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C. USE OF MAMMALIAN SKULLS AND MANDIBLES
BY PREHISTORIC INDIANS OF ILLINOIS

PAUL W. PARMALEE

Illinois State Museum, Springfield

Prehistoric Indians that once occupied the eastern United States subsisted almost entirely upon game which inhabited areas where their camps and villages were located. Although certain wild plants provided some food, as well as cultivated crops grown by later cultural groups, the bulk of the diet of aboriginal Illinois Indians consisted of native mollusks, fishes, turtles, birds and mammals. Especially in the case of the latter two, many of the bones were worked and fashioned into a variety of ornaments, tools and utensils.

In most instances it appears that such bone artifacts represent a secondary use of the animal, the primary use having been as food. However, worked mandibles and maxillae of the black bear and gray wolf, for example, have been found in association with human burials, primarily those of the Hopewell culture, while their other remains are almost entirely wanting in village midden deposits and refuse pits. These often elaborately cut and drilled sections of maxillae and mandibles were of special significance—possibly religious, a symbol of bravery, or simply as an ornament or trophy.

This type of bone artifact has been found in association with all three major prehistoric cultural groups (Archaic; Woodland; Mississippian) in Illinois, but apparently only during the Hopewell phase of the Woodland Culture were there

any "extensive" manufacture and use of these bone ornaments. The only thoroughly excavated Archaic site in the state is the Modoc Rock Shelter Site (Fowler, Winters, and Parmalee, 1956) located in southwestern Illinois. Although no extensively worked or drilled mandibles or maxillae were found, a right mandible of a bobcat was recovered that had apparently been cut at the symphysis (separating it from the left half) and handled or worn a great deal as evidenced by its smoothed and polished appearance.

Mayer-Oakes (1955: 209, Fig. 19-1) has illustrated a "Cut, polished and perforated bear jaw" from the Archaic East Steubenville Site in Ohio; generally, such bone artifacts are uncommon in Archaic sites. However, some unique artifacts have been reported from the Archaic Indian Knoll Site in Kentucky. A section of the skull (rostrum) and mandible of a bobcat were found with three burials, while two cut mandibles of the gray wolf and four mandibles (plus the rostrum) of the fisher, *Martes pennanti*, occurred with others (Webb, 1946: 228, Fig. 30). These are of special interest since they were associated with a preceramic culture. The use of cut mandibles and maxillae for decorative and/or ceremonial (?) purposes, primarily those of the larger carnivores and mustelids, apparently decreased with the decline of the Hopewell culture. They are

known from the later Mississippian groups, but are uncommon and do not exhibit the workmanship of the cut and perforated bones of the Hopewell period.

Canine teeth, mostly from smaller carnivores such as raccoon and fox, and typically perforated at the root end for suspension, have been found in varying numbers at several Illinois sites. Deuel (1952b) refers to 179 perforated canine teeth of the raccoon that "lay in the neck region of a skeleton of a middle-aged person in Baehr Mound 2 (Brown County)." He also noted more than 200 drilled incisors of squirrels, that occurred with a skeleton in the Hemphill Mound in Brown County. The incisors of beavers were often used as a tool, possibly some type of chisel; more have been found at the Fisher Site (Will County) than in any other Illinois site.

The following accounts deal with the species of mammals utilized by the prehistoric Indians of Illinois for the manufacture of jaw and skull ornaments, pendants and utensils. These data provide an index to cultural traits, to the use and possible significance of certain species to the Indian and to the former abundance and distribution of these animals. Figure 1 illustrates several typical cut mandibles and maxillae which have been recovered at various archaeological sites in Illinois.

ACCOUNTS OF SPECIES

BLACK BEAR, *Ursus americanus* Pallas.—Now extinct in Illinois, the black bear was fairly common in wooded sections in early times. As noted previously, remains are rare

in refuse pits and midden debris of prehistoric sites in Illinois and apparently only historic tribes used the bear for food, and possibly for robes and clothing. To the prehistoric Indian (primarily Hopewell) the bear appears to have had special significance and apparently was killed principally for the canine teeth, mandibles and skull.

Illustrations and discussions in the literature dealing with the bear's canine tooth and its use as a pendant or necklace component are too numerous to list. These teeth were a favorite with the aborigines; some were split, often drilled (one to several holes) and occasionally inlaid with pearls. The manufacture of imitation bear's teeth by the Indian is especially noteworthy since it also infers that the bear had special significance. Such canine teeth, made from bone, occurred in the Wilson Site Cemetery (Wh^o10), White County (Deuel, 1952a) while two similar shell "teeth", fashioned from the axis of a marine whelk, were found with a burial in the Morton Mound F^o14 in Fulton County (Cole and Deuel, 1937); these carved shells had apparently been worn as ear pendants.

Several imitation bear's teeth made from sheet copper have been recovered in mounds of the Liverpool group in Fulton County. Five of these (Dickson Mounds State Park Museum near Lewistown) were found lying on the skull of a burial, apparently having been worn as a head band. Each was approximately three and one-half inches long and contained two, centrally drilled holes. Four imitation canines were found at the Weaver Site, Ful-

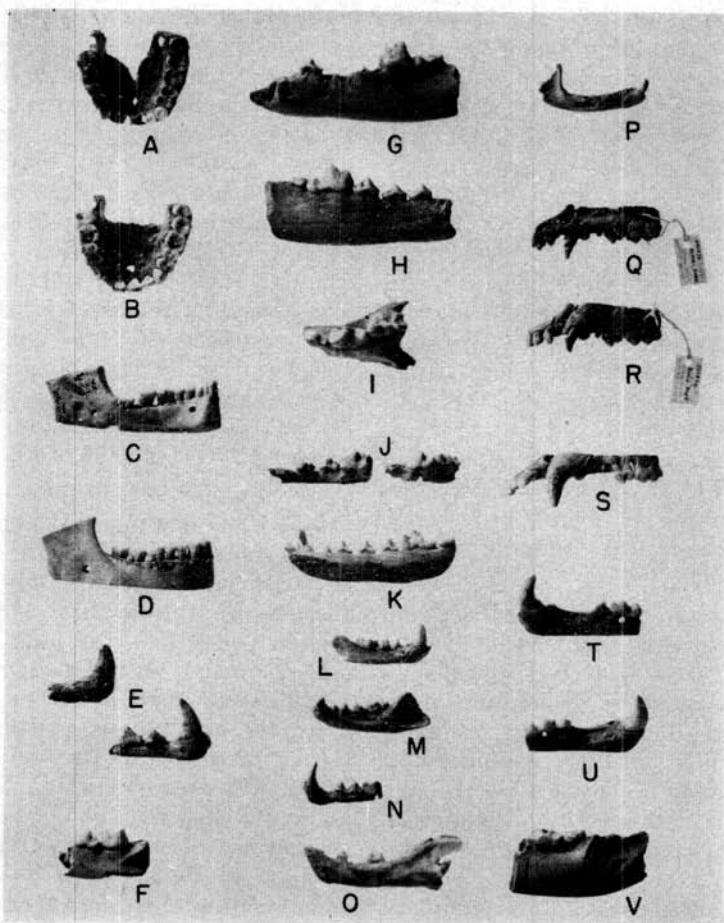


FIG. 1.—Types of cut mandibles and maxillae from archaeological sites in Illinois. *A* and *B*, palatine sections of human skull, Liverpool mounds, Fulton County; *C* and *D*, human mandibles, Sister Creeks Site, Fulton County; *E*, mountain lion mandibles, Mound F^o191, Fulton County; *F*, mountain lion mandible, Little Chains Site, White County; *G* and *H*, mandibles of gray wolf and *I*, maxilla of gray wolf, Clear Lake Site, Tazewell County; *J*, maxillae of domestic dog, Clear Lake Site; *K*, coyote mandible, Cahokia Site, Madison County; *L* and *M*, badger mandibles, Clear Lake Site; *N*, bobcat mandible, Jersey County, Mound 69; *O*, bobcat mandible, MODOC Site, Randolph County; *P*, raccoon mandible, Snyders Site, Calhoun County; *Q* and *R*, black bear maxillae, Dickison Mounds, Peoria County; *S*, black bear maxilla, Mound Wh^o6, White County; *T* and *U*, black bear mandibles, Liverpool mound; *V*, black bear mandible, Clear Lake Site.

ton County (Wray Coll., I.S.M.); two with a male human burial in a Hopewell cemetery and two in a house pit in the village. These ear pendants had been made by overlaying sheet copper on wood carved in the shape of a canine; portions of the wood were still preserved.

One of the most unique artifacts encountered thus far in Illinois was found in a "log tomb" mound (Hopewell) of the Liverpool group. A piece of bone had been cut and ground to resemble a handled dagger while the canine tooth of a bear had been hollowed out to serve as its sheath. A line drawing of this artifact (Dickson Mounds State Park Museum) is shown by Moorehead (1928: Pl. 49). Although he refers to it as that of a "grizzly bear tusk", it is probably the canine of a large black bear.

Cut and drilled maxillae and mandibles have been found in association with Hopewell burials in Illinois, maxillae being the more common. Bone artifacts fashioned from skulls generally included that portion obtained by cutting through the roots of the teeth and longitudinally through the palatine section; typically, each contained three incisors (premaxilla), the single canine, the premolars, and the first molar. Four such artifacts (two bears) from the Dickson Mounds in Peoria County are mistakenly illustrated as "halves of wolf mandible" (Deuel, 1952a.: Pl. 8, Figs. A and D). Three others occurred in the Wilson Mound Wh^o6 and two in Mound Wh^o7, White County (Deuel, 1952a.: Pl. 67, Figs. D and G, and Pl. 72, Fig. C).

Two cut and drilled bear man-

dibles (same individual) were recovered with a human burial in a Liverpool mound (Dickson Mounds State Park Museum). They were cut similar to the skull types and, although the incisor teeth were missing, the original artifact apparently include the apex of the mandible. Evidently, the only other artifact made from a black bear jaw and found in Illinois was recovered at the Clear Lake Site, Tazewell County, (Schoenbeck coll., I.S.M.). The ascending ramus of a left mandible had been cut away and it had also been cut at right angles to its longitudinal axis, leaving only the second and third molars intact (Deuel, 1952a.: Pl. 50, Fig. O).

RACCOON, *Procyon lotor* (Linnaeus).—The quantity of raccoon remains found in numerous Illinois sites indicates extensive use of the raccoon by the Indian. Although certain bones (*e.g.* the ulna, radius and os penis) of the raccoon were modified and used as awls or other tools, the animal was probably collected primarily for its flesh and/or hide. Mr. Gregory Perino found a worked right mandible of a raccoon at the Snyders Site (Hopewell) in 1955 (I.S.M. coll.). The ventral side was ground flat and then several shallow grooves were cut in this surface at right angles to its longitudinal axis.

The only other Illinois record of a worked raccoon mandible is one described and illustrated by Maxwell (1951: Pl. 5) from the Sugar Camp Hill Site, Williamson County. He describes it as "cut through the ramus, polished and scratched deeply with a knife along the labial wall". However, this description

does not fit his illustration and, according to Maxwell (pers. comm.), this was the preliminary field description of a specimen later classified as unworked. Maxwell (*op cit.*: 106) also states that "a lynx mandible was cut in back of the canine and gouged with three wide shallow incisions on the labial side at right angles to the longitudinal axis of the mandibles and drilled into, but not through the bone in two places on the lingual side"; this description applies rather to the illustrated raccoon jaw.

WOLVERINE, *Gulo luscus* (Linnaeus).—The presence of two cut and perforated sections of mandibles of this species in Mound No. 6 of the Havana Mound Group (Mason County) represents a unique record since there are no historic accounts of the wolverine in Illinois. These artifacts were described and figured as parts of a dog's jaw (Baker, 1941: 11, 69 and Pl. 7) but were later determined as *G. luscus* by Hoffmeister (1954) who states "Indians in Illinois probably obtained these bone artifacts only by trading with Indians far to the north or by hunting far to the north of the present boundaries of Illinois."

RIVER OTTER, *Lutra canadensis* (Schreber).—This mustelid was not uncommon in Illinois in early times but the limited number of otter bones at most sites indicates it was taken only occasionally by the Indian. There are apparently only three instances in which otter remains were used for ornaments or decoration. Mr. Perino recovered the cut palatine section of an otter skull in a Hopewell mound (No. 4 near Bedford, Pike County); this skull

section contained the full complement of teeth. Langford (1927: Pl. 21, Fig. F) records a nearly complete skull and left mandible from the Fisher Site; it was described in his original notes as having been found "on a woman's forehead in the Middle Level of the Big East Mound EM". Originally the skull may have been worn (with the hide?) in the form of a headdress.

Mr. Theodore Shapas, Dolton, found the anterior half of a skull and the complete right dentary of *L. canadensis* with a human burial at the Anker Site, an Upper Mississippi Site at South Holland, Cook County. This find was noteworthy since the skull had been wrapped in sheet copper and copper disks had been placed in the eye sockets.

BADGER, *Taxidea taxus* (Schreber).—The badger is uncommon in Illinois although earlier it was reported as numerous, at least in the northern third of the state. Its bones have been identified from only five Illinois sites and, except for the complete skeleton (apparently interred by the Indians) found in Rose Mound No. 13, Schuyler County (Baker, 1941), they were few in number at each site. Three mandibles, a maxilla section and the anterior half of the skull were recovered at the Clear Lake Site (Schoenbeck coll., I.S.M.); two of the mandibles had been worked. The ascending ramus of one had been cut off at the mandibular foramen, but the other had been more elaborately worked (Deuel, 1952a: Pl. 51, Fig. I) with both the ventral side and most of the ascending ramus cut off and noticeable scratch marks on both lateral surfaces. It appeared polished, pos-

sibly from being handled; neither mandible had been perforated.

GRAY FOX, *Urocyon cinereoargenteus* (Schreber).—The only record of a fox mandible worked by the Indian occurred at the Pool Site, Pike County. Found in 1950 (Univ. Ill., Dept. Sociol. and Anthropol. coll.), the section of a right mandible had been worked to a limited extent; the ventral margin was ground to a flattened surface and the condyloid process was cut off. None of the teeth remained and it had been broken off between the carnassial and second molar. Possibly this slightly altered jaw was in the initial stages of manufacture and originally it probably included more of the mandible.

DOMESTIC DOG, *Canis familiaris* Linnaeus.—Remains of the domestic dog have been found in midden deposits of all cultural groups, from the Archaic to those of historic tribes. Bones of the dog were seldom modified for tools or ornaments by the Indian, although there are records from a few Illinois sites of cut limb bones of *Canis* and of ulnae fashioned into awls. The only skull or mandible artifacts that are probably referable to the domestic dog were recovered at the Clear Lake and Cahokia sites. At the former site, two sections of the right maxilla were found in the village debris. Although the anterior portions of both had been broken off and lost, it was evident that one had been cut off immediately posterior to the carnassial tooth while the other had been cut behind the last molar. The artifacts were not drilled and their use is a matter of speculation.

Mr. Perino found a section of a

worked canid mandible in Mound No. 34 at the Cahokia Site, Madison County. The ascending ramus was cut off immediately behind the third molar and the ventral edge was ground down close to the base of the teeth; the mandible was broken where the carnassial tooth was originally located. Specific identification is uncertain since only the second molar remained, but this tooth and jaw section compares most closely with *C. familiaris*.

COYOTE, *Canis latrans* Say.—As evidenced by the scarcity of remains of this animal in Illinois sites, the coyote was rarely taken by the Indian. Two badly decomposed cut mandibles were found at the Kraske Site, St. Clair County, in 1957 by Mr. Perino and are probably *C. latrans*. He also recovered a section of a right mandible of the coyote at the Cahokia Site in 1956. This artifact bears scratch marks on both lateral surfaces and the proximal end had been cut off between the second and third molars and rounded along the ventral margin. It is noteworthy because this carefully worked jaw was recovered at a Middle Mississippi site.

McGregor (1958) reports a cut canid mandible with a burial at the Pool Site, Pike County. The ventral edge was cut off parallel to the long axis of the jaw and the posterior section had been removed by cutting through the mandible at the position of the carnassial tooth, leaving only the anterior one-third of the tooth. The anterior portion of the artifact originally included more of the mandible; it had been drilled just below premolars two and four. Specific determination

was difficult, but based on cusp structure, tooth dimensions and the general narrowness of the jaw, it compared most closely with coyote rather than dog or wolf as proposed by McGregor (1958: 139, 141, Fig. 46,f).

GRAY WOLF, *Canis lupus* (Linnaeus).—This large carnivore was reported to have been fairly common in the wooded sections of Illinois prior to 1800, but it has long been extinct in this region. Bones of the gray wolf have been reported from only nine Illinois sites and it was evidently seldom killed by the Indian. Artifacts fashioned from the bones of this species suggest it may have been sought more as a trophy animal than as a source of food. An ulna, apparently used as an awl, and the cut distal end of a humerus occurred at the Weaver Site, Fulton County (Wray coll., I.S.M.).

Two cut mandibles and a section of maxilla, probably the same individual, were recovered at the Clear Lake Site (Schoenbeck coll., I.S.M.). None of the artifacts were perforated; each had been cut through at the point of the canine tooth and the ascending ramus cut off, but all of the premolar and molar teeth were left intact. Another section of maxilla, probably of *C. lupus*, was also recovered at the Clear Lake Site (Wray coll., I.S.M.). Posteriorly, it had been cut through the middle of premolar three and, although only this and premolar two remained, the artifact originally was more extensive.

The maxillae of a wolf were recovered in 1956 by Mr. Perino at the Cahokia Site; although weathered

and broken, these pieces bore evidence of having been cut. Maxwell (1951: Pl. 5) illustrates the worked jaws of this species recovered at the Sugar Camp Hill Site, Williamson County, and states "Also in Zone II were two sections of the right and left sides of a wolf mandible, flattened on the bottom, cut in back of the carnassial and perforated in six places". Langford (1927) refers to "two carved bear jaws" he recovered at the Fisher Site, although judging from the plates (17, e; 20), these (premaxillae-maxillae) appear to be a large canid, possibly wolf. Langford (*op cit.*: Pl. 17, d) illustrates and mentions a "part jaw (of canid?) showing chopping marks" that may also be *C. lupus*.

The cut right mandible of *C. lupus* was found at the Busch Estate Site (Woodland), Pike County (Univ. Ill. Dept. Sociol. and Anthropol. coll.). The unperforated mandible contained the third and fourth premolars and the anterior portion of the carnassial; it was cut off anteriorly at the second premolar and the ventral edge had been cut off parallel to the long axis of the jaw.

In 1957, Mr. Theodore Shapas, Dolton, recovered portions of two left mandibles of the gray wolf with a human burial at the Anker Site, Cook County. One mandible contained premolar four, the carnassial tooth and molar two, while all three molars and premolars two and three were still present in the other. These mandibles had been broken but were not cut or drilled, although they definitely had been part of the burial complex. On October 18, 1958, at the same Upper Mississippi site, Mr. Shapas found a cache of jaw

and skull remains above the pelvis of a burial; these may have been contained in a pouch of some sort. Except for the missing rami and the purposely (?) broken ventral margins, the lower mandible of this large wolf was complete. Also included was a single canine, the right premaxilla containing three incisors and canine tooth and both right and left maxilla sections, each with premolars three and four and both molars intact (probably all from the same wolf). Portions of the right maxilla and both mandibles of a bobcat formed part of the cache; these remains were not worked.

At this same site, Mr. David Pedrie, Dolton, found two larger, nearly complete mandibles of *C. lupus* with a burial. The ascending rami were broken off and each, which still contained a full complement of teeth, had been drilled in two places at mid-point between the gum line and ventral edge, one below the third premolar and one below the carnassial.

There are apparently only two instances known in Illinois in which the skull of *C. lupus* was elaborately modified to form an artifact. A field party from the Department of Anthropology, University of Michigan, Ann Arbor, recovered a broken section of the right premaxilla-maxilla (Cat. No. 9829) of a wolf at the Snyders Site (Hopewell), Calhoun County, in 1947. It was broken behind the first premolar; only the three incisors and broken portions of the canine tooth and first premolar remained. The palatine section and upper part of the maxillary had been cut away and a hole drilled between the canine tooth and the third in-

visor; originally the complete artifact probably contained another drilled hole, posteriorly.

During the excavation of a burial in Mound 2 several years ago, at the Knight Site (Hopewell), Calhoun County, two unperforated premaxilla-maxilla sections of the gray wolf were recovered by Dr. P. F. Titterington, St. Louis (U. Mich. Cat. No. 44779). They were cut off immediately posterior to the second premolar and the maxillary had been cut away parallel to the gum line, exposing the roots of the teeth. All the incisors, canines and first and second premolars were intact.

MOUNTAIN LION, *Felis concolor* Linnaeus.—The comparatively few animals that once inhabited this region, coupled with the probable difficulty encountered by the Indian in killing the mountain lion, may account for the scarcity of its remains at sites. An unworked section of the pelvis occurred at the Starved Rock Site (LaSalle County), and the distal end of a tibia of this species was recovered in the village debris at the Rosiclare Site, Hardin County (I.S.M. coll.). An awl made from the ulna of this cat was found with a human burial by Mr. David Pedrie at the Anker Site.

In Mound F^o191 (Mitchell Mound), Fulton County, the cut anterior section of a right mandible that contained the canine tooth and both premolars was found by Dr. Don Dickson and mistakenly referred to in Cole and Deuel (1937) as "a wolf jaw". The fragment of a left mandible containing only the canine tooth (probably the same animal) was also recovered. Two cut and perforated mandibles of the

mountain lion (same animal, originally with the full complement of teeth) were found with a Hopewell burial in Mound Wh^o7, White County, and are illustrated (Deuel, 1952a: Pl. 72, Fig. E) but mistakenly identified as "cut wolf jaws" The only other record is a broken section of left mandible (containing the molar tooth and premolar two) found by the author in July, 1956, at the Little Chains Site, White County. The ascending ramus had been cut off just posterior to the molar tooth.

BOBCAT, *Lynx rufus* (Schreber).—With reference to historic tribes in southeastern United States, Swanton (1946) mentions that "The wildcat seems to have been eaten at times and its skin was also worn". Faunal remains indicate that this cat was used to some extent by the aborigines, although artifacts fashioned from the bones of *L. rufus* are uncommon in Illinois sites. Titterton (1942) lists the "cut section of fox mandible, Burial No. 49—Mound 69", from the bluff focus in Jersey County, but this mandible is that of a bobcat. The right mandible of *L. rufus* recovered at the Modoc Rock Shelter (mentioned earlier in this paper) is the only artifact of its type known from an Archaic site in Illinois. The complete dentary and anterior two-thirds of a skull of a large bobcat were found on the chest of a human burial by Mr. Pedric at the Anker Site. Like the otter skull recovered at this site, the skull of *L. rufus* had been wrapped in copper and copper disks inserted in the eye sockets.

WHITETAIL DEER, *Odocoileus virginianus* (Zimmermann).—An al-

most limitless variety of artifacts fashioned from nearly all of the different bones of this animal have been found, but ornaments and pendants made from the skull or mandible are rare. However, there are records (*e. g.* Perino, 1957: Fig. 49) of complete mandibles which were used probably as some sort of grubbing or cultivating tool.

Four cut mandibles have been recovered from Illinois sites thus far. Maxwell (1951: Pl. 5) records a "cut and polished section of deer mandible" from the Sugar Camp Hill Site. A cut portion of the right mandible occurred with a burial at the Irving Site (late Middle Woodland), Pike County (McGregor, 1958: 150, Fig. 51 B). The ventral edge had been cut off parallel to the long axis of the jaw; the ascending ramus was removed by making a cut that began part way up on the anterior edge of the ramus and curved down to join the ventral cut. The artifact was broken and only the second and third molars remained; originally it probably included more of the dentary. The broken, worked section of a right deer mandible occurred at the Pool Site (Hopewell), Pike County (Univ. Ill., Dept. Sociol. and Anthropol. coll.). Again, the ventral edge was cut away and the anterior section had been removed by cutting immediately in front of the first premolar. Only broken portions of premolars one and two remained, although originally the artifact included the third premolar and at least the first molar.

A broken section of a left mandible was recovered by Mr. Raymond Bieri, Belleville, in a refuse pit at a Late Woodland site near Falling

Springs, Madison County. The ventral edge had been cut away and both lateral surfaces bore distinct scratch marks; although this artifact had originally included more of the mandible, only premolar three and the first molar remained. Deuel (1952b) states that "One of the most interesting finds from the Liverpool group (Mound 77?) consists of two antlers of a young Virginia buck found near the head of a skeleton and doubtless part of a headdress". This is apparently the only case noted from Illinois of complete deer antlers being used in this type of an ornamental or a decorative capacity.

MAN, *Homo sapiens* Linnaeus.—The use of human skulls and mandibles as ornaments and pendants appears to have been restricted in Illinois to the Hopewellian culture, and nearly all such artifacts have been found with human burials in Fulton County mounds (Sister Creeks and Liverpool sites). Typically, the mandibles were separated at the symphysis, the ventral surface was cut away along an even line, the ascending ramus was cut off half way to the coronoid process and each was perforated for suspension. The palatine section was kept (with the full complement of teeth) and, like the mandibles, was also drilled for suspension. Several of these human bone artifacts in the archaeological collections of the Illinois State Museum are illustrated (Cole and Deuel, 1937: Pl. 23, Fig. A; Pl. 26, Fig. B; Pl. 31, Fig. B); similar specimens from Hopewellian mounds are on exhibit at the Dickson Mounds State Park.

Interesting hypotheses have been proposed by Deuel (1952b). "Since

bear and wolf jaws were worn, it would seem that the more powerful fighting wild animals were chosen and hence, that the human mandibles and maxillaries were those of brave enemies and worn for a like reason. However, if the jaws had a protective quality or religious significance, they might rather represent friendly relationships and hence the human jaws might be those of dead friends, patrons or relatives."

SUMMARY

Worked mandibles and/or maxillae of 13 species of mammals have been recovered from archaeological sites in Illinois. Although these bone artifacts occurred in Archaic and Mississippian sites, they have been encountered most frequently in Hopewell burial mounds. With respect to this latter cultural group, the mandibles and skull sections are more meticulously cut and polished and, in nearly every instance, perforated for suspension. The scarcity of bones of the black bear in the village midden debris of prehistoric sites in Illinois indicates that the animal was killed primarily for its skull, mandibles and canine teeth.

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