

**ABSTRACTS of the 10th Annual Meeting of the  
Midwest Bioarcheology & Forensic Anthropology Association  
Loyola University, Chicago, Illinois  
October 11 & 12, 2003**

**Abstracts are given in alphabetical order by senior author; all papers are podium presentations unless noted otherwise.**

**(1) APPLGATE, Darlene, Dominica DEDOMINICO-MURPHY, & Careese CANNON.  
"Bioarchaeology of 15AL329A, a Late Prehistoric Cemetery in Allen County, Kentucky."**

Site 15AL329A is a late prehistoric stone-box grave cemetery located on the shoreline of Barren River Lake in south-central Kentucky. Twenty-five Late Woodland-Mississippi period graves were documented at the site in the 1970s and 1980s. Recent bioarchaeological analysis of skeletal remains from eight of the graves provides information about late prehistoric demography, health, and mortuary behavior. At least 22 males and females of all age groups were interred in the eight graves. Overall, individuals were not significantly biologically stressed, though there is limited evidence of dental pathologies, bone traumas, vertebral osteophytosis, and porotic hyperostosis. The most common burial pattern involved secondary burial of multiple individuals in each grave. SEM examination of cut marks provides evidence of both disarticulation and defleshing activities.

**(2) BUEHLER, Kent, Leland BEMENT, Larry NEAL, & Alicia BEAT. "Evidence of Multiple Incidents of Violence in a Late Prehistoric Burial from Oklahoma."**

Salvage excavation of a burial in north-central Oklahoma resulted in the recovery of a single individual, a young male dating to the late prehistoric Plains Village period. Despite some portions of the skeleton having been lost to erosion, preliminary analysis indicates this individual experienced two separate incidents of violence. The first, a probable projectile point wound on the superior edge of a central rib, is well healed and retains a fragment of the projectile that caused the wound. The second incident is represented by a series of cuts around the circumference of the fragmentary skull. The cuts occurred around the time of death and are consistent with injuries produced by scalping.

**(3) CURTIS, Janene. "Histomorphometric Aging Techniques."**

One method used to determine the age of an individual is to examine and quantify the microstructure of the bone tissue. This process is known as quantitative histology or histomorphometry. Histomorphometry aging techniques are based on the bone remodeling process. Histomorphometry quantifies the variation in the microscopic appearance of bone tissue that is attributed to various influences, including age. This paper will address the bone remodeling process and illustrate the techniques and methods used for this aging method, including slide processing, histomorphometry, and statistical analysis.

**(4) CURTIS, Janene, Stephen NAWROCKI, & Gregory REINHARDT. "Analysis of Two Painted Trophy Crania from Central Indiana."**

In early 2002, two painted human crania that had been in a private collection in west-central Indiana were turned over to a county Sheriff's office. The Indiana Department of Natural Resources obtained custody of the remains and brought them to our laboratory for analysis. The specimens are well-preserved and represent one older adult female and one child of about 6 years of age. Observations of discrete traits as well as computerized analysis of cranial measurements using FORDISC 2.0 suggests that both are Native American, although the specific geographic and temporal origins cannot be determined. Of particular interest is the extensive and detailed artwork on both specimens. Each displays color paintings of bison, Plains Indians riding horses, bust of Indian men and women wearing Plains headdresses, and geometric star and circle designs. Both have partially legible poems and phrases and one is signed "J.R. Dyckman, 1911." The artistic style is consistent with vernacular/primitive/folk art of that time period.

**(5) IRELAND, Ellen, Robin LILLIE, & Shirley SCHERMER. "The Gregg Collection: Archival Resources in Paleopathology."** (poster presentation)

Dr. John B. Gregg donated to the University of Iowa Office of the State Archaeologist his vast collection of notes, correspondence, articles, books, slides, photographs, x-rays, films, and videos spanning his 30-year career. A retired physician from South Dakota, Dr. Gregg has had a long-time active interest in physical anthropology and Paleopathology. The extensive listing of his published articles in the *Human Paleopathology* bibliography includes *Dry Bone: Dakota Territory Reflected*, a book on paleopathology of the Middle Missouri River region he authored with his wife Pauline Snyder Gregg. Through Gregg's involvement with work at numerous important sites in South Dakota, such as Crow Creek, osteological data from burials at these sites are documented in this collection. The archival materials provide valuable research and teaching resources for those interested in osteology and paleopathology in general.

**(6) KOLATOROWICZ, Adam. "Discriminant Function Analysis of Ancestry: A New Model."**

Determining ancestry of an individual is an important part of creating a biological profile when faced with an unknown decedent. It is also, more often than not, the most difficult characteristic to determine from the skeleton. This study examined 5 ancestral groups (Russian, South Asian, African American, Native American and European American) to create a model for predicting the ancestry of unknown individuals. As the face has been recognized to provide the most conspicuous clues of an individual's ancestry, 11 craniofacial measurements were taken from 49 anatomical and forensic specimens and then entered into a statistical software package (SPSS 11.0) to run a discriminant function analysis. The predictions of this model were then compared with FORDISC 2.0 predictions from the same data.

**(7) LATHAM, Krista, Carlos ZAMBRANO, & Mary RITKE. "The Effect of Heat Associated with Maceration on DNA Preservation in Skeletal Remains."** (poster presentation)

This poster explores how boiling applied during the cleaning process affects the quantity and quality of nuclear DNA that can be extracted from pig bone. The results suggest that boiling for up to 10 hours during maceration does not have a detrimental effect on the ability to extract and amplify nuclear DNA, and, in fact, boiling may actually increase the DNA yield. (NOTE: this poster was

originally presented at the 55th Meeting of the American Academy of Forensic Sciences, Chicago IL, February 2003; for a complete abstract, see Proceedings of the American Academy of Forensic Sciences 9).

**(8) MILLER, Katherine. "Sacral Vertebrae Metric Analysis of Mississippian and Late Woodland Illinois River Valley Children Aged Three to Adolescence."**

The first, second, and third sacral vertebrae of forty individuals three years of age to adolescence were analyzed to create a method for age estimation in isolated sacral vertebrae. Twenty-one measurements were collected from Middle Woodland, Late Woodland, and Mississippian components of several sites in West-Central Illinois: Schild and Koster Mounds (Greene County), Yokem (Pike County), and Klunk Mounds (Calhoun County). The individuals were grouped into four age groups: three to five years of age, six to eight years of age, nine to eleven years of age, and twelve years of age to adolescence. The ages were determined using dental eruption and root formation based on standards of Moorrees et al. (1963) and Scheuer and Black (2000). Five Mississippian skeletons with age estimations based on various age indicators were then aged using sacral element measurements to test the method. Interestingly, the study also produced a 1:8 ratio for individuals with asymmetrical or sacralized fifth lumbar vertebrae and asymmetrical or lumbarized first sacral vertebrae. Craniocaudal shifts may be more common in children not surviving to adulthood than in the adult portions of these series.

**(9) MILLIGAN, Colleen, Sean DOUGHERTY, & Norman SULLIVAN. "The Milwaukee County Almshouse Cemetery."**

The Milwaukee County Almshouse Cemetery was in use from about 1885 to 1924. The skeletal collection from the institutional cemetery includes the remains of 588 subadults. More than 95% of the subadults were less than two years of age at the time of death. Eighteen subadults display significant inflammatory skeletal pathologies and/or circular caries on the anterior deciduous teeth. These individuals have been subjected to a differential diagnosis leading to provisional identifications of congenital syphilis.

**(10) NAWROCKI, Stephen. "Experimental Burning of a Dry Human Cranium."**

Determining the state of bone prior to burning can be important in reconstructing the sequence of events in forensic casework. The literature on burned bone sometimes states that burned fresh or "green" bone can be differentiated from burned dry (skeletonized) bone because each leaves a distinctive pattern of fracturing. Because of its moisture and organic content, fresh bone is known to warp, twist, and shrink, resulting in substantial distortion. The external table of the cranial vault will also delaminate. However, while a number of experimental studies have examined crania that were burned fresh, few have included dry controls. In this experiment, a dry, unsectioned human anatomical cranium that had been commercially cleaned and degreased was burned in an outdoor May bonfire of sticks and logs from pine and maple trees. Care was taken to use materials that might be commonly available around a home or garage, making the situation more analogous to conditions encountered in forensic cases. For simplicity and safety, no accelerants were used. The fire was stoked for just under an hour and the specimen was removed from the coals after a total of 4.5 hours of exposure. The cranium was still remarkably intact, and standard measurements taken before and after burning showed no overall shrinkage. However, a large area of delamination appeared at the top of the vault shortly after cooling, and warping was observed in thinner areas of the vault and at extreme convexities. In

summary, this rather limited test suggests that one must be cautious when using fracture patterns to discern the original state of the bone prior to burning.

**(11) PARR, Nicolette. "Posterior Inversion of the Mandibular Ramus in Native Americans."**

In Gill and Rhine's (1990) collection of articles regarding ancestry, Angel and Kelley published their findings on determining ancestry by looking at gonial flare and inversion of the posterior edge of the ramus of the mandible. In looking at a total of 781 individuals, they concluded that posterior inversion of the mandibular ramus may be used to differentiate African-Americans, Euro-Americans, and Plains Native Americans. Inversion was present in 95% of the African-Americans studied, whereas inversion was only apparent in 30% of the Euro-American population. The dichotomy between these two groups is clear, yet the results for the Native American sample were ambiguous, with posterior inversion present in 44.5% of the population. The current study looks solely at Midwestern Native American mandibles in an attempt to clarify in Angel and Kelley's method can be applied to other American Indian groups. Their simple "present/absent" scoring strategy was expanded to include intermediate categories of expression.

**(12) PESTLE, William. "Preliminary Report on a Newly (Re)Discovered Mandible from Solutre."**

Recent re-organization of the collections held by the Field Museum of Natural History's Anthropology Department has brought to light a portion of a juvenile mandible in a soil sample from the French Upper Paleolithic type-site of Solutre, Saene-et-Loire. The mandible, from an 8 to 10 year old individual, was excavated sometime before 1920 from the "4<sup>e</sup> foyer du Renne, 3<sup>e</sup> Couche (Third level of the Fourth hearth of the reindeer)", an ostensibly undisturbed context of the *l'age du renne* (Solutrean). The results of AMS dating, to be performed by the Oxford Radiocarbon Unit, are pending. At present, a preliminary report on all aspects of the analyses performed on this specimen (dental aging, morphology, paleopathology) will be offered, the first images and radiographs of the specimen will be displayed, and this potentially unique specimen will, for the first time, be discussed in public.

**(13) SIVILICH, Michelle, & Shawn PHILLIPS. "Diagnostic markers of a possible case of cleft palate: A case study of an adult male from a Late Woodland site in Indiana." (poster presentation)**

This study presents an adult male that demonstrates diagnostic markers of cleft palate. The burial is associated with the Grider site (Late Woodland context, Pike County, Indiana). The analysis draws on clinical and paleopathology literature to consider other possible conditions responsible for the skeletal anomalies. Cleft palate occurs in about 1 in 750 live births; it is the most common defect of the face. Despite the high frequency of cleft palate, few cases are reported from the archaeological record. It is possible that, in the past, few infants survived extreme forms of cleft palate, and such cases are not present to be recorded. Or, it is possible the lesion simply goes undocumented. This analysis outlines the markers of cleft palate in this individual and demonstrates that a prehistoric culture could overcome the health issues experienced by an infant with the condition (full communication between the oral and nasal cavities) and survive to adulthood.

**(14) SMITH, Maria. "Archaic Period Treponemal Infection: Evidence from the Western Tennessee River Valley." (poster presentation)**

Six Archaic period sites from the Kentucky Lake Reservoir of west-central Tennessee were surveyed for evidence of Treponemal infection. There is evidence for its presence in two adults from the middle Archaic period (5000 - 3000 BC). The diagnostic reactive bone is primarily found on the cranium. Sabre tibiae appear in the late Archaic period (2500 - 1000/500 BC) and primarily in the subadults. Relatively more cases as well as adults with sabre tibiae are found in subsequent early Woodland occupation levels of the Archaic sites sampled. Although sample size is indeed a factor, there is a suggestion of temporal change in the expression and frequency of Treponemal disease.

**(15) STARR-PARKINSON, Diane. "The Relationship Between Age and Secondary Dentin Formation in Adult Human Mandibular Molars." (poster presentation; abstract not available)**

**(16) TUBBS, Ryan Maureen. "You Are What You Eat: Why Then Do Some Anthropologists Get it Wrong?" (poster presentation)**

The presence of skeletal pathologies at Oneota sites has been interpreted by some archaeologists as indicative of poor nutrition as the result of reliance on maize and unpredictable wild food resources. Such a cause and effect relationship is not supported when nutritional data are added to studies of skeletal pathologies. In order to investigate the relationship between nutrition and skeletal pathologies, a reconstruction of diet at the Tremaine Complex sites was created based on floral and faunal remains recovered from the sites. Using the U.S.D.A. Nutrient Database for Standard Reference, dietary intake of essential nutrients was determined based on the Tremaine reconstruction and compared to the Recommended Daily Allowances for modern Americans. The results demonstrate that malnutrition was most likely not a major problem for the Oneota at the Tremaine Complex.

**(17) WALL, Nicole, Karl REINHARD, & Matthias OKOYE. "Forensic Analysis of a Current Homicide Case: Usage of Palynology to Help Determine Time and Location of Death."**

This paper reports on the role and importance of palynology within the forensic science field. Palynological studies were conducted in a recent homicide case. Pollen was processed from three different samples which included the hair, intestinal tissue, and the underlying carpet on which the deceased was found. The microscopic analysis of the palynomorphs revealed interesting results such as dietary pollen and the type of environment found at the crime scene which could be beneficial in the overall forensic analysis of the case. Further studies should be conducted in a collection and identification of the outside pollen at the crime scene in order to strengthen the results of the indoor pollen found.

**(18) WAY, J.L. "Fetal and Subadult Age Estimation using the Os Temporale Pars Petrosa: Accuracy of Quantitative and Qualitative Criteria." (poster presentation; for this abstract see the American Journal of Physical Anthropology, Supplement 36:221, 2003).**

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