AT WORK IN THE VILLAGE SITE.

Explorations of the Baum Prehistoric Village Site

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NOTE.

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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

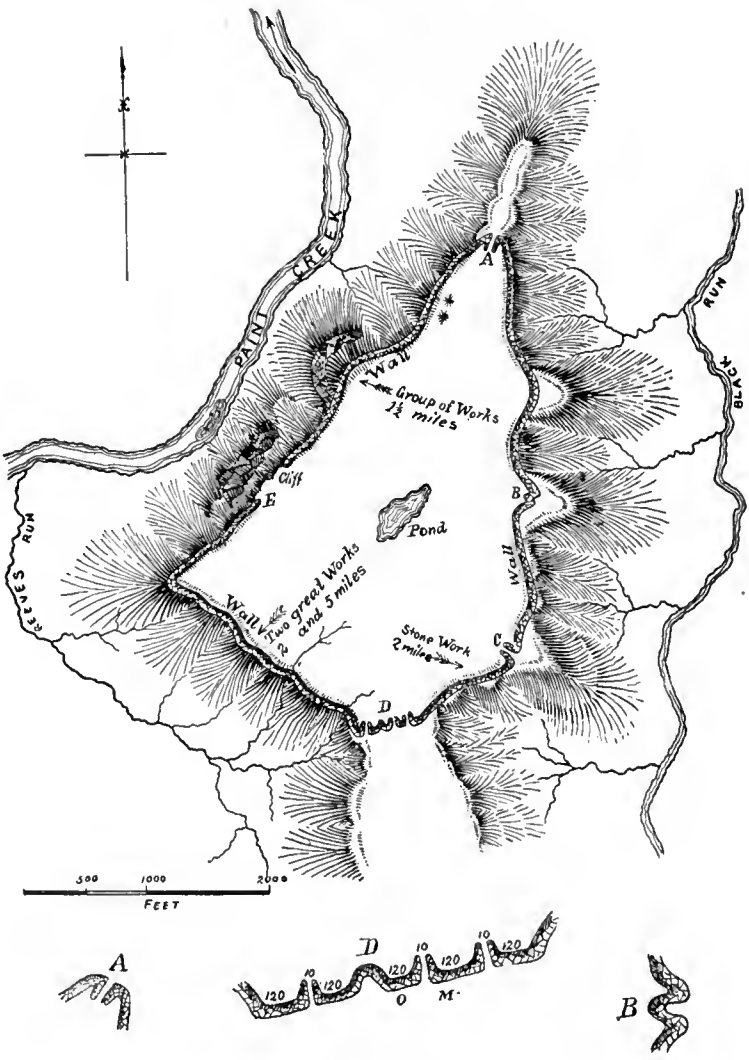

FIG. 1 — Spruce Hill.

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;

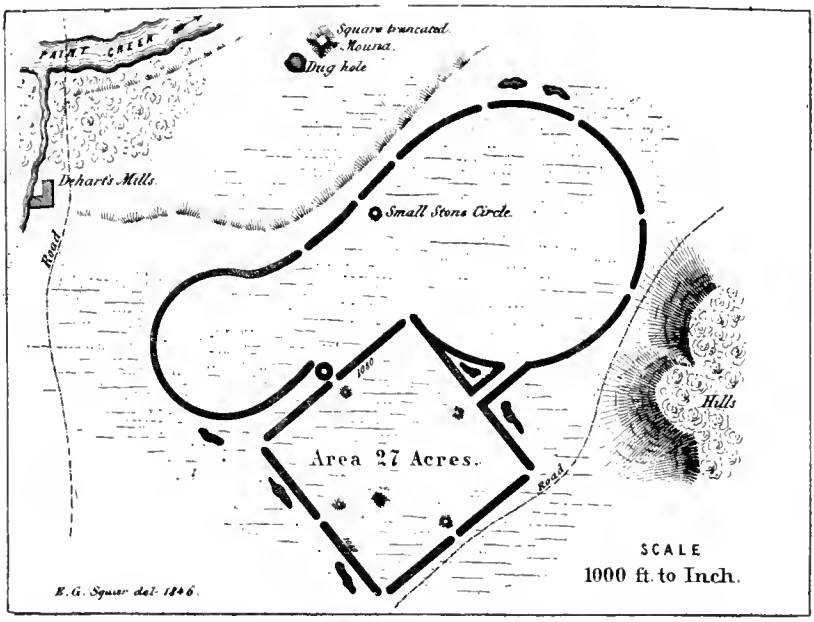

FIG. 2 — Baum Earthworks (After Squier & Davis). The village site surrounds the square truncated mound marked on the drawing.

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 Mr. 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 post-molds 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

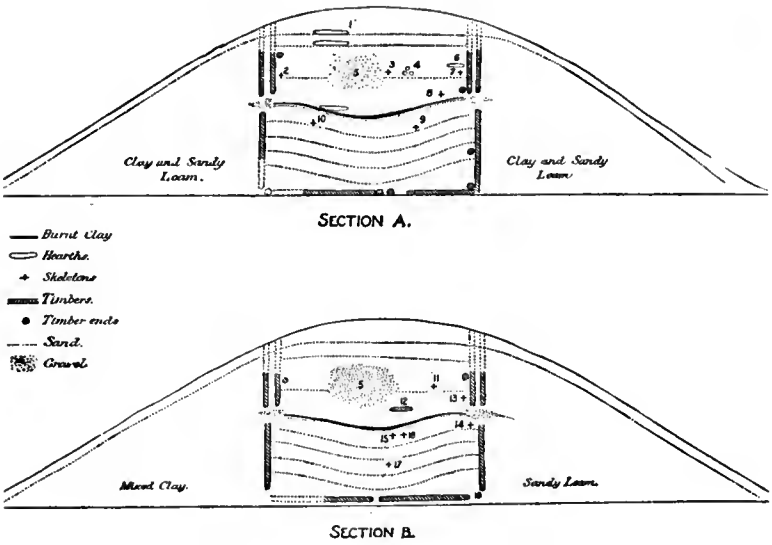

FIG. 3 — Cross sections of the Baum Mound. (Middleton, B. E. Report 12.)

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 Archæological 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 earthwork, 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.

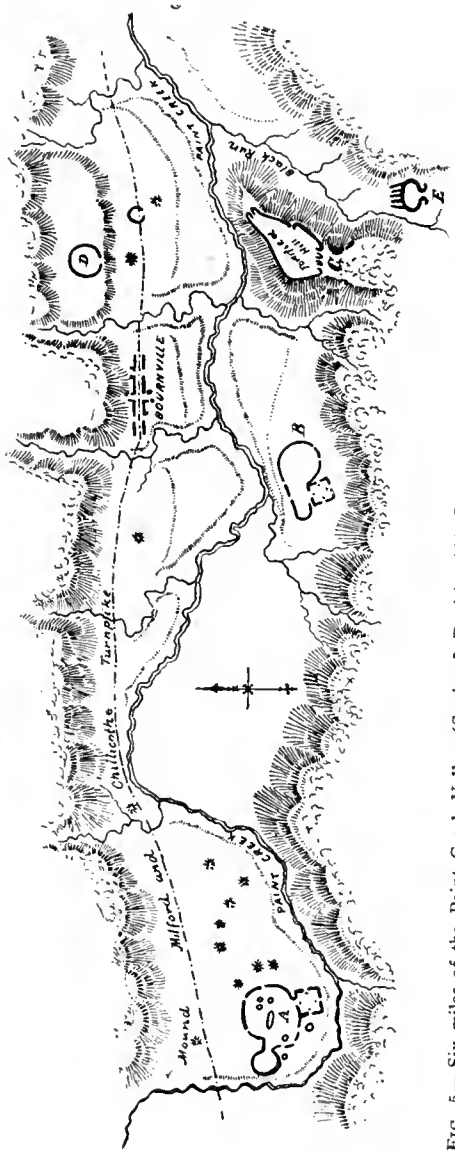

FIG. 5 — Six miles of the Paint Creek Valley (Squier & Davis). (A) Seip group of mounds and earthworks, (B) Baum group of mounds and earthworks, (C) Spruce Hill.

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.

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

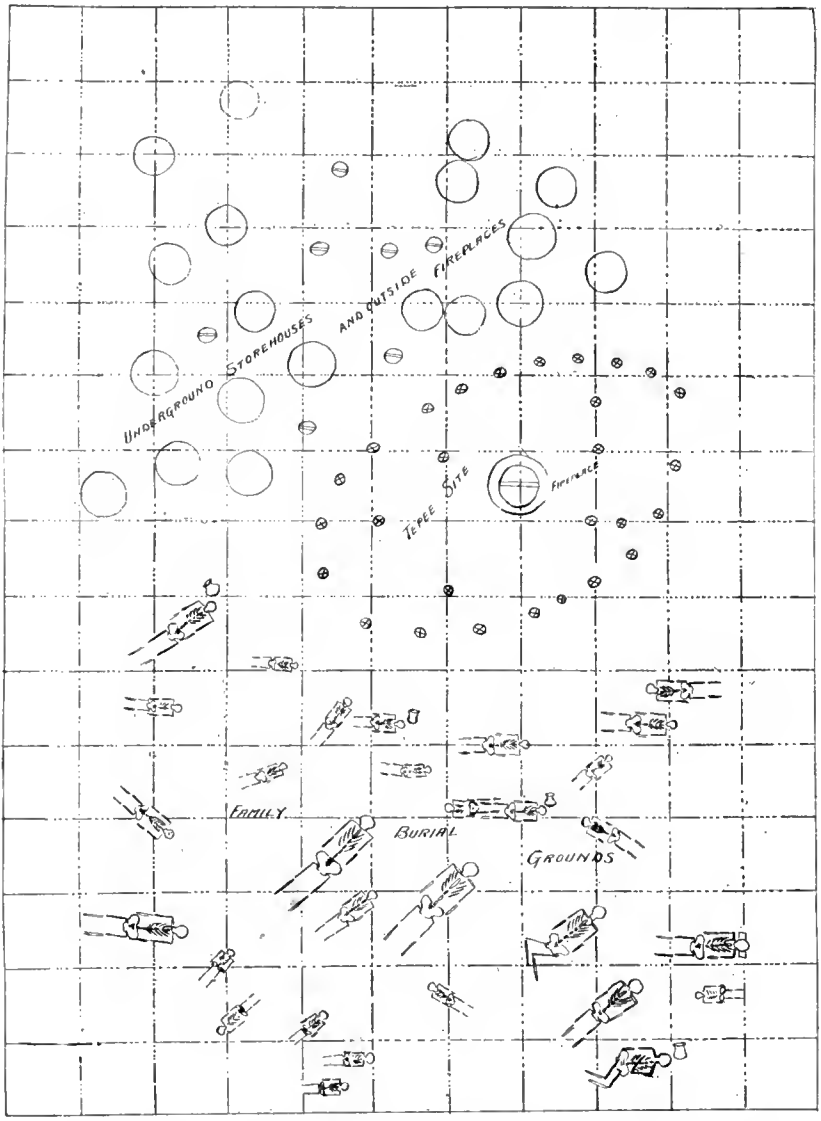

FIG. 6 — Tepee site, surrounded on one side by the burial ground and on the other by underground storehouses.

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 Gartner 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 racoon 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:

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

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 palustrus) — 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 occassionally 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 (Haliaetus 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 boochas) *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.

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* 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 (Asiminan 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 (Prunis 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 (op)) 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.

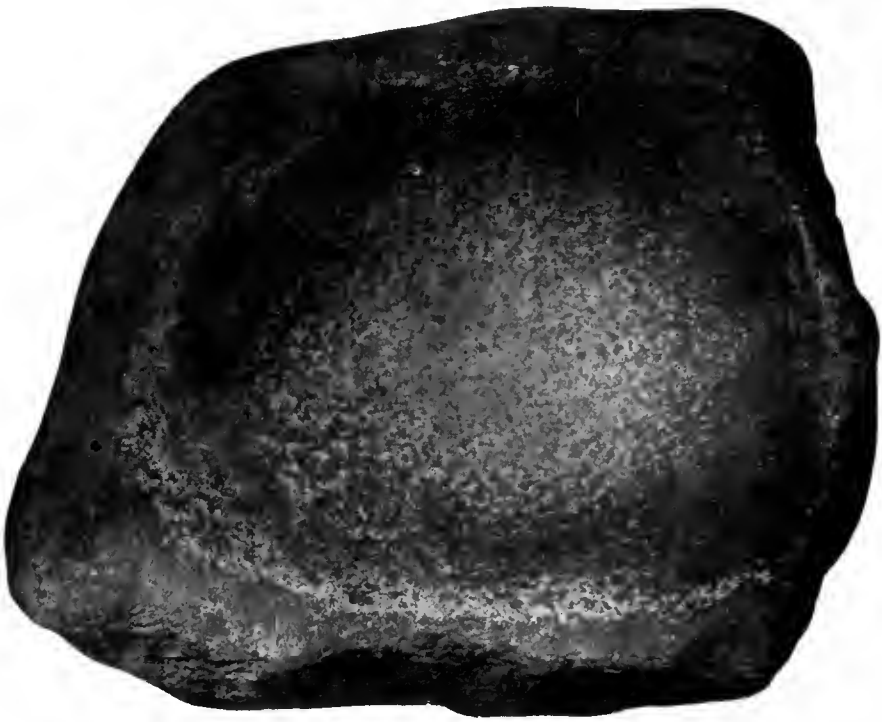


FIG. 10 — Stone Mortar, fifteen inches long, twelve inches wide and five inches thick, with a cavity three inches in depth.

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

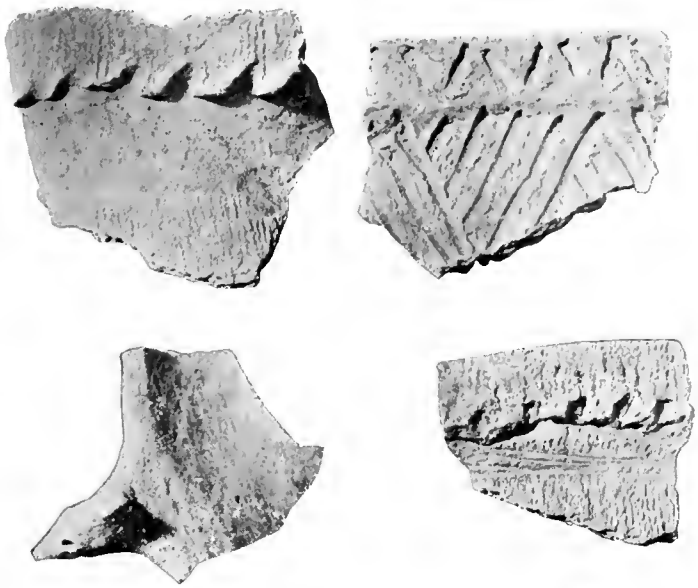


FIG. 11 — Pottery fragments showing decoration of rims.

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,

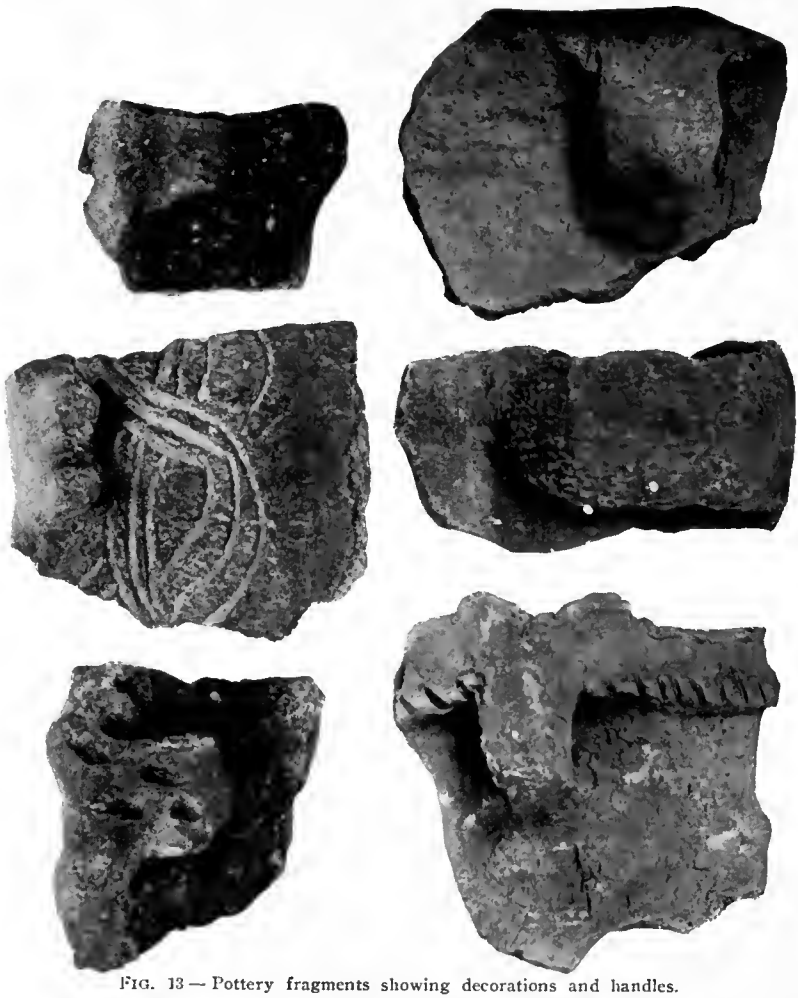


FIG. 13 — Pottery fragments showing decorations and handles.

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

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

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. 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).

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 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 bowlders 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. 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).

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 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

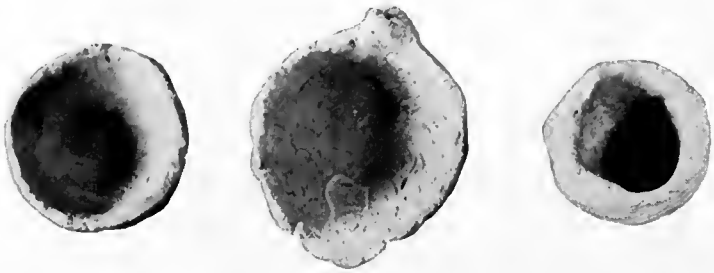


FIG. 20 — Very small, perfect vessels, made of the same material as the larger vessels (half size.)

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.

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

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 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

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

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 bowlders, 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 bowlder from the river near at hand would answer the purpose. Therefore it seems natural to believe that all the bowlders 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 indispensible 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.

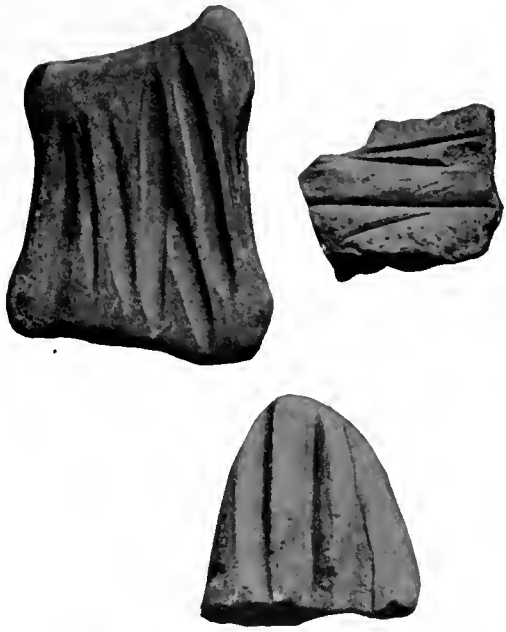


FIG. 23 — Whetstones used in making bone implements (one-third size).

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 horn stone 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-fifth inches.

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

lage. The beautiful spear point shown in Flg. 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

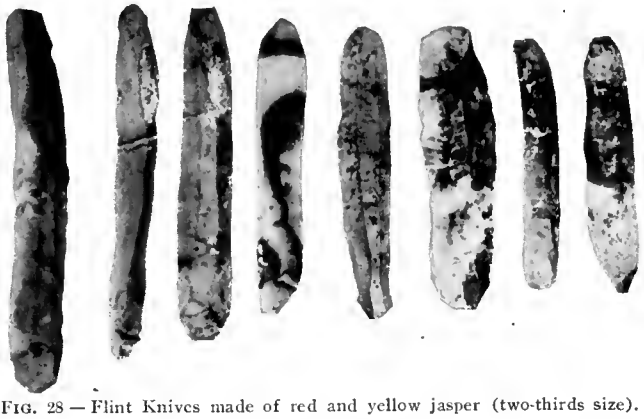


FIG. 28 — Flint Knives made of red and yellow jasper (two-thirds size).

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.

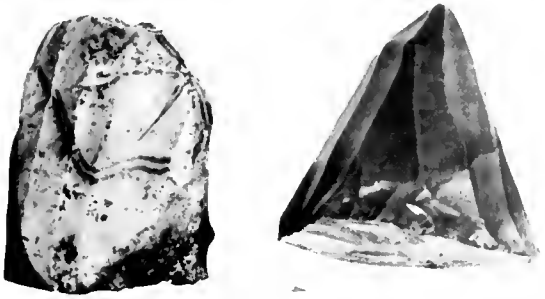


FIG. 29 — Flint Cores. Specimen to left, red and yellow jasper. Speciment to the right, maroon colored jasper (half size).

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.

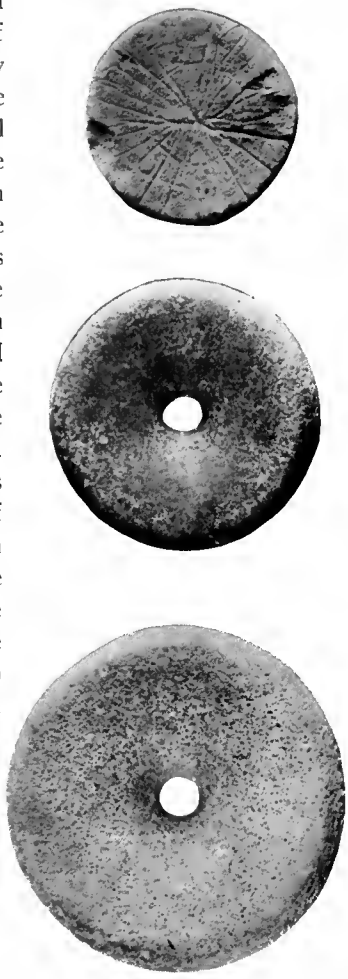


FIG. 30 — Typical discoidal stones fuond in the village (two-thirds size).

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

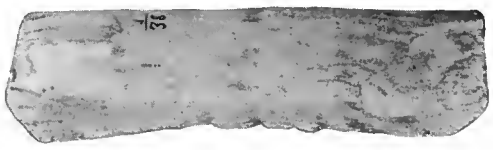
with perforation, is the most abundant, and is made for the most part of diorite, and highly polished. The perforations are usually circular, but the finest specimen found in the village and made of quartzite had an oblong perforation. The specimen is shown in No. 2 of Fig. 30. Other specimens of this 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, 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.

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

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

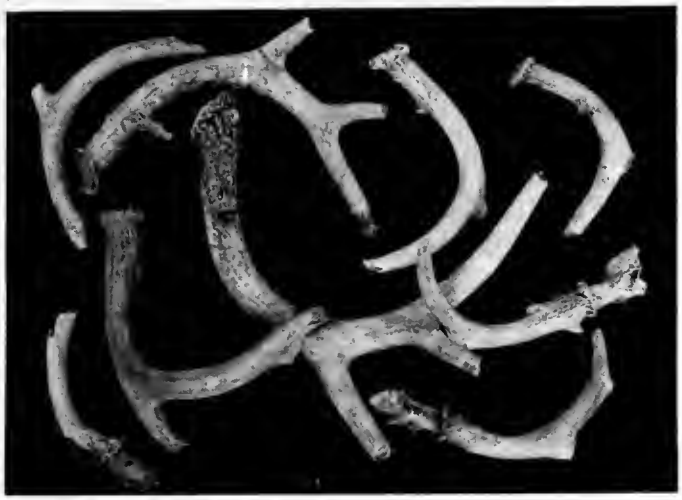


FIG. 32 — Deer horns with tines removed.

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-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

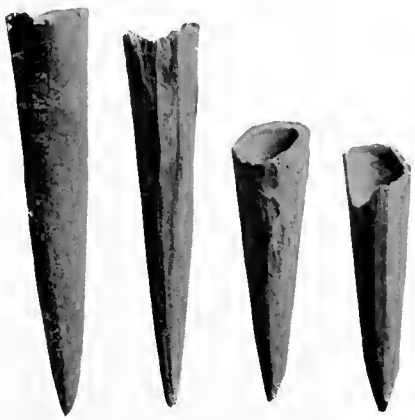


FIG. 33 — Arrow points made from the tines of deer horns (two-thirds size).

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."

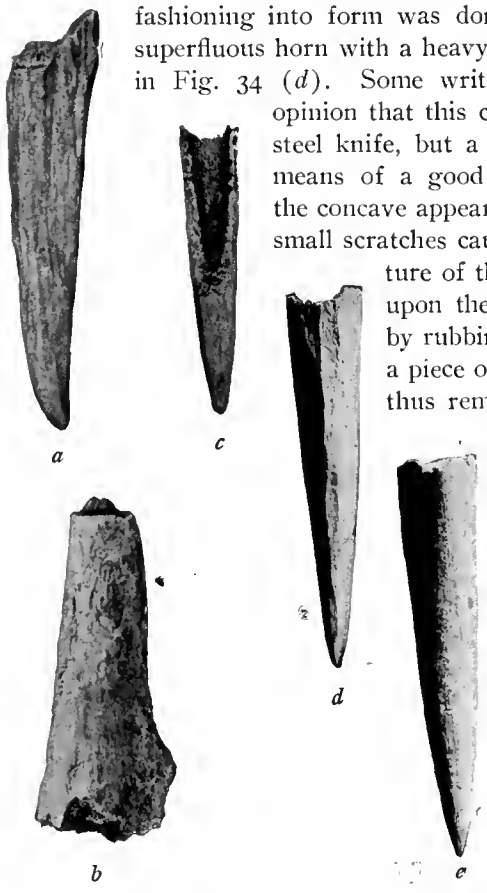


FIG. 34 — Arrow point making, as illustrated by specimens taken from the Cartner Village: (*a*) Tine from deer horn, (*b*) Cutting of tine, (*c*) Depth of hole drilled, (*d*) Cutting away of superfluous horn, (*e*) perfect point (two-thirds size).

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 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.

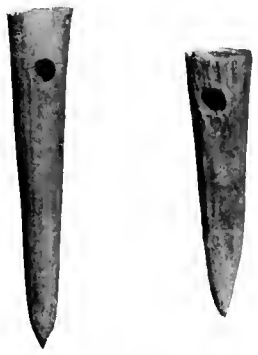


FIG. 35 — Arrow points made of deer horn with a perforation for attachment to the shaft (two-thirds size).

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 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

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

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-

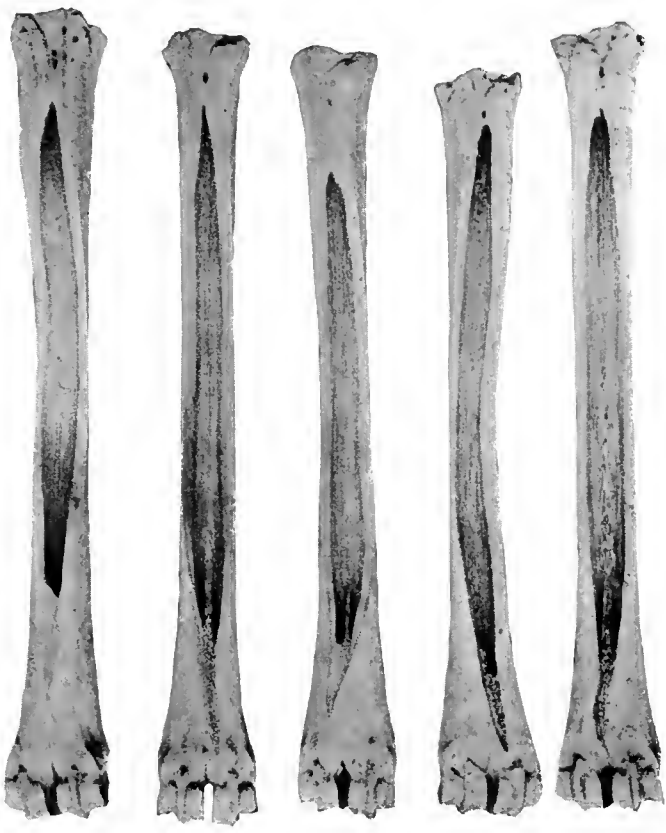


FIG. 37 — Perfect scrapers, made from the metapodal bones of the deer. (Average length of scrapers, ten inches).

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,

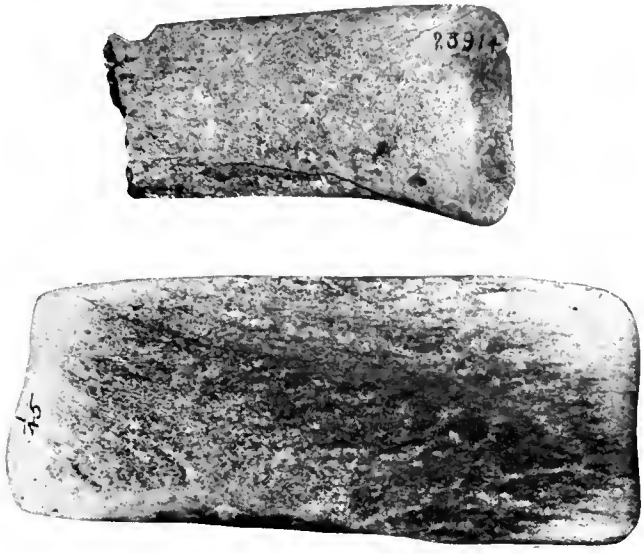


FIG. 39 — Celt-like scrapers made of elk horn (two-thirds size).

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.

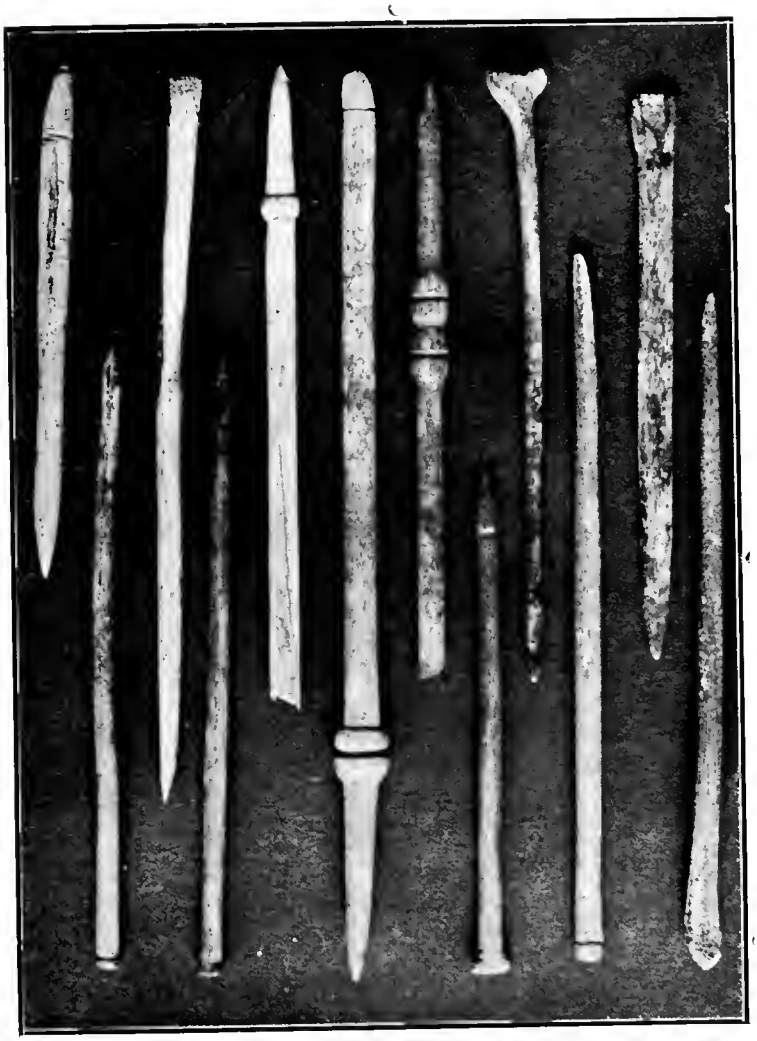


FIG. 41 — Typical bone awls with blunt points (five-eighths size).

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.

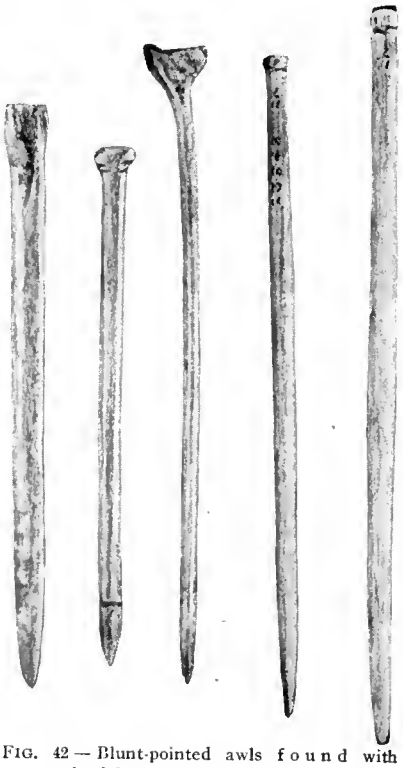


FIG. 42 — Blunt-pointed awls found with burials (two-thirds size).

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

FIG. 43 — Bone awls made from the ulna and metapodal bone of the deer (five-eighths 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 trocantor slightly polished. The specimen to the right in Fig. 50 is made from the humerous 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.

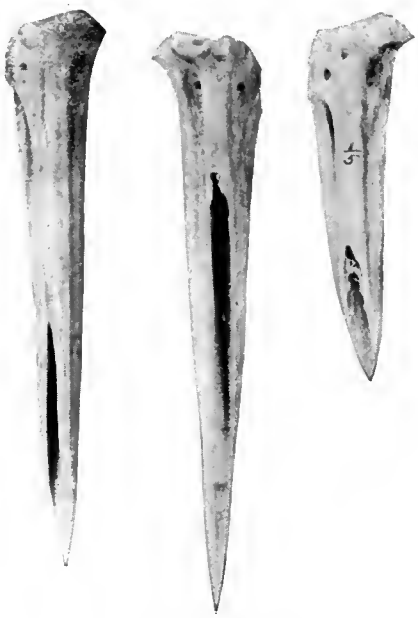


FIG. 45 — Bone awls with sharp points, made from the tarsometatarsus of the wild turkey (half size).

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

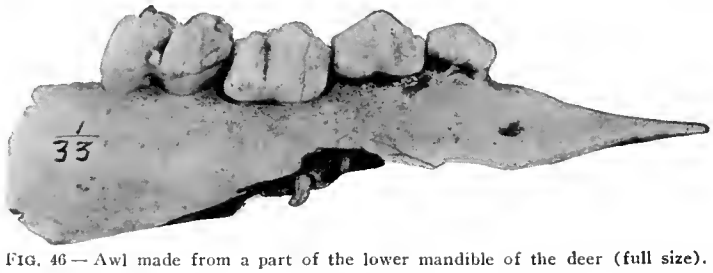


FIG. 46 — Awl made from a part of the lower mandible of the deer (full size).

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

FIG. 49 — Typical needle, length six and three-eighth 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).

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

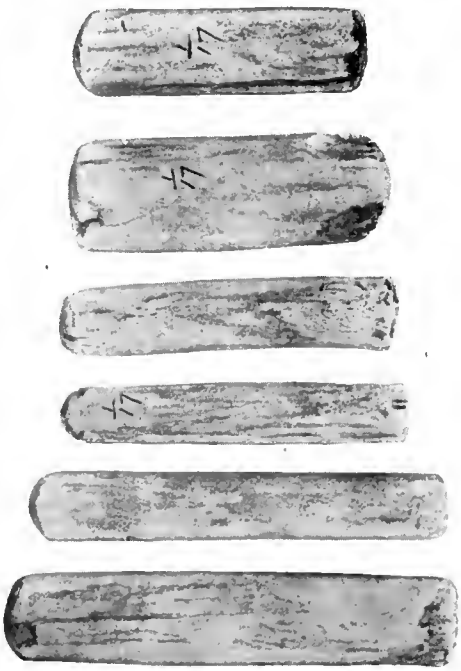


FIG. 53 — Flaking tools made of elk horn (two thirds size).

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

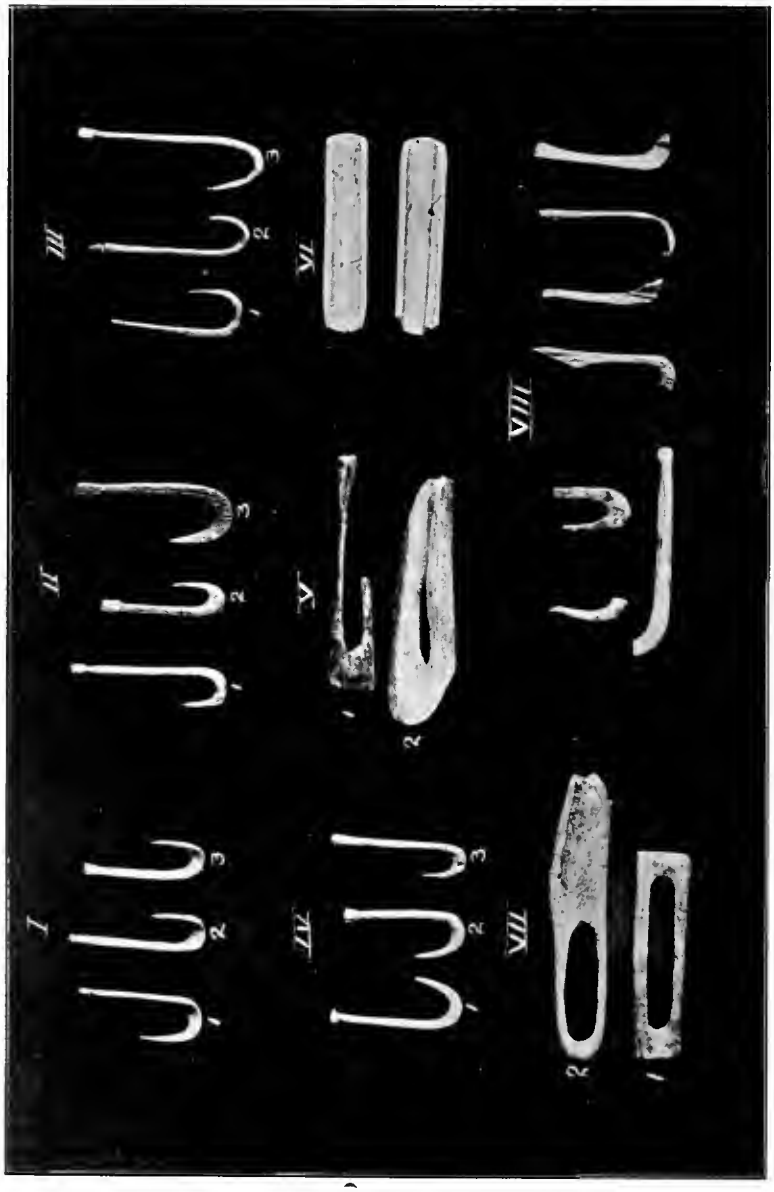


FIG. 55 — Fish-hooks and the stages in their manufacture (two-thirds size).

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 aboroginal 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 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.

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

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 pendants, 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.

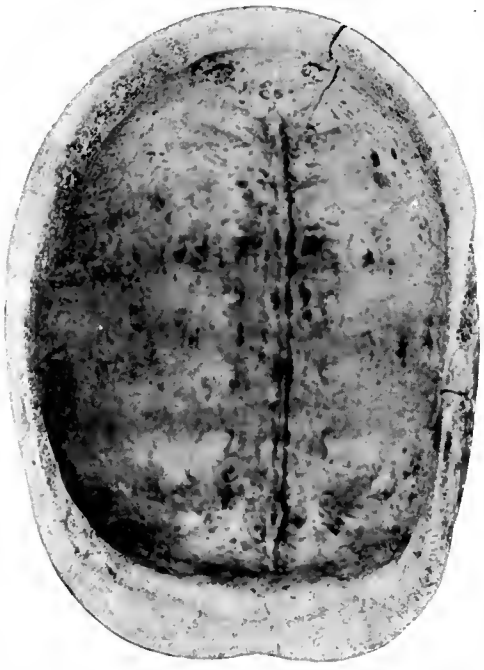


FIG. 57 — Spoon made of the carapace of the common land turtle (half size).

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-

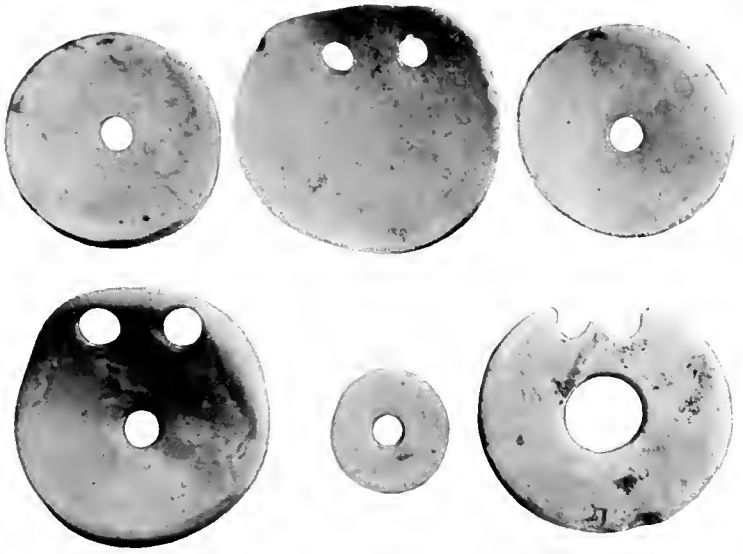


FIG. 58 — Typical shell gorgets (full size).

casionally 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 aperature. 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

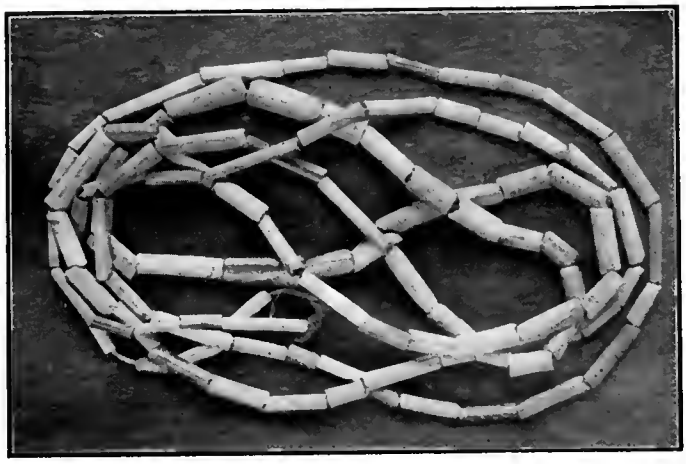


FIG. 61 — Beads made of bone.

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

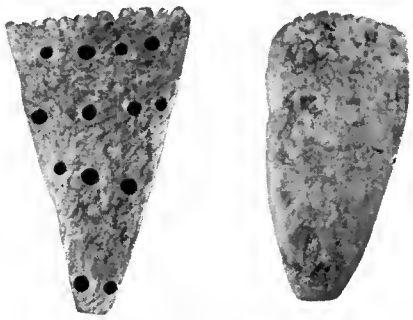


FIG. 62 — Pendants made of bone (half size).

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.

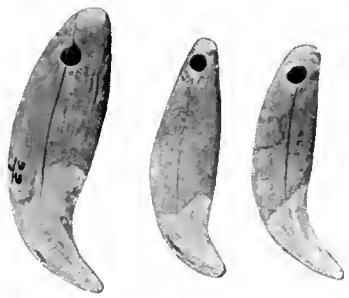


FIG. 64 — Perforated canines of the bear and wolf (half size).

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

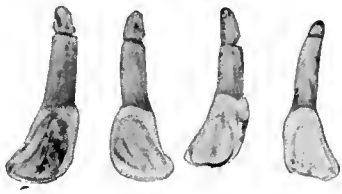


FIG. 66 — Pendants made of the incisor teeth of the elk (⅔ size).

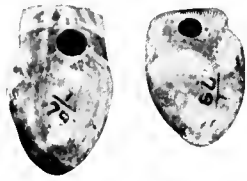


FIG. 67 — Perforated canine teeth of the elk (⅔ size.)

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).

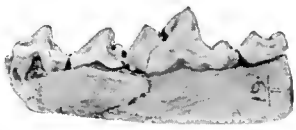


FIG. 69 — Cut lower jaw of the wolf (half size).

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

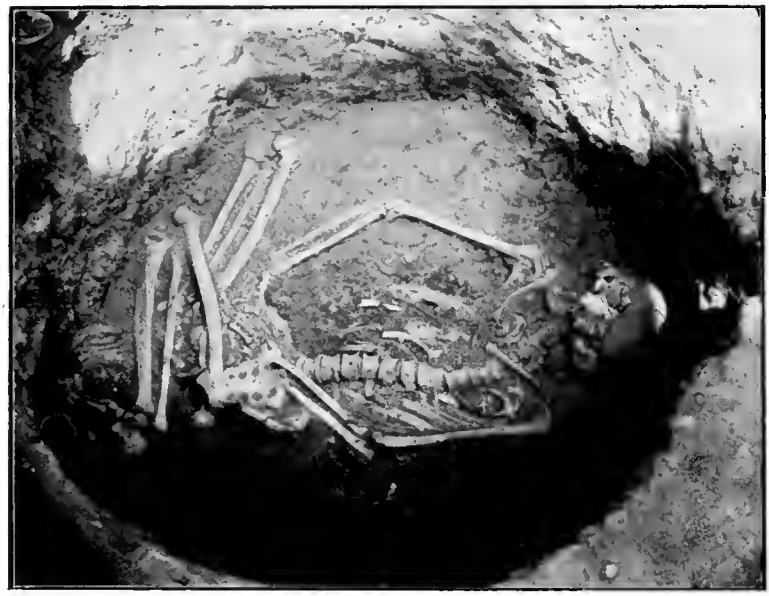


FIG. 79 — Burial in one of the refuse pits.

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 osseus remains exhumed at Soultrè in the Department of Sâone-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 das 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 claocæ 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 exotoses 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).