

BONE AND ANTLER ARTIFACTS FROM THE LIBBEN SITE, OTTAWA CO., OHIO

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Only the hard stuff, things such as stone and ceramics, typically have survived the passage of centuries and millennia to inform us about what were really very limited aspects of the lives of prehistoric peoples. It is from these hard things that we form unavoidably distorted views and opinions of their societies. It is called the Stone Age not because stone was all there was, but because it is usually all that remains for us to see. The prehistoric populations of the Great Lakes region surely produced uncounted millions, if not billions, of items made of softer, perishable materials over the millennia during which the area was occupied. These organic materials did not survive long on the surface or unprotected in the acidic soils of open sites in the Eastern Woodlands. By far, the vast majority of items that constituted the material culture of prehistoric societies has long since disintegrated into nonexistence. The soil at the Libben site was composed primarily of Pleistocene beach sand from a Lake Erie predecessor. Prufer described it as having the consistency of "kitty litter." This provided excellent drainage, which in turn contributed to excellent bone preservation. The bone, antler and shell artifacts recovered from the Libben site excavations give us a rare glimpse at a few items fashioned from the upper, harder end of the soft materials. Among them are some rare and unique items. They expand our vision beyond the stone just far enough to remind us of how little we can actually see of the physical world in which past peoples lived. What little we pretend to know of their intellectual and spiritual lives are just fragments of our imaginations.

In total, we are reporting on over 450 individual bones and 79 pieces of antler that were modified or used by human beings and deposited, intentionally or accidentally, at the Libben site. Usage has crept into the archaeological literature that corrupts the meaning of the word artifact. The *American College Dictionary* (1970) defines an artifact as, "Any object made by man with a view to subsequent use" [emphasis added]. The residue of artifact production, such things as unutilized flint chips (debitage) or pieces of bone or antler that were cut away and discarded, are worthy of study for what they can tell us about artifacts and their manufacture, but they are not artifacts. Comparable things produced in our society are called trash. Missing from the above definition of an artifact are things that were not man-made, but were still used by humans to some end. If one deletes the items that are merely the residue from artifact manufacture, and reports items composed of multi-

ple component bones as single artifacts, the total artifact counts are closer to 275 made of bone and 50 made of antler.

ITEMS OF BONE

Awls

The initial analysis and identification of the faunal remains from the Libben site was conducted by Dr. Orrin C. Shane and Mr. Andrew Fortin, both of whom were associated with Kent State University at the time (Harrison, 1978). Mr. Thomas Bills of the Cleveland Museum of Natural History was kind enough to lend his expertise to a recent (Nov. 2007) reexamination of the bone artifacts. Bone awls (Fig. 1), presumed to be tools for puncturing and making holes in softer materials such as leather or bark, are common on nearly all archaeological sites where bone tools survive. With a total of 131 tallied, they were the most common type of bone artifact recovered from the Libben site. Twenty-one were associated with burials, six came from grave fill, and 104 were recovered from non-burial contexts.

Awls were made from the bones of mammals, fish and fowl. The specific bone from which each awl was fashioned, or the species from which each bone was taken, could not be identified in the vast majority of cases because they are either too fragmentary, or were modified to the extent that identifying criteria are no longer present. Thirty awls (23%) were identified to the species, or related species, level. Tables 1 and 2 summarize this data.

The size of the Libben site awls varies greatly, both in length and in maximum diameter. The overall length ranges from 1.4 cm to 14.5 cm. At the large end there are eight (6%) that exceed 10 cm in length; at the small end there are eleven (8%) identified here as miniature awls (Fig.2). The miniature awls have the appearance of being complete tools, and not fragments of larger ones. They range in length from 1.4 to 3.5 cm, with an average of 2.6 cm. Two of them have finished bases that may have sat in sockets, and thus could conceivably have been projectile points, and not awls. One of these (Fig.2, F), recovered from the burial of an infant, still has an extremely sharp point that would have worked well as a tattoo needle. The other one (Fig.2, G) has small notches on each side about a third of the way up from the base, perhaps for hafting.

As might be expected, those recovered from burial contexts are, for the most part, more complete than those from non-burial contexts. Single awls were recovered with seventeen individuals; two burials con-

tained two awls. Awls were recovered from the graves of an infant, five children aged from three to twelve years, three adolescents from thirteen to sixteen years, and eight adults from the ages of twenty-two to forty-three years. Sex could be determined for eight of the nineteen: five were females; three were males.

Needles

A total of thirteen items, one small fragment recovered from a burial (B-80, unit L-V) and the others from the general excavation, are being reported here as bone "needles," although that probably brings an erroneous connotation to mind. They are not round and sharp as are our present day needles, but flat, primarily having blunt rounded tips. It is more likely that they were used for some type of weaving or threading rather than piercing and stitching. Ritchie (1965), in discussing his "Kipp Island Phase," referred to them as probable "mat-sewing implements." Only one is complete (Fig.3). Four have complete eyes, and four, including the one from the burial, have remnants of eye-holes that have worn or broken out; four are tips; one is a mid-section.

Beaver incisor chisel

A single beaver incisor chisel fragment is extant from the excavations. While these tools may have been used independently, they have also been reported in the archaeological literature as being found inserted through an oblong hole in a curved antler handle. This composite antler/beaver incisor artifact is diagnostic of the Late Woodland "Intrusive Mound Culture," as it has been termed in Ohio (first reported by W. C. Mills, 1922), or the "Kipp Island Phase," as it has been designated in New York state (Ritchie, 1965). In addition to the extant specimen (Fig. 4), another of these tools was excavated at the Libben site in association with a burial that is discussed below under antler handles. It did not survive, but disintegrated when removal was attempted.

Beamer

A single "beamer", fashioned from a deer metatarsal bone (Fig. 5), was recovered with Burial 40 in unit L-IV, who was determined to be a female and estimated to have been thirty-seven years old. It is approximately twenty-seven and a half cm long. These artifacts have been adequately described elsewhere in the archaeological literature (e.g. Prufer and Shane, 1970). Also with this burial were an adze and four artifacts fashioned from marine shell. It, too, was likely an Intrusive Mound/Kipp Island Phase burial.

One distinctive feature of this particular artifact is that the adjacent tarsal bones were recovered with the metatarsal beamer. This would seem to indicate that the artifact was fashioned from a freshly butchered leg bone whose elements were still held together by tendons and ligaments.

Fishhooks

Nine bone fishhooks (Fig. 6) are part of the extant Libben bone inventory. Seven accompanied Burial 219 in unit L-II, estimated to be a thirty-five year old male. In addition to the fishhooks, grave goods with this burial included a complete ceramic elbow pipe, two antler artifacts, two bone awls and twenty-seven marginella beads. The field notes indicate that three "trophy skulls," one of which had a cranial disk removed, were also interred with this man. Another fishhook was recovered from Feature 86, and one from the general excavations in Unit L-IX. Two more that are no longer extant were reported from unit L-XXVI. A massive amount of fish remains was excavated from pits at the Libben site. The fishhooks are the only fishing gear found in the excavations, unless the antler "harpoons" discussed below also served this function.

Projectile points

The Libben site produced two different styles of bone projectile points, which are extremely rare in Ohio archaeological assemblages. One type was fashioned from the distal phalanges of whitetail deer. Two finished examples (Fig. 7, A&D) were excavated from unit L-II, one of which came from Feature #41. The proximal ends of the bones were cut away, and they were hollowed out to form sockets to hold the arrow shafts, a treatment similar to that used to produce conical antler arrowheads. In this case, however, the sockets are oblong, matching the shape of the bone, rather than being round. Eight (per the field notes; six are extant) unmodified deer phalanges (Fig. 7, B&C), accompanied Burial 9 in unit L-X, a thirty-five year old of undetermined sex. This is another Intrusive Mound/Kipp Island burial. Also with this person were an antler handle, a stone adze, three conical antler projectile points, two triangular flint projectile points, and a fragment of a polished bone bead. Griffin (1943) reports small numbers of deer phalanx arrowheads from three Fort Ancient sites – Baum, Gardner and Turpin.

The second type of bone arrowhead recovered at Libben is even more rare. They were carved from unidentified bones and are roughly lozenge shaped. Approximately two-thirds of the length functioned as a tapered shank for hafting, while the remaining third constitutes the "head," or business end, of the arrowhead. Only two (Fig. 7, I&J) were excavated at the site, although there are three antler projectile points (Fig. 7, F-H) that were similarly fashioned. The only reference to similar specimens that we found, about which we are told only that they are

from Eastern Missouri, are illustrated in *Antler, Bone and Shell Artifacts* (Hothem, 2006).

Bird wing fans

Six burials at the Libben site contained carpometacarpus bones, the fused wrist and hand units, or wingtips, from large birds. Five were from Canada geese and one was from a wild turkey. The bones are unmodified, but were intentionally placed in the graves. The field notes give the locations for four of them: in the left hand; by the right humerus; on top of the skull; and on the sternum. One imagines that the large wing feathers were still attached when they were in use, most likely serving as hand-held fans. Five of the individuals could be aged. There were two children, one of whom was estimated to be two years old, and three adults between the ages of 36 and 43. Sex could be determined for only two individuals, both adult males. Three additional sets of bones of this type were curated with the artifacts (as opposed to faunal remains) from non-burial contexts, but no details of their recovery or disposition in the excavation could be found.

Modified turtle carapaces

These were the second most numerous bone items recovered from the Libben site. There are 125 specimens extant. Adjacent pieces that could be fitted together were counted as one piece. There were thirty-nine fragments from the polished rims of turtle shells that had presumably been turned into cups or bowls (Fig. 8, B-F, H, I). Seven pieces had holes drilled through them (Fig. 8, G), including three of the rim fragments mentioned above, two of which had finished holes, and one that had only incipient drilling that did not puncture the bone. An alternative interpretation for at least some of these artifacts comes from Ritchie (1965), who reported pieces of turtle shell "bearing perforations evidently for the attachment of handles" that he interpreted as being parts of rattles. Twenty-nine pieces, from a maximum of twenty-five individuals, had cut marks where they had been detached from carapaces. Fifty-three additional fragments had either cut marks (i.e. incisions on the surfaces) or areas of polish where portions had been ground away. Three appear to have incised decoration on them (Fig. 8, I).

None were from burials; all were from the general excavations. Only one complete, or nearly complete, turtle shell is extant (Fig. 8 A). The rest of the fragments were very small, most less than three centimeters in maximum dimension. The cut fragments show that some, at least, were manufactured on site. It seems odd, however, that only such small fragments of the rims were found. Unless the site contained a garbage dump or trash heap outside of the excavated area (as at the Kipp Island Site; Ritchie, 1965), one is left with the conclusion that the damaged artifacts were carried away from the site, either to continue being used in their damaged state, or to be disposed of elsewhere.

Beads

Thirty-one bone beads, five from three burials, two from grave fill and twenty-four from the general excavations, are extant from the Libben site. The five bone beads from burials (Fig. 9, A-D) are larger in diameter and much more highly polished than most of those from the general excavations. In length they range from 2.5 cm to 4.2 cm, with an average of 3.2 cm. The diameters range from 1.1 to 1.6 cm, with an average of 1.3 cm. The individuals with whom they were buried were determined to be fifteen (2 beads), eighteen (2 beads) and thirty-five (1 bead) years old. The eighteen-year-old was determined to be a female; the sex of the other two was undetermined.

One bead from grave fill and one from the general excavations are similar to those from the burials. The other twenty-four beads (Fig. 9, E-K) appear to be of a different style. They are, for the most part, either damaged (ten are split lengthwise), or have the appearance of being unfinished, with the ends of several not being ground smooth. They present the appearance of being, or having been, longer and thinner, with the longest being 8.8 cm. The average diameter is less than half that of the burial specimens.

Not extant, but reported in the field notes for Burial 215 in unit L-XXVI, are eleven bird bone beads, all "approximately two inches long." Four were located by the right wrist, two by the left ilium, four by the left hand, and one under the second lumbar vertebra. The excavator noted that they "probably formed a chain around the waist." The notes also report the recovery of a polished bone from this same burial, puzzlingly described as "two-and-a-quarter inches long, five inches wide, and pointed on one end." This item also is no longer extant.

Ear spool

This artifact (Fig. 10) is an unpolished bone bead 1.3 cm in length, and 1.3 cm in maximum diameter. It was excavated from Burial 220 in unit L-XXVI. This individual was classified as a fifteen-year-old of undetermined sex. This bead is distinctive in that it is not polished and the surface is concave, tapering from greater diameters at the ends to a lesser diameter in the center; in other words, spool shaped. It was discovered near the skull where the left ear would have been. The location in reference to the body and the unique form of the artifact lead to the speculation that it represents an earring, or ear spool, used to decorate a pierced ear. The only other artifacts recovered with this body were two of the bone beads previously reported (Fig. 9, A-B), one of which was found near or in each hand.

Bone tubes

Four bone tubes, all from burials, are among the extant artifacts recovered from the Libben site. Two are complete; one is damaged; one is a fragment. All were made from the bones of large birds. The largest (Fig. 11, A) is most likely from a swan, and is

15.8 cm long and 2.8 cm in maximum diameter. It was the only artifact accompanying a twenty-four-year-old of undetermined sex. The other complete example (Fig. 11, B) is 8.4 cm long and 1.1 cm in maximum diameter. It is from a bird the size of a goose or turkey. It was the only artifact accompanying a woman determined to be forty-two years old. The damaged specimen is 14.9 cm long and 1.3 cm in maximum diameter. Unlike the others, which are of relatively uniform diameter, this one tapers at one end. It was recovered with Burial 234 in unit L-0. Additional grave goods with this individual, who was probably a male, also included a complete ceramic elbow pipe, a horizontal marine shell columella pendant whose suspension holes were worn through, and seven marginella beads. Burial notes indicate that this individual was buried with six "fetuses/infants." The fragmentary specimen, while fractured at both ends and broken lengthwise, is still 10.5 cm long with a diameter of at least 1.5 cm. It came from a grave containing a year-old infant, who also had five marginella beads at the neck.

The function of these artifacts is unknown. All are very highly polished. They have been found with both Kipp Island Phase burials (Ritchie, 1965) and on Fort Ancient sites (Griffin, 1943). Ritchie opines, "The magical or ritualistic usage of other animal bones, exhibiting a polish or wear from much handling, is suggested by...two bird humeri from...a sandhill crane, and...a Canada goose." In the following paragraph he suggests that "...the lingering aura of the Hopewellian tradition...seems to have invested the Kipp Island culture..." Lewis and Kneberg (1946), reporting on similar items from Hiwassee Island in eastern Tennessee, offer much more mundane conjectures, suggesting that they may have been handles, pipe stems, or even, citing the appropriate authority, "the tubular portion of an enema syringe, the bag being made of an animal's bladder."

Flute or whistle

A fragment of a bone flute or whistle (Fig. 11, C) was recovered from Burial 221 in unit L-0. The bone from which it was made came from a very large bird. The fragment, fractured on both ends, is still 6.9 cm long and 2 cm in diameter. The remnant of an air hole, 5 mm in diameter, can be seen at one of the broken ends. Other grave goods accompanying this burial were three relatively large (6 – 7.9 cm in length), thin bifaces of Upper Mercer flint. These we interpret as very well made Jacks Reef knives or preforms, making this another Intrusive Mound/Kipp Island burial.

Drilled elk phalanx

A single cut, drilled and hollowed elk phalanx (Fig. 12) was found in the fill of Burial 8 in unit L-XXV. Prufer and Shane (1970) write, "In the literature they are sometimes referred to as tinklers or jinglers. Guilday (1963) has shown convincingly that these objects are part of the Cup-and-Pin Game

which still survives among some North American Indian Tribes."

Wolf canine

Burial 260 in unit L-III, a three-year-old of undetermined sex, contained a single wolf canine that was drilled for suspension (Fig. 13, A).

Wolf claws

There are ten distal phalanges (Fig. 13, B) from a wolf or wolves extant, all recovered from Burial 259 in unit L-III. This was the body of a male who was judged to be either sixteen, or alternatively thirty, years old, citing different sources. Grave goods in addition to the wolf claws include a horizontal columella pendant, sixteen marginella beads, two human teeth (Fig. 19, A, C), two socketed, conical antler projectile points, and a splinter bone awl (Fig. 1, D) from a large mammal, probably a deer. The claws and beads were distributed on various parts of the body – around the neck, around the right wrist, and along both legs. The human teeth were also at the right wrist. The columella pendant was found under the 5th lumbar vertebra. The projectile points were by the "right ear or shoulder."

Wolf tail headdress

Burial 86 in unit L-V, designated a nineteen-year-old male, produced what the field notes describe as a "skull cap of spirally arranged" caudal vertebrae (Fig. 14), thirty-two in number, later determined to be from a wolf. In addition to what was apparently a unique hat or headdress adorned with a wolf's tail, this individual was also accompanied by a single marine shell disk bead, twenty-five marginella beads arranged along the legs, and an antler handle located next to the head. Antler handles and grave goods by or under the head are also diagnostic traits of the Intrusive Mound/Kipp Island time period. The grave also contained three triangular projectile points, one of which was imbedded in the third lumbar vertebra, and one of which was found in the rib cage. There were cut marks on the frontal and left temporal and parietal bones of this young man's skull, possibly indicating that he had been scalped. The individual was part of a mass burial containing six bodies. Three adults were laid side by side, with each of the three accompanied by a child. Burial 86 had an infant between his legs; the adult beside him (Burial 81), a 26-year-old male, had a child (Burial 80, to be discussed below under antler artifacts) on top of his legs; and the third adult (Burial 83A) was interred with a child beside the legs.

Wolf jaw ornament

When Burial 25 in unit L-V, who was determined to be a thirty-four year old male, was excavated, a "wolf jaw ornament" (Fig. 15) was discovered to the left of his mandible. This unique item consists of the anterior portion of the bony structure of a wolf's muzzle, basically the mandible and maxilla that have

been cut away immediately posterior of the premolars, just before the width expansion caused by the zygomatic arches. Both the maxilla and the mandible have been cut away just beyond the teeth, so that the roots of the teeth show on the cut surfaces, all of which were polished to a smooth finish. The size is such that the assemblage fits into a human mouth, and was possibly, if not likely, part of a wolf mask of softer organic materials, perhaps wood or a wolf pelt that did not survive. The wolf's two top center incisors and the lower left center incisor are missing. Perhaps they were accidentally broken, or perhaps intentionally removed to allow the insertion of an item or items through the remaining teeth into the mouth of the person wearing the mask. In addition to this artifact, the field notes report that a "pendant of teeth around the neck" also accompanied this individual. There is a photograph of this burial in which most of the neck area is obscured by the individual's mandible, but one can see one large mammal canine tooth exposed to the right of the human mandible. Whatever this "pendant of teeth" consisted of, it is no longer extant. Not mentioned in the field notes, but among the extant artifacts attributed to this burial, are nine marginella beads.

Turtle plastron disks

Two burials produced small, thin, irregularly oval bone disks (Fig. 16) fashioned from the plastrons, or bottom shells, of turtles. The five that are complete enough for measurement average approximately 3.4 cm x 2.8 cm. They have small (1-2 mm) holes, in pairs, drilled through them near the outer edges. Some also have small notches cut in the edges adjacent to some of the holes. Burial 20 in unit L-I, determined to be a twenty-one-year-old male, produced three of these items: one is complete, one is damaged and one is a fragment. Burial 24 in unit L-IV, a forty-one-year-old of undetermined sex, contained five: 2 complete, 1 damaged, and 2 fragments. Four of the five whole, or nearly whole, disks have three pairs of holes; one has four pairs, spaced around the edges.

These were items of some curiosity when first encountered in the present analysis of the material culture from the Libben site. The grave goods from the site were curated separately by material type, so that artifacts fashioned of different materials – flint, shell, bone, etc. – from the same burial were curated separately. While recording the shell artifacts, we encountered a freshwater spiral snail shell (*Leptoxis*, sp.) that had been modified by cutting, with the cut edges smoothed, and by having small holes drilled in pairs near the cut edges. Having previously examined the turtle plastron disks, seeing the six holes in the shell caused a flicker of recognition, and when the bone disks from what turned out to be this same burial (B-24 in L-IV) were retrieved and compared to the shell, it was found that one of them perfectly matched the outline where the body of the snail shell had been cut away. In addition, the holes drilled in each

item aligned with those in the other. While this was a eureka moment, the composite artifact arouses the same curiosity that its components did. We still have no idea how, or for what, it was used.

The bone disks and *Leptoxis* shells, one complete and one fragmentary (showing two drilled holes), were the only cultural items recovered with Burial 24. Burial 20 in unit L-I, in addition to the bone disks, also contained a stone elbow pipe with incising on it, and thirty-one marginella beads located around the neck.

Mammal teeth and jaws

Burial 3 in unit L-V, determined to be twenty-eight years old, but of undetermined sex, was accompanied by a section of the left mandible of a bobcat that still held three teeth, the canine and two premolars. Three additional canines and three additional premolars were also present (Fig. 17). A single marginella bead was the only other extant artifact accompanying this burial.

Burial 205 in unit L-0, an adult of unknown age and sex, although noted as “probably male,” was accompanied by fragments of the upper left maxilla and associated teeth of a river otter. The largest fragment contains an incisor, a broken canine, and three premolars. A smaller fragment contains an incisor. Completing the extant inventory are three small bone fragments and a loose molar. Red ochre was associated with this burial. It is another Intrusive Mound/Kipp Island period burial that also contained twenty-one flint bifaces located beneath the skull. This is another individual who had cut marks on the frontal, and left and right parietal bones of the skull, perhaps indicating scalping.

In addition to the burials having the bobcat and river otter jaw fragments, the field notes indicate the following items that could not be located in the extant material from the site:

Burial 202 in unit L-II, determined to be a 40-year-old female, contained a “fox jaw bone,” and no other artifacts.

Burial 240 in unit L-II, determined to be a 39-year-old male, reportedly contained a “dog or fox mandible” on the pelvis. In addition, the field notes record a “conical bone point under the left humerus” that is also no longer extant.

Burial 243 in unit L-II, reported as a 36-year-old male, had a “canine skull” on the lower right arm.

Burial 49 in unit L-II, determined to be a 36-year-old female, had a “fragmented mandible found near the left knee.”

Burial 232 in unit L-I, determined to be a 29-year-old male, contained, among other things, a “small non-human mandibular fragment.” The other things, according to the field notes, were “approximately 75 small disc beads, yellow ochre, turtle shell, antler segment, projectile point,” all of which were apparently located under the skull. The excavator interpreted this assemblage as being a “medicine bag.” A photo exists (Fig. 18). Whatever this assemblage was, it was

apparently impressive enough for someone to expropriate. The only thing extant from this burial is one small lump of yellow ochre.

Burial 27 in unit L-II, determined to be a 40-year-old female, had “two superimposed [human] mandibles between the right arm and the body.” They were interpreted in the field to be “trophies.” There was also a human cremation (Burial 27A) on the right upper chest of this woman, and “bird and other miscellaneous bones around the right radius/ulna.” None of this material could be located. The field notes also reported “white shells around the ankle and knee.” What is extant from this burial consists of 39 marginella beads and 42 marine shell disk beads.

Finally, as reported above under “Wolf claws,” Burial 259 in unit L-III had two human teeth (Fig. 19, A,C) that were apparently part of a bracelet. In addition, there is another human incisor (Fig. 19, B) from Feature #116 that shows incipient drilling on opposite sides.

Varia

Two burials of the Intrusive Mound/Kipp Island time period included fragmentary bones that could not be identified. Burial 208 in unit L-0 produced five fragments of mammal bone and two fragments of bird bone. These were interpreted in the field to be fragmentary awls, which they may have been, but one cannot identify them as such from the surviving fragments. There were also four small pieces of turtle carapace with this individual. The field notes also reported a “mini awl” from this burial that is no longer extant. Burial 276 in unit L-III contained what are described as “9 articulating bone fragments.” Five of the nine still fit together; four do not. The articulated bits form a bone fragment that has maximum dimensions of 10.5 cm x 2.2 cm, but it remains unidentified. This burial, determined to be a nineteen-year-old female, also contained an antler handle and a flint drill. In addition, the field notes report that she had a “rodent jaw” on the chest; this item was not curated with the grave goods.

The literature contains other reports of miscellaneous animal bones (e.g. Norder, et. al., 2003), usually presumed to be raw material for artifact production, from burials of this time period. Ritchie (1965) sums it up thusly: “...most of the burials of this culture contain quantities of ‘raw’ or partially modified bone and antler, rodent teeth and jaws, and, in at least one case, the pectoral fin spines of fish, evidently to provide ready source materials for artifact manufacture for the deceased in the spirit realm, which likely was conceived as a continuation of earthly existence requiring the same necessities.” There may have been more burials at the Libben site that contained this type of material that, being unmodified, wasn’t recognized as being artifactual, and so was not curated as grave goods. They may still be extant, but if so, are “lost” in the large faunal assemblage from the site, which has been, to a large extent, sorted out by species.

In addition to those reported above, the

field notes contain at least two references to such non-curated animal bones recovered from burials that did contain recognized artifacts. One was Burial 239 in unit L-I, which contained 26 marginella beads. The grave was that of a ten-year-old girl whose head was reported to be lying on a “pillow” of bones. Another was Burial 251 in unit L-0, which contained a single marginella bead and a bone awl. This individual was reportedly a 55-year-old of undetermined sex who was also accompanied by “assorted animal bones.” Several other burials that did not contain artifacts, were reported to have such things as “bones,” “animal bones,” “rodent bones,” and “bone fragments” interred with them. There was also one with “large cat bones,” and one with a “bird bone on pelvis.” The field notes report at least seventeen graves containing fish bones, and nine with deer bones. Unfortunately, the notes are not specific enough to tell us whether any of these were intentional deposits, or items that accidentally ended up with the body through inclusion in the grave fill.

Completing the extant bone artifact inventory, there are twenty-five bone fragments, one from burial fill and twenty-four from the general excavations, that show evidence of alteration, but, except as noted, are not complete enough to allow identification of either the bone or its function. They represent either the residue from artifact manufacture or small unidentifiable fragments of broken finished artifacts. There are six scored and snapped bird bones, the residue of bone bead, or tube, manufacture. There are nine fragments that show evidence of polish; four with cut marks; three, two of which are rib fragments, that are polished and have incised lines on them; one that has been cut, with the edges ground; one that is polished and punctated; and one small unidentified mandible fragment that has been polished, cut and drilled.

Non-extant artifacts

Gregory D. Golden, at the time (2008) an undergraduate student at Kent State University, undertook the Herculean task of mining the massive field notes from the Libben site excavation to extract pertinent information therefrom. The extant inventory was then compared to his summary of what was reported in the field notes to learn of any discrepancies. Several of these have been noted above. Other items that were reported in the field notes that are either no longer extant or improperly curated are:

Bone awls: two from Burial 210 in Unit L-III, a 13-year-old of undetermined sex; one from Burial 257 in unit L-0, a 36-year-old of undetermined sex; and one from Burial 2 in unit L-I, a 34-year-old-male.

Bone beads (or tubes): one under the left knee of Burial 28 in unit L-II, a 46-year-old of undetermined sex; a “large” one with Burial 71 in unit L-V, a 23-year-old male; a three-inch bone bead behind the ear of Burial 223 in unit L-III, a 21-year-old female; and a “worked long bone bead” with Burial 15 in

unit L-VII, a child of undetermined sex.

Miscellaneous: a “worked bone” near the right shoulder of Burial 3 in unit L-VII, a child of undetermined sex; an “associated bird bone” with Burial 614 in Unit L-II, an infant; “turtle remains” from Burial 261 in Unit L-I, a 43-year-old female; and a turtle shell, thought to be a human skull when first exposed, to the left of the right knee of Burial 207 in Unit L-XXV, a 19-year-old of undetermined sex.

Other than reporting their absence, not much can be said about these items. They may, or may not, have been pilfered from the collection. Subsequent examination may have determined them not to be artifacts, and they may be curated with the bone refuse from the site. Some could also be extant, but mislabeled. The field notes are only as good as the person recording them, and the dig involved a large number of excavators of varying degrees of expertise and dedication. On the flip side, it should be noted that there are also a number of extant artifacts, including some that are quite notable, that were not mentioned in the field notes.

ITEMS OF ANTLER

Projectile points

Twenty-six conical, socketed antler projectile points are extant from the Libben site excavations. These, as are the triangular flint projectile points, are believed to truly be arrowheads, not dart or spear points. They are fashioned from carved, polished and hollowed-out deer antler tines. Fourteen came from six burials, three from grave fill and nine from the general excavations. Fifteen are more or less complete; ten are tips; and one is unfinished, i.e., shaped but with only incipient drilling begun for the socket. The complete examples ranged in length from 2.2 cm to 6.8 cm with an average length of 3.7 cm. The longest one at 6.8 cm is somewhat of an aberration, as it is 2.1 cm (or 45%) longer than the next largest example.

Seven antler arrowheads and six triangular flint arrowheads were found together, adjacent to the left shoulder of the individual designated as Burial 80 in unit L-V, who was determined to be a nine-year-old male. All of the arrowheads by the boy's shoulder were oriented due north, suggesting that they may have been attached to arrows in a quiver. These seven antler arrowheads (Fig. 20) ranged in length from 2.9 cm to 4.7 cm, which, as with the total sample, also average 3.7 cm. Also accompanying this burial was a marine shell columella pendant, three columella tubes, three marine shell scoops or spoons, and a small fragment of an eyed bone needle. There was a seventh triangular flint projectile point in the grave, embedded in the sphenoid bone at the base of the boy's skull, although bone growth around it makes it doubtful that this injury caused death (Romain, 1979). This individual was referenced above as the child lying on the legs of the adult adjacent to the young man

who was adorned with the wolf tail head-dress. The bones of this lad showed considerable modification. Cut marks appear on the frontal, occipital and temporal bones of the skull; on the mandible; on the left and right scapulae; and on the left femur and tibia. In addition, a “trephination” had removed a cranial plaque from the skull. Romain (1979) also reports, “Burial records note that the outline of the burial pit containing these six associated burials was well defined and that there were postmolds at the corners of the roughly rectangular pit.”

Three conical antler arrowheads were recovered from Burial 9 in unit L-X. This burial and its associated grave goods were discussed above under bone “projectile points.” Two conical antler arrowheads were retrieved from Burial 259 in unit L-III. This burial was discussed above under “wolf claws.” The longest (6.8 cm) conical antler arrowhead was recovered from Burial 10 in unit L-IX, an infant less than one year old. Also recovered from this grave were a number of marine shell ornaments: a pendant made from the body of a whelk shell, disk and cylindrical shell beads, and a single marginella bead. The final conical antler arrowhead from a burial was associated with Burial 47 in unit L-V, who was determined to be a seventeen-year-old female. A marine shell columella awl was found in her mouth. She was buried holding hands with Burial 48, recorded as a 31-year-old male, whose grave contained two shell gouges and three triangular flint arrowheads, all with the tips broken off. The field notes are not helpful in enlightening us on this matter, but other than the seven that were probably in a quiver, it is possible, if not likely, that these antler arrowheads caused or contributed to the deaths of the individuals in whose graves they were found.

There are four additional antler arrowheads of a different style (Fig 7, E-H), being flat rather than conical, and tanged rather than socketed. With one exception, they differ from the bone arrowheads reported above only in the material from which they were fashioned. The exception (Fig 7, E) has barbs, leaving little doubt as to its identification as an arrowhead. They range in length from 3.6 cm to 4.2 cm, with an average of 4.0 cm. The two bone arrowheads of similar style are 3.3 cm and 3.9 cm in length. These items are nearly, if not entirely, unique; the literature that we have seen is largely silent on this style of arrowhead, whether in antler or bone.

Harpoon heads

Three antler harpoon heads were recovered from two burials at the Libben site. Burial 202 in unit L-XII produced the most complete antler harpoon head (Fig. 21). It is 6.0 cm long and 1.7 cm wide. It has only a single barb, and a 3.5 mm drilled hole, presumably to attach a retrieval line, that is broken out. It is possible that there was a second barb on the piece that is missing. The person buried in this grave was deter-

mined to be a 22-year-old female. Other grave goods buried with her were a well-made, highly polished bone awl fashioned from a Canada goose humerus (Fig. 1, I); two columella pendants, one with two holes for horizontal suspension, and one with one hole for vertical suspension; and the bit of a stone “chisel,” or perhaps “pick.” Antler harpoons and stone picks are both diagnostic artifacts of the Intrusive Mound/Kipp Island time period.

Burial 208 in unit L-0 is another Intrusive Mound/Kipp Island burial with a large number of grave goods, two of which are badly eroded antler harpoon heads. One is broken 5.7 cm from the tip, where a single barb remains. The other one is broken at both ends, and on the barbed edge, with only the bases of the barbs, of which there were at least four, still in existence. It is 7.7 cm long. Additional items with this burial include seven antler handles and/or flakers to be discussed below, three Jacks Reef corner notched projectile points; three bifaces of unidentified flint and two small Upper Mercer flint chips showing minimal use wear; three small sandstone abrading stones; and eleven bone fragments discussed under “Varia” above. A small circular disk was removed from the individual's skull; an oval hole was cut out of the ramus of the left mandible; and there were cut marks on the frontal, temporal, and left and right parietal bones of the skull.

Ritchie (1965) suggests that the large antler harpoons were employed for spearing large fish, or alternatively, spearing beaver in their winter lodges, for which he cites ethnographic references.

Handles/Flakers

The Libben site excavations produced a total of fifteen antler artifacts (Fig. 22) that are variously referred to in the literature as handles (Mills, 1922), handle-like (Converse, 2003) or flakers (Ritchie, 1965). Twelve came from six burials. Seven were with Burial 208 in unit L-0 (mentioned above under “harpoon heads”), determined to be a 15-year-old male; and one each with Burial 86 in unit L-V, a nineteen-year-old male (discussed above under “wolf tail head-dress”); Burial 276 in unit L-III, a nineteen-year-old female (mentioned above under bone “varia”); Burial 9 in unit L-X, a 35-year-old of undetermined sex (discussed above under bone “projectile points”); Burial 219 in unit L-II, a 35-year-old male (discussed above under bone “fishhooks”); and Burial 207 in unit L-0, an adult male whose grave contained red ochre, five Jacks Reef corner notched projectile points, eighteen whole and one fragmentary bifaces, two utilized unifacial flint flakes, and four other stones whose functions are debatable. The field notes also report a “bone tool” from this burial that is no longer extant. Three antler handles came from the general excavations, one of which was from a pit, Feature 34 in unit L-I. Discounting the beaver-incisor chisel handle (discussed below) at 19.5 cm, they range in

length from 5.9 to 17.8 cm, with an average length of 9.2 cm. Diameters range from 1.4 cm to 3.0 cm, with an average of 2.1 and a median of 2.0. In other words, for the most part, they fit the hand like a standard screwdriver handle. Nearly all show a degree of polish, ranging from slight to heavy.

While all of these tools are characteristic of the Intrusive Mound/Kipp Island time period, one of the handles is different from the others, and is, to quote Ritchie (1965), "a very distinctive index trait of the culture." He termed this the "antler-hafted beaver-incisor wood-carving tool". At the Libben site, one of the seven antler handles from Burial 208 in unit L-0 was this type of tool (Fig. 23). It consists of a curved antler handle with an oblong hole through which a worked, chisel-shaped beaver incisor would be inserted. There is no extant beaver incisor chisel with this artifact; however, the field notes report that one was present when the tool was excavated, but disintegrated when removal from the earth was attempted.

Of the other eleven antler handles from burials, eight have sockets of varying sizes and depths indicating that they probably functioned as handles that accommodated tangs on implements of unknown material and function; one, the shortest, is not socketed; the remaining two (Fig. 22, C & D, from Burial 208) have only surface indentations instead of sockets. It is not clear whether these are incipient sockets, or are the result of them having been used as punches, again in an unknown manner on unknown materials. Of the three from non-burial contexts, one has a definite socket. Another (Fig. 24, A) is conical in shape and deeply socketed in the manner of conical antler projectile points. However, it is much larger than the arrowheads and the tip, if such it was, is broken; similar items have been reported elsewhere as antler "spearpoints" (Griffin, 1943). The final one, the smallest of the series, is unfinished, with only incipient drilling begun. The Libben specimens clearly exhibit characteristics demonstrating why different authors have used different terms to describe this type of tool.

Drift

One small antler cylinder, 2.7 cm long by 0.8 cm in diameter, was recovered from the surface of unit L-II. This item is of relative uniform diameter throughout its length, and most closely resembles the artifact type known as a "drift," which is usually interpreted to be a flaking tool for working flint. Drifts are usually somewhat larger, however, and it could just as easily have been a preform for the manufacture of a conical antler arrowhead.

Ring/Atlatl hook

An antler artifact was recovered in one of the 1966 test trenches that would appear to be nearly unique (Fig. 24 B). It is a section of antler tine that is oval in cross-section. The length is 3.7 cm, and the maximum diameters are 3.4 cm high and 2.1 cm wide.

The center has been hollowed out to form a tapered hole (2.0 to 1.5 cm x 1.3 to 0.9 cm) that passes completely through it. A very similar item was recovered from excavations on Hiwassee Island in eastern Tennessee (Lewis and Kneberg, 1946. Page 124; PL76D). There it is referred to as an antler ring, and declared to be a unique item of unknown function. The Libben specimen has a raised nub, for lack of a better term, on the large end, and the photograph of the Hiwassee Island specimen appears to have this same feature. It is suggested that this item could have served as an atlatl, or spearthrower, "hook." The presence of both Jacks Reef and triangular projectile points in association with Intrusive Mound/Kipp Island burials, suggests that the switch from spearthrowers to bows and arrows occurred during this time period. So-called gorgets (one of which, the only one from the site, was recovered with Burial 250 in unit L-0, a 30-year-old male), presumed to be Woodland "atlatl weights" (Lutz, 2000), also seem to have their last gasp during this time period.

Disk

A small oval disk, 2.0 cm x 1.5 cm x 0.4 cm, was recovered as the only artifact with Burial 35 in unit L-II. This burial is described as the cremation of an infant.

Varia

Among the antler materials from the Libben site are sixteen modified fragments of antler, four from burials and twelve from other contexts. Two of the four from burials are likely fragments of the antler harpoon(s) from Burial 208 in unit L-0 discussed above. The other two are unidentifiable. The twelve from non-burial contexts all show cut marks. All are judged to be residue from antler artifact manufacture, nine of them being short fragments, the butt ends, of antler tines that have been scored all the way around with the tips snapped off.

Finally, completing the antler inventory are eight similarly small tine fragments that do not look much different in size and shape from the last twelve described. The difference between them is that these do not show evidence of having been cut, but are instead roughly broken. They, too, are likely residue that was generated in procuring raw material for artifact manufacture by reducing larger pieces. Four large pieces of antler tine, up to 25 cm long and 5 cm wide, were also included in the items that had been sorted and curated as artifacts, but they also, other than being broken, show no sign of workmanship.

COMMENTS

Without radiocarbon dating, only the presence of certain diagnostic artifacts with an interred individual allows us to attempt the chronological placement of his or her lifetime in the vast expanse of prehistory. Objects of material culture that survived the

intervening centuries between interment and exhumation were recovered from less than a quarter of the graves at the Libben site. About a dozen of the burials from Libben were identified above as belonging to the early Late Woodland time period designated as the Intrusive Mound Culture in Ohio and as the Kipp Island Phase in New York. If one includes those burials containing the various unmodified animal bones that weren't curated as artifacts, that number is, perhaps, doubled. However, one should not conclude from this report that the Libben site represents only, or even primarily, this earliest of times in the Late Woodland period. Burials of this time period would appear to represent the earliest interments in the cemetery, but would also appear to be but a small minority, given the number of people who were buried there. Their prevalence in this report represents a bias created by the subject of the report – bone and antler artifacts, which are more common and have some more distinctive forms in graves of this time period than in later burials. The ceramics recovered from the site, of which there are in excess of 75,000 sherds, would indicate that the bulk of the activity at the Libben site postdated the Intrusive Mound/Kipp Island time period, perhaps by a couple of centuries or more.

The Intrusive Mound Culture (a term that Prufer despised, as to him it implied a "culture" whose *raison d'être* was to bury people in existing mounds) is the next distinctive taxonomic entity in Midwestern American archaeology following the demise of Middle Woodland mound-building activities. We know next to nothing about these people, but their remains have been found, albeit in small numbers, over a wide area that includes much of the same territory that has produced Hopewellian remains. There appears to be a time gap of a few centuries following the disappearance of recognizable Middle Woodland remains and the appearance of the recognizable remains of these early Late Woodland peoples. We lack enough knowledge to say with any degree of certainty that they are the direct physical and/or cultural descendants of the Hopewell people (or peoples, as they may not have been a single ethnic group), but the facts that they are found in the same geographical areas having evidence of Middle Woodland presence and that some of their dead were buried in pre-existing Woodland mounds are probably not coincidental. It is also not much of a stretch to see Jack's Reef Corner Notched projectile points, diagnostic artifacts of the early Late Woodland period, as descended from Hopewellian Snyder's points. It seems to me that Ritchie's opinion concerning "the lingering aura of the Hopewellian tradition" has merit.

Acknowledgements

Gregory D. Golden is to be commended for his yeoman service in searching through the massive field and burial notes from the Libben site excavations to extract

pertinent data. Thomas Bills, then of the Cleveland Museum of Natural History, who was familiar with the Libben site faunal remains from his days as a graduate student at Kent State University, is gratefully acknowledged for taking the time to aid in identifying some of the species whose bones the people at Libben used to create implements and ornaments.

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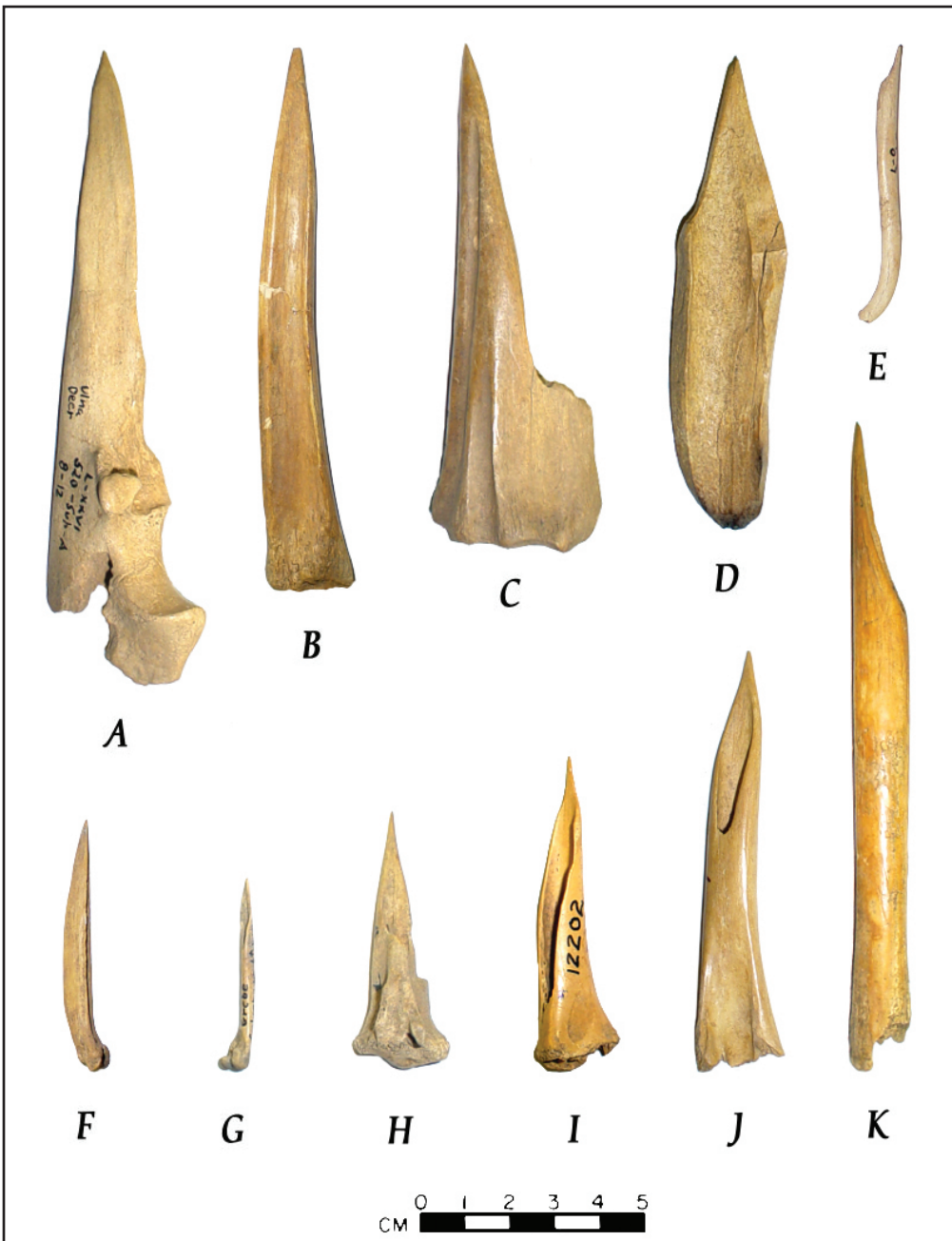


Figure 1 (Pigott) Bone awls from the Libben Site. A-D, whitetail deer; E, raccoon baculum; F, drum spine; G, grebe humerus; H, K, wild turkey; I, Canada goose; J, probably swan.

	BURIALS	FILL	OTHER	TOTAL
Bird bone awls	5	0	13	18
Mammal bone awls	2	1	8	11
Fish bone awls	1	1	3	5
Miniature awls	2	0	9	11
Splinter bone awls	7	0	13	20
Awl tip fragments	4	3	51	58
Awl body fragments	0	1	7	8
Total	21	6	104	131

Table 1 (Pigott) Bone awls from the Libben Site.

SPECIES	NO.	BONE IDENTIFIED
black bear	2	baculum
whitetail deer	5	ulna, metatarsal
bobcat	1	radius
raccoon	2	ulna, baculum
turkey	9	tibia, tibiotarsus, tarsometatarsus
swan, sp.	1	humerus
Canada goose	2	humerus
loon, sp.	3	humerus, tibiotarsus
wood duck	1	humerus
grebe, sp.	1	humerus
fresh water drum	2	dorsal spine
channel catfish	1	dorsal spine

Table 2 (Pigott) Species and bones used in Libben site awls.



Figure 2 (Pigott) Miniature awls from the Libben Site excavations.

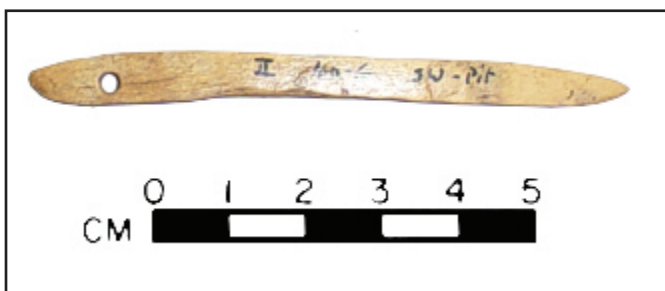


Figure 3 (Pigott) Bone "needle" recovered from a pit in unit L-II.



Figure 4 (Pigott) Beaver incisor chisel fragment.



Figure 5 (Pigott) Whitetail deer metatarsal bone beamer.

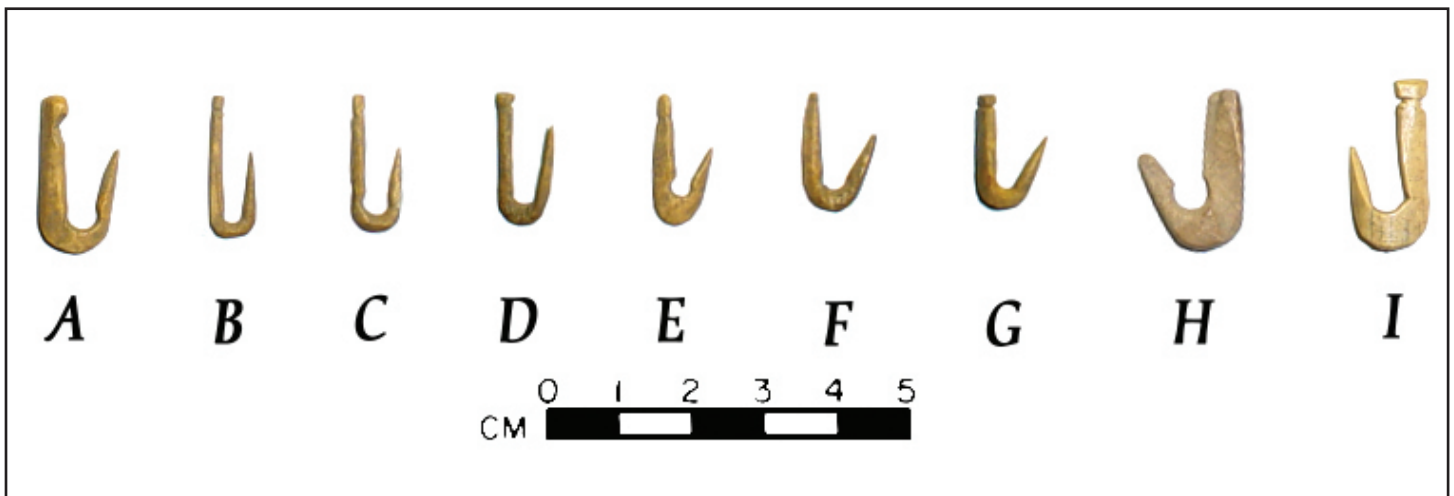


Figure 6 (Pigott) Bone fishhooks. A-G accompanied burial 219 in unit L-II; H is from feature 86, a pit in unit L-VIII; I is from the general excavations in unit L-IX.

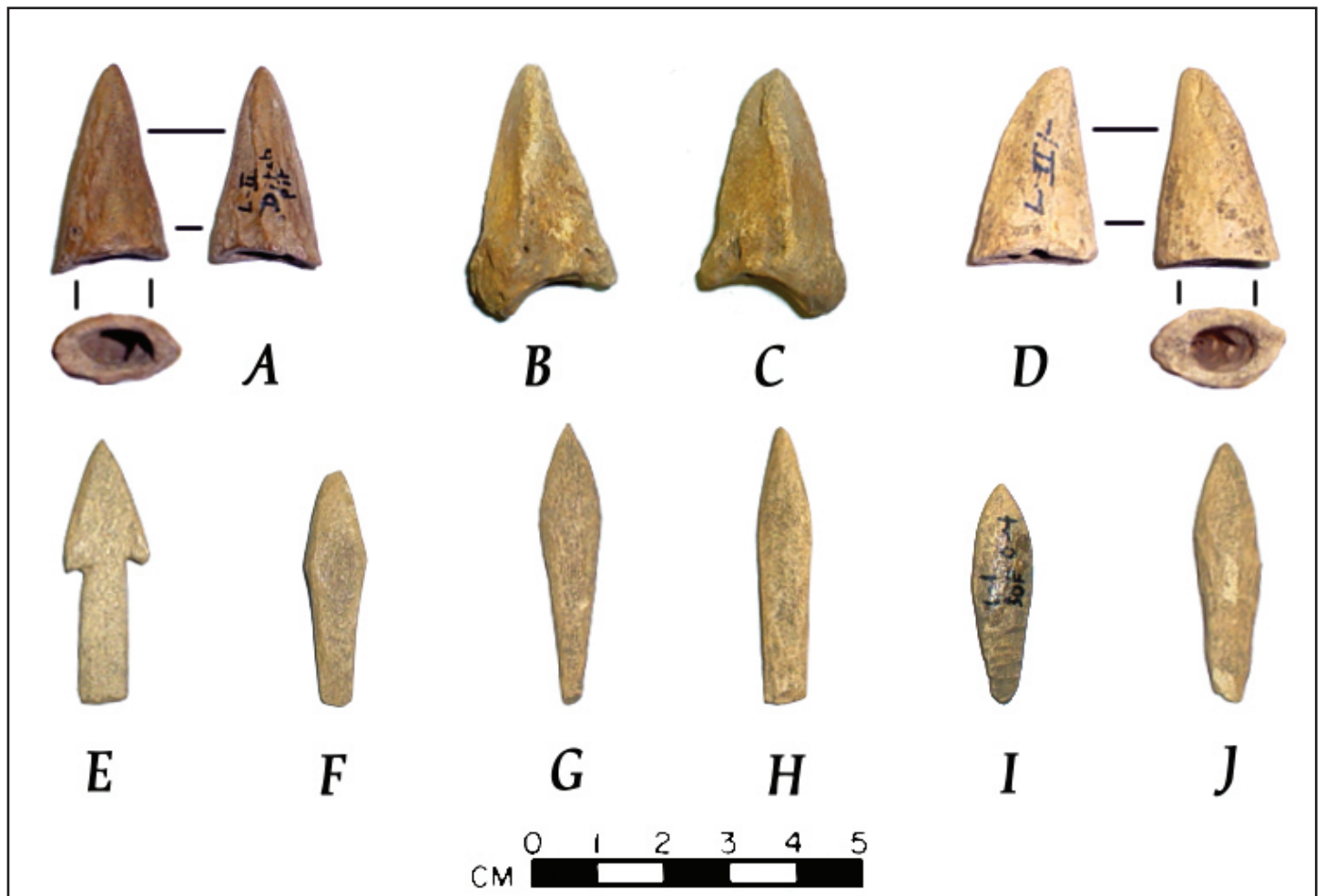


Figure 7 (Pigott) A (Feature 41) & D (unit L-II), carved and socketed deer phalanx projectile points. B & C, two of six unmodified deer phalanx projectile point "preforms" accompanying burial 9 in unit L-X. E-H, carved antler projectile points; I & J, carved bone projectile points (E, G & H from pits; F, I & J, general excavations).



Figure 8 (Pigott) Turtle carapace artifacts. Nearly complete turtle shell (A); polished turtle shell cup or bowl rim fragments (B-F, H, I); drilled turtle shell (G); shell with incised markings (I).

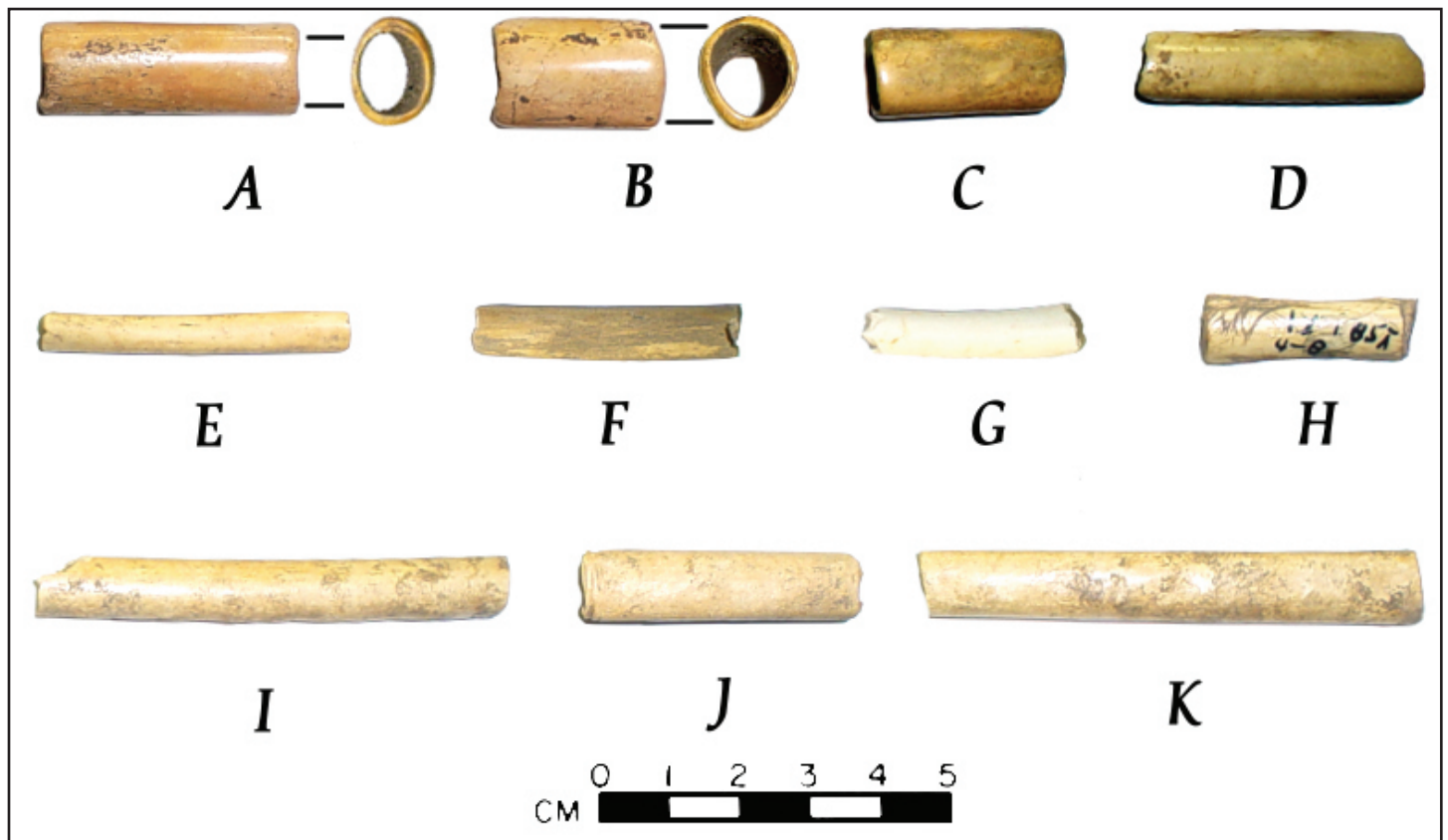


Figure 9 (Pigott) Bird bone beads from burials (A-D) and the general excavations (E-K).



Figure 10 (Pigott) Bone ear spool.

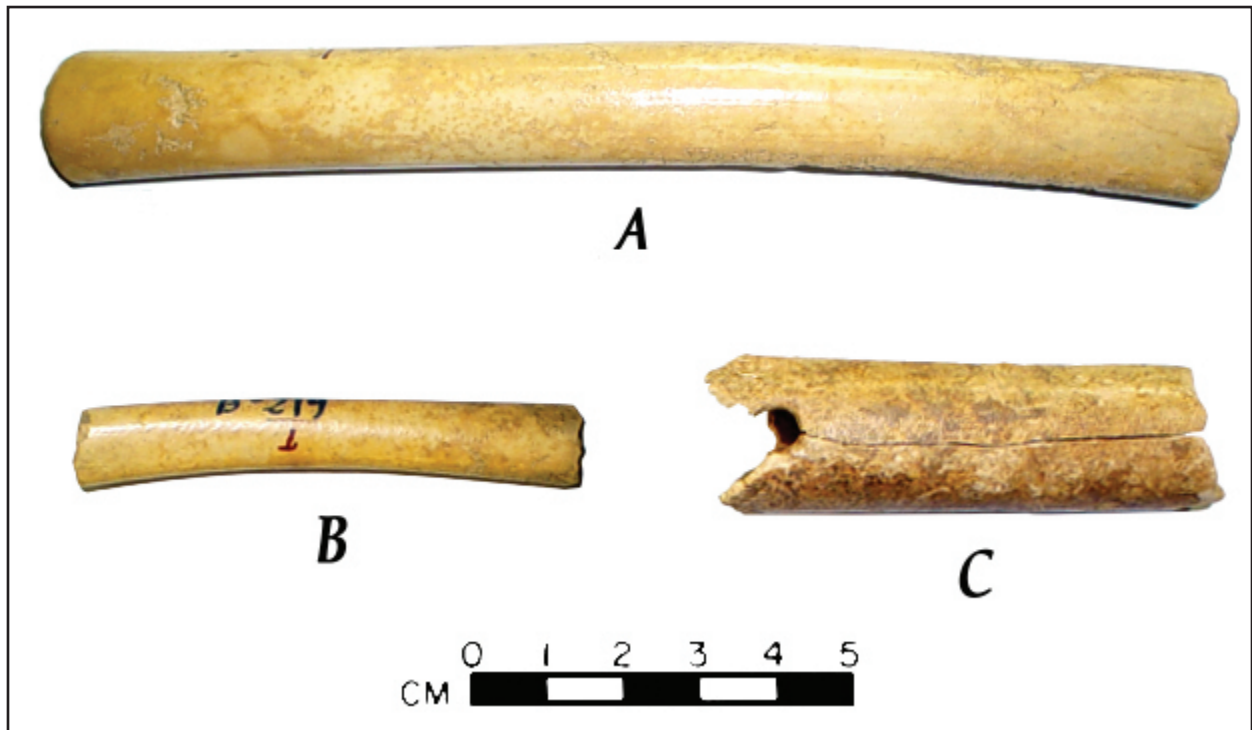


Figure 11 (Pigott) Bird bone tubes from burials: A, probably swan; B, goose or turkey; C, bird bone flute or whistle fragment.



Figure 12 (Pigott) Cut, drilled and hollowed elk phalanx.

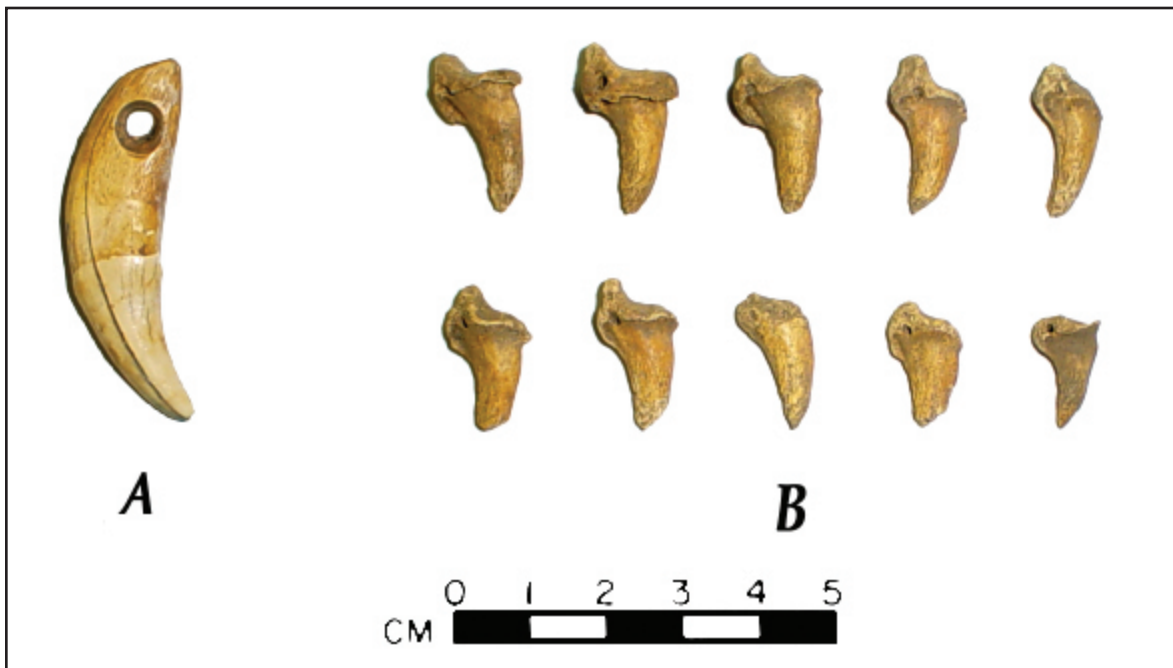


Figure 13 (Pigott) Drilled wolf canine (A) and distal phalanges (B) from burials.



Figure 14 (Pigott) Caudal (tail) vertebrae from a wolf recovered from burial 86 in unit L-V.



Figure 15 (Pigott) Modified wolf jaw bones from burial 25 in unit L-V.

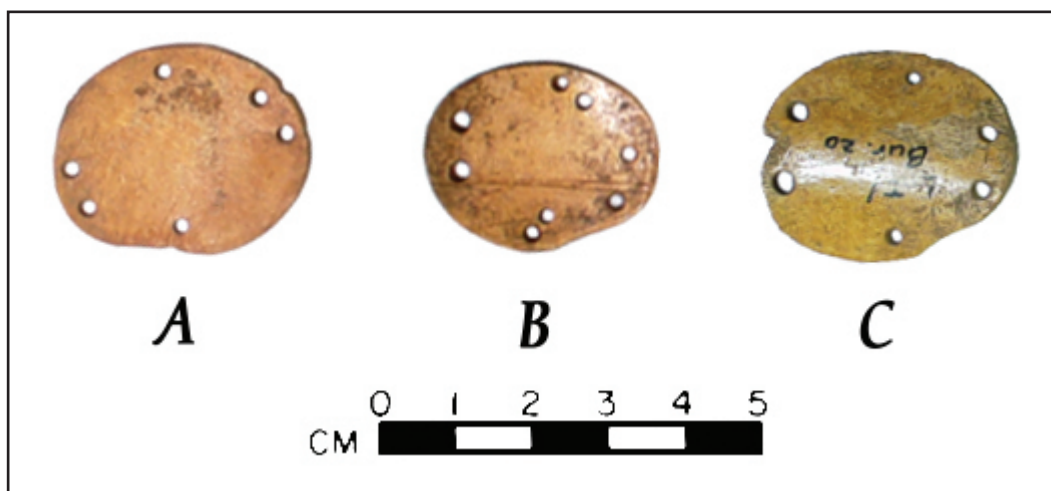


Figure 16 (Pigott) Turtle plastron disks from burial 24 in L-IV (A, B) & burial 20 in L-I (C).



Figure 17 (Pigott) Bobcat mandible fragment and teeth from burial 3 in unit L-V.



Figure 18 (Pigott) Burial 232 in unit L-I showing beads and miscellaneous bones under the skull.



Figure 19 (Pigott) Human teeth. A & C from the right wrist of burial 259 in unit L-III; B from feature 116.



Figure 20 (Pigott) Socketed antler projectile points, part of a quiver of arrows with burial 80 in unit L-V.



Figure 21 (Pigott) Two views of an antler harpoon head from burial 202 in unit L-XII.

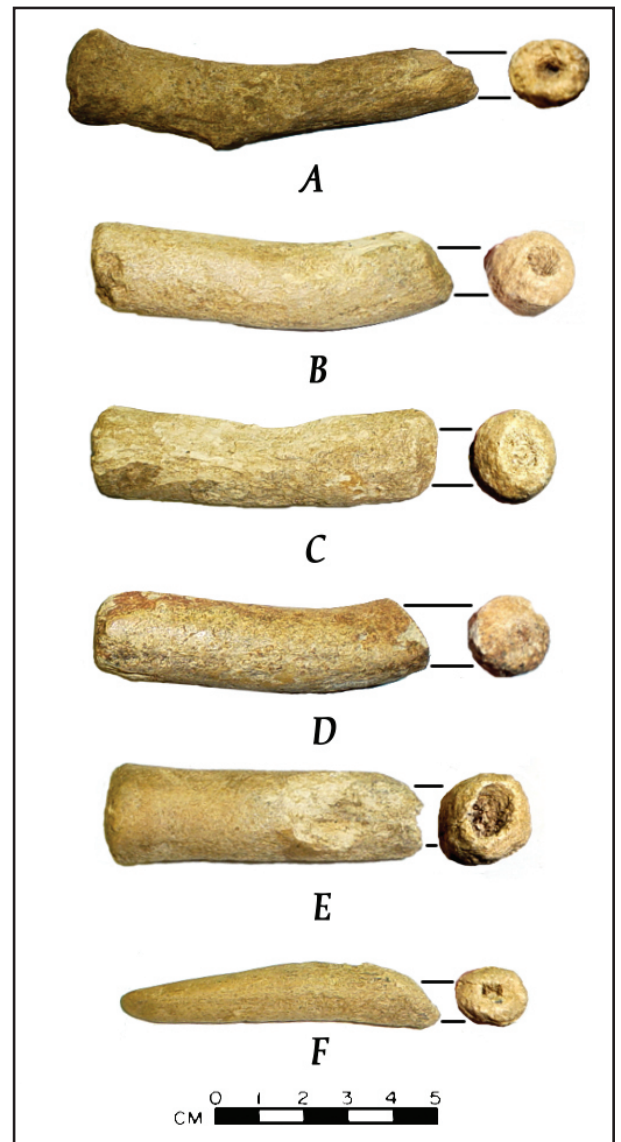


Figure 22 (Pigott) Antler handles from burial 208 in unit L-O.



Figure 23 (Pigott) "Antler-hafted beaver-incisor wood-carving tool" from burial 208 in unit L-O).



Figure 24 (Pigott) Antler handle or "spear point" (A). Antler "ring" or "atlatl hook" (B).