

MAMMOTH TRUMPET



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PRE-CLOVIS BARRIER BROKEN IN NEW MEXICO?

Another hot sleepy July afternoon was drawing to a close when the telephone rang.

"Scotty MacNeish here," came a gruff voice at the end of the line. "I just wanted to let you know the results of that date I was telling you about."

Earlier in the month I had spoken with Dr. Richard S. ("Scotty") MacNeish about his recent work at Pendejo Cave, a multicomponent site located in New Mexico's Chihuahua desert. Although the stratigraphy and associated faunal remains of the cave suggested that some of the archaeological materials were of great antiquity, MacNeish and his team were anxiously awaiting the first of the 24 C-14 dates that were being run on samples from the site.

"Now the date is not from the lowest level," cautioned MacNeish, "but from Zone L. There are at least four levels below L—Zones M, M1, N, and O."

"Oh, oh," I thought, "Scratch off another hopeful." I braced myself for an ensuing explanation of contamination, bioturbation, or the like.

"The radiocarbon date," MacNeish announced, "is $24,420 \pm 560$ UCR-2499A."

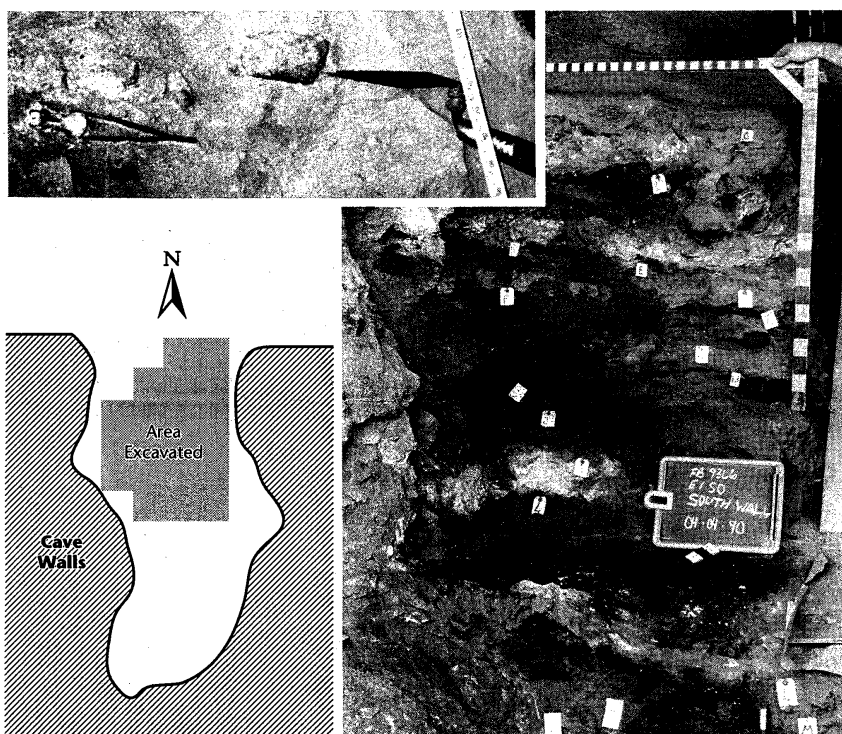
♦ ♦ ♦ ♦

Pendejo Cave (Fb9366) is located on the Fort Bliss military base, approximately 13 miles east of Orogrande, New Mexico, and 30 miles north of El Paso, Texas. The site itself lies about 50 m above an arroyo in a small cliff that rises to a low mesa. Pendejo Cave is a relatively small limestone cavern, measuring about 5 m wide and 12 m deep, with a maximum height of 3 m. A talus slope drops off steeply in front of the cave's mouth.

Although the site was first discovered in 1978, its situation on the McGregor firing range of the Fort Bliss military reservation precluded further investigation until 1989, when firing activities were discontinued. Later that same year, the cave was brought to the attention of MacNeish, who visited the site.

MacNeish has high praise for the archaeological facility at Fort Bliss, which, he says, "gave us ultimate cooperation." In addition to providing the Pendejo Cave team with living quarters on the base, the Department of Defense allocated a stipend for some of the cataloging.

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(Upper left) A quartzite pebble tool (near trowel) and the toe bone of an extinct horse (between tweezers) were found in Zone O, the lowest level of the cave. Zone O also contained a bone awl made from a horse scapula. Photograph (right) shows the many stratigraphic horizons of

Pendejo Cave. Level L, which contained artifacts and extinct faunal remains, was recently radiocarbon dated at $24,420 \pm 560$. Sketch of the floor plan of Pendejo Cave (lower left) shows the area excavated earlier this year. (Photographs and drawing courtesy of R.S. MacNeish.)

A NEW CLOVIS DISCOVERY IN NORTH-CENTRAL TEXAS

A recently excavated Clovis site in north-central Texas may be instrumental in changing a number of common perceptions on what the Clovis culture was like. The Aubrey site, a deeply buried site located about 10 miles north of Denton on the Elm Fork Trinity flood plain, has produced evidence suggesting that Clovis peoples practiced a much more opportunistic hunting strategy than is generally believed. In contrast to the popular conception of Clovis peoples as specialized big-game hunters, preliminary analysis of faunal remains recovered from the site indicates that the Aubrey inhabitants exploited a wide variety of small-game animals. "It's not," says principal investigator Dr. C. Reid Ferring, University of North Texas, "the classic one elephant/one Clovis point site."

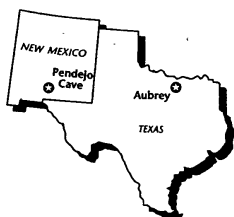
The Aubrey site has yielded a wealth of other infor-

mation seldom seen in Clovis sites, including well-preserved living surfaces that indicate discrete activity areas. The University of North Texas excavation team also recovered extensive paleoenvironmental data that will enable researchers to reconstruct past climates in this area from about 15,000 years ago to the late Holocene.

The site promises to provide insights not only on what Clovis life was like, but where Clovis sites may be found. The location of the site, 8–10 m beneath the surface of the Elm Fork Trinity River flood plain, suggests that intact Clovis sites on the eastern Plains may simply be rarely exposed. "If anything," says Ferring, "what the site could do is help us redefine our survey strategy."

Ferring discovered the site in December of 1988

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UPCOMING CONFERENCES

September 4-8, 1990 Second World Archaeological Congress, Cartagena, Columbia.

Contact: Dr. Paul Reilly, IBM UK Scientific Centre, St. Clement St., Winchester SO23 9DR, United Kingdom.

September 20-24, 1990 Fifth Nordic Conference on the Application of Scientific Methods in Archaeology, Stockholm, Sweden.

Contact: Arkeologiska Forskningslaboratoriet, Greens Villa, Stockholms Universitet, 106 91 Stockholm, Sweden.

October 14-21, 1990 Lubbock Lake 50th Anniversary Celebration, Lubbock, TX.

Dedication of new facilities; Public lecture series; and Symposium focusing on the integration of the geological and biological sciences in archaeology as a driving force behind the current era of Quaternary research.

Contact: 50th Anniversary Celebration, Lubbock Lake Landmark, Museum of Texas Tech University, Lubbock, TX 79409-3191; Tel. (806) 742-2479.

October 21-26, 1990 Soil Science Society of America Annual Meeting, San Antonio, TX.

Contact: SSA 677 S. Segoe Road, Madison, Wisconsin, 53711; Tel. (608) 273-8080.

October 29-November 1, 1990 Geological Society of America Annual Meeting, Dallas, TX.

Contact: GSA Meeting Department, PO Box 9140, Boulder, Colorado, 80301; Tel. (303) 447-2020.

October 31-November 3, 1990 48th Plains Anthropological Conference, Sheraton Century Hotel, Oklahoma City, OK.

Contact: Morris Foster, Susan Vehik, or Jack Hofman, Department of Anthropology, University of Oklahoma, Norman, OK 73019.

SUGGESTED READINGS

On Linguistics and Prehistory

Greenberg, J.H. 1963 The Languages of Africa. *International Journal of American Linguistics* 29 (Part II). (Publication No. 25 of the Indiana University Research Center in Anthropology, Folklore and Linguistics.)

Greenberg, J.H. 1987 *Language in the Americas*. Stanford University Press, Palo Alto.

On Pre-Clovis Barrier Broken in New Mexico?

Bryan, A.L. (editor) 1986 *New Evidence for the Pleistocene Peopling of the Americas*. Center for the Study of Early Man, University of Maine, Orono.

November 7-10, 1990 Southeastern Archaeological Conference, Mobile, AL.
Contact: Edwin Jackson, Department of Sociology and Anthropology, University of Southern Mississippi, Hattiesburg, MS 39406.

November 14-17, 1990 The Evolution and Dispersal of Modern Humans in Asia, Tokyo, Japan.

Contact: The University Museum, University of Tokyo, Hongo 7-3-1, Bunkyo-Ku, Tokyo 113, Japan.

November 14-18, 1990 American Anthropological Association Annual Meeting, New Orleans, LA.

Contact: AAA 1703 New Hampshire Ave. NW, Washington, DC, 20009; Tel. (202) 232-8800.

November 25-December 1, 1990 International Symposium on Loess, Mar del Plata, Argentina.

Symposium will consist of paper sessions and local field excursions in the surrounding area of Mar del Plata.

Contact: International Symposium on Loess - Marcelo Zarate, Centre de Geologia de Costas y del Cuaternario - UNMDP, Casilla 722, Correo Central, 7600 Mar del Plata, Argentina.

December 27-30, 1990 Annual Meeting of the American Society of Zoologists; also the American Microscopical Society, San Antonio, TX.

Contact: Mary Adams-Wiley, American Society of Zoologists, 104 Sirius Circle, Thousand Oaks, CA 91360; tel. (805) 492-3585.

January 9-13, 1991 Society for Historical and Underwater Archaeology, Richmond, VA.

Theme: World System/World Views.

Contact: L. Daniel Mouer, Program Chair, SHA '91, Archaeological Research Center, Box 2040, Virginia Commonwealth University, Richmond, VA 23284.

August 2-9, 1991 13th INQUA International Congress on Quaternary Research, Beijing, China.

Contact: Secretariat, 13th INQUA Conference, Chinese Academy of Sciences, 52 Sanlihe, Beijing 100864, People's Republic of China.

MacNeish, R.S. 1971 Early Man in the Andes. *Scientific American* 224:36-46.

MacNeish, R.S. 1976 Early Man in the New World. *American Scientist* 64:316-327.

MacNeish, R.S. 1978 *The Science of Archaeology?* Duxbury Press, North Scituate, MA.

On A New Clovis Discovery in North-Central Texas

Ferring, C.R. 1984 Intra-site Spatial Patterning: Its Role in Settlement-Subsistence Analysis. In *Intra-site Spatial Analysis in Archaeology*, edited by H. Hietala, pp. 116-126. Cambridge University Press.

Ferring, C.R. 1989 The Aubrey Clovis Site: A Paleoindian Locality in the Upper Trinity River Basin, Texas. *Current Research in the Pleistocene* 6:9-11.

Haynes, C.V. 1984 Stratigraphy and Late Pleistocene Extinction in the United States. In *Quaternary Extinctions: A Prehistoric Revolution*, edited by P.S. Martin and R.G. Klein, pp. 345-353. The University of Arizona Press, Tucson.

The Hudson-Meng Site: An Alberta Bison Kill in the Nebraska High Plains.

Larry D. Agenbroad. 1979 (Reprinted 1989). 230 pp. The Caxton Printers, Ltd. Caldwell. Also available from L & L Enterprises, 1109 S. Plaza Way, Suite 361, Flagstaff, AZ 86001. \$17.50, paper.

This book details the excavation and interpretation of a large Paleoindian bison kill in the panhandle of Nebraska. This stratified in situ location provides the first absolute age for the Alberta culture. The kill site represents nearly 600 bison that were processed adjacent to a cliff formed by an arroyo meander against a bedrock ridge. The butcher floor; the scattered Alberta tools from a variety of lithic sources; the presence of the earliest dated "Cody" Knife in North America; and the absolute chronology obtained from the site establish Hudson-Meng as an important Paleoindian locale in the North American High Plains.

Only two sites of the Alberta culture (the Horner and Dunn sites) have been investigated since Hudson-Meng was first reported. In all three studies, it is apparent that the Alberta culture is the forerunner of and ancestral to the younger Cody complex.

DID YOU KNOW...

that in addition to our own publications, several other fine volumes are available through the **Center for the Study of the First Americans?** We are pleased to announce that *The Hudson-Meng Site: An Alberta Bison Kill in the Nebraska High Plains* can now be purchased through the **Center for the Study of the First Americans!** To order, send \$17.50 check or money order (\$22.00 if ordering outside of the United States) to the **Center for the Study of the First Americans**, 495 College Ave., University of Maine, Orono, ME 04473. (U.S. dollars only please.) To obtain a listing of other titles, contact the **Center for the Study of the First Americans**.



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FIFTY YEARS OF DISCOVERY: THE LUBBOCK LAKE LANDMARK

sponsored by
TEXAS TECH UNIVERSITY
Wednesday, October 17, through Friday, October 19, 1990
Lubbock, Texas USA

Scholars from around the world will gather at Lubbock, Texas, to celebrate fifty years of investigation at the Lubbock Lake Landmark and to participate in a symposium focusing on the interaction of the geological and biological sciences in archaeology as the central force behind the current era of Quaternary research both at the Landmark and internationally.

In addition to the symposium, there will be a week-long series of events recognizing the half-century of discovery, exploration, and community involvement at Lubbock Lake. The celebration events include dedication of new facilities at the Landmark, a public lecture series, the international symposium, and a regional field trip.

Partial Listing of Invited Symposium Faculty

Dr. Mary Leakey, Kenya, Nairobi
Dr. Marylene Patou, Paris, France
Dr. Gustavo Politis, La Plata, Argentina
Dr. Vivendra Misra, Poona, India
Dr. Paul Goldberg, Jerusalem, Israel
Dr. Andrey Dodonov, Moscow, USSR
Dr. Johan Kamminga, Canberra, Australia
Dr. Thomas Dillehay, Lexington, Kentucky, USA
Dr. Wan-Po Huang, Beijing, People's Republic of China
Dr. Joe Ben Wheat, Boulder, Colorado, USA

If you would like to receive the registration materials for "Fifty Years of Discovery: The Lubbock Lake Landmark," please contact:

Dr. Eileen Johnson, Director
Lubbock Lake Landmark
The Museum of Texas Tech University
Lubbock, Texas, USA 79409.

A New Consensus on the Peopling of the Americas

In May of 1989 the Center for the Study of the First Americans convened the First World Summit Conference on the Peopling of the Americas. Although the Orono conference included presentations by linguists, the primary focus of this event was to develop a synthesis of archaeological information important to understanding the peopling of the Americas.

At a recent conference that built from results of the Orono meeting, Professor Allan Taylor, Director of the University of Colorado's Center for the Study of the Native Languages of the Plains and Southwest, convened linguists, archaeologists, and genetic specialists to examine the hypothesis that the Americas were peopled by three migrational waves. This conference, entitled "Language and Prehistory in the Americas: A Conference on the Greenberg Classification," was held March 22–25, 1990, in Boulder, Colorado.

Science writer Virginia Morell reports the results of this historic meeting in the April 17, 1990, issue of *Science* ("Confusion in Earliest America," pp. 439–441). In reviewing the impact of this conference, she concludes that the emerging consensus—that the Americas were inhabited earlier than had been thought—has "undone a neat synthesis of linguistic, dental, and archaeological evidence."

Professor Taylor's contribution to the *Mammoth Trumpet*, "Linguistics and Prehistory," provides a detailed understanding of the circumstances leading to the historic Boulder conference, as well as the contributions presented at the conference and the scientific consequences of this important meeting.

—Robson Bonnicksen, Director
Center for the Study of the First Americans

LINGUISTICS and PREHISTORY

by Allan R. Taylor, Ph.D.
Department of Linguistics
University of Colorado, Boulder

The origin of the native peoples of the Americas, and the nature and relationships of their many tribes and languages, have been topics of interest to Europeans and—eventually—issues in science—since the sixteenth century.

Speculation during the earliest period was constrained by the need to conform to the Biblical account and is of little but antiquarian interest today. By the early years of the nineteenth century, however, speculation had become quite sophisticated. As the century wore on, the probable Asiatic origin of the American natives and their relationships to each other based on cultural resemblances (including language) became increasingly apparent. By the end of the nineteenth century, no one seriously doubted that the main source of the American population was Siberia via the Bering Strait, and philologists and other scientists had a reasonably clear understanding of the low-level relationships of most of the American languages and dialects.

The twentieth century has seen considerably more skilled technical description of the languages, providing a data base for further research that far exceeds anything which preceding centuries could produce or even dream of.

Study of the taxonomy of the American peoples has not been prominent in North American science during the past forty years. The great American anthropologist Edward Sapir (1884–1939), and some of his students (e.g., Morris Swadesh, Mary Haas) were the last of a very distinguished series of linguists and anthropologists who devoted themselves almost exclusively to elucidating the relationships of the American peoples. (I do not wish to imply that American scholars were the only ones who were active in American taxonomy; for example, their European contemporaries such as the Frenchman Paul Rivet and the Czech Cestmír Loukotka were also equally dedicated and productive.)

The point is that these issues ceased to interest more than an extremely small number of American and European linguists. Probably a major factor in this loss of interest was the shift—first in North America and later elsewhere—away from the social aspects of language toward its psychological and cognitive aspects. This is usually termed the *Chomskyan Revolution*, a paradigm with radically different philosophical bases, research methodologies, goals, and biases.

Among the 'extremely small number' of linguists and anthropologists who have worked on language classification since the 1950's is Joseph Greenberg, now a distinguished professor emeritus in anthropology and linguistics at Stanford University. Professor Greenberg has carved an enduring niche for himself in American social science of the last half of the twentieth century for his work in language universals and language classification.

Greenberg has produced a number of language classifications since his epochal classification of the languages of Africa, which appeared in 1963. His interest in the languages of the Americas predated publication of the African classification, and he was occupied, off and on, with the American question from at least 1956, the date of his first paper on the relationships of some of the American languages, until 1987, when his definitive study of these languages—*Language in the Americas*—was published. In addition to these two he has produced original classifications of the languages of Australia and

the Pacific, and he is currently working on a classification of the languages of the northern half of the Eurasian continent.

All of these classifications reflect a "lumping" viewpoint, rather than the "splitting" viewpoint which had become more general by the time that they appeared. This is one of the reasons that Greenberg's classifications are unacceptable to many of their critics. (Splitting can be done—in fact, should be done—in the absence of proof; the opposite is not true.) But "lumping" is only one of the sins that Greenberg's critics accuse him of, a point to which I will return in a moment.

Language in the Americas presents Greenberg's classification of all of the native languages of the Western Hemisphere, together with some of the supporting evidence. Greenberg places all into just three groups. The smallest of these is Eskimo-Aleut, a long-recognized entity that is restricted entirely to the Arctic region of North America. In Greenberg's opinion, this family belongs in a large Eurasian phylum which he calls *Eurasianic*.

The other two groups are purely American in the sense that they can not yet be connected absolutely to any larger Old World grouping. These are the *Na-Dene* family (the name is Sapir's), which includes the closely-related Athabaskan family, Eyak, Tlingit, and Haida. All of these languages are spoken largely in the far northwest of North America, in the Arctic and sub-Arctic region. This particular grouping had been suggested previously by several scholars, and there is large agreement that the languages are a genuine unit; only the inclusion of Haida is questioned by some. Most scholars of American Indian languages are not willing to take the position that these languages are not related to other Native American languages, or that they are any more different than many other American languages.

The last group which Greenberg posits includes all of the remaining languages of the Western Hemisphere. This suggestion is entirely new in research in the North American tradition, and it is by far the most controversial part of the classification, mostly because it includes hundreds of languages, many of them extinct and/or otherwise poorly known, and covers almost the entire hemisphere. More conservative classifications place these languages in more than 200 "families," only some of which are accepted generally as belonging to larger groupings (e.g., Aztec-Tanoan).

I should note here that contemporary Soviet scholars who have worked extensively on the classification of the languages of Eurasia and the Americas concur with Greenberg in establishing only three families for the Americas, although they do not necessarily agree with all of his assignments of particular languages.

Besides presenting the classification outlined above, *Language in the Americas* briefly considers the problem of the peopling of the Americas. In chapter 7, called "Conclusions and Overview," Greenberg suggests that his three distinct language taxa represent three separate and independent immigrations into the Americas.

The first to arrive, in Greenberg's opinion, were the ancestors of the Amerind group, followed by those of the Na-Dene group. Last to arrive were the speakers of Eskimo-Aleut. If there were indeed three separate migrations, this chronology is quite plausible in terms of the numbers and distribution of the speakers of these languages, as well as in terms of the size of the territories which they occupy.

The three-migration hypothesis is said, moreover, to match very well with recent findings in physical anthropology (dentition, blood groupings) and in genetics (family trees based on study of genetic markers of various kinds).

A final tentative suggestion of this chapter is that the three migrations can be associated with particular archeological cultures: Amerind with Clovis (11,000 yr B.P.), Na-Dene with Beringian (also called Paleo-Arctic; 7,000–10,000 yr B.P.), and Eskimo-Aleut with Anangula (8,500–10,000 yr B.P.). This suggestion is particularly daring, because of its attempt to assign the families in real time and to tie them to archeological cultures. I will return to this point below.

Most of the criticism of the Greenberg classification stems from the suggestion that virtually all of the languages of the Western Hemisphere belong to the single, enormous Amerind family. No previous classifier had come close to such a reduction of the complexity of the hemisphere; moreover, many would question that such a large progeny could derive from a single ancient source.

But this lumping—with the strong aprioristic character of the classification—is only one of the sins that Greenberg's critics accuse him of. He is also accused of ignorance of the languages, subjective procedures, and sloppy handling of data sufficient to invalidate all of his claims. These are serious charges and, if true, certainly may be grounds for not taking seriously either the classification or its attendant hypotheses. The allegations must therefore be examined carefully.

Greenberg's procedure in classifying languages is to inspect simultaneously a large mass of data from all of the languages which he is studying. He calls the process "mass comparison."

To do mass comparison, charts are prepared on which horizontal lines are labeled with core semantic notions such as terms for body parts, natural phenomena, and basic actions, while in vertical columns are placed the terms from particular languages that are equivalent to the semantic notion given in the left-most column.

A chart prepared in this way displays simultaneously all the words with a given meaning in as many languages as are being compared. In theory, words which are historically related should show resemblances in form, and should be evident as the scholar reads across the chart on the same line.

Resemblances are regarded as significant when the same languages show resemblances on a number of different lines, that is, when a number of the semantic lines break down into groups according to recurrent resemblances. This is regarded as *prima facie* evidence of common descent, although coincidence, incorrect transcriptions of various kinds, convergent development, or borrowing of terms between languages could also account for at least some of the resemblances.

The theory of the methodology is clear, in general; the difficulty comes in the application, where errors in judgement (subjectivity) are always a danger.

First and foremost, what constitutes resemblance? Although identity is not demanded and would indeed be vacuous, how much phonetic resemblance is required in order for words to be considered as putative cognates? (Linguists label as *cognates* items that are known to have differentiated from a single earlier source.) And after putative cognates have somehow been identified on phonetic grounds, how many must there be in order to consider the source languages as cognate (that is, differentiated forms of a single, earlier language)?

It is clear that each of these questions might be answered differently by different scholars. But the difficulties do not stop there: at least two additional problems plague any comparatist, Greenberg or otherwise. One of these has to do with the meanings of items to be compared, the other with the (grammatical)

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A New Clovis Discovery

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when he took his young son to look for fossils near an artificial cut along the Elm Fork Trinity River. At this location, the Army Corps of Engineers had excavated a 30-foot-deep (10 m), 3,000-foot-long channel to serve as an outlet for the newly created Lake Roy Roberts. Because a University of North Texas team headed by Ferring had done extensive work in this area evaluating and excavating the archaeological resources that would be affected by the Lake Roy Roberts project, Ferring was familiar with this locale. He had not studied the channel because it had been "surveyed" before the North Texas team began working on the project. While Ferring's son searched for fossils in a nearby bedrock area, Ferring went to look at the alluvial and lacustrine sections that were exposed by the channel cut. "It was on that visit," he recalls, "that I saw geologic exposures indicating the presence of ponds and also found bison and deer bones and snails, which strongly suggested a late Pleistocene age for the locality."

Although the evidence had not yet come to light, Ferring had just discovered the first Clovis camp site to be found in Texas in 50 years!

With an archaeologist from the Corps, Ferring later returned to the site and found a Clovis spear point eroding from the channel walls, along with several

"We definitely have evidence of very marked climatic changes at the Pleistocene-Holocene boundary. And the Clovis people seem to be a marker for that boundary."

flakes of exotic raw material (stone that is not native to the region). This discovery, says Ferring, "began the whole process of serious archaeological investigation."

In response to this new evidence, the Corps provided funding for limited emergency testing. Ferring and his associates soon located two clusters of in situ archaeological deposits and faunal remains, 7.5 to 9 m beneath the surface of the flood plain. The researchers determined that the first of these concentrations represented a probable bison kill in a late Pleistocene pond. The second concentration, in a slightly higher stratigraphic position, proved to be a buried Clovis camp where people had made and resharpened their stone tools. "The artificial channel," Ferring explains, "cut a cross-section right across the paleolandscape of Clovis time."

Following these initial discoveries, the Corps once again expanded the scope of work. Further testing revealed yet another Clovis camp surface, considerably distant from the first camp area and right next to what would have been the active river channel during Clovis times. "We were able to see," says Ferring, "that we were dealing with a very complex and extensive record of Clovis occupation."

At this time, the Fort Worth District of the Corps of Engineers funded a full-scale excavation by the University of North Texas. The archaeologists brought in heavy equipment to remove the overburden that lay above the previously identified artifact concentrations before beginning the painstaking process of excavating the Clovis surfaces. The project was a large one, lasting nine months and employing a full excavation team. Ultimately, about 200 m² of the two Clovis camp surfaces and 50 m² of the bison kill locality were revealed. In addition to the archaeology, explains Ferring, "we studied the geology and stratigraphy of the site and collected samples for the analysis of pollen, mollusks, diatoms, insects, and other kinds of data that will help us reconstruct the paleoenvironments of this area from the late Pleistocene through the entire Holocene."

For those who can read them, the channel walls of the outlet tell the story of a late Pleistocene landscape that was dramatically different from the flat flood plain that exists today. "The landscape of Clovis time," Ferring observes, "was really quite ideal for occupation." Near the western edge of the river valley, the Aubrey Clovis inhabitants established a camping area on a sandy terrace that was laid down by a late Pleistocene channel of the Elm Fork Trinity River.

Immediately adjacent to, but about 1.5 m below this occupation surface, a spring and a large pond occurred. The pond, which Ferring says existed "from about 15,000 years ago through Clovis time," would have attracted animals as well as humans. Butchered bison bones and those of smaller animals recovered from the clay sediments of the pond indicate that it served as a focal point for Clovis hunters.

About 125 m towards the modern river, on yet another eroded remnant of the same sandy terrace, a second camp area lay adjacent to the river channel of Clovis times. Here, the archaeologists recovered Clovis-age artifacts from what would have been the banks of the river. "The Clovis people," Ferring observes, "were obviously camped as close to the pond and the river as they could get."

Ironically, the water that had been so attractive to the Clovis peoples was a major hindrance to the excavation team. Adding to the difficulty of working at levels close to the water table were major spring floods, which inundated the areas the researchers were working in. "In addition to the very fine texture of the soil," Ferring relates, "which made excavation and screening go slowly, the flooding and water table problems slowed us down. It's sort of like many good sites," he adds thoughtfully, "they're not easy to dig."

Despite the difficulties, Ferring and his team recovered a wealth of Clovis cultural materials from the site. "Virtually every area we excavated," he notes, "yielded Clovis-age artifacts." Additionally, the excellent preservation of the site enabled the researchers to collect a wide variety of paleoenvironmental data.

While the pond area had few lithic artifacts, it yielded a large number of animal bones, about a thousand of which are identifiable. "The bones," explains Ferring, "include both those with evidence of human modification, as well as bones that were probably deposited naturally and provide good evidence of the past environments of the locality." Preliminary identification of taxa recovered from the pond area include bison (*Bison antiquus*), deer (*Odocoileus*), two species of rabbit (*Sylvilagus*), pocket gopher (*Thomomys*), three species



Nancy Kelly water-screens sediments at the Aubrey site. All sediments from the site were fine-screened so as to recover small stone chips and bones. (Photo courtesy of Dan Santema, University of North Texas.)

of vole (*Microtus*), and squirrel, birds, turtle, and snake. Thus far, over 40 species of land and aquatic snails have also been identified, of which at least 12 are locally extirpated (extinct in this region).

"The site," Ferring observes, "is really the classic case where you can do interdisciplinary research. We're all excited because in the past, if you were lucky, you got bone. Or, if you were lucky, you got snails. But here we have independent records of environments that include geology, snails, pollen, diatoms, and stable isotopes, so we're really going to have a chance from a methodological point of view to see how well these data bases support one another." Ferring has assembled a large team of specialists that is currently studying the various samples collected from the site. The individuals involved in the Aubrey project include: Dr. Ernest Lundelius, University of Texas—paleontology and taxonomy; Bonnie Yates, University of Texas, and Peggy Jodry, Smithsonian Institution—taphonomy; Dr. Raymond Neck, University of Texas—mollusks; Dr. Steven Hall, University of Texas—pollen; Dr. Scott Elias, INSTAR, Colorado—insects; Dr. Herb Haas, Southern Methodist University—radiocarbon dating; University of Arizona—accelerator radiocarbon dating.

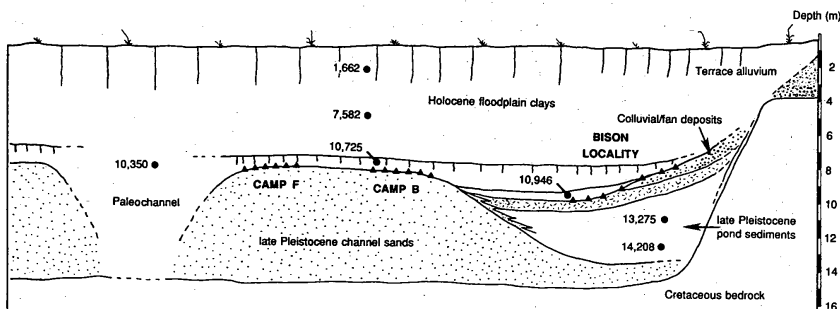
The two Clovis camp areas produced over 10,000 pieces of stone debitage and an extensive array of bone fragments. Although the camp areas contained fewer than thirty formal artifacts, including scrapers, graters, retouched flakes, and knives, the large number of chert and quartzite flakes indicated that these areas had served as tool manufacture and rejuvenation locales. "It's a very interesting camp assemblage," says Ferring. "And even though it's a very small assemblage of tools, this may be representative of what a short-term occupation looks like."

The researchers also found "quite distinct concentrations of charcoal and burned bone, which are very suggestive of hearth areas." These burnt areas, Ferring believes, may indicate surface cooking fires.

In addition to bison-sized elements, the burned bones in the camp area include squirrel, rabbit, deer, and turtle. Although a few mammoth tooth fragments have also been recovered from the site, "we can't really say that they have any evidence of cultural association."

"But the interesting thing," Ferring continues, "is that if we make the gross, and perhaps unjustified, assumption that everything burned is being exploited, what we see here is a faunal assemblage that shows essentially a Holocene spectrum of animals. All we have evidence for really is an opportunistic bison kill and then exploitation of a lot of small animals. . . . The evidence of faunal procurement and processing [at the Aubrey site] points toward a very broad pattern of exploitation of aquatic and terrestrial animals, as opposed to perhaps the classic Clovis model of megafaunal exploitation."

The wide variety of taxa recovered from the Aubrey site supports those who question the long-held assumption that Clovis peoples subsisted almost exclusively on



A diagrammatic cross-section of the Aubrey Clovis site. Clovis artifacts and faunal materials are indicated by solid triangles. Selected radiocarbon ages all have standard

deviations of less than 200 years. Distance between camps B and F is 125 meters. (Courtesy of C.R. Ferring.)

big game. Ferring explains that many of his colleagues have been quite pleased with his findings at the site. "For a long time there has been this man-mammoth association made about Clovis people. But the suspicion has been that Clovis peoples were general hunters that would have hunted and exploited a broader range of faunal material, not to mention plants."

The radiocarbon dates obtained for the site, "suggest we're well within the ranges of other Clovis sites for the western U.S., between 10,800 and 11,000 yr B.P." Thus far, samples collected for radiocarbon dating have produced three minimum ages for the Clovis occupation period. The first, a sample of humic clays taken immediately above the faunal remains in the pond, yielded a date of 10,937 \pm 85 yr B.P. A second sample, collected from the camp area overlooking the pond, produced an age of 10,725 \pm 89. And a third, from the Clovis paleochannel fill, yielded an uncorrected age of 10,350 yr B.P. Six charcoal samples from the Clovis camp area are currently undergoing processing for accelerator dating by the University of Arizona. Additional dating samples collected from above and below the Clovis surface have produced a sequence of ages ranging from about 15,000 years ago to 1700 yr B.P.

The radiocarbon ages and geological evidence indicate that soon after the Clovis occupation ended, the site was buried. Within a few decades, or at most 100 years, the Clovis occupation surface was sealed, preserving a unique record of activity areas and spatial patterning. Evidence strongly indicates that the Clovis people occupied the site only briefly.

Ferring explains that once a site has been dated as accurately as possible, archaeologists can examine spatial data to find out more about how long a site was occupied. "What we're getting to," he says, "is a notion I looked at in a paper a few years ago. This is that once we're confined within the ranges of stratigraphy and radiocarbon dating in terms of discriminating between repeated occupations, we have to shift over to the realm of spatial evidence for human behavior in order to talk about single versus repeated occupations. . . . At this site, what we see thus far is no evidence for the re-use of space."

The spatial patterning, Ferring explains, "suggests that no two people used the same space for different things." From these data, he infers that the site was

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likely only occupied for a few days or weeks. "Because we're getting a very nice spatial segregation of tool manufacture areas, tool rejuvenation areas, clusters of burnt bone, and so on, my interpretation at this time is that we're dealing with a single occupation. On a very objective scale, I'd say we're dealing with a very brief occupation. Even over a period of a few months, space would be re-used for something."

"My gut feeling is that this site represents a group of Clovis people that exploited the area near the spring and pond, made some kills of animals, collected other animals or plants, and moved on."

Although much analysis remains to be done, a picture of Clovis life at the site is already beginning to form. For example, "They were obviously," observes Ferring, "carrying every bit of stone they needed with them. Out of 10,000+ artifacts, we don't have a single chip that we can reasonably say is local material." The archaeologists found tools made of Edwards chert from central Texas, quartzites from New Mexico, and chalcodony of unknown origin. The closest source of any of these stone materials is 250 miles away. "It seems to me," suggests Ferring, "that when these people went out on hunts,

they did not plan on stopping anywhere to look for stone sources. They had already found excellent sources of stone and took all of their tools and all of their blanks with them when they went."

Many of the lithic sources of debitage found at the Aubrey site are in the high plains and the eastern front of the Rocky Mountains. "Over here in the eastern Plains, we're dealing with a spectrum of materials that would fit in with any High Plains site. The same groups appear to have been extending their hunting and travelling ranges much further east from the High Plains." Although Ferring cautions that this hypothesis is not yet proven, "This site at least allows us to say that it could be possible."

*"We know that if you walk
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The geologic and paleoenvironmental data from the site provide evidence of a different sort on what Clovis life would have been like. These data indicate that the period between 15,000 and 11,000 years ago was much drier than at present. "Surface water," says Ferring, "was certainly more restricted. For 4,000 years, we have no evidence of overbank flooding on the rivers." In contrast to the fairly lush prairie-forest mosaic that exists today in this region of the eastern Plains, the Aubrey Clovis people likely inhabited an area of dry open prairies. These conditions, Ferring adds, may have imposed considerable stress on late Pleistocene megafaunal populations.

"It's probably no coincidence," he says, that Aubrey, like almost all other major Clovis sites in the western U.S., is associated with a spring. These water sources would have attracted animals as well as humans and would have been good places for human hunting activities. However, "no single source could be exploited for a long time. . . . I don't want to deal with theatrics," Ferring stresses, "but in terms of the rapid exploration and settlement of North America, I'm beginning to wonder . . . whether Clovis people explored and expanded their territories of occupation not so much out of an aggressive curiosity or population growth, but out of necessity."

The paleoenvironmental evidence collected from the Aubrey site includes data not only on Clovis times, but spans a period from the late Holocene to almost 15,000 years ago. The site, says Ferring, "will provide data that I think a lot of people can chew on to look at parallel records of environmental change that may have affected the megafaunal population as well as the Clovis people."

Although analyses are still in a preliminary stage, findings thus far appear to strongly support previous assertions of significant climatic change at about 11,000 years ago. "It really looks," explains Ferring, "as Vance Haynes has said for years, that the 11,000-year-old boundary represents a dramatic change in terms of the stratigraphic and paleoenvironmental record." The Aubrey data indicate that overbank flooding and increased moisture occurred in the region shortly after the Clovis occupation. "We definitely," says Ferring, "have evidence of very marked climatic changes at the Pleistocene-Holocene boundary. And the Clovis people seem to be a marker for that boundary."

The Aubrey discovery fills in a large geographic gap in terms of known Clovis sites. The nearest Clovis site to the east of Aubrey is Kimmiswick, a kill site near St. Louis, Missouri, while the nearest camp is Blackwater Locality No. 1 in eastern New Mexico. "People have looked for so long," says Ferring. "This is the first major Clovis site that's been found in Texas in 50 years. . . . We're dealing with decades between discoveries."

For the North Texas archaeologists, the Aubrey site also jumped a large temporal gap. Although the University of North Texas had worked intensively in this region for the four years leading up to the site's discovery, "the oldest well-dated living surface we had found was about 2,700 years old."

Ferring stresses that because there are so few known Clovis sites, each new find has a significant impact on our ideas about Clovis culture. "We're not dealing with very good coverage of the Clovis paleolandscape. So if we start talking about Clovis mobility, settlement patterns, and raw material procurement, our sample size is so dismally small that almost any interpretation is possible."

"It all kind of points out how much we don't know about the Clovis sites that are out there," he continues thoughtfully. "Instead of our old impressions that Clovis sites are rare, I think maybe now . . . our impressions should shift toward the fact that Clovis sites are very rarely exposed. We don't really know how rare they are."

The Aubrey site, for instance, was discovered only because a deep channel was cut by modern machinery. Many intact western Clovis sites, Ferring believes, are simply too deeply buried by flood deposits to be accessible by traditional excavation techniques.

"I've been doing geology on the Trinity River since late '85. . . . So I paid particular attention to where we



Archaeologists excavate at the Aubrey site in December of 1990. (Photo courtesy of Dan Santema, University of North Texas.)

might expect to see Paleoindian sites. One of my basic research questions was: 'Where is the Pleistocene/Holocene boundary?' From bore holes and other research, Ferring concluded that this boundary lies about 14-18 m beneath ground surface in the Dallas area. Upstream, where the Aubrey site was found, the boundary is less deeply buried and is about 8-10 m below the flood plain.

Ferring proposes that investigators go further up into the drainages and tributaries where Clovis sites will be closer to the surface. "I think that if the stratigraphy holds up as I've broadly outlined it, it will be virtually impossible to find Paleoindian sites downstream because they're going to be so deeply buried."

"We really need to take the approach that . . . Kirk Bryan and Vance Haynes have espoused for decades and that is know your stratigraphy first and then you'll know where to look for sites! We've got to get out of the pattern of walking flood plains," Ferring emphasizes. "We know that if you walk flood plains, you're going to find spark plugs and beer cans," he says, with a flash of humor. "You're not going to find Clovis sites."

"My hope is that this discovery will rekindle some enthusiasm and confidence that if we pay attention to what we're looking at, we can substantially increase our chances of finding new data. . . . We're dealing with such a unique time in human history and such a unique set of climatic and environmental conditions for human adaptations. It really requires us to redouble our efforts to find more early Paleoindian sites all over this continent."

—Nancy Allison

Pre-Clovis Barrier Broken?

continued from page 1

MacNeish, who has long been a pioneer in the study of agricultural origins in the Western Hemisphere, decided to excavate Pendejo Cave because of its potential for containing preserved vegetal remains. "I dug the cave," says MacNeish, "not to find [evidence of] Paleoindians, but because it has beautiful preservation in the upper strata. From the little erosion that was present, it was obvious that the top layers of the site contained sandals, corncocks, baskets, and similar materials."

Operating under the auspices of the Andover Foundation for Archaeological Research (AFAR), a non-profit research organization, MacNeish returned to Pendejo Cave in February of 1990 with a small crew. Using a trowel and paint brush technique, and fine screening for the recovery of small animal bones, the excavators opened a 1 x 5 m test trench extending lengthwise from the mouth of the cave.

The excavation team soon revealed a remarkable stratigraphic record of alternating layers of burned ash. "It looks," MacNeish says, "almost like a black, white, and orange layer cake. It's textbook stratigraphy." He explains that burning of the vegetable floors in the cave probably occurred when cooking fires got out of control. "It appears that the layers were regularly burnt. Over on the edges of the cave, the floors kind of smouldered."

As MacNeish had predicted, the upper levels of the site yielded Ceramic and Archaic period artifacts, along with an impressive array of vegetal and faunal remains. Zone A, the uppermost (5-13 cm) level, consisted largely of owl droppings, vegetation, and other recent material. Beneath it, Zone B, a 13-cm-thick vegetal and ash horizon, contained brownware pottery shards and chipping debris that probably dates between 1000 and 1700 years ago.

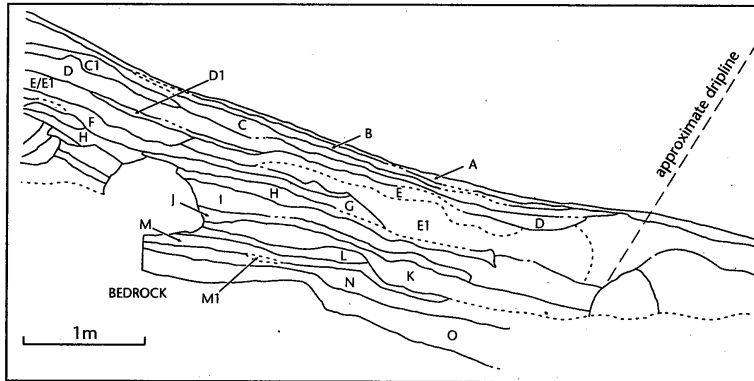
From Zone B to Zone F, says MacNeish, "We were mainly getting Archaic materials, which is what I was interested in." Zones C1-C5, alternating vegetal and ash layers, produced Pendejo points, twilled sandals, split-stitch baskets, knotted nets, corn kernels and other materials characteristic of the Late Archaic period. Zone D, a 20-cm-thick ash horizon, overlay Zone D1, a thin localized charcoal floor. Beneath them, Zone E, a layer of gray ash, covered Zone E1. Although artifacts in these zones were rare, Zone E1, a 20-cm-thick white ash layer, is noteworthy in that it had been heavily cemented by water, thus preventing the up and down movement of materials. Zone F, a 20-cm-thick charcoal floor, contained blades and a denticulate that are probably Early Archaic (6300-8000 yr B.P.) in age.

What MacNeish could not have predicted, however, were the artifactual and faunal materials that lay beneath the upper 80 cm of cave sediment. Although Zones E1 and F1 contained a few extinct mammal bones, thought to be intrusions from earlier (lower) levels, the upper layers of Pendejo Cave yielded a profusion of Holocene animal bones. These included deer, antelope, coyote, cottontails, jackrabbits, rattlesnakes, and other species typical of a modern desert-like environment. With Zone G, however, a 20-cm-thick ash horizon, "the whole picture changed."

One day, recalls MacNeish, "One of the supervisors came running over and showed me a toe bone about four inches long that was from a giant horse. We knew then that the rest of the cave was going to be quite early." Zone G, which proved to be at the junction of the fossil animal bones, produced a large number of extinct

animal remains, among them giant and medium-sized horse (*Equus niobrarensis* and *E. conversidens*), and large palaeolama (*Hemiauchenia macrocephala*), as well as deer, rodent, and bird bones. Associated with the faunal remains was a small artifact assemblage that included three snub-nosed end scrapers, a prismatic blade, and a graver—implements that MacNeish describes as, "With a little pushing and shoving might be Clovis. But," he adds, "the artifacts down below are very different."

Because of the fragile stratigraphy of the cave, MacNeish and his team decided to expand the test trench to



North-south vertical profile shows the complex stratigraphy of Pendejo Cave. (Courtesy of R.S. MacNeish.)

3 m in width before proceeding downwards in the central 1-m trench. "We dug the cave in alternating 1 m squares," he explains, "so we had very good control. We were always stripping strata from a vertical profile."

When Zone G and its underlying layers were again exposed, the archaeologists discovered a plethora of faunal and cultural remains that had lain undisturbed for thousands of years. "We also," MacNeish adds, "got pieces of wood and seeds towards the edge of the cave going right down to the bottom level." By the end of the first season, the excavators had revealed a complex stratigraphic sequence containing a minimum of 21

MacNeish adds, "have scratch, chew, and cut marks."

The rich faunal record of Pendejo Cave promises to shed light on a question that has long puzzled researchers—that of the late Pleistocene megafauna extinction. "There is," MacNeish points out, "considerable difference between the extinct animals in the earliest layers of Pendejo Cave and those in the upper layers. In terms of the stratigraphy, it doesn't look like all these animals became extinct at the same time." The apparent differential extinction indicated by the levels of Pendejo Cave, MacNeish suggests, "argues strongly against the overkill theory where everything happened in one brief

moment due to hunters."

Asked to elaborate, MacNeish continues, "There's a kind of three-way break in the zones in terms of the fossil record. In the top block, which is Zone G, H, I, and J, we have large palaeolama and giant horse. We do have some small horse, but no small camels, and no small antelope." Other animals recovered from this block include extinct antelope and/or sheep, giant bear, a large feline, and deer, rabbits, rodents, birds, and snakes.

"Now Zone K," continues MacNeish, "is quite distinctive. This zone contains long-tailed weasel, giant turtle, salamander, tapirs, and even a toad."

Also contained in Zone K were the remains of bushy-tailed woodrat, northern pocket gopher, and spotted skunk.

The Zone K fauna strongly imply the occurrence of a wetter forested environment during this period in the site's history. Although much more research is needed, it is possible that Zone K corresponds to the late glacial maxima of 18,000-25,000 years ago.

"Below Zone K, Zones L, M, M1, N, and O are dominated by small and medium-sized horse and small camels." Gone are the deer, giant horse, and large camels, so prominent in the levels overlying Zone K. Preliminary

identification of other faunal remains in this block includes extinct antelope, extinct goat, and giant turtle, as well as a large number of rodent and bird bones. Overall, the fauna suggest a probable desert-like environment, although the assemblage differs significantly from the types of fossil animals contained in the levels above K. Also occurring in Zones M1 and O are the remains of Aztlan rabbit (*Aztlanolagus agilis*), a recently identified species known from only a few other sites that is seemingly characteristic of early to middle Rancholabrean times (30,000-40,000 yr B.P.).

And the cultural materials? "We have some artifacts," says MacNeish, "but they don't look much like what I've seen from the Southwest except for maybe

the top layer of fossil animal bones [Zone G]. All told, we recovered about 89 chipped stone tools from the lower cave levels, of which there are 12 in Level G and about 10 in each of the layers beneath."

Again, the materials beneath Zone G seem to fall naturally into three stratigraphic groupings. Although the associated faunal remains in Zones H-J are similar to those in Zone G, culturally there is a change to a more generalized flake-tool assemblage. Stone tools from these zones include unifacial side scrapers, large spoke-shave-like implements, utilized flakes, and large ovoid cores.

Spokeshaves and utilized flakes continue into Zone K, with the addition of a bifacial core tool and a knife made from a rib bone. The occurrence of these tools, along with this horizon's distinctive faunal assemblage, leads MacNeish to suggest that Zone K may represent a period of cultural, as well as environmental, change.

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JOIN AN ARCHAEOLOGICAL EXPEDITION TO THE SOUTHWEST

The Andover Foundation for Archaeological Research (AFAR) is a non-profit research organization dedicated to undertaking scientific archaeological investigations, training prospective archaeological students, and bringing this information to the public. Since its inception in 1984, AFAR has funded and staffed excavations and surveys in Bolivia, Belize, Mexico, and the U.S. Southwest.

Now, with discovery of the Pendejo Cave finds, AFAR faces its greatest challenge. Initial excavation at this site has revealed an extensive stratified sequence of Holocene and Pleistocene faunal and vegetal remains. Associated with these materials is a unique artifactual record that promises to provide insight into one of the most intriguing questions of archaeological research today: When did humans first enter the New World?

Next winter, AFAR Director of Research Dr. R.S. MacNeish will return to Pendejo Cave with a small team to continue work at the site. You can

be a part of this extraordinary project by becoming a Friend of the Foundation! Each season, AFAR accepts a limited number of nonprofessionals to assist in actual field research. Friends of the Foundation may stay for two weeks (\$1,500) or a month (\$2,000). Contributions cover all field costs, excluding transportation. AFAR also accepts archaeological students for a full season (\$2,800 tax-deductible); college credit can be arranged.

Additionally, a small number of sponsored students will be selected—so send in your CV's now. Since AFAR can accommodate only 12 Friends for each two-week session, we urge you to apply now.

For information on how you can become a Friend of the Foundation or to make a tax-deductible contribution to AFAR, contact: Andover Foundation for Archaeological Research, 1 Woodland Road, Box 83; Andover, MA 01810, (tel.) 508/470-0840.

distinct horizons extending about 2 m beneath the cave floor's surface. From Zone G, the strata are:

Zone H: 5- to 15-cm-thick charcoal floor.

Zone I: 15- to 20-cm-thick gray-brown ash.

Zone J: 5- to 10-cm-thick charcoal floor.

Zone K: 20-cm-thick cemented white ash.

Zone L: 10- to 30-cm-thick intermixed charcoal and sediment.

Zone M: Thin gray ash.

Zone M1: Thin charcoal floor.

Zone N: 10- to 30-cm-thick orange sand.

Zone O: 10- to 30-cm-thick white ash. (This level may be further subdivided.)

Although study of the faunal remains is still in a preliminary stage of analysis, paleontological expert Dr. Arthur Harris of the University of Texas at El Paso has thus far identified at least 20 different extinct animal species from the site. Many of the larger bones,

Linguistics and Prehistory

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form of the items under comparison. Both bear heavily on the appropriateness of specific comparisons.

With respect to meaning, it is by now clear from the historical study of languages with a long written tradition such as English that meanings change through time. *Knave*, for example, is no longer the commonest term for *boy*, and *hound* is not the commonest term for *dog*, although both of these terms did have those meanings in Old English. *Heaven* now has a largely abstract, religious meaning; its everyday meaning in Old English has been replaced by *sky*, a loan word from Danish. (In modern Danish the term means *cloud*!) And *bead* has changed its meaning entirely from its earlier meaning of *prayer*, which presumably originated with the use of the rosary in acts of prayer. In the first three cases, peripheral modern meanings still tie these words to their Old English ancestor; but with even more semantic evolution, as in the case of *bead*, and without a knowledge of the history of English permitted by written records, what would, what could, a comparatist do?

Because of the universal tendency for semantic evolution, a scholar doing comparative work must therefore constantly consider words as members of semantic groups: *finger:point:show*; *sky:cloud:sun*; *give:take*; *sleep:faint:die*; *black:dark:dirty:excrement* etc. But there is no guarantee that all scholars will agree on the plausibility of the members of the semantic groups, and the worth of the comparisons will be questionable to some as a consequence.

An even thornier problem concerns the global form of items to be compared. Ideally, grammatically equivalent items ought to be compared, e.g., English *heart*, German *Herz*. But suppose that the only available German terms were *Herzen* or *herzlich*, which are grammatically different from *heart* and *Herz*. What about the additional material in these new German words? Can it be regarded as a grammatical suffix of some kind, or as a meaningless variant of the same root? (In both of the above cases, the additional material is suffixal.) Experienced comparatists know that it is often necessary to work with such disparate items, and that the differences may or may not be significant; but the decision on inclusion of such items usually requires rather detailed additional knowledge of the languages from which the data come. This is obviously very difficult, if not impossible, when hundreds of languages are undergoing comparison, and the cautious comparatist usually does not count such items until their difficulties can be accounted for, which may not be feasible in a great many cases.

In classification by inspection, as Greenberg does, these concerns, while admitted, are nevertheless discounted on the assumption that the mass of data is largely self-correcting. Sheer numbers of resemblance are taken as an indication of relationship, without the need to account for troubling differences of detail, and without the need to establish the consistent, recurring agreements of one or another kind that constitute proof.

Although Greenberg believes that his classification does represent a truth, he nevertheless readily agrees that it remains to be proved. He argues that his work is no different than that performed by a large number of his predecessors in the eighteenth and early nineteenth centuries, when historical linguistics was first conceived, and the immediate relationships of many of the world's languages were first recognized. He argues that comparison of languages rests on a hypothesis of genetic relationship, whether this hypothesis is overt or implicit, and that sound comparative work has to follow linguistic classification, not precede it.

Greenberg's motive in doing classification—especially subgrouping—is thus to provide a plausible framework within which to do standard comparison. Too much comparative work has been done all over the world, he feels, essentially at random. Languages are chosen because a scholar knows them, or has a hunch about them, and not because there are good reasons to believe that they have a relationship of some order. Moreover, he insists that comparison of a limited number of languages is equally random and unjustified, since it is comparison itself which shows which languages and which etyma (words) are the more useful at particular levels.

All of these issues loom very large in doing historical

ANNOUNCEMENT

Travel Grant Program to the XIII INQUA Congress
Beijing, August 1991

The U.S. National Committee for the International Union for Quaternary Research (USNC/INQUA) is expecting to obtain funding for its travel grant program for the XIII INQUA Congress in Beijing, China, August 2-9, 1991 and related pre- and post-congress field excursions. This travel grant program is cosponsored by the American Geophysical Union (AGU). The USNC/INQUA, with the cooperation of AMQUA, seeks to ensure appropriate U.S. representation by providing 20 to 30 travel grants to enable Quaternary scientists residing in the United States (regardless of citizenship) to participate in the activities of the congress. Travel grants, which will cover only a portion of a participant's expenses (equivalent to airfare), are to be awarded competitively, in part on the evaluation of papers submitted for presentation at the congress, especially as they relate to the congress theme "Global Environmental Changes and their Relation with Anthropogenic Activities." The Awards Subcommittee will give special consideration to those judged to benefit most by participation at this important international event.

Deadlines: Note that abstracts for inclusion in the congress must be received not later than December 1, 1990. Abstract forms will be included with the travel grant application materials, as well as information on registration for the congress. The completed application for a travel grant, including an extended abstract of your paper and a one-page curriculum vitae, must be received in Washington by January 15, 1991.

Grant announcements: The committee aims to announce the travel awards by February 15, 1991. However, some awards may be made later because of cancellations or delays in availability of funding. For travel grant applications and/or additional information, contact:

Pembroke J. Hart
USNC/INQUA-HA-460
National Academy of Sciences
2101 Constitution Avenue NW
Washington, D.C. 20418

For applications by phone, call:
(202) 334-3368 or -3306

linguistics, and they are cause for genuine concern about the validity of all comparison. They are usually resolved by consensus among scholars working in the same area; familiarity with the data and the languages is usually adequate to make broad agreement possible. Unfortunately, consensus is not easy to achieve when the scope is hemispheric and hundreds of languages and scholars are involved. No one has extensive competence in even a small number of the languages. Yet, there must be a way that consensus can be achieved—certainly there is now broad acceptance of the African classification, and the same obstacles to its acceptance were present when it was first presented.

An initiative to promote the interest of Americanist scholars in remote comparison of Native American languages was taken this past March, using the Greenberg classification as a point of departure. A panel of over twenty prominent scholars in American Indian diachronic study met in Boulder, Colorado, to examine and discuss American diachrony with special reference to Greenberg's two largest groupings, Amerind and Na-Dene. The conference, which was entitled "Language and Prehistory in the Americas: A Conference on the Greenberg Classification," met from March 22 to March 25. It was sponsored by the University of Colorado and the Center for the Study of the Native Languages of the Plains and Southwest. A number of interested professionals attended in addition to the invited speakers and discussants.

The following are the titles and authors of the invited papers

"The peopling of the Americas: the classical view... sort of" Dennis Stanford, Smithsonian Institution.

"The Pacific Coast as a possible route of initial entry into the Americas" Ruth Gruhn, University of Alberta.

"Linguistic diversity and its implications for the settlement of the New World" Johanna Nichols, University of California, Berkeley.

"Dental and archeological evidence for the peopling of the Americas: an intercontinental perspective" Christy Turner II, Arizona State University.

"Genetic evidence from mitochondrial DNA for the peopling of the Americas: an intercontinental perspective" Rebecca Cann, University of Hawaii, Honolulu.

"The classification of American Indian languages and the peopling of the Americas" Lyle Campbell, Louisiana State University, Baton Rouge.

"Reexamining the family tree model of linguistic classification, with special reference to North America" Sidney Lamb, Rice University.

"Sapir's reconstruction and linguistic classification" Victor Golla, Humboldt State University.

"Hypothesis generation vs. hypothesis testing: a comparison between Greenberg's classifications in

Africa and the Americas" Sarah Grey Thomason, University of Pittsburgh.

"On being right: Greenberg's African linguistic classification and the methodological principles which underlie it" Paul Newman, Indiana University.

"Indo-European practice and Americanist theory on language classification" Joseph Greenberg, Stanford University.

"What constitutes grammatical evidence and how do we evaluate it?" Scott DeLancey, University of Oregon.

"The Amerind family, an overview" Merritt Ruhlen, Palo Alto.

"The Na-Dene languages in the light of the Greenberg classification" Juergen Pinnow, Sylt, German Federal Republic.

"Towards a uniform evaluation of proposed genetic relationships: Greenberg's North American Amerind" William Jacobsen, Jr., University of Nevada, Reno.

"Tlapaneco-Subtiaba, Otomangue, and Hokan" Terrence Kaufman, University of Pittsburgh.

"Deep genetic relationship in Amerind: the case of Maya-Zoquean" James Fox, Stanford.

"Structural comparison of Arauan and Tzapacuran; do these languages belong in the same subgroup?" Daniel Everett, University of Pittsburgh.

Discussants were David Meltzer, Southern Methodist University; Thomas Dillehay, University of Kentucky; Jared Diamond, University of California, Los Angeles; Jeffrey Heath, University of Chicago; Sheila Embleton, York University; Sergei Starostin, USSR Academy of Sciences; Jeffrey Leer, University of Alaska; M. Dale Kinkade, University of British Columbia; Aryan Rodrigues, Universidade de Brasilia.

As can be seen, the papers fell into three broad groups: the peopling of the Americas, history and theory of genetic classification, and the classification of the American languages.

Papers in the first group definitely favored a pre-Clovis peopling of the hemisphere, thus challenging Greenberg's association of his three language families with three Clovis or post-Clovis archeological cultures and the time depth for the peopling of the Americas that this implies. This was not a major aspect of the conference, however, since dating is not crucial to the classification that is the heart of Greenberg's hypothesis, and the only part of the hypothesis interesting to many linguists.

The second and third groups of papers considered aspects of Greenberg's classification, together with its implications for American prehistory. Discussion was lively and for the most part very constructive. Although few minds were changed, many misunderstandings about Greenberg's assumptions and procedures were

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clarified, and it appears to me that the future will see further exploration of a number of aspects of the classification, including some of those which are more controversial.

Most current research on American diachrony can be characterized as very conservative and cautious. Comparison and reconstruction—which are spectacularly successful where relationship is reasonably close and data are abundant—is held by most to be the only method which will yield trustworthy results. But these procedures are less and less successful as relationships become remote, and work in deep time must perforce employ other techniques. Unfortunately, there is as yet no general agreement in the profession as to what these are to be.

A particularly serious problem, especially for anthropologists, archeologists, and others in the human sciences outside of linguistics, is how the data and conclusions of linguistics can be applied to the problems of their own disciplines. For example, there is far too little understanding outside of linguistics that the conclusions which historical linguists draw are purely linguistic.

Due to the nature both of their evidence and their results, the only time which linguists can deal with is "before" and "after," and in a strictly language-internal sense: they can assert with confidence that some language phenomena or states precede others. Unfortunately, perhaps, linguists sometimes do make estimates of the length of calendar time required to account for a given amount of accumulated diversity between different language states, but these estimates are completely impressionistic. There is also no sure way to extrapolate from linguistic data and conclusions to material culture, habitat, ethnicity, and other non-cognitive areas.

It is these facts which make attempts to work at deep levels so controversial, especially because no single, really successful procedure for work beyond the reach of the standard comparative method has yet appeared.

In reaction to this, some scholars avoid comparative work, or concentrate on practice of traditional, low-level comparison, honing its techniques further, purifying its goals, and, unfortunately, elucidating details which are essentially trivial to all but themselves. . . . Some deny that deep comparison is interesting or even possible. If not impossible, they find that it is at least premature, since, in their view, much more descriptive and low-level comparative work will have to be done before solid work can be done on remote relationships. Such an agnostic view is repugnant to Greenberg and many others, who feel that alternative approaches both exist and can be found which will yield reliable answers before the passage of another half millennium.

It seems likely that the appearance of the Greenberg classification of the American languages will give new impetus to research in linguistic prehistory. A new paradigm in diachronic research could emerge in time as a result of the interaction of ongoing research in all of the human sciences. I believe that linguists do presently have the tools to test many of Greenberg's suggestions, and it will be well worth the investment of time by scholars, particularly those early in their careers, to explore some of his proposals. Such research will benefit all of the human sciences, not only linguistics.

As a specialist in American Indian linguistics with a great deal of interest in the larger picture in which American Indians belong, I accept the Greenberg classification with some reservations. It is interesting and provocative in the good sense of this word.

But there is no question that caution will continue to be of the essence, because of the many problems of interpretation of evidence and because peoples can change their language very abruptly, often without any recollection of the fact only a few generations later. Thus, a genetically constant population may well belong to different linguistic groupings through time. Historical conclusions based on linguistic affiliation can therefore be quite risky.

As the organizer of the conference, I feel that the conference was very successful, and the proceedings, due to be published by Stanford University Press before 1992, should be an important contribution to the nature and direction of research in American linguistics during the next two decades.

Song of the Mammoth Hunters: A Bit of Ice Age Doggerel

Translation and annotations by
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*Gripping wooden spear shafts
with painted, sweat-soaked hands:
Slinking through the verdant gloom—
the last of the hunting bands.
Spurning the wild asparagus;
eschewing the pomme de terre²—
Questing for Big-game mammals
to stab and rend and tear . . .*

*We are the red-handed butchers,
Martin's Paleolithic Blitzkrieg³—
Relentlessly lustful for protein,
for blood and for higher prestige.
Heeding the call of the wild,
following Romer's rule⁴—
Maintaining our adaptation,
as stubbornly as a mule.*

*Don't ask us what will happen—
we haven't a clue to our course—
When we've eaten the last of the
Pleistocene herds
of mammoth, sloth, and horse.
Perhaps we'll eat some shellfish,
or maybe we'll plant some maize⁵—
But we needn't worry, they're not
extinct yet—
And they probably won't be for days!*

(Disclaimer: We at the **Mammoth Trumpet** wish to express our appreciation to Dr. Lepper for news of this recent discovery. However, we must emphasize that Lepper's interpretations do not necessarily reflect those of the Center for the Study of the First Americans. Although Lepper's hypothesis that the inscription was

freely translated from an Ogam¹ inscription on a mammoth ivory pseudosemifabricated thingummybob recovered from an undiscovered locality in Licking County, Ohio. It is believed to date to very near the Pleistocene/Holocene transition. If confirmed this poem may represent the oldest historical text in the world.

NOTES

¹ The discovery of an Ogam inscription in an undoubted late Pleistocene context suggests that many of the Ogam inscriptions documented by Barry Fell (e.g., 1989) are of a comparable antiquity. Perhaps Irish Druids were the original discoverers of America and the New World was initially peopled by small proto-Celtic bands who crossed the North Atlantic on floating icebergs as Greenman (1963) originally suggested. On the other hand, the parallel scratches and grooves observed on the surface of the artifact (?) might be butchering marks, carnivore tooth marks, or trampling marks. Various sophisticated taphonomic analyses will proceed along with the standard unsophisticated epigraphic woolgathering.

² The use of the French expression in this context suggests the author was a cultured individual schooled in the intricacies of lithic technology. Such an individual undoubtedly could pronounce as well as make and use pièces esquillées.

³ The use of this apparent Germanic expression is further evidence for a European connection (see notes 1 and 2 above). The reference to Martin is interesting. Perhaps this was an ancestor of the noted paleoecologist whose theories find strong support in this early historic document (see, for example, Diamond 1987).

⁴ Romer's Rule (or, possibly, Roamer's [?] Rule) appears to relate to a concept such as "No matter how far you roam from home, don't change a thing about your way of life." Or, "If it was good enough for Granddad on the Beringian tundra, it's good enough for me in the Brazilian rain forest." This Clovisian credo must be the "rule" to which several researchers refer—for their notions of extreme cultural conservatism have little, if anything, to do with the work of the noted paleontologist A.S. Romer (e.g., 1958:68).

⁵ What you call "corn."

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Fell, Barry 1989 *America B.C.*, Newly revised and updated edition. Pocket Books, New York.
Greenman, F.E. 1963 The Upper Paleolithic and the New World. *Current Anthropology* 4(1):41-324.
Romer, A.S. 1958 Phylogeny and Behavior with Special Reference to Vertebrate Evolution. In *Behavior and Evolution*, edited by A. Roe and G.G. Simpson, pp. 48-75. Yale University Press, New Haven.

composed by a Paleoindian hunter cannot be completely discounted, the sophistication inherent in this rune suggests it is far more likely that the author was one of the visitors from outer space who are thought to have inhabited our planet at about this time.)

Pre-Clovis Barrier Broken?

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Zones L-N are dominated by unifacial points, bifacial choppers, utilized flakes, and possible worked bone. "Is this," MacNeish asked at a recent presentation, "the 'bone-tool chipped-stone unifaces horizon' that occurs under Clovis in so many parts of the New World?"

Finally, Zone O, the lowest artifact block, "is heavy on choppers and pebble tools. These are mainly," MacNeish reels off the list, "split-pebble, side-scraper chopper, flaked chopper, plus," he pauses, "a bone awl made from the scapula of a horse." "There's no way," he adds, "you can make a horse scapula pointy without whittling it. And this has a lot of whittle marks on it!"

Most of the stone tools from the cave are made of chert or on quartzite pebbles. Because many of these tools have been heavily burnt, sourcing will be difficult. Although the artifacts, MacNeish says wryly, "have not been enhanced by being burned, flaked, and scarred . . . there's no doubt in my mind that they are tools."

MacNeish seems confident that Pendejo Cave may prove to be the turning point for a universally accepted pre-Clovis occupation in the Americas. Referring to the "chopper-pebble" tools of Zone O, he stresses, "We're a long walk up from the arroyo, so when pebble tools appear in this layer, well, they're not being brought into the cave by rabbits." Also, "the roof is limestone and these are quartzite pebbles so there's no way these can be dismissed as roof fall."

MacNeish is presently planning to return to the site next winter. At that time and in the interim, a number of specialists will bring their expertise to bear on the Pendejo Cave materials. In addition to Dr. Harris, who

will continue studying the faunal remains, Dr. Pat Shipman of Johns Hopkins University will conduct a taphonomic analysis to determine if the many marks on the bones are human produced. Dr. Mike McPaul, Laramie Soil Survey Inc., will continue work begun last season on the area's geomorphology; Dr. J. Schoenwetter, Arizona State University, will conduct a palynological (pollen grain) analysis on the cave sediments; and Bruno Marino of Harvard University will study H₁ isotopes in seeds recovered from the site to determine former rainfall patterns.

Additionally, the excavators were able to collect samples of burnt bone and pure charcoal from each of the cave levels for radiocarbon dating. These samples are currently undergoing independent analysis by two different radiocarbon laboratories—the charcoal by Dr. R.E. Taylor, University of California, Riverside, and the bone by Livermore Laboratory, California.

Returning to the subject of Pendejo Cave, MacNeish emphasizes, "I don't believe this is the first early site [to be discovered] in North America by a long shot. I think Meadowcroft is perfectly good, as is Wilson Butte, or Valsequillo in Mexico, or my Diablo materials in Tamaulipas. This is just another good case."

"I don't know," he continues, "how the site can be refused, but I think that of a dozen or so sites in the New World. I don't expect easy acceptance. But I think we've got all the ingredients here that Vance Haynes said are necessary to prove this is an out and out site. There's no doubt about the date, there's no doubt about the stratigraphy, and there's no doubt in my mind about the tools, particularly the worked bone!"

—Karen Turnmire