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FLINT HILLS ARCHAEOLOGICAL CONFERENCE

Abstracts—2004

<> Symposium Papers <>

Anderson, Mark L. and Dan G. Horgen (both from University of Iowa's-Office of the State Archaeologist, Iowa City)

The Lithic Raw Material Assemblage at the University of Iowa's—Office of the State Archaeologist: An Improved Framework for Lithic Analysis

The UI-OSA lithic raw material assemblage encompasses over 250 in-state and 220 out-state samples. Multiple structural shortcomings in the assemblage have limited the efficacy of making clear geologic and geophysical associations. In turn, this has significantly limited the ability of making cultural inferences regarding prehistoric use. Consequently, the assemblage has been reorganized to align with the geologic column of Iowa, to represent geo-physical regions, and to afford a more systematic and consistent approach to lithic identification. Multiple software packages (e.g. Excell, Arc View, Visual Basic, Trimble Pathfinder, Dream Weaver) have been used to provide for a GIS based assemblage that features a web-based component affording research/identification of Iowa lithic materials from a remote location. Lastly, this paper summarizes analytical tools in addition to the existing macroscopic identification key that may be applied to the assemblage for improved future use.

McGregor, Douglas S. (Kansas State University, Manhattan)

Neutron Activation Analysis at Kansas State University, A Powerful Tool for Trace Element Characterization (*in Symposium—"Sourcing Cherts: Looking East from the Flint Hills*)

Kansas State University nuclear facilities include a Neutron Activation Analyses (NAA) Laboratory. Neutron activation analysis is a powerful technique for determining trace element composition of a family of elements including most metals, heavy metals, and rare earth elements. NAA does not require large sample volumes and does not generally affect the sample properties (i.e., is nondestructive). NAA has typical sensitivities of micrograms to nanograms, with

virtually no potential for false-positive indicators. Because of these characteristics, NAA has been successfully used in geology, archaeology, paleontology, and forensics applications to determine provenance, origin, and environmental conditions leading to sample formation.

Ray, Jack H. (Southwest Missouri State University, Springfield)
Workshop on Chert Resources from the Western Ozarks and Adjacent Eastern Border of the Central Plains (*in Symposium—"Sourcing Cherts: Looking East from the Flint Hills*)

This workshop will describe several chert resources of Ordovician, Mississippian, and Pennsylvanian age that are located in the western Ozarks of southwest Missouri, northeast Oklahoma, northwest Arkansas, and extreme southeast Kansas. It is a hands-on workshop in which samples will be passed around as identifying characteristics are discussed.

Ray, Jack H. (Southwest Missouri State University, Springfield)
Late Prehistoric Quarries Along the Western Ozarks Border (*in Symposium—"Sourcing Cherts: Looking East from the Flint Hills*)

True quarry sites in the western Ozarks appear to be restricted in space and time. All of the documented quarries are located on the Springfield Plateau subprovince along the western flank of the Ozarks. All of these quarries were excavated into chert deposits of Mississippian age. Rock formations of Mississippian age tend to produce large amounts of high-quality chert that often occur in large nodules and/or thick beds. All but one of the quarries along the western flank of the Ozarks were in residual Burlington chert deposits of the Burlington-Keokuk Formation. Although temporal affiliation of quarry sites is difficult, circumstantial evidence indicates that several of these quarries date to Late Prehistoric times. This paper presents a few of these Late Prehistoric quarry sites along the western border of the Ozarks.

West, Ronald R. (Kansas State University, Manhattan)
Artifacts, Chert, Fossils, Provenance (*in Symposium—"Sourcing Cherts: Looking East from the Flint Hills*)

Chert occurs widely in most carbonate units, and as such was a readily available resource for use by early hominids. Although chert occurs in numerous rock units in Kansas (Banks 1990) the focus here will be on chert in eastern Kansas.

Carbonate rocks, and associated chert, are exposed from the Mississippian in the extreme southeastern corner of the state to the Permian Units in north central Kansas. Chert gravels are associated with the weathered exposures of most of carbonate units even if chert is not conspicuous within the unit.

The provenance of flint artifacts is difficult. Physical properties, color, texture, etc. vary within and between different units and with the degree of weathering, and are thus not definitive.

Chemical characteristics are often expensive and destructive. Banks (1990) contains more details, and stresses the need for a chert database.

Fossils within flint artifacts are potentially useful in provenance studies. Microfossils, radiolarians and foraminiferids, are potentially useful, but both require the expertise of well-versed specialists in these fossil groups. The presence of fusulinids, a group of foraminiferids, in a flint artifact indicates that the chert used was from a unit of Pennsylvanian or Permian age, and a specialist may be able to provide more specific provenance information. Other fossils that often occur in chert are: sponge spicules; corals; bryozoans; brachiopod and mollusk shells; echinoderm ossicles, plates, and spines; and ostracode valves. These are potentially less useful, but may provide some provenance information in the hands of knowledgeable specialists.

Wetherill, Bert (Overland Park, Kansas)
Mid-Continental Pennsylvanian Cyclothems: Toward a Better Understanding of Chert Variability (*in Symposium—"Sourcing Cherts: Looking East from the Flint Hills*)

Cyclothem is a term geologists apply to the series of rocks formed during one complete transgression-regression episode of seas over the mid-continent area of North America. This paper looks at the general concept of the cyclothem and at a specific study of the Winterset limestone member of the Dennis limestone formation, Kansas City group, Missourian stage, of the mid-continent Pennsylvanian system. The Winterset study and chert samples collected from the Winterset member suggest that distinct varieties of chert distributed north to south along the outcrop are likely due to the general transgressive-regressive nature of a cyclothem. Vertical variations of chert at specific locations are likely the result of phased transgression-regression episodes within the cyclothem. This model may help explain variability found in chert from other mid-continental rocks.

Wetherill, Bert (Overland Park, Kansas)
Vertical and Areal Variability of Chert in the Winterset Limestone Member (*in Symposium—"Sourcing Cherts: Looking East from the Flint Hills*)

The Winterset limestone member of the Dennis limestone formation, Kansas City group, Missourian stage of the Pennsylvanian system outcrops from southwest Iowa through northeast Missouri, eastern Kansas and into Oklahoma to the vicinity of Tulsa. Three Winterset chert varieties have been described in Iowa and a single variety has been described for the Kansas City locality. Additional varieties collected in western Missouri and eastern Kansas have brought the total to seven and possibly ten known varieties. Both vertical and horizontal distribution of identified varieties suggests much greater variability in this chert type than that found in other mid-continental Pennsylvanian limestone members.