MOCHANOV SHOWS, TELLS, ON U.S. TOUR
Siberian Says Diring Site 3.1-1.8 Million Years Old

Russian archaeologist Yuri A. Mochanov has returned to the chill of Siberia after attempting to warm American scientists to evidence that humans lived—and perhaps originated—in the frigid far north more than two million years ago.

During a tour of the United States in January and February, Mochanov, director of the Lena River Basin Archeological Expedition and Academician of the Russian Academy of Science, spoke to American scholars, students and the public. His appearances, which received considerable news coverage, caused audiences to ponder questions of human origin and dispersal. His tour began in the Northwest with public appearances in Seattle, Portland, and Corvallis. Then he spoke in San Francisco and met with scholars at Texas A&M University and the University of Oregon before visiting the Smithsonian Institution in Washington, D.C., and Rutgers University. His final U.S. appearance was at the Denver Museum of Natural History. The tour was sponsored by the Center for the Study of the First Americans.

Mochanov has strongly defended his scientific team's series of paleomagnetic dates that indicates a stratum containing pebble tools and associated debitage is from 3.1 to 1.8 million years old. (See Mammoth Trumpet 7.3 "Siberian Site Defies Theories on Peopling"). Speaking to an Oregon State University seminar, Mochanov insisted that to suggest the site might be younger would be intellectually dishonest for him because it would deny evidence secured by his scientific team. Mochanov insisted that research has done nothing but confirm original findings of the site's antiquity, and he repeatedly invited U.S. scientists to visit Diring and investigate for themselves.

The concept of tool-making hominids 3 million years ago at one of Earth's coldest places confounds anthropological theory. Yet if Diring's evidence is troubling for American anthropologists and archaeologists, it was stunning to Mochanov and Svetlana Fedoseeva, his wife and the archaeologist who initially found the pebble tools while excavating a late...continued on page 4

Archaeologist Yuri A. Mochanov engages in an animated conversation with a Russian-speaking visitor at a reception following his lecture in Corvallis, Ore. With him is his wife, archaeologist Svetlana Fedoseeva.
You Can Join the First Americans Expedition

If you would like to discover a stone tool that someone lost more than 11,000 years ago, consider joining a First Americans Expedition in southwestern Montana this summer. You’ll be guaranteed an away-from-it-all, two-week vacation in a beautiful, secluded place, and you’ll meet interesting, intelligent people who share your interests.

More important, you’ll be a crucial part of a tangible scientific quest at the Mammoth Meadow archaeological site. Volunteer support is crucial to the opening of this unique window on America’s earliest human heritage, because field archaeology is a time-consuming and labor-intensive undertaking. The Mammoth Meadow site, under scientific study since 1995, has revealed an extensive series of habitation floors dating back as far as 14,000 years. Nearly 20,000 flaked stones, worked bones and other artifacts have been recovered by volunteers and professional archaeologists from the site, which is located near sources of high-quality chaledony that was used for tools by people over a vast area. More unusually, it is the source of 200 feet of hair recovered by Mammoth Meadow workers. Hair found there is helping change the course of archaeological investigations because it has proven the presence of many animals, some of which, like mammoth, American horse, and American bison, are long extinct. Still more fascinating is the record of human hair that clearly links the early inhabitants with Asia. Using new technology, scientists can use the hair recovered from the site to provide hitherto-unobtainable information on prehistoric animals and people who have been there.

The Center for the Study of the First Americans is already accepting applications for volunteers for the 1994 field season at the site on the slopes of the Beaverhead Mountains. Volunteers are expected to provide their own transportation to Hamilton, Mont., and furnish their own camping gear, but are served meals at Mammoth Meadow’s “Far Away Cafe,” a well-equipped mobile kitchen and sheltered meeting area. Volunteers learn from and work with a competent team of professional archaeologists, geologists, civil engineers, and anthropologists. They join in hands-on projects like mapping, excavating, screen-washing, flotation of organic sediments, and cataloguing.

The three expeditions are scheduled: June 18–July 2, July 6–July 20 and July 23–Aug. 6. A few scholarships may still be available. For an information packet on the 1994 Mammoth Meadow expedition and a registration form, phone 503-776-6955, or write: First Americans Expedition, CSFA, Weniger 355, Oregon State University, Corvallis, OR 97331.

New Genetic Study Backs Early Arrival

Research in genetics published recently by a team headed by Antonio Torroni of Emory University indicates that people reached Central America 29,000 to 32,000 years ago. The report in The Proceedings of the National Academy of Sciences details the study of seven groups of Central American Indians who speak the Chibcha language.

Archaeological and linguistic evidence indicates the separation of the seven groups at 10,000 to 8,000 years ago. The genetics team studied mitochondrial DNA from these people and determined the amount of genetic diversity apparent from a separation of that length of time. Having thus developed a presumed rate of genetic mutation and differentiation, team members then compared genetic differences between the Chibcha people and 18 other Indian groups. They concluded the amount of diversity they found would have taken at least 22,000 years to develop.

Though the team’s paper notes there are inferential leaps in their evolutionary time clock, Dr. Torroni told The New York Times that he believes in the date. “I feel that they strongly push for an early arrival of people in the Americas,” The Times reported.

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Video Previews Expedition

An excellent way to preview what it is like to be a part of a First Americans Expedition is by purchasing the new video, "An Archaeological Quest for the First Americans." The professionally produced presentation illustrates work at the Mammoth Meadow site and beautifully depicts the ambiance of a First Americans Expedition. It also places developments at Mammoth Meadow into a broader scientific context. To order your copy of this video by Anne Stanaway of Sunlight Productions, send $13.95 to the Center for the Study of the First Americans, 16555 E. Oregon State University, Corvallis, OR 97331, or fax your order with your Visa or MasterCard number to 541-737-3651.

MAMMOTH TRUMPET

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A NEW WORLD of materials is opening up for archaeological study. Inside bone and teeth, as well as inside softer parts of living bodies, are minute amounts of DNA, the genetic material. This comes about because every part of a human being is built up from cells. And virtually all cells contain DNA, long molecules that direct each cell’s function: whether it will grow and divide, whether it will produce bone materials or head hair, whether it will send out nerve signals, and so on.

Molecular biologists have become proficient at isolating and analyzing DNA from the cells of living bodies. Recently some molecular biologists have turned to the challenge of studying DNA isolated from dead bodies, whether Egyptian mummies or Paleo-Indian burial remains (see Suggested Readings). Since our human individuality depends in large part on our DNA, these molecular studies of present and past humans are informative about human variation and human evolution.

So far, studies on ancient human DNA have relied on extracting it from hard materials such as bone and teeth. But bones and teeth are not as numerous as human hairs, which also contain DNA but which are often overlooked in archaeological excavations. So a team at Oregon State University is now embarking on the comparative study of hair DNA from both modern and ancient humans.

The team, composed of Katherine Field, Walter Ream, and Robson Bonnichsen, has recently received funding from the OSU Research Council for a pilot project aimed at the analysis of human hair from the extensively studied Mammoth Meadow site in Montana. Dr. Field is in the departments of Microbiology and Zoology, Dr. Ream is in the Agricultural Chemistry department, and Dr. Bonnichsen is Director of the Center for the Study of the First Americans, Professor of Anthropology, and principal investigator at Mammoth Meadow, where he and his co-workers have developed field methods for recovering hairs from the clay deposits. The site has produced a record of human and animal hair spanning the period from about 14,000 to 8,000 years ago.

In a recent interview, Dr. Field explained that human hair can be readily differentiated from the hair of other species. Furthermore, it is “touch,” resisting decomposition even under rather extreme conditions.

Analysis of hairs from archaeological sites might reveal genetic characteristics of the local group and how the population changed through time.

It can be radiocarbon dated quite accurately by the method of accelerator mass spectrometry. And it contains minute but measurable amounts of DNA. "Another important consideration," Dr. Field noted, "is that human hair is lost continuously throughout the life span—unlike bones or teeth, so that an archeological site encompassing a camp or a settlement may contain hairs from the entire local population. It follows that analysis of the hairs at such a site might reveal unusual detail genetic characteristics of the local group and how the population changed through time, given the good dating techniques now available.” Ancient groups from several areas could also be compared genetically, via hair-DNA studies.

Dr. Field cautions that a number of technical problems need to be addressed before the ancient hair samples can be analyzed. First of all, when studying today’s populations, copious DNA can be extracted from blood samples. A hair, in contrast, contains a very small amount of DNA, and it is likely to be imperfectly preserved. The technique of gene amplification called polymerase chain reaction, or PCR for short, can be used to get around this problem. Using PCR, millions of copies of a DNA sequence can be made in a test tube, as long as researchers have some DNA sequence information to start off the reaction. The necessary sequence information to prime the reaction comes from what is known about modern humans, because all people living or long dead share a great many of their genes. The initial step in this study will be for team members Field and Ream to analyze DNA from the hair of living people. Then they will turn their attention to old but not ancient hair samples obtainable from museums, such as the Smithsonian Institution; this phase of the work will permit them to develop lab techniques especially applicable to old, fragile, and imperfectly preserved hair.

The DNA extractable from such hair is expected to be degraded into short segments, far from a "pristine" condition. Obtaining enough DNA for genetic analysis from these old hairs is often problematic. Only when these "test runs" have been satisfactorily concluded will the team members turn their attention to the less numerous, and far older, human hairs rescued from Mammoth Meadow. Then the heart of the study will really begin.

Katharine Field examines an individual DNA record in her lab at Oregon State University’s Department of Microbiology. Dr. Field, who is also in the OSU Zoology Department, and her colleagues hope to develop techniques to analyze DNA found in old hair from archaeological sites.
Neolithic site at Diring. Nothing of the kind had ever been found in Siberia. "We were at a loss," Mochanov told the Oregon State seminar. "These materials were comparable only to the most ancient tools in Africa." They seemed, he said, Oldowan in typology, that is, comparable to the 1.6- to 2.5-million-year-old tools of broken pebbles and flakes found at Olduvai Gorge. Such tools are quite individual in character, though some may seem sophisticated and practical.

Showing slides depicting snow blankets their site, Mochanov and Fedoseeva explained that on Oct. 9, 1982, they had to temporarily abandon their quest because the Lena River, the only means of transportation and to and from the site, was starting to freeze. However, back at their laboratory in Yakutsk, 140 km downstream, winter gave Mochanov time to plan the 1983 field season. The mysterious pebble tools were made of hard, fine-grained quartzite, and because they were found near the surface it was imperative to ascertain the local stratigraphy. Were the tools in one spot or were they scattered? Were they part of some complex they hadn't yet discovered?

Diring Yurekh (Deep Creek) was not an isolated site in the Siberian wilds. Mochanov and a team from the Siberian Academy of Sciences had worked for years carrying out an archaeological survey of 5 million square kilometers. By 1982 they had identified more than 1,000 sites dating to the age of mammoth-hunting peoples.

Mochanov's primary interest had been to answer questions about the peopling of the Americas, and he knew that people expanding out of Asia into Beringia would have had to cross the natural boundary formed by the Lena River and its major tributary, the Aldan. This river system, one of the world's mightiest, stretches from the Arctic Ocean at the mouth of the Lena all the way to mountains near the Pacific coast. Mochanov reasoned that this geographical boundary would be the place to look for clues to the people who moved into the Americas, and by 1982 the Lena Basin Archaeological Expedition had documented a series of five ancient cultures extending from Dyukati (25,000-10,000 B.P.) to Yemyskhatkh (4,200-3,100 B.P.).

"We obtained a clear picture of population and change of cultures for the last 35,000 years," said Mochanov, speaking through an interpreter. "Whenever we worked, we always were able to find something that confirmed something that was found in previous years. We were starting to get bored," he said with a smile. "When you find the same material you automatically get bored." He thought it was time to sit down and write thick monographs in Russian and to translate them into English, Chinese and other languages.

"As it often happens, some accident changes all the plans." That accident was the chance placement of a ceremonial Yemyskhatkh burial, which contained an assemblage of jewelry-quality lithic points, beside a scattering of mysterious artifacts made from quartzite pebbles. Mochanov and Fedoseeva believe that the pebble-tool makers were further removed from the Yemyskhatkh culture than those late-Neolithic people are distant from our own age of space travel, genetic manipulation and telecommunication.

Beginning with the 1983 field season and continuing each year, Mochanov has moved vast amounts of earth to understand the starting discovery. On the bluff that rises 150 m from the left bank of the Lena River, a great tract of boreal forest has been ripped away and more than 60,000 cubic meters of the sandy permafrost soil have been pushed aside as Mochanov and his team followed the very primitive cultural layer into the hill. At times the archaeologist commanded operators of bulldozers and legions of Soviet soldiers as the project continued vigorously in search of answers. Back from the bluff the cultural layer is as much as 40 cm below the surface in permanently frozen deposits. As more was uncovered, more pebble tools were discovered scattered about the newly leveled surface. Ultimately more than 26,000 square meters of the subject surface was laid bare—an area large enough for several sports fields. It has become, Mochanov believes, the most expensive archaeological excavation in the world, and undoubtedly it is the largest Stone Age excavation.

The mysterious artifacts were grouped in clusters, frequently around an anvil stone. The obvious conclusion from the configurations is that a person put a rounded pebble, perhaps the size of two hands clasping each other, on the anvil stone and struck it with another rock. Pieces of broken pebbles scattered from impact, and most, presumably not being the shape the makers had wanted, were left where they fell. About 12 percent have been classified as tools, perhaps lost among the litter of camp life or food preparation; about 7 percent are anvils and hammerstones, while the remaining 81 percent is debris.

Mochanov brought a collection of Diring's cobbles on his American tour, giving scholars and anyone who attended his public lectures the opportunity to examine them. The quartzite, Mochanov observes, preserves the impressions of each hit made to break it. "You can trace the whole process of thinking in making the tools," he told an audience of more than 400 in Corvallis, Ore. "You can see how the final result was obtained." Studying the alteration of the pebbles gives Mochanov a sense of personal communication with the makers, and he is confident the makers thought as we think. "Tools come alive."

Mochanov's team has discovered in the single Diring stratum more than 3,000 artifacts, nearly 400 of which were identified as tools. Many broken pebbles were found complete in situ; archaeologists can piece them together and study how they had been broken apart. Others were scattered as desired tools were removed and used. Most common tools from Diring are various forms of choppers. Mochanov notes that choppers have been associated with various cultures from Flouccene time on. Pebble tools are the only known tool type from Flouccene time (generally considered to have ended 1.6 million years ago with the beginning of the Pleistocene epoch).

Diring's artifact level is a deflated zone about 3-5 cm in thickness typified by wind-abraded pebbles, ice wedges, caused by permafrost conditions, extend 5 m below it. Mochanov has evidence that the surface was formed under permafrost conditions; subsequently the surface seems to have been exposed to Siberia's bitter elements for a long time. The pebble artifacts as well as smalier rocks have been abraded and polished, perhaps by blowing sand and great temperature extremes. The deflated surface on which they were found was deposited by the Lena River; Mochanov says geomorphologists work-
Mochanov Feels Americans Have Neglected Russian Research

Yuri Mochanov is more than a little disturbed by the neglect of Russia's scientific community, but he takes some comfort from having observed that good science sometimes is rejected In favor of political expediency.

Director of the Lena River Basin Archaeological Expedition and faculty member at the Academy of Science in Yakutsk, Russia, Mochanov holds the title of Academician of the Russian Academy of Science, his country's highest honor. He commands large river boats and heavy excavation machinery, and he has had spies of Soviet soldiers put at his disposal to probe for clues to humans' ancient past in northeastern Siberia. If red dots that mark his teams' archaeological discoveries on a map of Siberia were cities, the wild region might be one of the world's most populous.

Mochanov objects to recent American archaeological publications that suggest Siberia is poorly studied or not well understood. While visiting Oregon State University earlier this year, he expressed concern that the cultural-historical layer has given a cold shoulder to Russian archaeological discoveries in Siberia, particularly the Diring Yurakh site. He also has expressed concern that his American colleagues, whom he sees as his "former friends," might have gone too far in not recognizing their work ignored.

Diring received a number of accounts of discoveries at Diring Yurakh from Mochanov, who has turned his colleagues reacted to political pressure during the Soviet regime. In an interview with an American journalist, Mochanov told a story of one of his most prominent scientists whose work was highly regarded by all his colleagues. Then Joseph Stalin, the long-time Soviet dictator, published an article criticizing this famous archaeologist, and soon other scientists began reciting their research for him. Mochanov says that the "whole chain of intrigues" that you would not be able to understand unless you were there as he was. Significant work was ignored.

Mochanov also recalls similar "intrigues" in Russian archaeology when China came to be seen as an enemy rather than an ally of the Soviet Union. Some scientists immediately changed their perspective on scientific matters regarding China, and scholarly contacts were severely restricted. After such conflicts, Mochanov notes, scientific exchanges with the United States have never been as frequent as they were in the Soviet era. He describes the situation as a "dead-end." The experts, he adds, is that the dominant side concedes the publication of his views and rejects publishing the other viewpoint.

He says he sees the same process in the United States in respect to Russian research, which he believes is discounted or ignored by American scholars. Western scientific literature, he says, is likely to contain phrases such as "some Russian scientists say..." rather than containing citations to actual Russian publications.

"The scientists use the excuse they don't read Russian," he says. "They are published in English, and 10 years later they publish the same site." Mochanov says that Russian research findings are often referred to in the West as old wives' tales. Because of his interest in questions about the people of the Americas, he believes that research by Russians in Siberia should be considered along with work of North American and South American researchers. It is, he says, a very international issue.

What is Mochanov's advice to American colleagues?

"Make close acquaintance with the Diring site," he replies without hesitation: he believes his book on Diring should be published in English so North American archaeologists could read it and draw their own conclusions. He suggests that American scholars should visit the site, either as part of a conference or as individuals. He insists that it's important for Americans to understand the site and its artifacts. "I do not oppose inviting all the other scientists to work with me," he told a seminar at Oregon State University. (The Center for the Study of the First Americans is seeking funding for a project that would assemble a conference of Western authorities at the Diring site this year, to reexamine these scientists in the second year to present their findings, and publish them the following year.)

Mochanov advises American archaeologists to look further into the seemingly ancient and question'real sites in the Americas that may contain pebble-tool complexes. "The pebble-tool complexes are a part of the site," he tells an interviewer, and he specifically mentions the Las Yedetas site in Argentina and pebble-tool sites in the southwestern United States where finds have largely been from the surface. "It's important to get stratigraphical context even if you pick up surface material," he says, and he advises archaeologists to look for, and map, any clusters of pebble tools.

"Invite Russian scientists to study these sites. Every archaeologist has his own particular insights," Mochanov goes on to suggest that archaeologists work together to determine definitions. As he looked at his relationships with American authorities on early prehistory, Mochanov said it was extremely important that Diring artifacts be shown to those who have worked in the Americas and for us to look at them as a part of the archaeological record. He points out that the only known analogies to Diring artifacts have been found in Africa. Before returning to Yakutsk, Mochanov visited Donald Johnson at the Institute of Human Origins at Berkeley, Calif., and John W. K. Harris, professor of African prehistory at Rutgers University, New Brunswick, N.J.

Diring Yurakh, Mochanov says, "provides the potential for placing humans in the Americas a very long time ago—hundreds of thousands of years." Diring, of course, does not determine an early presence of humans in the Americas. "Only American studies can show that," Mochanov says.

"These findings just confirm the views of scientists who think the Americas were peopled long before Clovis culture," says Mochanov. He is aware that many scientists believe the first humans did not reach the Americas until after 13,000 years ago, and he also understands that some scientists insist that the Arctic was peopled quite late. He says he appreciates their doubts because it is obviously difficult to survive in the Arctic form now. He observes that everyone knows the harshness of cold, yet peoples known as Eskimos have adapted well to the Arctic. "For them cold is routine condition."

Because scientists and the Diring Yurakh conflict with all theories of preanthropology, "I am forced to think revolutionized theories. Either he has a wholly misinterpreted from the site high above the Lena River I believe the theories are wrong," says Mochanov. He is still so confident that the Arctic was peopled quite late, he says he appreciates their doubts because it is definitely difficult to survive in the Arctic form now. He observes that everyone knows the harshness of cold, but that cultural adaptation has always meant the cultural adaptation of the cold area. Western cultures, he argues, are rooted in ancient Greece and Rome—warm Mediterranean places where people wore light clothing and sandals, and ate olives and other fruits. That culture rejects Arctic origins of humanity, he says, that our history was acquired from Eskimos people, our cultural traditions would likely focus on snow and ice, walrus and seals.

"We comprehended completely the problems the Diring site has raised," Mochanov told an Oregon State University seminar. "We do not mean to make the statement that humans lived within the Arctic Circle 3 million years ago."

---HAN HALL

---Lecture visitors examine Diring artifacts.
PEDRA FURADA CONFERENCE REACHES FOR COMMON GROUND

The recent visit to Brazil's illustrious Toca do Boqueirão Pedra Furada archaeological site did not convince American scholars who are skeptical that people lived there as long as 50,000 years ago. But the meeting at the site may yet produce more common ground among researchers.

A number of the world's leading authorities attended the International Meeting on the Peopling Process in the Americas Dec. 17-21 at São Raimundo Nonato, about 535 miles due west of the coastal city of Recife in a remote and semi-arid region of Brazil's state of Pernambuco. As guests of the Museum of American Peoples (Fundação Museu do Homem Americano, or FUMHAM) the scientists visited Pedra Furada and nearby archaeological sites. In five days of tours, presentations and discussions, participants examined the problems confronting studies of the initial peopling of the Americas, but they did not reach the hoped-for, but elusive, resolution of how scientists can agree on when humans first reached northeastern Brazil or any other part of the Western Hemisphere. They did concur, however, on the need of a consensus for evaluating early evidence of humans in the Americas. Proceedings of the meeting, conducted in English and Portuguese, are scheduled to be published early next year.

Participants who actively took part in discussions included J. M. Adovasio, Mercyhurst Archaeological Institute; Robson Bonichsen, Center for the Study of the First Americans; Claude Chauchat, Université Bordeaux; Tom D. Dillehay, University of Kentucky; Dena F. Dinceu, University of Massachusetts at Amherst; Claude Guérin, Université Claude Bernard-Lyon; Richard MacNeish, Andover Foundation for Archaeological Research; David J. Meltzer, Southern Methodist University; Fábio Parenti, Universidade de Roma; Jacques Pelegrin, Université Bordeaux; John Alveszatai Peláez, Central Washington University; and Gastavo G. Politis, of Argentina's CONICET-Faculty of Natural Sciences and Museum de la Plata.

Parenti's eight years of research on Pedra Furada produced a four-volume doctoral dissertation, which he defended earlier in 1993 before an academic committee in Paris. While conclusions of that research were presented at the December meeting, participants did not feel that it was possible to directly evaluate details of the enormous amount of work described in the dissertation. For example, participants had difficulty interpreting alignments of rocks that have been found in the site. Much clearer, however, is the chronological, stratigraphic framework established at Pedra Furada by principal investigator Nîlée Guidon and her team. The hosts presented a list of 55 dates.

Left: Pedra Furada artifacts are displayed on red velvet for the conference.

Below: Jacques Pelegrin, a lithic authority at France's Université Bordeaux, examines a collection of artifacts exhibited for conference participants.
They did not reach the hoped-for, but elusive, resolution of how scientists can agree on when humans first reached northeastern Brazil or any other part of the Western Hemisphere.

from excavations from 1978 to 1988 dating to more than 48,000 years B.P. They also displayed some of the site's diverse and extensive assemblage of artifacts. Though many obviously are attributable to human manufacture, it is the archeological evidence that most troubles those scientists who do not wish to concede that there could have been humans in the Americas more than 12,000 years ago.

Pedra Furada is a rockshelter at the base of a bulging cliff of colorful sandstone. Rockfall is a natural feature there, and falling rocks can break or cause other rocks to break in ways that make them resemble artifacts. Guidon and Parenti have examined the lithic materials and determined which were geofacts (caused accidentally by rock falls) and which were artifacts. Doubting archaeologists contend that reasonable scholars can disagree about what are geofacts and what are artifacts, and they suggest that since there can be ambiguity about artifacts from the site's old levels, all specimens must be considered geofacts. Thus, they insist, there is no credible evidence of human presence.

During the discussions at the conference, a variety of approaches to solving questions about the veracity of early sites in the Americas was suggested. Several of the participants noted the need to reduce ambiguity. The scientists discussed specific methods that can be used to analyze the natural deposition and rockfall at rockshelter sites. Though Pedra Furada has been extensively and patiently studied, there has been no off-site study to specifically analyze natural slumping from the cliff above. Though there was some suggestion that in scientific disagreements the burden of proof must lie with the investigator, participants of the meeting agreed on the need for dialog and exchange of ideas between archaeologists and scientists in other fields at broad levels. Perhaps such dialog can generate impartial models that can be applied to archeological controversies.

In the wintertime December heat, visiting scientists got a good look at what is expected to become a big tourist attraction—not only a new, still-vacant museum building, but an extensive open-air archeological museum. In a natural reserve of more than 300,000 acres that harbors unusual plants and animals. In a picturesque, semi-arid area in a basin of sedimentary rock with mountainous ridges, valleys and plains, Sierra da Capivara National Park contains 360 archeological sites, most of which feature rock art. Largely because of the rock art, the United Nations Educational, Scientific and Cultural Organization has designated the area an international cultural preserve.

FUMDHAG integrates research at several Brazilian and French universities. Support for it comes from the government of Brazil, the state of Piauí's departments of education, culture, and tourism, the government of France and businesses and banks.

-PDAH

New Video: Mammoth Meadow: An Archaeological Quest for the First Americans documents our research at the Mammoth Meadow site in the Big Sky country of southwestern Montana. Produced by Sunstone Productions, Inc., this 15-minute video is an excellent introduction to CSFA's First Americans expedition and our years of research at this important location. 513.79. Order now from: CSFA/Weniger 355 Oregon State University Corvallis, OR 97331

After Pendeiro Cave

Archaeologist Richard S. MacNeish and a team from the Andover Foundation for Archaeological Research are exploring sites in the Animals region of southwestern New Mexico this winter and spring. The area is in New Mexico’s "bush belt" about 150 miles west of the controversial Pendeiro Cave site, where MacNeish and workers found what appear to be human hand prints cast in clay dating to 28,000 B.P. and apparently butchered animal bones dating to 40,000 B.P. 

March 17-20—Annual Meeting, Central States Anthropological Society, Kansas City. Contact: Martin Ottenheimer, Dept. of Sociology, Arth. and Social Work, Kansas State University, Manhattan, KS 66506-4003. 913-532-2703 Fax: 913-532-6978 E-mail: omars@kswum.ku.edu


April 7-9—Annual Meeting, Southwestern Anthropological Association, Las Vegas, NV. Contact: William Jankowiak, Department of Anth., UNLV, Las Vegas, NV 89154. 702-739-3610

April 8-9—Integrating Archeological Demography: Multidisciplinary Approaches to Prehistoric Popu- lation, Sponsored by Center for Archaeological Investi- gations, Carbondale, IL. Contact: Richard R. Payne, CAI, Southern Illinois U., Carbondale, IL 62901. 618-569-4009 Fax: 618-543-5037 Email: rpaine@socvmbv

April 20-24—59th Annual Meeting of the Society for American Archaeology, Anchorage, AK. Contact: SA, 900 Second St. NE, Suite 12; Washington, DC 20002

May 4-8—27th Annual Meeting, Canadian Archaeo- logical Association, Edmonton, Alberta, Canada. Contact: Jack Ives, Conference Chair; Provincial Museum of Alberta, 12845-102 Ave., Edmonton, Alberta TSN- OM0. 403-454-9149 Fax: 403-454-6429

May 17-21—International Conference on Free Rings, Environment and Humanity: Relationships and Pro- cesses, Tucson, AZ. Contact: International Conference, Laboratory of Tree Rings, University of Arizona, Tucson, AZ 85721. 602-621-2191 Fax: 602-621-8229

May 23-29, 1994—Symposium on Paleoindians and the First Americans, Museum of Natural History of San Rafael, Argentina. Contact: Committee on the Symposium on Paleoindians and the First Americans, Archaeology Division, Faculty of Natural Sciences and Museum, University of San Carlos, Av. 5 de Mayo 1900 La Plata, Argentina. Fax: 54 21-257527 or C.C. 275, 7635-Necochea, Argentina, Fax: 54 0262- 21209


June 19-22—13th American Quaternary Association 13th Biennial Meeting, University of Minnesota, Minneapolis.

Field trip June 17-19 to Archaeological Sites in Min- nesota dating from Paleoindian to European contact. Contact: Linda C.K. Shane, Limnological Research Cen- ter, 310 Pillsbury Drive S.E., Minneapolis, MN 55455- 0219. 612-626-7899 Fax: 612-625-3819.

Aug. 25-Sept. 2—45th Arctic Science Conference, Anchorage, Alaska, and Vladivostok, Russia. Themes include Natural Resources and Environmental Changes, Recent Discoveries about Beringia, Development and Adaptation of People and Culture, and Communication and Information Exchange. Contact: Dr. Gunter Hellm, Geophysical Institute, University of Alaska, Fairbanks, AK 99775-0800, E-mail: gunter@ldeu.alaska.edu Fax: 907-471-2290.


Two Nova Scotia Mastodons May Be 70,000 Years Old

Remains of two mastodons recently recovered from a gypsum quarry at East Milford, Nova Scotia, are to be studied by a number of North American Quaternary scientists. The site dates to the late Sangamonian interglacial interval, and it has been estimated to date to about 70,000 years B.P. Such dates are expected to provide more accurate dating. About 60-70 percent of the bones of an adult mastodon were recovered. The other mastodon, a juvenile, that lived about seven years old. Less than 10 percent of it was recovered, according to Dr. Derek S. Davis, manager of collections at the Nova Scotia Museum of Natural History in Halifax, Bone, hair, and skin material was obtained from both animals. In addition to the mastodons, many samples of sediment and organic materials were also taken.

"Particularly good collections of mollusks, insects, amphibians and reptiles were made," Davis says, adding that the project also recovered other mammals and possibly bird remains. The museum recognizes the extreme scientific value of these materials, which will provide a unique documentation of climate and life.

The project to excavate the mastodons and other interglacial materials from sink holes in a gypsum quarry continued from October 1991 until August 1993 under the direction of Robert Grahams, curator of geology at the Nova Scotia Museum. The site, owned by the National Gypsum Company, has been known since the 1950s for its glacial and interglacial materials.

While the field-collecting phase of the project was completed last summer, a larger quantity of material is being conserved and that process is expected to require up to three years. Dr. Davis suspects new discoveries will be made as the work progresses. He noted that conserving the material is no small task because much of the bone was decaying or decalcified and required immersion in preservatives. It must be dried slowly. Meanwhile the museum has been working with a number of scientists on the analysis of the material, "We did not want to put sensitive materials through a conservation process before studies are done," Davis said.

Dr. Daniel Fisher of the University of Michigan is examining the mastodon remains. Other authorities are engaged in thermoluminescence dating, analyzing the stratigraphy, interpreting climatic changes, doing archeological, paleoecological and studying remains of mammals, reptiles, and amphibians, and arthropods. Davis is analyzing the mollusks.

The Province of Nova Scotia provided additional funding to the museum for the project, and several outside scientists are cooperating with the museum on research.