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THE BURNHAM SITE: POSSIBLE PRE-CLOVIS EVIDENCE FROM OKLAHOMA



The skull of a long-extinct bison is seen here as it was found, lying upside-down. Although considered a paleontological site when it was first excavated, laboratory technicians carefully examining the sediment removed from the Burnham site later discovered several minute stone flakes, possibly made by humans. (Photos courtesy of D. Wyckoff)

Initially investigated as a paleontological locality, the Burnham site (34W073) in northwestern Oklahoma, has also produced evidence that suggests very early human activity. A scraper, nine small flakes, and a battered cobble with one flake removed have been recovered from the same deposit as that containing a partial *Bison alleni* skeleton, a species of bison that became extinct 20,000 years ago.

The site was discovered during the spring of 1986 by landowner Keith Burnham, while building a pond in the upper end of a gully. The large bones that were exposed prompted his son, Vic Burnham, a member of the Oklahoma Anthropological Society, to report the find to the Oklahoma Archaeological Survey. At the time, Dr. Donald Wyckoff, of the Oklahoma Archaeological Survey, was planning a trip to a late Wisconsin elephant site along with Dr. Larry Martin and Dr. Wakefield Dort, of the University of Kansas. The Burnham site was consequently added to the itinerary and visited in June 1986.

The pond excavation had exposed an ancient stream channel which had cut into the Permian sandstone and been subsequently filled with sediment. On the west side of the pond, the bottom of the old stream channel was buried under nearly 6 m of sediment. Contained within the channel were the bones of Pleistocene animals, including mammoth, horse, and turtle. On the east side of the pond, the ancient stream channel was less deeply buried, lying beneath approximately 4 m of sediment. Upon closer examination of this area, the researchers noticed a large bison skull protruding from the exposure. Martin, a paleontologist, identified the skull as belonging to an extinct species of bison that died out about 20,000 years ago, before the peak of the last major Wisconsin ice advance.

Little is known about the local climate and environment in this part of Oklahoma during the last Ice Age. Martin therefore suggested that the Burnham site discovery had the potential to yield important paleoecological information, as well as that pertaining to rare Ice Age fauna.

As a result, Wyckoff made plans to return to the site in the fall when cooler temperatures would make fieldwork more pleasant and hoped-for rain would make the hard soil easier to excavate. In October of 1986, Wyckoff and the Survey Laboratory Director, Peggy Flynn, assisted by two avocational archaeologists, set up a metric grid over the site and began the excavation of a 2 meter square surrounding the bison skull.

Although Wyckoff and Martin then regarded the site as a strictly paleontological one, it was excavated archaeologically in 10 cm levels to provide good vertical control for the expected paleoenvironmental data. All of the sediment within the square was water-screened through 1/16-inch mesh to recover climatically sensitive snails and small mammal remains, plus any charcoal or artifacts that might be present.

As the excavators exposed the bison skull, they observed that it was lying face down with the right horn core against the south bank of the stream channel. The horn cores were very large, 18 cm in diameter. Because the left horn core was damaged by the bulldozer during pond construction, the horn core tip to tip measurement was estimated at 1.25 m. Beneath the skull were additional bison bones, including a mandible fragment, several ribs, a right scapula, and a vertebra. Twenty-five cm below the skull, the excavators found a large angular flint cobble that appeared to be slightly battered. Although the cobble was of a local flint that could conceivably have gotten into the watershed naturally, it seemed out of place due to the lack of gravel channel fill in any of the observed exposures. At this stage in the investigations, the cobble was the only hint of human presence, and was not conclusive by itself or even particularly suspicious. The 1986 excavations were suspended for the season before the

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Interview with Niède Guidon

LA RECHERCHE DU TEMPS PERDU

Rockshelter in Brazil is 32,000 years old . . . and still counting!

It was 25 years ago that Niède Guidon first learned of the enormous complex of archaeological sites in northeastern Brazil. Presently affiliated with the Ecole des Hautes Etudes en Sciences Sociales in Paris, Guidon was then working as an archaeologist for the Paulista Museum of São Paulo. In 1963, the mayor of the village of São Raimundo Nonato paid a visit to the museum. After carefully perusing the archaeological exhibits, he asked to speak to the director of the museum. He wished to report the existence of a series of rockshelters situated within the high cliffs located in the vicinity of his village. Later research has revealed that over 240 of these shelters harbor paintings and engravings which date back as far as 17,000 yrs B.P.; the oldest art and earliest evidence of human symbolic capacity in the Americas.

Because of prior commitments in France, it took Guidon until 1970 to make her way to the area. When she arrived for an initial survey, she found herself staring at hundreds upon hundreds of paintings and rock engravings. Most of the figures were painted in red, primarily ochre, although colors of yellow, black, grey, and white were also present. These paintings depicted animals, people, natural objects, and abstract symbols, organized into scenes representing both everyday and mythical events. By the time Guidon completed longer surveys in 1973 and 1975, she had identified more than 100 shelters covered with rock art. The total number of figures in the caves now exceeds 20,000.

But the most momentous news recently from Guidon's combined French-Brazilian investigation concerns the levels *beneath* those containing the rock art. Guidon, who originally specialized in Brazilian coastal archaeology developed an interest in rock art after

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EMMA LOU DAVIS

We at the Center for the Study of the First Americans join with her many friends and colleagues in mourning the death of Dr. Emma Lou Davis, who passed away peacefully October 19, 1988. Dr. Davis leaves a legacy of significant contributions to the field of Early Human Studies. But Emma Lou Davis was far more than an archaeologist. An individual with varied and far-ranging interests, Davey, as she was known to her friends, was truly a woman of the 20th century.

Emma Lou Davis was born November 26, 1905, in Indianapolis, Indiana. Following her graduation from Vassar College in 1927, where she received a degree in Fine Arts, Davey went on to a highly successful career as a sculptor. She traveled widely, living for a time in the Caucasus Mountains of Bolshevik Russia during the 1930s, and later in China. Returning to the United States, Emma Lou Davis worked in the Whitney Art Gallery and the Museum of Modern Art in New York City. In 1938, she sculpted the bow relief which ornaments the Social Security Building in Washington, D.C. During World War II, Emma Lou Davis was employed as an aircraft designer and draftsman for Douglas. Following the war years, she became a designer of contemporary furniture on the West Coast and, later, an art instructor at the University of North Carolina at Chapel Hill.

It was not until a move to New Mexico in the early 1950s that Emma Lou Davis began pursuing an interest in anthropology. Initially taking beginning courses at the University of New Mexico in Albuquerque, she eventually entered the graduate program at UCLA, receiving a master's degree for ethnographic research on the Kuzadeika Paiute. Davey's doctoral dissertation, which focused on migration and culture change at Wetherill Mesa in Mesa Verde, became one of the pioneering efforts which unlocked the mysteries of this region. In 1964, at the age of 58, Emma Lou Davis received a Ph.D. in anthropology from UCLA.



She was the Curator for the Museum of Man in San Diego from 1966 through 1971. In 1975, Dr. Davis founded the Great Basin Foundation, an organization in which she remained active until a year before her death. Like its founder, the Great Basin Foundation has a wide scope of interests. The Foundation has been instrumental in advancing the state of archaeological knowledge, sponsoring archaeological excavations and documentaries, and producing numerous publications.

In the area of Early Human Studies, Emma Lou Davis is best known for her work in the Great Basin. In addition to a controversial discovery regarding possible 42,000 year old stone tools at China Lake, California, she conclusively established the presence of a Clovis component in the Mojave Desert. Dr. Davis

published extensively, authoring over 70 books, papers, and articles regarding her archaeological research.

Never mean-spirited, Emma Lou Davis was forever a frank and forthright individual who minced no words in pursuing truth. She was an ardent feminist long before feminism was fashionable, a supporter of the San Diego Zoo, a contributor to the arts, and a member of Greenpeace, the environmental group Cal Ping, and Amnesty International. Throughout her life, Emma Lou Davis continued to explore new avenues and to remain open to new ideas. Some people merely exist. Others live. Davey lived her life to the utmost, and the world is richer for it. We pay tribute to a great woman.

—Editor

My thanks to the friends and colleagues of Dr. Davis—Dr. Clark Brott, Dr. James Winkler, and Robert Brennan—for their generous assistance in providing information on Emma Lou Davis' life.

FACULTY POSITION IN QUATERNARY SCIENCES

The Institute for Quaternary Studies of the University of Maine invites nominations and applications for a new tenure-line, academic-year faculty position at the Assistant or Associate Professor level in Quaternary Studies. We are particularly interested in candidates who will complement our established groups in archeology, paleoecology, glaciology, and glacial geology. Examples of complementary fields include geoarchaeology, geomorphology, paleoclimatology, stable isotopes, geochemistry, and vertebrate paleontology.

Candidates should have a strong research and teaching record. The successful candidate will be expected to obtain extramural research support and to develop a research program. Although the primary emphasis is on research, the position will have an undergraduate and graduate teaching component. The successful candidate will have a joint appointment between the Institute and an appropriate academic department. Salary is competitive. The deadline for applications is March 1, 1989.

Please send applications along with a resume and names of three references to: Search Committee, Institute for Quaternary Studies, 304 Boardman Hall, University of Maine, Orono, ME 04469

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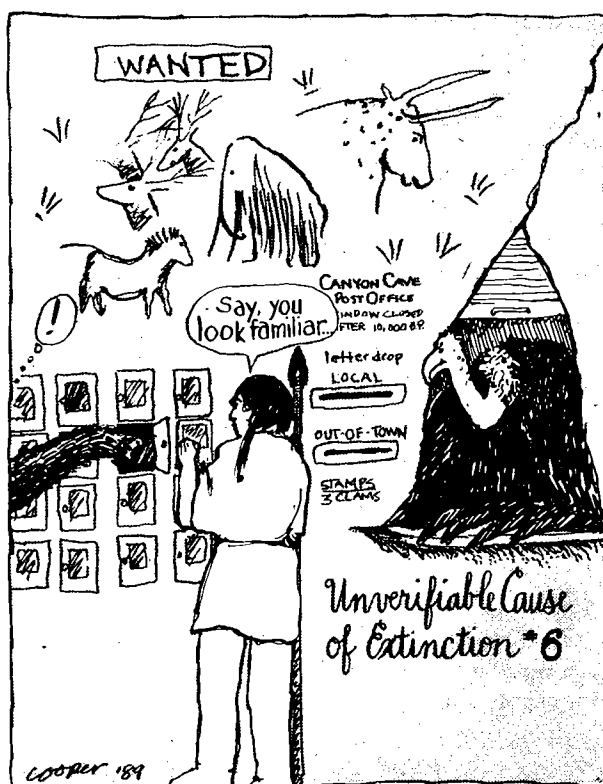
More than forty archaeologists from around the globe will present the results of their research to conference participants. Plan to join us for this history-making conference. For information and registration forms, contact: Conferences and Institutes Division, 206 Chadbourne Hall, University of Maine, Orono, ME 04469 USA

YES, SUBSCRIBERS, THERE IS A CONTEST WINNER

Yes, there was a winner of the "Find That Quote" Contest we held last summer. We are pleased to award a free ticket to the Awards Banquet at the First World Summit Conference on the Peopling of the Americas to Darrell Crawford of Brewer, Maine. He diligently hunted down every single quote and recorded it by volume, issue, page, and article title—a truly scholarly effort! Congratulations, Darrell. See you at Summit '89.

CENTER FOR THE STUDY OF THE FIRST AMERICANS

The Center for the Study of Early Man recently became the Center for the Study of the First Americans, a change which we feel better reflects the goals and objectives of the Center. Only our name has changed. We are still here at the same address and phone number, ready to serve you, our readers.



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THE BURNHAM SITE: POSSIBLE PRE-CLOVIS EVIDENCE FROM OKLAHOMA

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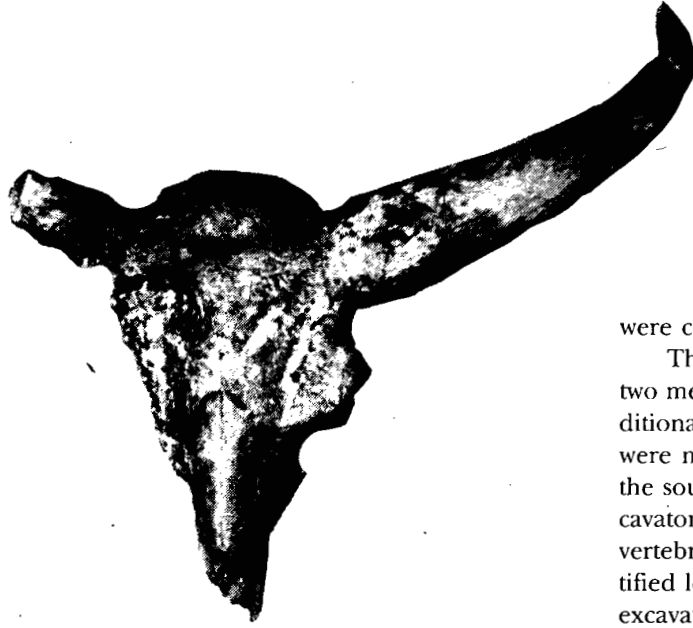
bottom of the ancient stream channel was reached. Nearly a ton of sediment had been waterscreened. Although the crew observed many snails and a number of small animal bones while waterscreening, actual sorting of the screened material under the microscope would require many months of laboratory time.

The discovery which shifted attention at the Burnham site from a paleontological to an archaeological context occurred during the tedious work of sorting the waterscreened materials. In the first month and a half of laboratory work, nothing unusual turned up. In May 1987, however, Peggy Flynn found a small retouch flake made from resharpening a unifacial tool. The flake, which had an intact platform and was of a local flint material, came from the same depth as the bison bone. The angular cobble which had been discovered earlier immediately came to mind, and it was washed and inspected more closely. On it, the researchers noticed a single unpatinated flake scar that produced a sharp edge. A few days after the first retouch flake was discovered, a second broken pressure flake turned up. This flake was made from brown chert, probably Niobrara jasper, which is exotic to the Burnham site watershed.

The discovery of human presence at the site was "due entirely to Peggy Flynn and the laboratory workers. We certainly didn't think there was any archaeology there," observes Wyckoff. "At that point, we had to get a date."

Wyckoff initially submitted bone samples and the darkest, most organic-looking sediment samples for radiocarbon dating. Unfortunately, neither yielded enough carbon for a date.

"With two flakes and the bison skull preliminarily identified by Larry Martin as an example extinct by



This bison, with horn cores reaching to a breadth of over a meter, has been extinct for 20,000 years. Small retouch and pressure flakes and a scraper (shown below) were found in the same stratigraphic levels as the bison bones.

lyzing the soil chemistry of this deposit, as well as that of a higher caliche layer that is about 2 m above the bison bones. "The upper caliche extends across part of the stream channel," Wyckoff indicates, "but excavations are needed to confirm that it extends completely across the channel." The lower carbonate is below the shallow zone disturbed by the bulldozer tracks, consequently, it was observed intact. "When you observe a caliche layer two meters above the bones and flakes, then a thick deposit of soils above that, all you can say is this site is old," remarks Wyckoff. A layer of ponded sediments lies above the caliche. Several flint flakes on the slope indicate a more recent campsite there during the period when sediments were accumulating in the pond.

The lack of gravel in the stream deposit eliminates the possibility that rocks could have hit the cobble to remove the flake, or produced the small pressure flakes. The snail species, which malacologist Dr. James Theler from the University of Wisconsin-LaCrosse is analyzing, indicate a sluggish stream not capable of "bumping rocks together, if any rocks were there, to create the flakes," Wyckoff notes.

The evidence of pre-Clovis human activity was tantalizing, but more excavation was needed to verify the early date and the human association with the date and the Pleistocene fauna. To accomplish this, Dr. Wyckoff put together an interdisciplinary research team to work on various aspects of the site analysis. Dr. Larry Martin would analyze the large and small mammals and their contribution to paleoenvironmental reconstruction. Dr. Larry Todd, Boston University, would study the bison bones for butchering marks and other taphonomic evidence. Drs. Wakefield Dort and Brian Carter would analyze the geology and soils. Dr. James Theler had already begun preliminary work on the snails. Curtis McKinney, a Ph.D. candidate at Southern Methodist University, working to refine the Uranium-Thorium dating process on tooth enamel, tried using this procedure on one of the Burnham bison molars. Although this technique has thus far been unsuccessful when applied to bison teeth, McKinney's work provided new insights into this process.

In August 1988, Wyckoff learned that a research proposal to fund more extensive work at Burnham had been rejected because there was not enough evidence of human presence to conclusively identify the site as an archaeological one. Meanwhile, however, the laboratory crew had found three more flakes in the sediment waterscreened from the bison bone levels. "One was a beautiful, almost intact little soft hammer retouch flake that has an overhanging lip and a distinct platform." The flake is from resharpening a biface and is made of gray chert from an unknown source. The other two flakes are from resharpening unifacial tools.

Wyckoff decided to excavate a few additional squares to obtain more conclusive evidence. With no funding available, he wrote to the best and most experienced avocational archaeologists in the Oklahoma Anthropological Society requesting help. Twenty-seven of them donated time and energy to the excavations, which were conducted September 14-30, 1988.

The volunteers excavated the last few levels of the two meter square begun in 1986 and opened up 8 additional one meter squares nearby. Seven of these were north of the bison bone cluster and one was to the south. Within the original 2 meter square, the excavators uncovered 3 more bison ribs, 2 thoracic vertebrae, a right scapula fragment, and an unidentified leg bone. The leg bone is in the east wall of the excavation trench and attests to additional bone beyond the area excavated.

The most exciting finds, however, were a stone tool and four flakes recovered during the excavation. The tool, a scraper, was about 1.5 m north of the bison bone and was in the bottom of the fine gray sand at the same depth as the bison skull. The scraper exhibits overlapping scalar flake scars along one edge; bifacial nibbling along the other edge, and a convex end. The other end terminates in a diagonal bend break. The material looks like Alibates agatized dolomite, which is exotic to the site area. "The scraper was not quite in situ—it was flipped out, but we know within 3 cm where it came from," observes Wyckoff.

All four of the flakes recovered during the 1988 excavations were unearthed about a half meter north of the bison bones, in the red sand deposit. They are small, the result of reworking tools. Two of the flakes were found in place. Another important result of the September 1988 excavations was the recovery of charcoal flecks from the top of the red sand and also from the fine gray sand. These samples will be sent for accelerator dating. Wyckoff revealed that the Oklahoma Museum of Natural History, through the efforts of Museum Director Dr. Michael Mares, had recently donated \$2,000 towards this end. Four charcoal samples, one bone sample, and one snail sample have been submitted to Doug Donahue at the University of Arizona Radiocarbon Lab. Results are expected in mid-January. "When the C-14 date on the charcoal comes back, it should confirm whether the snail date is erroneous or not," Wyckoff points out. Researchers tend to "...accept a snail date if they like it or toss it out if they don't. We definitely need a better handle on the chronology," notes Wyckoff.

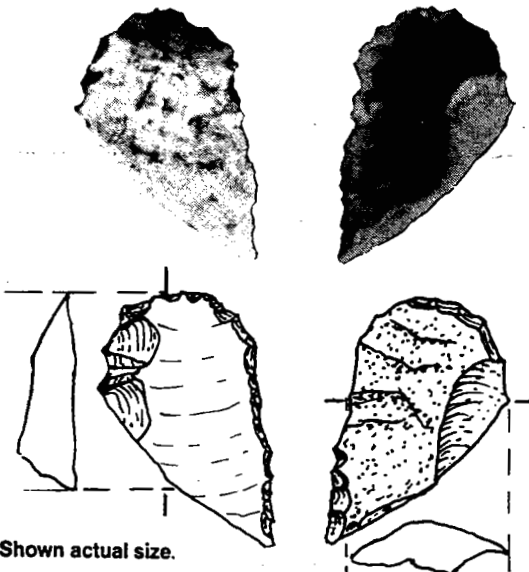
"I'm incredulous about it. I really am. I'd have been quite happy to have Clovis be the earliest thing."

The finds so far "closely parallel Paleoindian bison kills of 10,000 years ago, in which bison were trapped in steep-walled gullies where they could be killed and butchered." Wyckoff continues, "I'm incredulous about it. I really am. I'd have been quite happy to have Clovis be the earliest thing. I've always taken a conservative viewpoint about the peopling of North America.

"I feel comfortable with the geologic situation at the Burnham site. The alignment of the bones suggests some stream action was involved," Wyckoff explains, "but this redeposition took place before the lumpy carbonate layer was laid down, sealing off the channel deposits."

More excavation is needed at the Burnham site to confirm the possible early date for human activity there. Previous commitments have thus far taken priority over the Burnham site, and detailed analyses, such as the taphonomic study of the bison bones and small mammal study have not yet been started. Even though it takes time to get adequate funding, "if this is

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Shown actual size.

20,000 years ago, we simply had to get a date. The only other thing we had was snail shells. We submitted about 70 grams of snails from the two 10 cm levels that the flakes had come from. They were at the same depth as the bison bones," Wyckoff explains. That date, received in October 1987, was a surprising 31,150 ± 700 yrs B.P. (Beta 23045). Snails tend to date older than their actual age because they can absorb ancient carbon dissolved in ground water as they manufacture and maintain their shells. Even so, the date is not out of line with the known temporal range of *Bison alleni*.

"We were still somewhat reluctant to believe that we had people at the site, but there was not much other way to look at it," notes Wyckoff. "The geologic context looks good." The ancient stream channel is about 2 m deep and 3 m wide as observed in three exposures along the edges of the pond. A deposit of coarse red sand at least 50 cm thick lies at the base of the channel. Above the red sand, and infilling the channel, is a gray fine loamy sand. The bison skull was at the bottom of the fine gray sand, whereas the other bison bones and angular flint cobble were within the coarse red sand. The bones are about 160 cm to 210 cm below the top of the stream channel.

Because a carbonate layer 40 cm above the bison bones extends completely across the stream deposit in the areas excavated, the lower part of the stream deposit appears undisturbed by any recent cut and fill activity. This carbonate deposit is a lumpy material that may contain silica, as well as carbonates. Dr. Brian Carter of Oklahoma State University is currently ana-

HAUNTED BY THE PHANTOM OF ANTIQUITY

For over 100 years, researchers have been occupied with the controversy surrounding the origin and entry of the first people into the western hemisphere. Archaeologists of today concur that a bifacial projectile point-making, megafauna-hunting population known as Clovis was widely distributed throughout North America 11,500 years ago. What is not clear is whether these people were the first to colonize the New World or were others here before them?

As late as the late 1930s, American history was allowed only a very shallow time depth. Serious scholars declared the New World to have been occupied for less than four thousand years. By the 1860s, European archaeologists and geologists had demonstrated that human prehistory antedated biblical chronology. Inspired by the discovery of the "Old Stone Age" or Paleolithic in Europe, American investigators began an earnest attempt to find similar tools in the New

World, but unity, and continued to seek "primitive" physical types of human remains in the archaeological record.

Clark Wissler of the American Museum of Natural History attempted to interject a note of reason into the morphological arguments of Holmes and Hrdlicka, noting that "while the presence of a distinct morphological difference would be one good argument for a respectable antiquity, the absence of such differences would not be equally good evidence against it."⁽²⁾

Wissler's cautionary comment fell largely on deaf ears. By this time, Holmes and Hrdlicka had become extremely personal in their attacks. Holmes, for instance, at those sites where the artifacts could not be dismissed as intrusive, developed the tendency to cast aspersions on the collector. Despite inaccuracies and inconsistencies in the arguments of Holmes and Hrdlicka against an early human presence in the New

In the summer of 1895, excavators under the direction of S.W. Williston of the Paleontology Department, University of Kansas, unearthed nine bison skeletons on Twelve-Mile Creek near Russell Springs, Kansas. Upon removing the largest skeleton, the group discovered a projectile point lying beneath the right scapula, embedded in the matrix, and touching the bone itself. Although the point was unfortunately stolen soon after its discovery, drawings and a photograph show a broad, relatively short projectile point exhibiting bifacial flaking and a possible flute.

Williston was entirely satisfied with the find as demonstrating the contemporaneity of humans and extinct fauna. Brief notices of the site were published soon after its discovery; detailed accounts appeared in geological and anthropological publications soon after the turn of the century. Despite these publications, but in keeping with the conservative spirit of the times, the discernible association of an artifact with late Pleistocene fauna had no effect on the archaeological community.

In 1924, paleontological excavations under the direction of J.D. Figgins, Director of the Colorado Museum of Natural History, resulted in a discovery on Lone Wolf Creek, Texas, which closely paralleled that made 30 years previously by Williston. Again, projectile points were found under and in contact with the bones of extinct bison.

Scarcely two months after Holmes' caustic comments on the Vero and Melbourne sites appeared in *Science*, Harold J. Cook, a colleague of Figgins, published a preliminary report on the Lone Wolf Creek Bison Kill site in the November issue of that same journal.

Holmes remained silent. Hrdlicka, however, was clearly unimpressed, noting that "they [humans and extinct fauna] will be found in such associations even more frequently in the future, if excavations extend, is certain. But such association alone is of doubtful value. It is not yet known just how late some such animals survived, but regardless of their antiquity, the presence with them or even beneath some of them, of human remains does not necessarily mean contemporaneity. Here is where many are misled."⁽⁶⁾

Hrdlicka's words, similar in tone to the position taken by Holmes a few months earlier, again proved strangely prophetic. In the spring of 1925, George McJunkin, a cowhand searching for a lost cow near Folsom, New Mexico, noticed bones eroding from the bank of a dried up stream bed. Dismounting from his horse for a closer look, McJunkin climbed across the arroyo, and began prying at the bones with his knife. What struck him at once was the discovery of a flint projectile point lying amidst the bones.

In early 1926, J.D. Figgins and H.J. Cook visited the site, beginning excavations in the summer of that

***"A similar attitude toward the followers
of the phantom of antiquity should be rigidly maintained
by all conservative students of the history of man in America."***

World. Antiquarians maintained that once humans had achieved the ability to make tools, they would have spread to all habitable environments. Therefore, it was expected that evidence of Paleolithic age tool makers associated with the "glacial period" was to be found in the New World as well as the Old.

One of the most enthusiastic advocates for the existence of an American Paleolithic was a physician named Charles Conrad Abbott. In 1872, Abbott, announced he had found Stone Age implements on his ancestral farm near Trenton, New Jersey. Other enthusiasts were similarly inspired. Shortly after Abbott's announcement, "Paleolithic" artifacts began appearing in Ohio, Indiana, Minnesota, Delaware, and Washington, D.C. By the late 19th century, an extensive literature existed describing North American Paleolithic-type implements. But in 1892, the contention that the case for "Glacial Man" had been established beyond doubt came under severe criticism. William H. Holmes, Curator of Anthropology at the United States National Museum, led the opposition to the then-generally-accepted belief in an American Paleolithic.

Holmes began his career as an artist with the U.S. Geological Survey under John Wesley Powell. He later succeeded Powell as chief of the U.S. Bureau of American Ethnology. In a series of papers, Holmes argued that the Trenton artifacts were similar to numerous Potomac Basin quarry site materials, concluding that a more likely explanation for the apparent association of flaked stone with ancient deposits was that the artifacts from later times were intruding into older geological strata. Reinvestigations undertaken elsewhere by Holmes and his colleagues produced similar announcements. As a result of these investigations, Holmes concluded there was no good reason to assume any of the "Paleolithic" materials were anything other than the work of recent Indians, claiming that these finds had been "prematurely announced and unduly paraded."⁽¹⁾

In the early years of the 20th century, Holmes was joined in his opposition to an early North American occupation by Ales Hrdlicka. Hrdlicka, a Bohemian physician, was originally employed at the Peabody Museum by its director, F.W. Putnam. In 1903, Hrdlicka joined the Smithsonian Bureau of Ethnology.

Hrdlicka's primary argument against an early date for humans in North America was osteological morphology - the shape of human bones. The concept of morphology in dating human skeletal remains was closely linked to that of evolution. Similar to Holmes' assessment of the age of lithic artifacts, Hrdlicka took the position that bones that looked ancient were ancient. Hrdlicka dismissed the various linguistic, physical, and cultural differences between the various American Indian groups as demonstrating not diver-

sity, but unity, and continued to seek "primitive" physical types of human remains in the archaeological record.

Kirk Bryan, a professor of geology at Harvard University, spoke for a generation of scientists during the reign of Holmes and Hrdlicka when he cautioned his students, "If you ever find evidence of human life in a context which is ancient, bury it carefully, but do not forget about it."⁽³⁾

Isolated finds served to keep the controversy alive. In 1916, E.H. Sellards, Florida State Geologist, reported the presence of human remains and tools in association with extinct fauna at Vero, Florida. The layer holding the human materials was overlain by undisturbed stratified sediments. The opinions of researchers who came to visit the site were varied. Hrdlicka contended the human skeletal remains and artifacts represented an intrusive burial, geologist Rollin Chamberlin believed the human bones to be associated with the fauna, and archaeologist George Grant MacCurdy made the diplomatic suggestion that the association represented a survival of extinct megafauna into recent times.

A similar association at a site near Melbourne, Florida was reported by F.B. Loomis in 1924. In a strongly worded statement issued in 1925 regarding

***"If you ever find evidence of human life
in a context which is ancient,
bury it carefully, but do not forget about it."***

the two Florida sites, Holmes concluded it was, "...a duty to hold and enforce the view that the evidence of Pleistocene man recorded by Loomis at Melbourne, as well as those obtained by Sellards and others at Vero, are not only inadequate but dangerous to the cause of science. A similar attitude toward the followers of the phantom of antiquity should be rigidly maintained by all conservative students of the history of man in America."⁽⁴⁾

In the same 1925 article, Holmes went on to state, "...if there was a Pleistocene man there can be no question that in good time the evidence of his association with Pleistocene animals will accumulate until overwhelming."⁽⁵⁾ Ironically, the sarcasm of this statement became a prophesy which undermined the very basis of Holmes' objections to a Pleistocene human presence. Not only was such evidence accumulating even as Holmes wrote, it had actually been discovered some 30 years previously.

same year. Two points were found along with more bison bones. Efforts to report these discoveries were met with initial skepticism; in several instances, opponents claimed the deposits were mixed and the artifacts were later intrusions. In the summer of 1927, Figgins discovered yet another fluted point. This time he left the projectile point in place and invited his colleagues to come and see for themselves. On seeing the point in place, many of the critics of previous years became enthusiastic converts.

A string of fluted point discoveries followed within the next five years: Dent, Colorado; Burnet Cave, New Mexico; Clovis, New Mexico; Yuma, Colorado; Scottsbluff, Nebraska; Blackwater Draw, New Mexico. In spite of the evidence, ardent hold outs still maintained the possibility of intrusion. Even in the mid 1930s, researchers working on early human sites could expect to find themselves embroiled in a

(Continued on next page)

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viewing the cave paintings which are so prevalent in France. With that interest in mind, she began work at the Boqueirão do Sítio da Pedra Furada, a very large rockshelter that occurs at the base of a sandstone cliff. Guidon little expected the surprises the site held in store for her. The initial radiocarbon dates of 8,000–10,000 years ago yielded by the site during the early stages of investigation, although old, fell well within the norm. However, when an assistant brought the news to Guidon that the radiocarbon lab had returned a date of 25,000 years ago on a specimen, Guidon incredulously replied, "Ask them to see if it's our sample!" Subsequent samples produced similar results and by 1986, Guidon was reporting dates as old as 32,000 yrs B.P. from Pedra Furada.

At the time she published an article in the June, 1986 issue of *Nature*, Guidon thought she was finished excavating at Pedra Furada because she had reached bedrock during her work in 1985. However, during a recent visit to Brazil by Dr. Robson Bonnichsen of the Center for the Study of the First Americans, Guidon reported that she realized she had been deceived by the angle of the cliff; that there were levels below the 32,000-year level. Continuing the excavations, she began radiocarbon dating these lower layers (assigning negative numbers to these levels). Hearth charcoal from level -3 (about one meter below the 32,000-year level) yielded a date of 39,200 yrs B.P. As a double-check, she sent charcoal from the same hearth to France and received a date of 41,800 yrs B.P. In level -4, fires had been made on top of large blocks, around which a great number of flakes were scattered, as if people had sat near the fire to work. At level -5, Guidon again thought the excavation was finished—and then discovered level -6. The charcoal is presently being dated by thermoluminescence, as radiocarbon dating becomes inaccurate this far in the past. Uniform rates of deposition, though, lead her to believe that level -6 is between 50,000–60,000 years old!

Plunging deeper into the past, however exhilarating, is not the only task Guidon has on her hands at Pedra Furada; there is also the matter of interpreting the more recent cultural phases. There are three of these. The latest spans 6,000–5,000 yrs B.P. and may correspond to a painting tradition known as the Agreste. The Serra Talhada phase, which precedes it, dates from 12,000–6,000 yrs B.P. and accounts for most of the rock art in the shelters, which is executed in what has been termed the Northeast tradition of painting. The third, or Pedra Furada cultural phase,

ranges from an indeterminate beginning to about 17,000 yrs B.P. A gap between 17,000–12,000 yrs B.P. at Pedra Furada suggests a span of disuse at the site, but not necessarily for the region in general, as the nearby site of Toca do Meio has yielded artifacts within that period.

The Pedra Furada rockshelter is not exactly a convenient tourist stop, located as it is in one of the wildest, albeit most beautiful, regions of Brazil. The collision of two geological zones, a southeastern plain and a northwestern series of mountain masses called *serras*, has thrown up some of the most rugged terrain in all of South America. Right in the middle of it are the 100 meter high sandstone cliffs of Serra Talhada. The Pedra Furada rockshelter sits some 20 meters up those cliffs, isolated in a climate whose fluctuations resemble something from the Book of Job. A dry spell there makes this summer's drought in the United States seem like a tropical rain forest. After indefinite periods in which it simply does not rain at all, the local inhabitants stop being local. When no rain fell between 1980–1985, people left the region and went south to Amazonia or moved into the town, to which trucks brought water. The only ones who survived independently were those who lived by hunting. At other times, torrential rains make travel difficult and dangerous; the archaeologists rely gratefully upon local guides.

The rains also complicate the task of the area's geomorphologists by washing away the terraces of the nearest river. Guidon once saw a 60 cm deposit swept

**What compulsion or exuberance
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away in a single season. Interpretation of the cultural data depends a great deal on the interpretation of the climatic data. A pivotal question is whether the climate during the Serra Talhada and Pedra Furada phases resembled the conditions that prevail now, for from climate one can infer much about a people's way of life.

Prior to the arrival of Guidon's team, there had been little study of this region. Brazilian geomorphologists maintain that the climate of the northeast has

niques and insistence on scientific caution spurred the development of many of the field strategies and analytical techniques which are used today. If Holmes' and Hrdlicka's authoritarian and negative tactics obstructed and even halted early human studies in the Americas for almost 40 years, it should be remembered that the members of the archaeological community supported the arbitrary barriers they put forth. The ultra-conservative theories of the past have long ago been reexamined and reevaluated, bringing acceptance of differing concepts and earlier dates. The lessons of the past demonstrate that new ideas must be greeted with an open mind if we are not to resubscribe the narrow views of the "Phantom of Antiquity."

—Karen Turnmire

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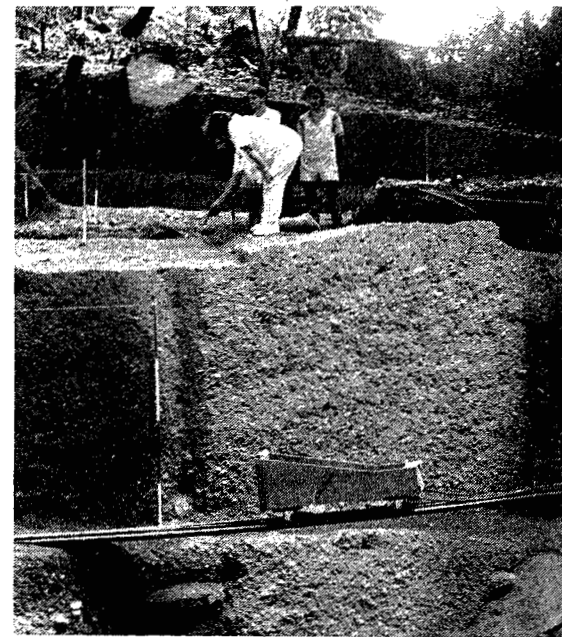
(2) Wissler, C. 1916 The Application of Statistical Methods to the Data on the Trenton Argillite Culture. *American Anthropologist* 18:190-197.

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Niède Guidon stands atop more than 50,000 years of stratigraphy at the Pedra Furada rockshelter in northeastern Brazil where she has been working for almost two decades. The rail-car is for hauling dirt from the excavation.

changed little within the last 17,000 years, but Guidon's French researchers are not so sure. Remains of giant sloth, horse, camel, mastodon, and llama, suggest that it was probably at least somewhat more humid prior to 11,000 years ago. This theory is corroborated by archaeological evidence that suggests the area supported a relatively dense human population. Although, as hunters, the early inhabitants would not have been so dependent upon water as farmers now are. Guidon's geomorphologist has, in fact, analyzed the sediment from the excavations into four layers indicating four climatic periods, however because there is no organic material for radiocarbon dating, he is still in the process of trying to date the levels geologically.

The rockshelter of Pedra Furada is 6 to 14 meters wide, but about 80 meters long, a sandstone womb whose back wall is lined with over a thousand painted figures from the Serra Talhada phase. Guidon has studied the region's 20,000 extant rock art figures for 14 years. The prehistoric art of this area has been classified into six traditions; three comprised of paintings and three of engravings. A tradition is primarily defined by the type and frequency of the figures involved. For example, the Northeast tradition, which predominates in Pedra Furada and the vicinity, is characterized by relative frequency of human figures and animals, and relative infrequency of trees, natural objects, and abstract signs. Within each tradition, figures also vary in style and technique of execution.

Dr. Anne-Marie Pessis of the Fundação Museu do Homem Americano has been working since 1980 to discover the meaning of this art. Her conclusion is that the drawings were intended to register graphically everything of importance in the life of the society, both secular and religious. There are fighting scenes, hunting scenes, scenes apparently belonging to ceremonies and myths, and some scenes that no one has been able to interpret at all. The discernible subjects resemble, in many cases, those of the rock art of the Spanish Levant and North Africa and are characterized by considerable action and movement. Little more, unfortunately, can be said, either about the content of specific pictures or the reason behind the activity of recording. What compulsion or exuberance motivated these people, over many centuries, to proliferate their drawings on the walls of every eligible cave in sight remains unknown.

Because Pedra Furada's rock art, the oldest in the Americas, has its roots in the earlier phases of human symbolic expression, this question expands into a larger one, that of the origin of symbolic capacity itself. What is mysterious is that this capacity seems to have made its appearance at roughly the same moment throughout the world. The Pedra Furada site reinforces this impression by preserving traces—a bit of red ochre here, two parallel lines drawn upon a rock there—that art was being produced at least as far back as 30,000 years ago, even though no actual figures survive before about 17,000–19,000 yrs B.P.

Current speculation is that mutation was mother to representation: that some new variant in the genetic pattern gave birth to the human ability to see pattern

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PHANTOM OF ANTIQUITY

(Continued from preceding page)

certain amount of political controversy. C.B. Schultz, University of Nebraska, recalls that John C. Merriam, Director of the Carnegie Institute, once cautioned him, saying, "Schultz, don't do what your colleagues tell you to do; every time you find an artifact, take a geology hammer and break it all to pieces and don't report it. Just keep on reporting."⁽⁷⁾

Rejection of the intrusion theory was not universally conceded until 1936, when a Folsom point was found embedded in the vertebra of an extinct bison at Lindenmeier, Colorado.

Following the Folsom finds, Holmes and Hrdlicka, if not converts, at least ceased going on the offensive against claims for early humans. Holmes, who was then over 80, simply dropped the matter. When confronted, Hrdlicka continued to point to the absence of human skeletal evidence.

In a sense, Holmes and Hrdlicka won the battle but lost the war. In terms of their specific arguments against an American Paleolithic, they were correct; the North American fluted point technology in no way resembled the implements characteristic of the European Paleolithic. On the other hand, the unequivocal association of humans with extinct megafauna conclusively proved that humans had inhabited the New World during the Pleistocene.

Despite the excesses of Holmes and Hrdlicka, their contributions to the field of archaeology were many. Their merciless exposures of careless field tech-

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A panoramic montage of photos shows the vast extent of the excavations at Pedra Furada. The large rocks (center) fell from the outer lip of the rockshelter; the white area (lower right) is the present-day rock face. Charcoal, possibly from ancient hearths (found at the same level as the rail-car in this photo) was radiocarbon-dated to 40,000 years B.P. Uniform rates of deposition of sediments suggest that artifacts found below this level are likely to be more than 50,000 years old! (Photos by Rob Bonnicksen)

(Continued from page 5)

as pattern which is the foundation of all symbolic systems, including language and the arts. But no one as yet has come up with a satisfactory answer to the question of how this capacity managed to become universal in such a short period. The contest between the two prevailing candidates, diffusion and simultaneous mutation, involves much the same choice between alternative absurdities as that so familiar to voters in an election year. A recently popular version of the diffusion theory is that some time between 200,000 and 125,000 years ago, one woman ancestor, a "Black Eve," had a mutation that was passed on. This mutation is now present throughout the world, suggesting that mutations do pass outward from their point of origin. Some feel that this was the origin of modern humanity. There remain, however, obvious problems with the time that diffusion takes to disseminate any innovation, whether cultural or biological. On the other hand, the theory of simultaneous mutations around the world producing exactly the same effect seems tantamount either to science fiction or to a theory of divine intervention.

In addition to categorizing it, Guidon has been working to link the rock art to an archaeological context. At Pedra Furada, as elsewhere, tools and flakes, hearths and food storage pits, accompany the Serra Talhada cultural levels of the Northeast rock art tradition. As the excavation proceeded (in 1985, it was 5 meters deep and covered 300 square meters), successive floor surfaces reflected a series of occupations. Pedra Furada was probably a campsite rather than a permanent habitation, Guidon believes, largely because there is evidence of only three types of activity: tool making and modification, food preparation, and rock painting. The presence of many flakes but few tools may indicate that the stone was flaked at the site because it was close to the source of the raw material, with the tools travelling back home with their makers. A series of galleries on various levels has been discovered in the calcareous outcrops of the Precambrian plain just in front of Pedra Furada, suggesting that it was here the hunters mined the flint that they worked back at the campsite.

The galleries are a pretty remarkable find in their own right and, like Pedra Furada, are still undergoing excavation. Lithics on the surface matched the 8,000 year level at Pedra Furada; those at 60 cm matched the Pedra Furada layers below 25,000 yrs B.P. Shafting the hill is a kind of vertical chimney which, 100 meters below the surface, opens into a large room filled with water, a kind of underworld from which four lakes go out. On the shore of the room is a cemetery of megafauna. All of the bones are crystallized, covered with quartzite, but the one so far extracted for analysis proved to be the femur of a giant sloth.

Returning to the archaeology of Pedra Furada, we may ask, without answering, a passing question: if the rockshelters were the temporary campsites of hunters, why were they so elaborately decorated with rock art? Did the paintings and engravings have some religious significance, perhaps connected with a ritual aspect of

If the rock art of the Pedra Furada phase, beneath the Serra Talhada, has survived only in tantalizing traces, stone artifacts remain in abundance.

the hunt itself? At present, no human bones have been discovered in association with the site. Looking for burials will be difficult precisely because the people did not live in the rockshelters. A major task in the next two years will be extensive excavations of the nearby calcareous caves, where conditions are more favorable for bone preservation.

Another possibility is determining which of the villages on the plain were the permanent homes of the rockshelter artist-hunters. It is known that thousands of people inhabited the area 10,000 to 7,000 years ago. Before that it is difficult to say. A few village sites do have tools similar to the older levels at Pedra Furada, but it is as yet impossible to date them or to

construct a chronology based on typological comparisons between sites alone. As Guidon puts it, up to now the excavators have been constructing the vertical frame; they are just beginning to construct the horizontal frame of Pedra Furada's relations with the outlying world.

The vertical frame has certainly been enough to hold anyone's attention. If the rock art of the Pedra Furada phase, beneath the Serra Talhada, has survived only in tantalizing traces, stone artifacts remain in abundance. Made of quartz and quartzite, the collection includes retouched and double-edged flakes, burins, denticulates, notched pieces, pebble tools, and hammerstones. These artifacts are usually clustered about large circular hearths constructed from fragments fallen from the cave wall. Charcoal samples are plentiful: a series of 12 produced a neatly ordered span of dates between 40,000 and 17,000 yrs B.P. A certain type of fairly primitive planoconvex tool is present from about the 25,000 year level to the current base of the excavation.

In addition to Pedra Furada, Guidon now has several sites yielding dates in excess of 11,000 yrs B.P. One of these is the rockshelter Toca do Sítio do Meio, which was actually opened before Pedra Furada but where progress has been halted by a series of large fallen blocks over the lower levels. Before reaching this impasse, archaeologists discovered a layer at the 8,000 year level containing the same kind of tools as the comparable level at Pedra Furada, and further layers at 12,000 and 15,000 yrs B.P. Although the lithics are not as numerous as those at Pedra Furada, it is also a much smaller site. Another small site, Toca do Caldeirão dos Rodrigues, has produced a date of 18,000 yrs B.P. Yet another site, the Serrote da Bastiana, appears to contain paintings of extinct animals, although it is difficult to identify the species because of the thick calcite layer which blankets many of the figures.

As often happens, such obstacles as rugged terrain, harsh climate, and fallen blocks have proven less insurmountable than the human obstacle known as bureaucracy. In 1979, the government set aside the 100,000 hecta-acres comprising the most important sites as a national park. Unfortunately, the very ordinance that protects the rockshelters also seals them off. According to Brazilian law, research cannot be done inside national parks, unless the area is a special one. At present, Guidon is working with the park authorities to determine which areas will be free for research inside the park. Plans have been drawn up for a 2,700 square meter complex with laboratories, offices, exhibitions, an auditorium, and an educational program for the local people. Construction is currently underway on this project.

—Michael Dolzani

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CONFERENCES

Plains Conference

The 46th Annual Plains Conference was held in Wichita, Kansas November 2-5, 1988. The conference featured 21 sessions. Conference seminars were divided into topical and geographical themes, and included seminars on skeletal biology, faunal and floral analyses, and geomorphology, as well as those focusing on regional Plains archaeology and ethnology studies.

A seminar on Paleoindian archaeology was of particular interest to **Mammoth Trumpet** readers. Six presentations on Plains Paleoindian studies were delivered by session participants.

Don Wyckoff, Oklahoma Archaeological Survey, spoke on the results of a joint collaboration on the Burnham site, an archaeological and paleontological site located in northwestern Oklahoma. The site has yielded the remains of an ancient bison in apparent association with lithic artifacts. A radiocarbon date of $31,150 \pm 700$ yrs B.P. has been obtained from snails collected from the level at which the bones occurred.

In a separate talk, Wyckoff also presented a synthesis on the types of Paleoindian points which have been collected as surface finds in Oklahoma. Dalton,

Plainview, and Meserve points have been found to be the most abundant. The stylistic and technological overlap of these tools raises questions regarding the veracity of such types in the region. George Frison, University of Wyoming, spoke on the results of the 1988 summer excavations at the Mill Iron site, located in southeastern Montana. During 1988, the 5th year of investigations at the site, researchers focused on the paleoecology of the area and on excavation of a bison bone bed. This bone bed produced parts of at least 29 bison, along with 9 Goshen projectile points and a small tool assemblage.

Daniel Amick, University of New Mexico, presented information on the Shifting Sands site, located in a series of 10-15 meter deep blowouts in the Monahans Dune system of western Texas. Over 400 Folsom stone tools and 4500 pieces of chipping debris have been collected from the site. Folsom artifacts and weathered bone are eroding out from a 1 meter thick interstratified deposit, overlain by a massive dune.

Lawrence Todd, Boston University, summarized new information from the Lipscomb Bison Quarry,

Nebraska, where recent study of collections and additional field work have led to an expanded documentation of the site. The site has produced over 30 Folsom artifacts and the remains of 50 bison. Eric Ingbar, University of Wyoming, discussed the results of debitage analysis from the Hanson Site, Wyoming, a Folsom workshop locality.

SUGGESTED READINGS

On The Burnham Site:

Possible Pre-Clovis Evidence from Oklahoma

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On The Munson Springs Site:

9,000 Years of Occupation in Central Ohio

Griffin, J.B. 1978 The Midlands and Northeastern United States. In *Ancient Native Americans*. Edited by J. Jennings. H. Freeman and Co., San Francisco.

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Woodward, S.C. and J.N. McDonald 1986 *Indian Mounds of the Middle Ohio Valley*. McDonald and Woodward Publishing Co., Newark, Ohio.

On The Phantom of Antiquity

Meltzer, D.J. 1983 The Antiquity of Man and the Development of American Archaeology. In *Advances in Archaeological Method and Theory*, Vol. 6. Edited by M.B. Schiffer. Academic Press, New York and London, pp. 1-51.

Payen, L.A. 1982 The Pre-Clovis of North America: Temporal and Artifactual Evidence. Ph.D. dissertation. University of California, Riverside.

Rogers, R.A. and L.D. Martin 1984 The 12 Mile Creek Site: A Re-investigation. *American Antiquity* 49:757-764.

Wilmsen, E.N. 1965 An Outline of Early Man Studies in the United States. *American Antiquity* 31:172-192.

UPCOMING CONFERENCES

February 28, 1989 Ohio Historical Society, Columbus, Ohio Lecture series on extinction.

Speaker: Russell Graham, Illinois State Museum. Contact: Ohio Historical Society, Columbus, OH (614) 297-2300.

March 7, 1989 Ohio Historical Society, Columbus, Ohio Lecture series on extinction.

Speaker: Paul Martin, U of Arizona, Tucson. Contact: Ohio Historical Society, Columbus, OH (614) 297-2300.

March 16-19, 1989 Northeast Anthropological Association, Annual Meeting, Sherbrook St. Montreal, Quebec.

Contact: Kenneth Jacobs, Dept of Anthropology, U of Montreal, CP6128 Succursale A Montreal PQH3C 3J7, Quebec, Canada.

March 30-April 2, 1989 Twelfth Annual Conference, Society of Ethnobiology, Dept of Anthropology, U California, Riverside, Depts of Anthropology and Botany and Plant Sciences.

Abstract deadline, February 1, 1989. Abstracts: Dr. Cecil Brown, Secretary-Treasurer, Society of Ethnobiology, c/o Dept of Anthropology, Northern Illinois U, DeKalb, IL 60015 Registration: Elizabeth J. Lawlor or Sharon J. Rachele, Dept of Anthropology, U of California, Riverside, CA 92521 (714) 787-5524.

April 5-9, 1989 Annual Meeting of the Society for American Archaeology, Atlanta, GA.

Contact: Kenneth L. Kvamme, Arizona State Museum, U of Arizona, Tucson, AZ 85721

May 10-13, 1989 Annual Meeting of the Canadian Archaeological Association, Fredericton, New Brunswick.

Contact: Christopher Turnbull, Conference Coordinator, Tourism, Recreation, and Heritage Archaeological Services, Old Soldiers Barracks, PO Box 6000, Fredericton, New Brunswick E3B 5H1, Canada (506) 453-2792.

May 24-28, 1989 First World Summit Conference on the Peopling of the Americas, Orono, Maine.

Contact: CID, 206 Chadbourne Hall, U Maine, Orono, ME 04469.

August 2-6, 1989 (followed by tour August 7-12) Circum-Pacific Prehistory Conference. Seattle Center, Northwest Conference Rooms, Seattle, WA.

Contact: Dale R. Croes, WSU, c/o Pacific Celebration '89, 1001 4th Avenue Plaza, Seattle, WA 98154-1101. (206) 622-2536.

November 9-12, 1989 22nd Annual Chacmool Conference, 'The Archaeology of Gender'.

Titles and abstracts for symposia and contributed papers due April 1, 1989. U of Calgary, Calgary, Alberta

Contact: The Programme Committee, Dept of Archaeology, U of Calgary, Calgary, Alberta, Canada, T2N 1N4.

May 21-25, 1990 Sixth International Conference, hosted by Smithsonian Institution, Washington, D.C.

Contact: ICAZ, Dept of Anthropology, NMNH, Smithsonian Institution, Washington, D.C. 20560.

GLOSSARY

Archaic—A term used by archaeologists to indicate a temporal and technological stage of development by the occupants of prehistoric North America. This period followed the Paleoindian period, and was in effect until approximately 2,500 yrs B.P.; although the duration varies geographically. The Archaic is characterized by ground stone woodworking tools, specialized pounding and grinding stones, an emphasis on stemmed, corner-notched, and side-notched projectile points and, in particular areas, ground slate points and knives, net sinkers, bone fish hooks, and atlatls.

Burin—A flake or blade stone tool with a small, angled chisel edge or a sharp, beaked point used for sculpting and engraving purposes.

Calcareous—Consisting of, or containing, calcium carbonate or calcium.

Calcium carbonate—Limestone.

Caliche—Calcium carbonate residue resulting from ground water activity that can occur as massive deposits in the soil or as a filler in joints and fractures in rocks.

Denticulate—A stone tool with small, pointed, tooth-like projections.

Fire-cracked rock—Stones which have been used in pit fires or for stone boiling and have split as a result of heat.

Hopewell—A middle Woodland culture, beginning about 2100 yrs. B.P. and extending to approximately 1500 yrs. B.P. Hopewellian traits developed in Ohio and Illinois and spread outward, eventually encompassing an area which extended from Kansas to New

York State, and north-south from Canada to Florida. The Hopewell manifestation is characterized by earthworks and massive two- or three-stage burial mounds, elaborate grave goods, ceramic vessels, figurines, and ear spools, copper ornaments, and stone platform pipes.

In situ—A Latin phrase meaning "in place" and referring to the original position of any object; an important aspect in determining the relationships of artifacts within a site.

Ochre—An iron-rich clay or soil, usually red in color, used as pigment.

Paleolithic—A term used by archaeologists to indicate a temporal and technological stage of development by the occupants of Africa, Asia, and Europe. The Middle Paleolithic period (also known as the Mousterian in Europe) extended from approximately 70,000-35,000 yrs B.P. The human inhabitants who lived during this period have been termed *Homo sapiens neanderthalensis*, a subspecies of *Homo sapiens*, who possessed a tool kit containing, among other things, prepared cores and had axes. The Upper Paleolithic period, which extended from about 35,000-10,000 yrs B.P., is characterized by the presence of modern *Homo sapiens*. The tool assemblage of these individuals was dominated by a blade technology.

Permian—The last era of the Paleozoic, 225-280 million years ago.

Planconvex—Flat on one side and convex on the other.

Pressure flake—A flake removed by a method of

chipped stone manufacture in which the knapper puts the tip of the flaking tool on the edge of the artifact undergoing manufacture, and then "pushes off" each flake.

Soil flotation—A method of recovering small, fragile particles (e.g., plant remains, snails, and insects) from an archaeological site which might otherwise be lost. Following the excavation of an area, soil samples are put into water; the heavy particles sink to the bottom and the light-weight material floats on the surface, where it can be removed for further study.

Taphonomy—The study of post mortem events in order to describe and analyze how organisms become fossils.

Thermoluminescence dating—A dating method based on the decay of radioactive material in objects which produces electrons and other carriers of electric charges. When heated, these particles produce light which can be measured and translated into the age of the object.

Unifacial—An artifact on which an edge is created by flaking on a single side.

Woodland—A term used by archaeologists to indicate a temporal and technological stage of development by the occupants of prehistoric North America. The Woodland period began about 2,500 yrs. B.P., lasting in some areas until shortly before the arrival of Europeans. The Woodland is characterized by the introduction of ceramics and, in some places, domesticated plant remains. In the Northeast, this period is known as the Ceramic.

THE MUNSON SPRINGS SITE: 9,000 YEARS OF OCCUPATION IN CENTRAL OHIO

"It's one of the most incredible natural areas I've been in," says Dr. Dee Anne Wymer, with a hint of awe in her voice. She is speaking of Munson Springs (also known as the Pig site), a stratified site in central Ohio. Here, researchers have discovered evidence of human occupation ranging from the Paleoindian period to the Late Woodland. Protected from the wind by a horseshoe-shaped ridge, the site forms a small hill in a south-facing hollow that receives maximum sunlight. Two perennial springs flow through the hollow, remaining open even in the dead of winter. "You can't get any better than that," Wymer comments.

Wymer, who holds a doctorate in anthropology from Ohio State University, began work at Munson Springs two years ago in her capacity as senior research associate with the Licking County Archaeology and Landmarks Society. Although her previous years of work at the site had made her well acquainted with its Hopewell riches, even Wymer was not prepared for the discovery made one day in late August of last year.

As society volunteers cleaned off the walls of a stratigraphic trench, one student accidentally broke a point that was sticking out of the wall. "I asked where it came from," Wymer recalls, "and he pointed clear down to the bottom of the trench, 70 to 80 cm below the surface." I said, "That's impossible, that's down on the glacial till!"

After carefully mapping and recording the location of the remaining half of the point—the distal end—the volunteers excavated it. "It had been an overcast day," Wymer recalls. But just as the student held up the artifact, "the sun came out and suddenly the fluting showed and I said, 'Oh my God, we have a Clovis point!' It was great," she says enthusiastically. "I didn't sleep that whole night. None of us did."

More than once, Munson Springs has revealed its wealth of archaeological evidence in an unexpected way. The site was originally discovered three years ago by members of the Society who were gathering clay out of the spring bank. Intended for use in a ceramics class, the clay was found to contain artifacts.

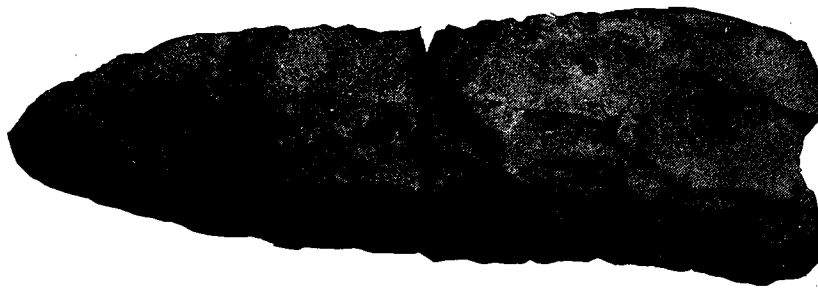
As a result of the discovery, a team of researchers from the society and Ohio State University began test excavations at Munson Springs. These excavations revealed a late Woodland occupation dating from about 1,100 years ago. In addition, the team discovered many more artifacts and an extensive amount of fire-cracked rock buried within the small hill immediately north of the spring bank. During the past two years, Wymer has led research focusing on the northern part of the site, where two 2 meter square test pits have revealed "an incredible amount of fire-cracked rock, more than I've ever seen at any site," says Wymer, as well as many artifacts from the Hopewell period, about 1,800 years ago.

These initial discoveries only increased Wymer's curiosity about the hill itself. Measuring only about 25 m by 40 m, it does not fit the surrounding topography. In the summer of 1988, to better understand the stratigraphy of the site, society volunteers excavated the 22 meter long trench that yielded the fluted point. Once that remarkable discovery was made, more researchers were called in. "We grabbed a local geologist and other scientists from Denison University, and they confirmed that the site was indeed on top of a glacial till and the rest of the hill was artificial."

So far, investigation of the site reveals that a meter of deposit covers the original surface. Contained in that meter is evidence of intensive human occupation, including fire-cracked rock at all levels. "We think we possibly have an intact Paleoindian occupation level that's right on top of the Clovis point and associated with it," says Wymer. "More than just that point I'm sure will come out." There is also evidence of an extremely early Archaic level on top of the Paleoindian level. This layer has produced Hardaway, Kirk, and McCorkle point types, dating to about 9,000 yrs B.P.

Because the discovery of the Clovis point is so recent, little analyses has yet been done. The point itself is still something of a mystery. "It's not a beautiful example of a Clovis point," Wymer says, explaining, "It's not complete, there's only fluting on one side." Although it was never finished, its makers decided to use it as a hand-held tool. One edge of the blade shows use wear: small scars made when the edge was used for a task like cutting meat or scraping leather. It is not certain what type of stone the point, which is white, is

"The sun came out and suddenly the fluting showed!"



Shown actual size.

made of, although Wymer speculates it may be from a local, flint-rich material.

Among the analyses Wymer plans to perform is radiocarbon dating. She has taken some samples for this purpose and expects to find more in the 22 meter long trench, but she has not yet had the testing done. "I don't want to run anything until I'm exactly sure of the context," she explains.

Wymer also hopes the site will yield extensive environmental information. Since her expertise is in paleo ethnobotany, the study of plant remains, she is examining samples carefully for all evidence of plant life. The plant remains already found at the site include nuts, seeds, wood, and pollen. Wymer promises that soil samples will be studied intensively, using a technique called soil flotation. "We're going to float the heck out of this site!" she says cheerfully.

Unfortunately, the soil acidity which has no effect on plant preservation destroys bone. Bones are rarely found in the region, and none have yet been found at Munson Springs.

Although extensive research remains to be done, Wymer and her colleagues have begun to speculate about the origin of the hill which comprises the site. "Different interpretations have been suggested, including the possibility that the hill was a burial mound, but at this point it doesn't look like that," Wymer says. Instead, it seems likely that people inhabited the area continuously because of its sheltered location and available water. The large amount of fire-cracked rock seems to suggest that the site was heavily used in wintertime.

Munson Springs presents almost endless topics for study. "It's got everything from Paleoindian material onwards," Wymer says. "The whole hill is capped with an intact Hopewell midden and possible structure. This site has everything an archaeologist could ever want!" The Clovis point alone is an important discovery, because it was found in place. While Clovis points are not uncommon in Ohio, they are almost always found in plowed fields in which the context has been destroyed. Munson Springs, unlike most areas of Ohio, has never been plowed.

The site is close to a variety of environments including ridges, hills, uplands, and interior hollows. Half a mile away is the Raccoon River, with accompanying flood plains and marshes. Theories of the

site's origins remain indefinite, pending future investigations by Wymer and her colleagues.

"The site," says Wymer, "presents a unique opportunity to investigate land use by Paleoindian peoples on through to Hopewell. Hopefully, Munson Springs will allow us to look at what types of environments the Paleoindian occupants were living in and what types of resources they were using." What is also exciting, she adds, "...is that with the Archaic levels above the Paleoindian, we'll be able to look at human adaptation and culture change in response to the close of the Pleistocene. That's probably of paramount importance."

Wymer's plans include an element of urgency. Munson Springs is owned by a developer who intends someday to build a housing development on it. Although the landowner has been cooperative, allowing the archaeologists to camp at the site, "It is in danger of being destroyed," Wymer says sadly. "The site is not being developed presently, but some day it will be, I'm sure. So it's not something we can just leave either."

A research team consisting of Dr. William S. Dancey, Ohio State University, Paul E. Hooge, Director of the Licking County Archaeology and Landmarks Society, and Dr. Wymer are developing future plans for the site and the surrounding area. The group is presently preparing a proposal to obtain funding for further excavation and research at the site.

Excavations at the site have, thus far, been conducted on a shoestring budget, with extensive help from volunteers. Denison University geologists Tod Frolking and Robert Malcuit, Ohio State University soil scientist George Hall, and Ohio Historical Society archaeologist Brad Lepper are among those whose aid has been enlisted by the society. "We have a real good core of people," Wymer says, "but I'd like to get some funding for radiocarbon dating and other types of detail work. Although we've been doing things very carefully, we don't have the money to hire, for example, crew chiefs or experienced field crew."

"Munson Springs," emphasizes Wymer, "is so important I want to be able to use all available research techniques to properly interpret the site."

—Nancy Allison

THE BURNHAM SITE

(Continued from page 3)

real, it has been in the ground for that long and a few more months will not hurt.

"We hope to do 6 to 8 weeks of fieldwork next September. We want to find good evidence in situ and have Vance Haynes and other researchers visit the site to evaluate it," Wyckoff states. The work accomplished so far has been because of the "super avocationalists from the Oklahoma Anthropological Society, Peggy Flynn and her laboratory staff who initially found the small flakes, and the colleagues who have donated time. The University and the Survey staff have also been very supportive." The Burnham site is in the Cinnamon River valley, the same drainage system containing the Folsom site. "Folsom got us to realize that the 4,000 year threshold was wrong," comments Wyckoff. "If the Burnham site proves out, it will help get us past this threshold of 12,000 to 14,000 years."

—Alice Tratebas

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