FIG. 76—Coarse mattings.

terrace as the Harness group, and is less than half a mile distant to the south. The mound is a typical conical mound, being six feet and six inches in height at the time of our examination and only forty feet in diameter at the base. Mr. Harness informs me that the mound was fully two feet higher at the apex when the site of the mound was first ploughed over some twenty years ago.

¹⁶ According to Professor Putnam the iron from this mound was determined as meteoric iron. Reports of the Peabody Museum Vol. 3.

The mound covered twenty-eight burials. Twenty-seven of these burials were placed on the base line, or from a few inches to a foot above this line. Not one of the twenty-seven was cre-



FIG. 77 — Fabric with copper balls attached.

mated, and all had been placed promiscuously at or near the base of the mound. No prepared graves were discernible, and in several instances the heads were placed lower than the feet, and in one instance the head and feet were lower than the middle of



FIG. 78 — Woven fabrics.

the body. The skeletons were badly decomposed, so much so that not a single perfect bone of any kind was removed from the burials. But few artifacts were interred with the burials, and these consisted of a few notched arrow heads, very well chipped, and many flint knives roughly prepared. Near one of the burials was found a finely polished celt, and with another a tubular pipe, which is shown in Fig. 79. The extra burial forming the twenty-eighth, which constitutes the contents of the mound, was cremated, and intrusive to this mound. The grave in which the cremated remains were placed was made some time after the mound had been completed, as the outline of the various layers of clay could readily be seen on the sides of the grave. No logs had been used as support around the side of the grave, which was otherwise similar to those placed above the base line in the Edwin Harness Mound, but the grave showed that a covering of

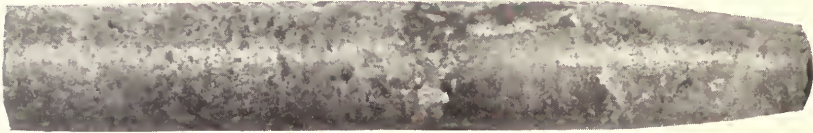


FIG. 79.—Tubular pipe. (Three-fourths size.)

brush and bark, which was set on fire, had been placed over the incinerated remains and the grave covered while it was burning. No artifacts were found with this burial.

RESUME.

A brief mention of the more salient points brought out by the examination of a portion of the mound that was abandoned after more than half a century of active efforts manifest in an attempt to examine the mound, as set forth in the preceding pages, will be, perhaps, of interest, and I will briefly give them.

The object of the mound was purely mortuary, and the site of the mound a charnel house until it was filled with graves, when the house was destroyed by fire and a mound erected as a monument to the dead.

All of the graves in the mound showed a careful preparation for the reception of the remains.

Of the one hundred and thirty-three, only five were uncremated, and a majority of those cremated showed that the last rite was performed before the grave was temporarily covered, by setting fire to the grass and twigs that covered the grave, and while burning was covered over with a layer of clay. This was done with each burial until the charnel house was filled.

The artifacts placed in the graves also show that the builders of the mound were possessors of a wonderful wealth of art products, which products had a well marked individuality, being superior in every respect to the artifacts found in the prehistoric village near Higby, five or six miles to the south. The Higby inhabitants were representatives of the Fort Ancient culture,¹⁷ though we find that the Harness Mound builders were equal in culture in every respect to the peoples occupying the Hopewell group.

The earthworks and mounds of the Harness group were purely aboriginal, and from the data secured from our explorations are representatives of the North West group described by Mr. W. H. Holmes,¹⁸ and which so far as the artifacts testify, are purely Pre-Columbian.

The great body of relics found in the mound were made of copper, shell and bone. Especially noticeable were the ear ornaments of copper which were in some instances covered with iron and silver, and which display remarkable workmanship. A careful examination of these finely wrought implements and ornaments plainly shows that the mechanical art was developed almost exclusively, while in other sections of the Scioto Valley, where the Hopewell Culture is found, the idiographic art was highly developed along with the non-imitative.

No perfect pieces of the ceramic art were exhumed, but the sherds plainly show that the fictile products are entitled to a high place in Ohio ceramic arts.

The great variety of weaving and the quantity of woven

¹⁷I have for my own convenience named the two great cultures whose remains are so abundant in Ohio, Fort Ancient Culture and Hopewell Culture. "Explorations of the Baum Village Site," Vol. 14. Ohio State Archaeological and Historical Publications.

¹⁸ Twentieth Annual Report of the Bureau of Ethnology.



FIG. 80 — The Mound about finished.

material found in the graves, indicate that the art was assiduously practiced.

The examination of the Robert Harness Mound proved it to be a burial mound belonging to the Fort Ancient Culture, and the finding of a burial of the Hopewell Culture intrusive to the Robert Harness Mound proves without question that the people of the Fort Ancient Culture were the first to occupy the surrounding territory, and consequently the Hopewell Culture occupied this territory at a later period.



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