



# MAMMOTH TRUMPET

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Center for the Study of the First Americans  
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## Seeking Coastal Ecuador's Secrets

This archaeological site near Santa Elena, Ecuador, has produced a large body of evidence that indicates ancient coastal contacts from Panama to Peru. The clues include human remains; funerary objects; artifacts of stone, bone and shell; faunal remains; and phytoliths. Details begin on page 1.



KAREN E. STOTHER/CARUTSA

**T**he Center for the Study of the First Americans fosters research and public interest in the Peopling of the Americas. The **Center**, an integral part of **Oregon State University**, promotes interdisciplinary scholarly dialogue among physical, biological and social scientists. The **Mammoth Trumpet**, news magazine of the **Center**, seeks to involve you in the late Pleistocene by reporting on developments in all pertinent sciences.

# MAMMOTH TRUMPET



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Oregon State University, Corvallis, OR 97331

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## EARLY ECUADOR PEOPLE WERE MARITIME ADAPTED

### Archaeologists Find Coastal Ties Reach From Panama to Peru

Toward the end of the Pleistocene, well-established groups of people were feasting on rich resources of the estuaries and mangrove swamps along the South American coast in what is now Ecuador. Though they lacked complex lithic technologies, they successfully adapted to their environment, says archaeologist Karen E. Stothert, a researcher at the Center for Archaeological Research at the University of Texas, San Antonio. A growing body of evidence—human remains and funerary objects; bone, stone and shell artifacts; faunal remains and phytoliths—indicates that members of this “Las Vegas” culture shared technology and

maintained contact with other coastal residents from Panama to Peru.

Much of Dr. Stothert’s research and conclusions focus on site OGSE-80, the largest of some 30 sites identified near the western tip of the Santa Elena Peninsula, approximately three kilometers inland and 33 meters above present sea level. Other Vegas sites are found a short distance from mangrove swamps, along the seasonal Las Vegas River, and near the beaches of Santa Elena Bay. During the Pleistocene the area was a savanna with patches of woodland sustained by a short rainy season.

Facts on exactly when and how the Las Vegas arrived on Ecuador’s southwest coast are not conclusive, said Stothert in a telephone interview from Washington, D.C., where she currently is a research fellow at Dumbarton Oaks. She believes that her 20 years of research on the preceramic period complex “supports the hypothesis that the Vegas people originally entered the region by sea”—and far earlier than previously was thought. She says that research by others, including the work in Peru by University of Maine’s Daniel Sandweiss, also supports the maritime orientation of early people.

Stothert says the bones of large fish recovered from Vegas middens strongly suggest the Las Vegas people were capable navigators. “They may not have sailed to Acapulco,” she quipped, “but they were competent offshore fishermen.” The arrange-

*continued on page 4*

## INSIDE

### 2 Clovis and Beyond

*Santa Fe conference will combine science with art and public policy.*

### 12 Amateur helps preserve prehistory of Texas coast

*Paul Tanner recognized by archaeological society for his years of work.*

### 14 Oregonians uncover remains of mammoths

*Amateur paleontologist and his friends carefully document Pleistocene relics.*

### 17 Genetics researchers see people in Beringia 34,000 years ago

*Other geneticists suggest ancient Paleoindian link with Eurasian people.*

### 18 COMMUNICATION

*Reconstructive archaeology suggests spear straighteners were necessary tools.*

### 13 Suggested Readings

### 18 New Books

### 20 Coming Conferences



# The Future of Research: Clovis and Beyond

## Santa Fe Conference Will Combine Science, Art, and Public Policy

The "Clovis and Beyond" conference is expected to bring several of the foremost authorities on the Americas' earliest people and cultures together in Santa Fe, N.M., this fall. Sponsored by the **Center for the Study of the First Americans**, Oregon State University; The Museum of Fine Arts, Santa Fe; the Laboratory of Anthropology of the Museum of New Mexico; and the Smithsonian National Museum of Natural History, the conference will be Oct. 28-31. In addition to presentations by authorities on the Clovis tradition, conference speakers will address other topics including evidence of traditions as old as Clovis and North America's pre-Clovis sites.

The conference, directed toward the interested amateur, will feature the current thinking of many distinguished scientists. Presentations will be slanted to a general audience. Public policy, Native American arts, and Native American technologies have prominent positions on the four-day program.

Opening activities Thursday evening, Oct. 28, will include a Clovis-point knapping demonstration and competition in the courtyard of the Fine Arts Museum by some of North America's most skilled flintknappers. Robson Bonnicksen, Director of the **Center for the Study of the First Americans** and co-organizer of the conference, says that each will be asked to replicate a Clovis point in his or her own way. The flintknappers will be allowed to bring preforms. After an hour their creations will be judged by a panel of archaeologists including Bonnicksen, George Frison, Kenneth Tankersley and other experts on Clovis lithic technology.

An exhibit of Clovis art will be on display at The Museum of Fine Arts. There also will be a benefit auction of fine arts and crafts. Details of how you can be a part of this event as well as details of the entire program will appear in the July **Mammoth Trumpet**.

The conference itself will be in Santa

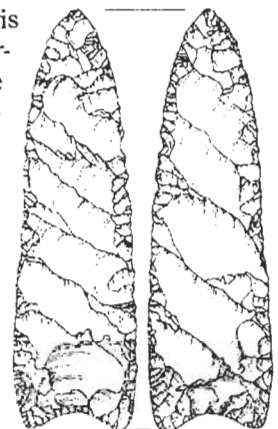
Fe's Sweeney Auditorium, where presentations will begin Friday morning and continue through Saturday. Conference exhibits and sales tables also will be at the Sweeney. Bonnicksen has issued an open invitation for posters and exhibits pertinent to Clovis and pre-Clovis research. Direct proposals for posters or exhibits to "Clovis and Beyond," in care of the **CSFA**.

The exhibits will include a number of renowned Clovis caches; Dr. Bonnicksen believes that these displays, featuring many of the finest Paleoindian creations, are likely to be the most extensive ever gathered under one roof. Conference-goers will also be able to see artifacts from archaeological contexts considerably older than Clovis.

Sunday will be devoted to field trips to notable archaeological sites in the area.

Conference activities Friday will open with an introduction to the "Clovis and Beyond" conference perspective by Bonnicksen and fellow archaeologists Dennis Stanford of

A point from the Fenn Clovis Cache, a Clovis creation that will be displayed at the Santa Fe conference.



FORREST FENN



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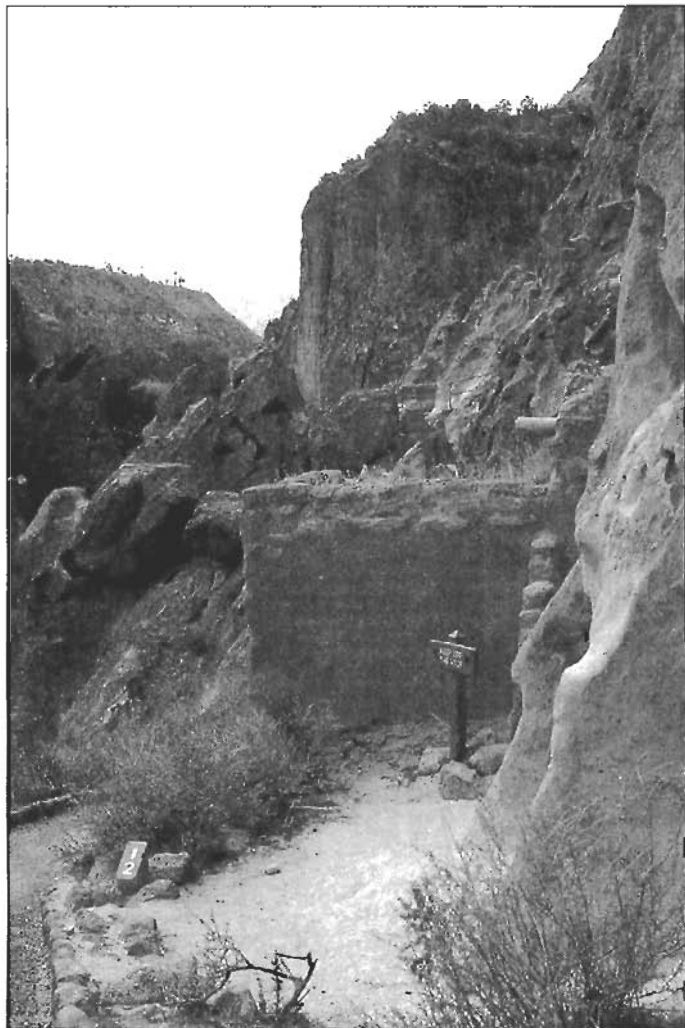
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the Smithsonian Institution and Kenneth Tankersley of Kent State University, and physical anthropologist D. Gentry Steele of Texas A&M University.

Presentations on Clovis east and west of the Mississippi will follow. Though arrangements are still tentative, this part of the program is expected to feature authorities including C. Vance Haynes, Jr., Dennis Stanford, Margaret Jodry, Chris Ellis, David Anderson and Ken Tankersley. Friday morning's session will conclude with a presentation by George Frison on traditions that were contemporary with Clovis, and what is and what is not Clovis in the West. Alan Bryan will present a history on pre-Clovis research.

Friday afternoon's presentations will focus on sites in eastern North America older than Clovis. The likely presenters will include Albert Goodyear. Other presentations will be on evidence of human presence at the margin of the continental glacier in the Great Lakes area by Daniel Fisher. There will also be presentations on mid-continent Pleistocene bone technology with Steve Holen and a review of sites in the Southern Plains and Southwest older than 11,500 years, with Mike Waters.

Saturday's program will continue with archaeology of South



ROBERTA L. HALL

Conference field trips will take visitors to places of interest including Bandelier National Monument with its cliff ruins that date to about 800 years ago.



BOTH: FORREST FENN ARCHIVES




A 19th-century photograph (above) depicts a view of Santa Fe that visitors to the "Clovis and Beyond" conference can experience only in museums and galleries. Santa Fe still features Native American arts as it did at the time of this 1940s scene (left), which shows a woman selling pottery under the portal at the historic Palace of the Governors.

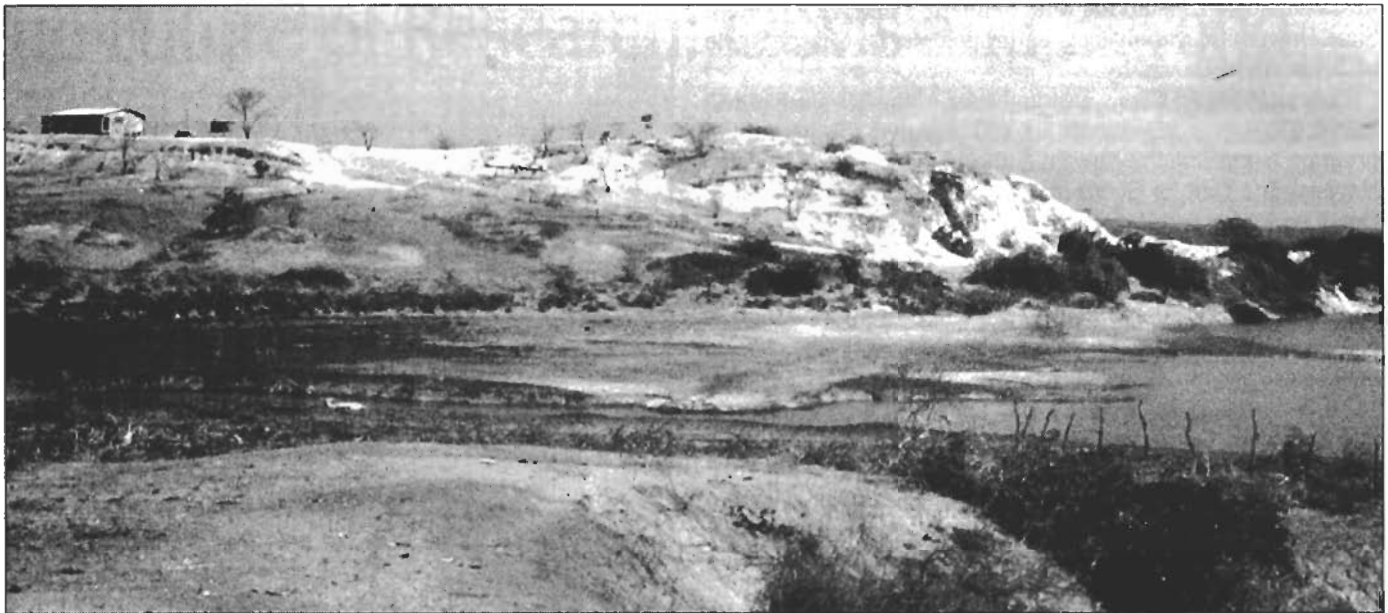
American sites older than 11,500 years with Ruth Gruhn. Then the focus will turn to advances in molecular archaeology and studies using human biology with Gentry Steele moderating presentations on ancient and modern DNA in the peopling of the Americas. Presenters are expected to include Theodore Schurr, Walter Ream, Orin Shanks and Katharine Field. Then Richard Jantz and Douglas Owsley will give a presentation on late-Pleistocene humans of Asia and the Americas.

Late-Pleistocene and early-Holocene skeletal evidence from the Americas will be the subject of Saturday afternoon's presentations by physical anthropologists including Joseph Powell and Gentry Steele.

Much of the afternoon will be devoted to two round-table discussions on the future of research on the peopling of the Americas. The first, on scientific questions, chaired by Dennis Stanford, will feature prominent archaeologists, physical anthropologists, and geneticists. Panelists are expected to include Margaret Jodry, James Adovasio, Alan Bryan, David Meltzer and others. The second, on public policy questions, organized by Jo Ann Harris, will explore perspectives of cultural resource management, Native Americans, professional archaeologists, collectors and amateur archaeologists, and the U.S. Department of Justice. Panelists will include Joe Watkins, Frances P. McManamon, Ken Kentaid, Lois Schiffer, and Alan Schneider.

Throughout the conference there will be displays of artifacts, casts, and posters, as well as sales of books, videos, posters, slide sets, and replicas. 





Rainwater stands in the bed of the normally dry Las Vegas River (above), about one kilometer from site OGSE-80. At the beginning of the Holocene, and in the recent past, the banks of these seasonal rivers supported trees and other vegetation. The river bed, still cultivated today after El Niño rains, apparently was suitable for growing gourds, squash and root crops in Vegas times. Beneath the midden in one part of site 80 (right), roots have penetrated the hard, sterile yellow soil and have left a maze-like pattern of holes filled with midden. In excavating these holes, archaeologists discovered the wall trench of an early Las Vegas circular structure, interpreted as a hut, located near a hearth. The hut was eventually used as a mortuary context.



BOTH: KAREN E. STOTHERT/CAR-UTSA

## Early Ecuador

*continued from page 1*

ment of bones in a bundle found reburied in OGSE-80 provides evidence that Las Vegans shared mortuary practices with people in Panama. The discovery in a Vegas tomb of a polished stone ax, which was probably manufactured in a region of the north coast of Peru located across the Bay of Guayaquil about 300 km away by sea, further supports the hypothesis that they were maritime voyagers.

Radiocarbon dates associated with cultural material in deeper sections of OGSE-80 indicate that people lived

there between 10,840 and 10,100 (uncalibrated) radiocarbon years ago. (When calibrated and expressed as calendar dates, these radiocarbon dates are similar to the calibrated dates reported by Sandweiss, whose Sept. 18, 1998 article in *Science* indicates that early maritime-adapted people were at Quebrada Jaguay, in Peru, between 11,000 and 13,000 calendar years ago.)

Stothert says both radiocarbon and phytolith evidence also shows that Las Vegans were well settled and cultivating early domesticated plants, including gourds, squash, an edible root, and maize on her site between 9,700 and 7,000 years ago. They also had versatile tool kits for a

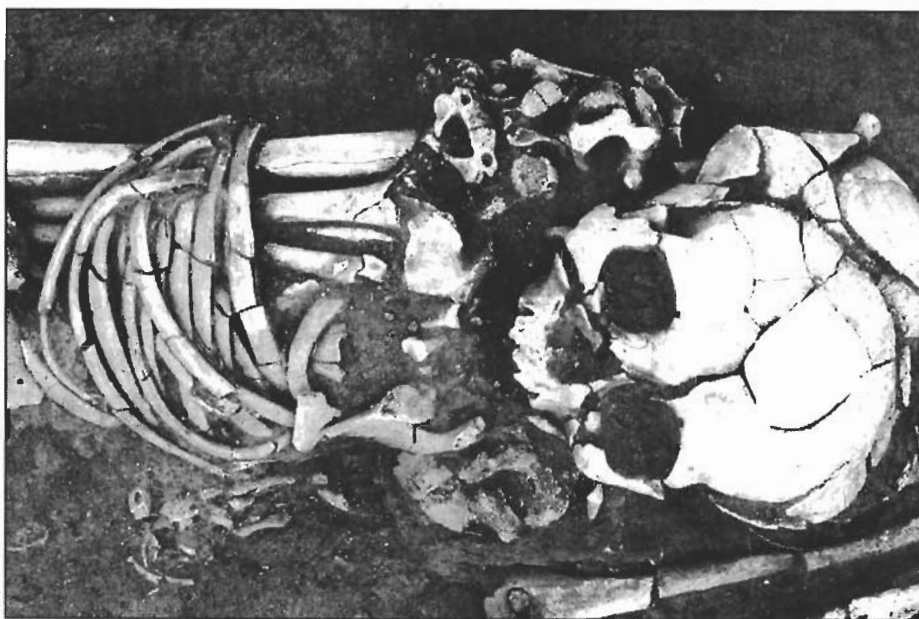
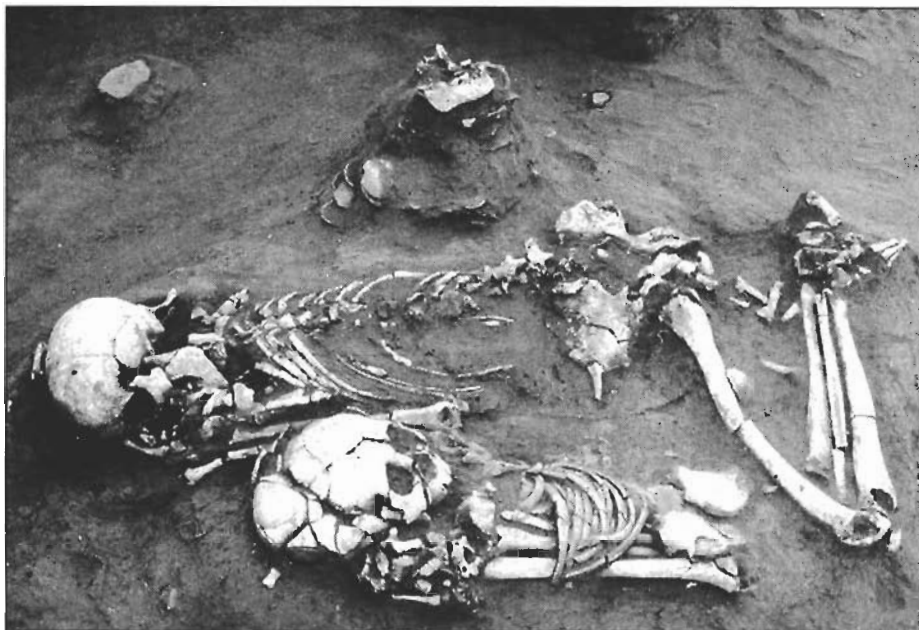
diversified economy in which they hunted deer, small mammals, and birds. Their menu included squirrel, peccary, opossum, frogs, snakes, lizards, and parrots that were hunted on tropical forest margins. From the mangrove swamps and sea they harvested fish and shellfish. Their stone tools included pebble-based pounders and hammerstones, and large quantities of utilized flakes showing no bifacial flaking. Some natural, water-worn quartzite pebbles served as anvils, and others showed evidence of edge grinding—similar to edge wear on tools that were used to process plants elsewhere in the Americas. The only ground-stone ax was recovered in pristine



Balsa rafts (*left*), which are still used by the Santa Elena region's impoverished fishermen, may reflect the kind of crafts used by the earliest inhabitants of site 80, who exploited marine fish early in the Holocene. When excavations began in 1977 (*below*), the site was located on a low hill in a deforested savanna outside of the town of Santa Elena, about 3 kilometers from the Bay of Santa Elena. When sea level was lower in early Holocene times, the site probably was much farther from the sea.



BOTH: MARY E. STOTHES/ESA-UTSA



Burial 3 (top), dating to late in the Las Vegas era, consisted of the articulated skeleton of an adult woman and a secondary burial bundle of the bones of a 14-year-old person. The bundle, shown in detail (center), has a distinctive rectangular shape and the bones are arranged in an unusual manner. Similar neatly arranged bundles of bones occur at Cerro Mangote, an early site in Panama occupied about 6,800 years ago. The group of polished pebbles (right) was found in a circular ossuary containing secondary burials of about 25 individuals. Presumably the marble-like stones were part of the funerary ceremonialism of late Las Vegas people.



condition in the grave of a mature woman. Stothert believes that many of the tools used by Las Vegans may have been made from wood, bamboo, and other fibers, materials that have not been preserved for archaeologists to find.

The Las Vegans were hunters, gatherers and cultivators who had an efficient and economical lithic technology. "They satisfied their need for a cutting edge with locally available chert. Since they were not highly mobile, and did not prey on large animals, they didn't produce a bunch of fancy projectile points. I think they used bamboo and wood for most of their tool kit, but we can't recover those materials." Stothert imagines they had net bags, nets, textiles, bark cloth, and fishing gear, although remnants of these have not been recovered at OGSE-80.

Besides being a rich and productive area for its inhabitants, the region has been a productive research arena for Stothert, who has worked the area yearly since 1977. The preceramic culture was given the name "Las Vegas" (fertile plains, or meadows) because its principal site, discovered by Edward P. Lanning during a survey in 1964, is located near the Las Vegas River. Lanning originally found cultural material exposed on the sparsely vegetated slopes of a low hill outside the town of Santa Elena. The deforested environment is regarded as an anthropogenic desert.

The empty landscape has drastically changed since Stothert began her excavations at site 80. She now conducts research surrounded by an urban neighborhood. Several towns have grown together to form a city of almost 200,000 people with condominiums, restaurants, and a beach resort. As a contractor working for the Anthropology Museum of the Central Bank of Ecuador, Stothert has worked to protect the Vegas site from urban encroachment, from erosion, and from truck drivers who had the habit of parking on the sloping site to drain engine oil!

"I worried in 1978 that another El Niño event would make site 80 disappear, along with the 7,000- to 8,000-year-old cemetery that we found there," Stothert said. But by capitalizing on the presence of the "Lovers of Sumpa," two embracing skeletons found in one grave in the Vegas cemetery, she was able to heighten pub-





lic interest in the site. A project was mounted to protect the entire site and to create a regional museum and cultural center there.

"The Lovers of Sumpa became the Adam and Eve of Ecuador, where people don't object to the display of ancient human remains" says Stothert. "By popularizing the find, we not only told people about their history and helped them celebrate their ethnic identity, we also raised their consciousness about archaeology."

Stothert and her colleagues have examined burials (both primary burials and secondary burials, where bones were reburied without flesh) containing the remains of 192 individuals interred between 8,000 and 6,700 uncalibrated radiocarbon years ago—one of the largest groups of human skeletons of such antiquity in the New World. No burials that date to the early Las Vegas period (before 8,000 years ago) have been found, a fact Stothert finds curious.

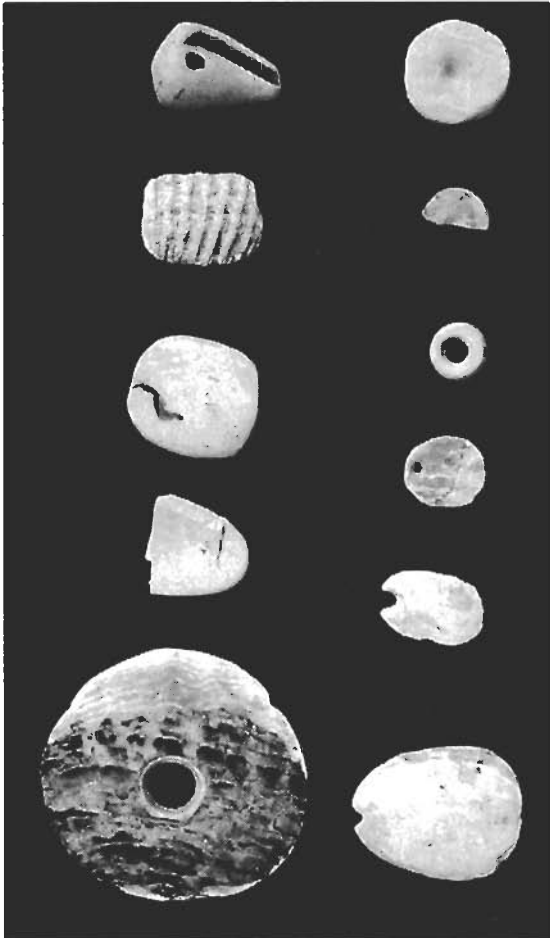
"I have thought a lot about that. Maybe the earlier tombs just aren't preserved." She also speculates: what if it was moister before 8,000 years ago and the skeletons didn't happen to preserve? What if there wasn't much topsoil then and burials were done elsewhere? What if it wasn't the custom of the people to bury their



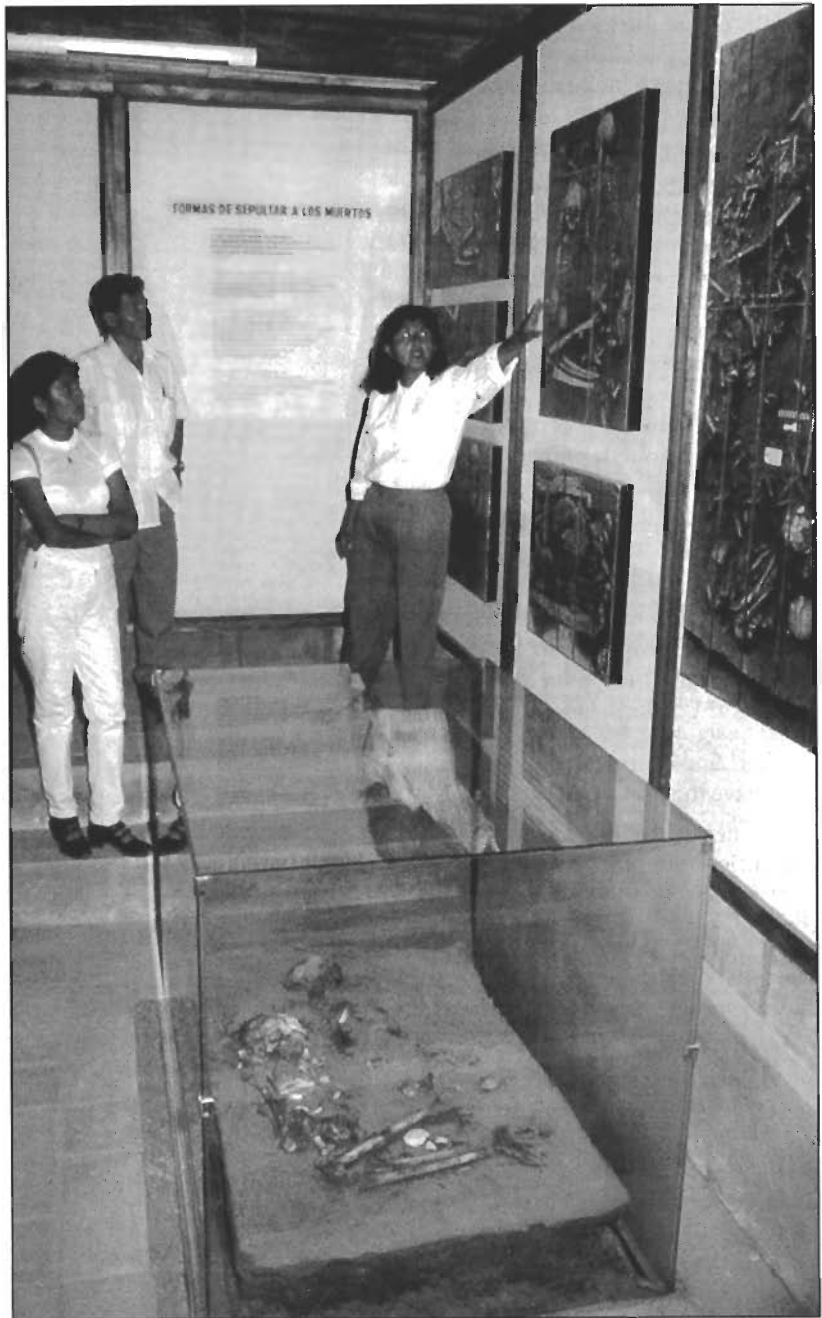
"The Lovers of Sumpa" is the name given to the embracing skeletons (*above*) of a woman and man, both about 21 years old at death, buried together about 7,000 years ago and protected by stones arranged over their graves. Though bones of some of the Las Vegas dead were redeposited in individual bundles, many individuals saw reburial in massive, circular ossuaries (*partially depicted below*). Site 80's 200 human skeletons from the late Las Vegas period provide evidence of a complex funerary program that began with the interment of adult individuals in flexed position in oval-shaped tombs (*left*).







Today, site 80 is protected by this new regional museum and cultural center in an urban neighborhood of the town of Santa Elena, where the Lovers of Sumpa are celebrated, in a display case and in photographs, as an emblem of the ancient heritage. That heritage also includes a variety of small ornaments and objects Las Vegas people made from shell, above, and funerary offerings that included shell dishes or scoops (*below right*) made from large sea shells (*Malea ringens*). Some such shell offerings were placed over joints of the skeletons, and some contained red pigment.



dead under houses at the site until after 8,000 years ago? Perhaps there was a shift from isolated burials to a communal ancestor worship after 8,000 years ago. She observed that there are Amazon peoples who indulge in ritual "endocannibalism," grinding the bones of their ancestors into a powder they mix in their drinks. Some of the secondary Las Vegas burials suggest the ritual manipulation of bones.

Perhaps such a shift to a cult of ancestor worship coincided with the move from a primary focus on hunting and gathering toward a labor-intensive and more sedentary life of cultivating crops, which Stothert says is suggested by the plant record from the site. She imagines that people found it benefi-



cial to elaborate the worship of their ancestors because that ritual activity gave them a chance to reaffirm their family bonds, which may have helped them to engage in cooperative labor activities.

Although Stothert and her colleagues have analyzed the Las Vegas skeletal remains, she says that comparative studies to determine the likely origins of these people are lacking. Stothert says there are no known skeletal data from ancient peoples of the Ecuadorian highlands to use for comparison. Christy G. Turner, Arizona State University physical anthropologist, has made a general analysis of teeth that suggests the Las Vegans, like other early Americans, derived from Asiatic populations.

The human remains from site 80 show that the people were well fed and relatively free of disease. In the period after 8,000 years ago they lavished considerable effort in making burials and in providing the dead with offerings that are evidence of their religious life. In a paper published in 1985 in *American Antiquity*, Stothert described how some of the dead were buried with "neatly rectangular secondary bone bundles, two containing defleshed bones and one containing cremated bones; shell spoons; perforated conch shells; a polished stone ax head; a compact pile of soft limestone balls or marbles; traces of red pigment; cobble and cobble percussor; flat pebbles, round in outline; small white pebbles; groups of mollusk shells, sometimes forming a pillow or nest for the deceased; and lithic flakes." Some of these objects, such as carefully selected and aesthetically pleasing pebbles, are similar to so-called "shaman's stones" and other paraphernalia (such as red body paint). Similarly, the use of heavy stones on top of tombs is a feature characteristic of mortuary practices observed in some Native American groups in the historic period.

One of the Las Vegas burials provided some insights into intertribal contact along the coast. Stothert noted that one of the neatly arranged bone bundles was similar to those found at Cerro Mangote in Panama. "The form of bundle was sufficiently complex and specific that it was not likely to have been invented by both groups independently," she wrote. "Hence it provides evidence for the relationship between the peoples who lived at



Conch shells (*Melongena patula*) may have been intentionally broken for use as hand-held digging tools (above), perhaps in ceremonial contexts; these were found in pits that also contained several human bones. Conch shells were also perforated and hafted for use as digging tools (below). Such tools were found in various Las Vegas contexts.



BOTH: KAREN E. STOTHERT/CAR-UTSA

the two sites. The date from the midden at Cerro Mangote was 6,800 B.P., just overlapping the youngest Vegas dates."

While Stothert is writing a book on her research, she and other researchers continue scrutinizing the extensive amounts of material recovered from excavating the Las Vegas cultural complex. A variety of other collected artifacts continually sheds light on the Las Vegas culture. Additional artifacts include mollusk-shell

dishes, beads, and small closed containers of the kind manufactured much later and used in drug rituals. Las Vegas people also may have used small conches and univalves as whistles and trumpets, says Stothert, and some shells also may have been hafted for use as digging tools.

Quantities of red and yellow ocher also were processed at the site, indicating that Las Vegans may have painted their bodies, baskets and mats.



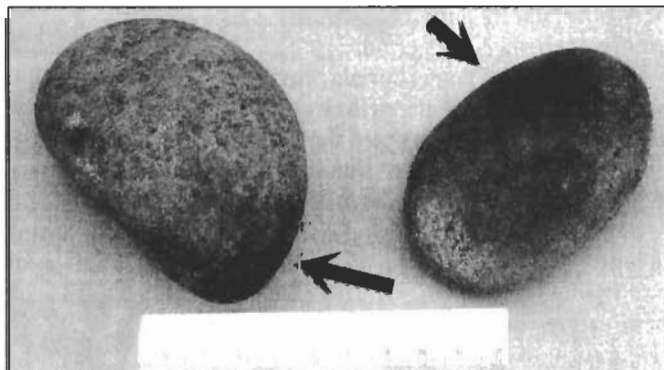
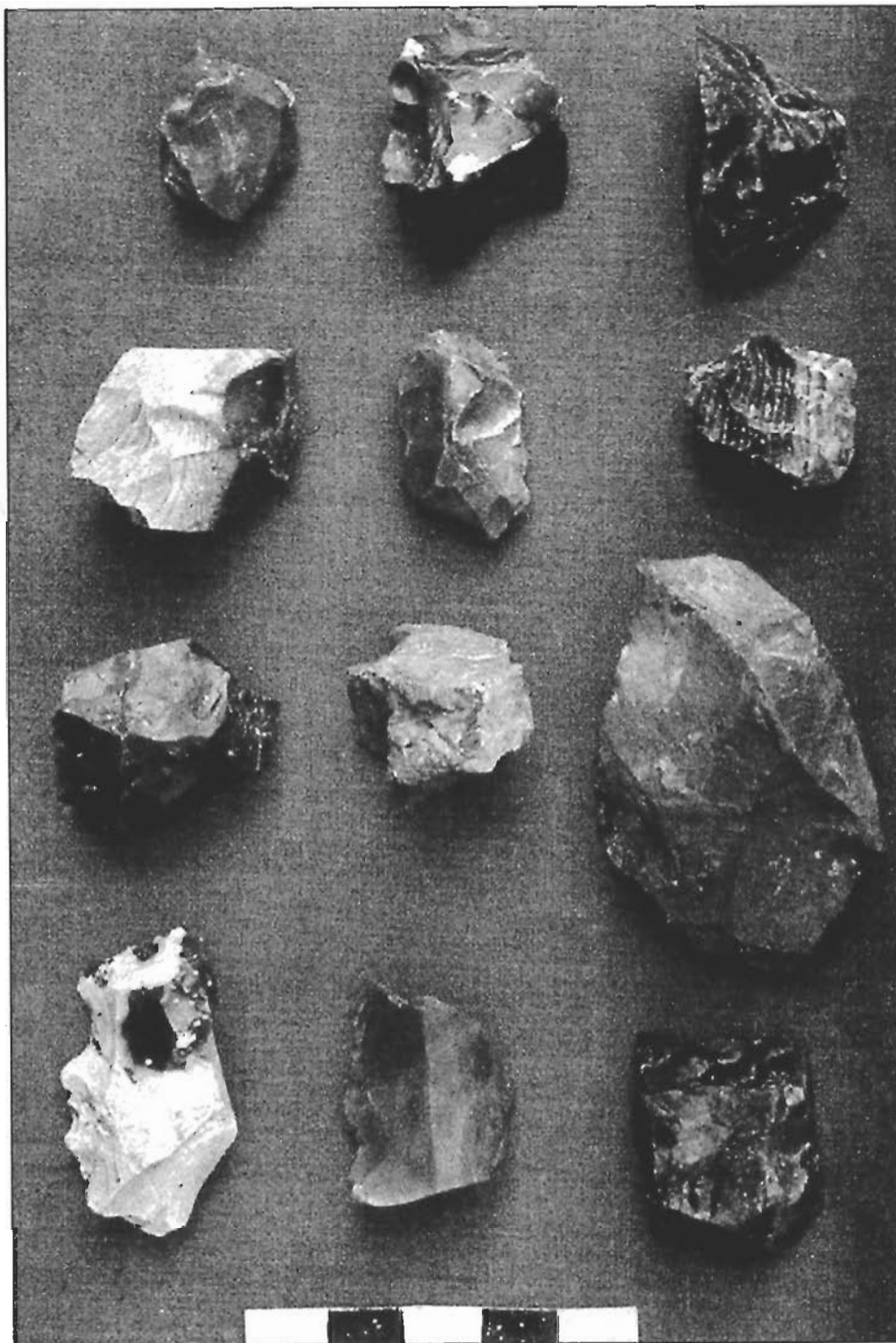
One of the most surprising finds came recently when a conservator from Paris, working in the exhibit in the Museum in Santa Elena (opened in 1997), began cleaning the "Lovers of Sumpa" and discovered textile impressions in the surface of their bones.

"I've been looking at those bones for 20 years and didn't see the impressions," Stothert said. She plans to examine the evidence more intently this year, applying dental impression material to the bones to see if she can get a positive impression of the textile marks and possibly determine what type of textiles the Las Vegas made, and what they made it from. She plans no further site excavations unless continued development or erosion threatens the complex. More than enough material has been recovered to provide researchers with years of work, and she hopes to get graduate students interested in using new methodologies to reinterpret the lithics.

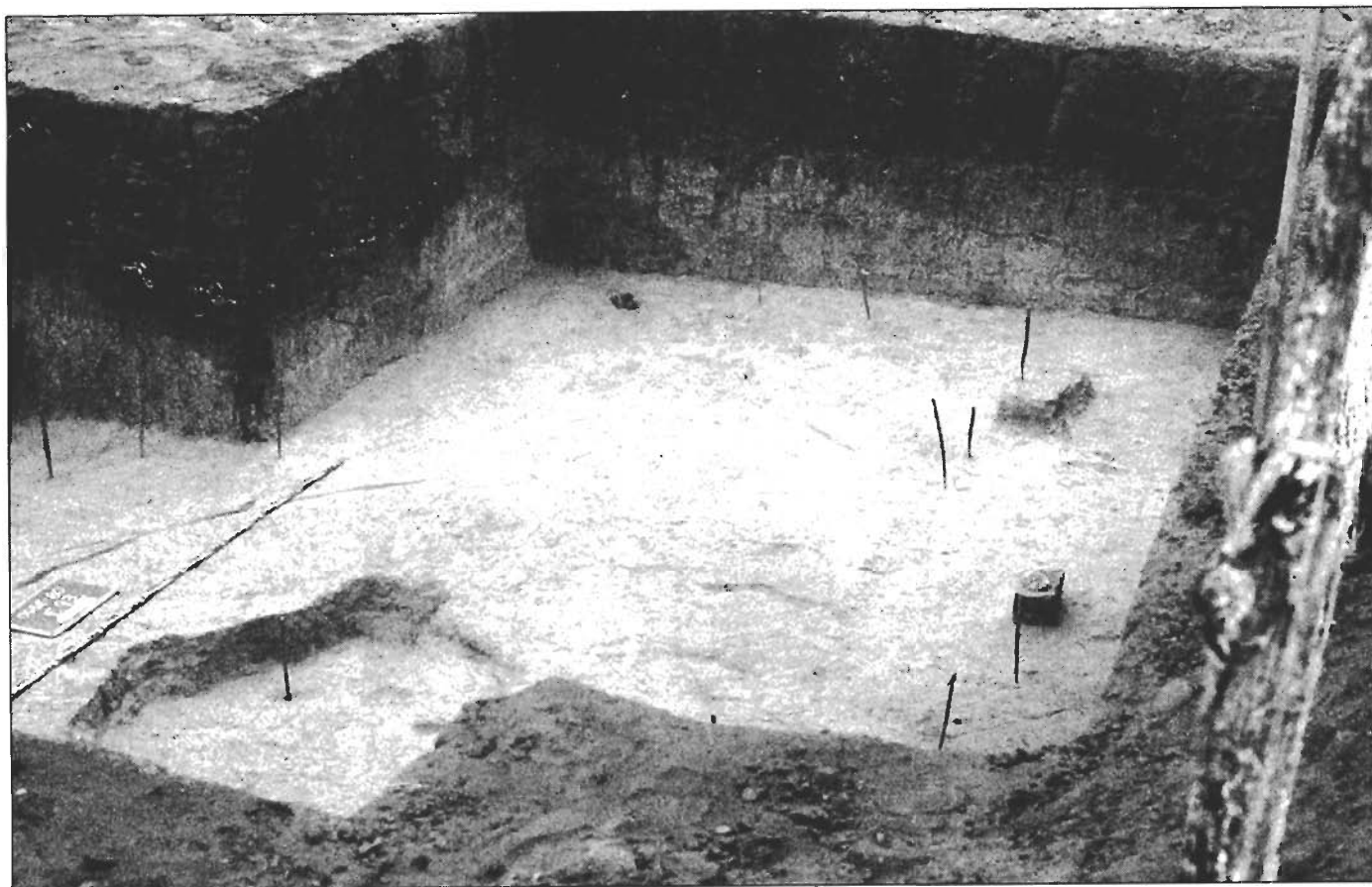
"What we found was mostly chip-

A selection of technologically simple Las Vegas chert artifacts (*right*) includes steeply retouched flakes and reduced core fragments.

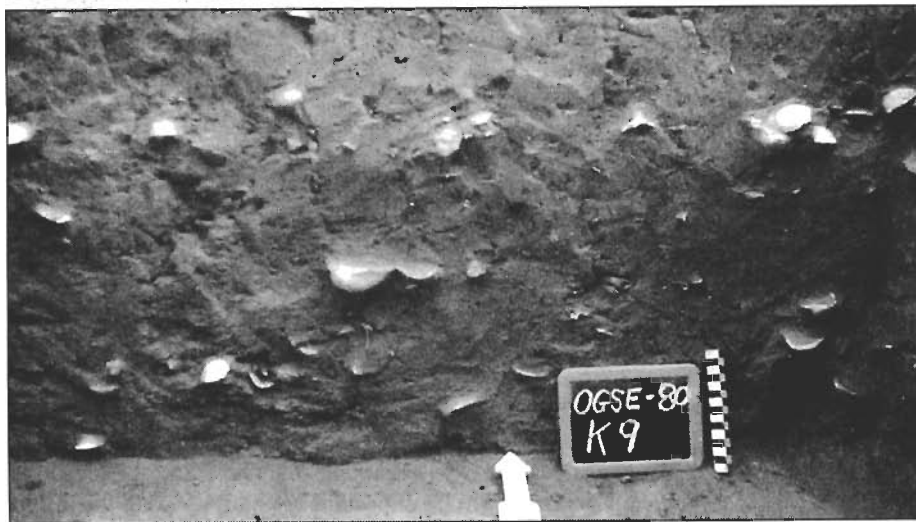
The best-quality chert occurs in small, water-worn pebbles found in dry stream beds in the Santa Elena region. Las Vegas lithic tools also include quartzite cobbles (*below left*). These are (*l-r*) an edge-ground cobble from a deep context in the site 80 midden, a cobble with a flattened and battered point, and a split cobble with a ground edge; all have edge wear. Two cobbles (*below right*) show well-preserved stains of red ocher (arrows).







BOTH: KAREN E. STOTHER/CAR-UTSA




This excavation picture of site 80 (above) reveals the extensive dark-colored midden in its sidewalls. Beneath is yellow soil, which was found to contain charcoal and shell dating to the late Pleistocene in association with a few tiny non-diagnostic artifacts and ecofacts. The site's dark-colored midden (left), up to 100 centimeters in depth, contained evidence of subsistence activities of the early and late Las Vegas people (from about 9,500 to 7,000 radiocarbon years ago). Those activities included hunting, fishing, shell fishing and plant use.

ping debris. The density of retouched artifacts or intentionally shaped stone tools was very low." But she hopes that revisiting those tools with fresh insights and new methods might produce new information on the culture.

Taken by itself, research on the Las Vegas complex provides a unique view of the area's early inhabitants and how they lived. When linked to research on other South American coastal sites, the resulting pattern of ancient coastal adap-

tations is stimulating renewed interest in searching for sites to support the idea that the early inhabitants of America dispersed along coastal routes, and that entry into the New World by sea is a viable alternative to the long-accepted theory that terrestrially adapted people walked into the New World across the Bering Land Bridge no earlier than 11,500 years ago (**Mammoth Trumpet** 14:1 "Charting the Way into the Americas," and 13:3, "Coastal-Entry Model Gains Sup-

port as Ice-free Corridor Theory Fades").

Although she is reluctant to speculate on precisely where archaeologists might look for evidence of the earliest human occupation of the coast, Stothert said the tectonically active South American coast offers great promise for such sites—particularly in areas where the continental shelf is very narrow, or where tectonic uplift may have kept pace with the post-glacial rise in sea levels. 

—George Wisner





PORT ARTHUR NEWS

*Amateur archaeologists have had enormous impact on what we know about the past. Although the earliest archaeologists were all amateurs, the discipline now is a part of academia and is dominated by professionals. Except for the labor they often furnish at professional excavations, the work of amateurs is too often overlooked. Thus it is with pleasure that we feature in this issue the accomplishments of some dedicated amateurs who are advancing scientific knowledge.*

Kathy Wheat, curator of the Museum of the Gulf Coast, presents Paul Tanner of Port Arthur, Texas, a Distinguished Service Award from the Texas Archeological Society for his outstanding work on mapping and cataloging finds at the McFaddin Beach area.

# Amateur Scientist Paul Tanner Helps Preserve Texas Prehistory

**A**N AMATEUR whose record keeping made him an expert on the McFaddin Beach site in Texas has been honored by the Texas Archeological Society for his long dedication to science. The society presented Paul Tanner, a longtime resident of Port Arthur, with its Distinguished Service award. (McFaddin Beach was featured in last October's **Mammoth Trumpet**, "Clovis Site on the Gulf Coast Yields Booty Only to Waves.")

Among those nominating Tanner for the award were Ellen Sue Turner of San Antonio and Melanie Stright of Sterling, Va. Both praised his many years of dedication toward keeping records on artifacts found on McFaddin Beach, which is southwest of Port Arthur between the town of High Island and Sabine Pass, at the Louisiana line. Tanner, a retired refinery foreman,

started walking the 24-mile beach in search of artifacts and fossils in 1983.

Rather than merely collect artifacts that occasionally wash in from offshore Clovis sites, he kept careful records of his finds. "Tanner knew from the beginning that recording the locations of each artifact might be important in understanding the origin of the artifacts," said Stright, who is completing a doctoral dissertation on the site. "Paul persuaded other collectors to begin keeping detailed maps, recording the date and description of each find, and sequentially numbering their artifacts so they could be cross-referenced to their maps and log books."

Ultimately, Tanner made local arrangements for a 1991 conference in Port Arthur on the site, which was attended by many Texas archaeologists, professional and amateur. "The collectors turned out in droves, making all their information available," said Turner, whose paper, "The McFaddin Beach Site on the Upper Texas Coast," co-authored by Tanner, appeared in the *Bulletin of the Texas Archeological Society* in 1994. She has been working with Tanner since 1989.

*Editor's note:* There are two ways of spelling the name of the Paleoindian site on the Texas Gulf Coast, and in **Mammoth Trumpet** 13:4 we chose the incorrect one. McFaddin Beach is correct.



McFaddin Beach was the location of Texas Highway 87, the coastal route between Galveston and Port Arthur, but the route, pictured here in the 1980s, has yielded to erosion and it no longer exists.

"Paul and some of these collectors have kept amazingly detailed records of each find and they have shared this information willingly," said Turner. More than 100 Paleoindian artifacts from the McFaddin Beach area were available at the Port Arthur conference. Most remain in private collections.

"It was Paul Tanner who contacted all the collectors," said Turner. "Paul encourages every beach collector that he meets to number their artifacts, keep a log book with dates, and plot their finds on some sort of map." She said that Tanner has done so himself for years. "His meticulous records and access to collections



Paul Tanner

have furnished Melanie Stright with data necessary to write a doctoral dissertation on McFaddin Beach," she said. She went on to say that he sends copies of artifact information to professionals at the Texas Archeological Research Laboratory at Austin, at Southern Methodist University, and at the Smithsonian Institution.

"I have never known a more dedicated and serious conservator of the past," said Turner. "Avocational archaeologists have so very much to offer," she told the **Mammoth Trumpet**, "and many of them are turned off by professionals who cannot or will not take the

time to answer their letters." She says that the professional archaeologists' indifference to serious avocationalists is one of the reasons so much material is being lost to collectors. Stright agrees and praises the diligence of McFaddin Beach artifact collectors.

"Little did these collectors realize," said Stright, "that had it not been for their many years of diligent effort, and walking literally thousands of miles searching the beach day after day, there would have been no data from McFaddin Beach on which to conduct a systematic archaeological study." She says that five collectors have picked up a total of 892 artifacts ranging in age from Clovis spear points to historic-era arrow points and pottery.

Stright, who is with the federal Mineral Management Service, said that the agency is studying McFaddin Beach, which she described as one of the most rapidly eroding coastlines in the United States. "As the position of the shoreline moves landward, archaeological sites are being destroyed," said Stright, "and the durable stone and bone artifacts are being scattered along the present beach." Thus, all artifacts that are collected are from secondary contexts.

Stright said the artifacts have been individually photographed to create a permanent archival record of the collection. "A database was created with detailed information about each artifact," she said. "The information recorded will be useful both in gaining insights into the prehis-

## SUGGESTED READINGS

### ON Early Ecuador People

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### ON McFaddin Beach's Amateur Scientists

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toric people who manufactured and used the artifacts and in understanding the manner in which the artifacts were redistributed by erosion and wave action." She said they are to be entered into a computerized geographic information system that will allow patterned searches to be conducted among various attributes of artifacts and between artifacts and paleogeography of the McFaddin Beach area. 

On the first day of the dig in August, 1992, Mike Full stands on a platform anchored to the bank of the Yamhill River as he excavates a mammoth scapula. The ladder in the river marks a mammoth rib protruding from the bank, and indicates the general limits of that first summer's dig.



## Amateur Paleontologist Uncovers Oregon Mammoths



In the riverbank excavation, Full works in blue, clay-like silty sand. Mammoth remains came from the blue matrix although some bones projected up into sandy gravel above.

### *Schoolboy's Discovery of Tooth Leads to Life-long Fascination*

**I**T WAS LATE SUMMER and the water level on Oregon's Yamhill River was at its lowest point when 12-year-old Mike Full picked up a rock to throw. Something about it caught his eye; so instead of pitching it into the clear, greenish water he placed it in the bottom of the boat that he and his cousin were rowing. The next year on a school trip to the Oregon Museum of Science and Industry he saw a mammoth tooth on display and suddenly he knew what the "rock" he brought home from the Yamhill River really was.

That's how his fascination with paleontology and archaeology began for Full, now a 46-year-old police sergeant in McMinnville, Ore. Since 1987 he and his friend Marvin Reken have been scouring the Yamhill River for mammoth artifacts. So far they have found four vertebrae, four ribs, two scapula, two teeth, a tusk, a tusk socket, a mandible and parts of a skull plate from what they are calling the McMinnville Mammoth.

Full says he is intrigued by the paleontology of what went on thousands of years ago in the Willamette Valley where he grew up. It is "right under our noses. All we have to do is study it."

When he went to college he even thought of becoming a paleontologist but concluded that the field was saturated and paying career jobs were scarce. Also, he says, "back then no one was studying Paleoindians" (which he was also interested in). "There wasn't much of a fascination for it."

The site is on McMinnville city property in the side of the riverbank about three feet above the summer water level and is fairly difficult to reach, thus making it relatively secure from vandals. In fact, until a couple of years ago, Full and Reken spent six hours rowing a boat five miles just to get to the area where the bones are located. "Rowing takes you along the river so slowly and disturbs so little that you can see deeper into the



water for fossils that are on the bottom and it takes you past the banks so slowly that you can look for fossils," says Full. Two years ago they began using a small motor on the boat and have recently developed a closer overland access.

In addition to fossil bones, the Yamhill River contains salmon and steelhead and bass, so fossil hunting sometimes gets edged out by fishing, Full says. Summer's low water levels make July and August the prime fossil-hunting months. The general vicinity of the site contains a variety of fossils and the remains of more than one mammoth. At various spots along the river they've found bones of ancient bison, horse, deer, elk, rodents, mammoth and mastodon. They now have a total of four mammoth teeth. Based upon the variation in the dentition, Full thinks that they may come from as many as three different mammoths.

In 1994 Full and Reken contacted Robson Bonnicksen, CSFA Director and Oregon State University archaeology professor, who visited the site and answered some of their questions. In the fall of 1998 Bonnicksen brought some archaeology students to work the mammoth site on weekends. The soil studies and the layout and referencing done by the students have been especially helpful, said Full.

Full and Reken have done some cursory scuba diving in bends in the river both above and below the mammoth site and have come up with parts of a skull, tusk, and femur from a very large mammoth, a different animal from the mammoth they are excavating. They plan to try and trace these lightly river-worn pieces back upstream and find where that mammoth is eroding into the river. So far, in tracing upstream they've come upon the stubs of two very large tusks that may be as much as 9 or 10 inches in diameter. By way of comparison, the tusk from the mammoth they are excavating is four feet long and only about four inches in diameter. Scuba diving in the river looking for specimens is a continuing project they expect to be carried out over the next few years along with the original excavation.

The three- to four-inch-thick mandible of the McMinnville Mammoth is broken on both sides. Dr. Bonnicksen alerted Full and Reken to be aware of the possibility that this could have been caused by ancient humans working to extract the tongue for food. No butcher marks have been found so far, but Full says they are now on the lookout for them.

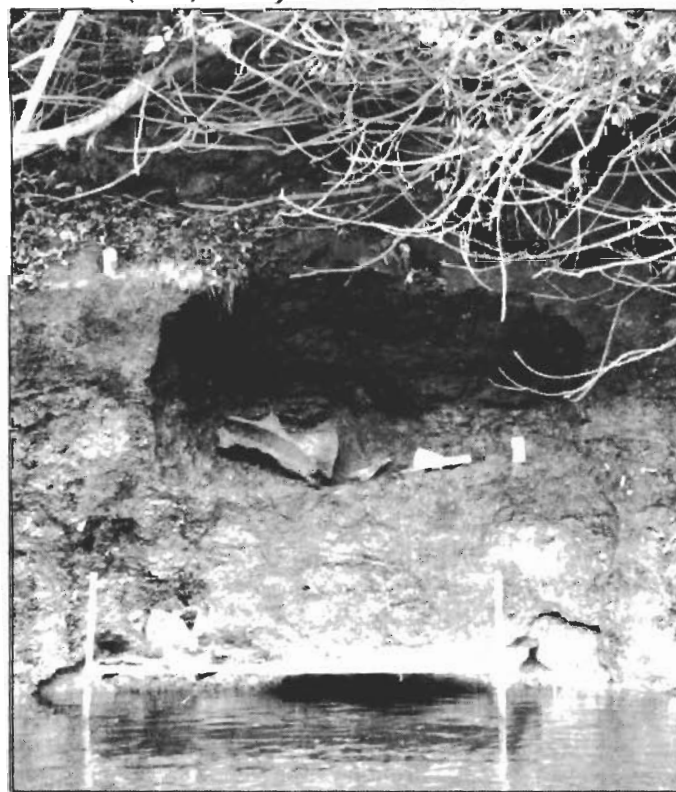
Although Full's paid police job takes up most of his time, he has dedicated a significant part of his free time and resources towards looking for mammoths. Inside the pole barn behind his country home he has built a large concrete vault with eight-inch-thick walls that he uses as a climate-controlled environment for storing the mammoth bones and other specimens that he has found. Specimens stay at a constant temperature and humidity so that they don't dry out or fall apart. For security, he uses the door from an old Mosler safe as the door of the vault. It's also reinforced with rebar, so, Full jokes, "if you want into it, you had better bring your bulldozer."

Preservation of the tusks is another step that Full and Reken have taken. Initially the tusks were placed in a children's wading pool full of water so that they wouldn't dry out and crack. Then they were soaked in a thin mixture of acetone and polyurethane plastic. The plastic takes the place of the water and stabilizes the fossil. The process can take months before it's complete.



MIKE AND KAY FULL

Two mammoth ribs and a tusk socket (above) immediately after being removed from the riverbank site in 1992. At the end of the first day's excavation, the right scapula of a mammoth (below) is ready to be collected.



MIKE AND KAY FULL



# Friends Join in Search for Relics of Pleistocene

**M**ARVIN REKEN is a 32-year-old co-owner of a dry-cleaning business with an interest in science that led him to take classes in archaeology and geology at the local community college. He heard that Mike Full had been hunting for fossils for a number of years along the Yamhill River and was happy to join him in the hunt starting in 1987. Reken spent the summers of 1996 and 1997 working for the National Park Service in Alaska as an archaeological aide, excavating and mapping house pits. When he picks up a bone, Reken says he begins to speculate about how it got where it is and wonders how the animal died.

Reken and Full initially contacted geologist Robert Linder and paleontologist William Orr at the University of Oregon. Both professors came out to the site, identified some of the bones, and said that the mammoth dated roughly to the late Pleistocene, at least 12,000 years ago.

When CSFA Director Robson Bonnicksen's First Americans Studies class at Oregon State University came to help excavate the McMinnville Mammoth in the fall of 1998, Reken said that he really learned a great deal from them. They learned the importance of photographing each specimen in situ from various angles before removing it from the earth, so that they have a visual record of how the artifacts relate to each other in the substrate in which they were found.

How to keep a written record noting specimen locations, height of the river water, and other details was another topic that Reken and Full learned about while working with Dr. Bonnicksen. They also began observing more closely the type of soil in which each bone specimen was found.

Their main mammoth site is located along the riverbank in

a layer of sticky, blue silty sand and sits about three feet above the summertime water level. Other bone specimens have been found within four miles both up and downriver from the main mammoth site. Some were found on gravel bars and had most likely been washed out of the riverbank. Other specimens have been found on the river bottom. Reken and Full now know what soil type is likely to hold buried paleontological remains and can more efficiently direct their attention there.




Roger McGilvray, who frequently helped Full and Reken at the McMinnville mammoth site, watches Full digging into the bank. The overhang above proved a difficult hazard.

OSU students working at the site last fall impressed Reken with their precise measurements. They placed a six-foot pipe in the ground near the riverbank as a datum point on which all site measurements were based. Measurements themselves were taken with a global positioning system instrument. Reken says with a laugh, "It's getting more complicated now; it's getting over our heads . . . it's eye-opening and educational."

—Carol Ann Lysek

McMinnville's city manager has been very supportive of the excavation. Full hopes to be able to improve access to the excavation site later this year by using a bulldozer to put in a trail to the site. He also hopes to be able to borrow some heavy equipment that would allow him to take some of the overburden off the site and make it safer to excavate. He was partially buried once when part of the overburden collapsed on him.

Full says he is happy to have the expert help provided by Bonnicksen and OSU archaeology students, and he is pleased to do whatever he can to facilitate further study of the McMinnville Mammoth. "I got the biggest kick out of just affording them the opportunity to learn something and make discoveries down there," said Full. 

—Carol Ann Lysek

Kay Full, Mike's wife, on the river bank in 1995. She often accompanied Mike to the site and on scouting trips along the Yamhill River.



MIKE AND KAY FULL

**B**ASED ON THEIR MITOCHONDRIAL DNA (mtDNA) studies of 145 Chukchi and Siberian Eskimo people, aboriginal groups of Chukotka, five genetics researchers have suggested that the first Americans probably were in Beringia approximately 34,000 years ago. In an article published in *American Journal of Human Genetics* (vol. 63, pp. 1473–91, 1998), they report that their analysis of the amount and form of diversity in their subjects' mtDNA, when subjected to genetic sequence analysis and assumptions about how long it takes for the amount of observed diversity to be developed, leads them to the conclusion that the ancestors of their subjects were in Beringia far earlier than the oldest archaeological evidence.

Separate research published in another issue of the same journal (*American Journal of Human Genetics*; vol. 63, pp. 1852–61) proposes that a puzzling genetic marker—known in the literature as “haplogroup X,” found in a few Native Americans as well as in European samples—indicates an ancient link between Paleoindians and Europeans. The authors theorize that haplogroup X originated in Western Asia 30,000 years ago and spread at low frequency west into Europe and across Asia.

In the first paper, researchers Yelena B. Starikovskaya and Rem I. Sukernik of the Russian Academy of Sciences in Novosibirsk, Theodore G. Schurr, Andreas M. Kogelnik and Douglas C. Wallace of Emory University, propose a dual origin for Paleoindians. Among their sample of 145 Chukotka people, 140 individuals carry haplogroups A, C, and D, which are all known in Native American populations in the Americas, but the other five are characterized as G, which is predominant in some Kamchatkan populations and is not known in the Americas. The researchers compared their new data from Arctic peoples with earlier analyses of North American samples. Their results indicate at least as great an amount of diversity in the American populations as in the Siberians. This suggested that ancestors of the present-day American populations had left the far north possibly as long as 35,000 years ago. The absence in the Chukotkan samples of haplogroup B, which is common to Native American populations in southern parts of North America as well as in Central America and northern portions of South America, suggested to them that B came to the Americas in a separate founding

population. And since haplogroup B shows less diversity than the other three haplogroups—technically, lower percentages of sequence divergence—it implies that the populations carrying it had a more recent arrival in the Americas than did populations carrying A, C, and D.

While this article builds on work done by the Emory team over the past decade it is unusual in hypothesizing links between

populations identified through their haplogroups and populations defined by tool technologies. Here, the researchers hypothesized that one ancestral population from Beringia, carrying haplogroups A, C and D, first migrated into the Americas about 35,000 years ago, through the Alberta corridor, and their descendants are those known in the Amazon basin about 16,000 years ago as well as in southern Chile 13,500 years ago. They think that the population bearing haplogroup B, by contrast, could have been associated with the Clovis culture and its rapid spread about 11,000 years ago. Alternatively, the researchers suggest that haplogroup B could have been associated with a coastal migration

occurring after the initial settlement by people with haplogroups A, C, and D. The researchers did not suggest another alternative that might occur to many archaeologists: that the coastal migration occurred first (by people carrying A, C, and D), and the later migration (of Clovis or others) came by way of an inland route and brought haplogroup B. An additional point that gives a slightly different twist to some of the scenarios about the settlement of the Americas is that this group of researchers sees Na-Dene populations as remnants of the original Beringia population who stayed in the far north, and then at a later time moved into the Americas.

The second paper, “mtDNA Haplogroup X: An Ancient Link between Europe/Western Asia and North America?,” also has a core group of authors from Emory University (Michael D. Brown, Seyed H. Hosseini, Jon C. Allen, Theodore G. Schurr,

and Douglas C. Wallace) as well as investigators affiliated with the Department of Genetics of the University of Rome (Antonio Torroni, Rosaria Scozzari, and Fulvio Cruciana), and with the Mathematics Seminar of the University of Hamburg (Hans-Jürgen Bandelt). Their research presents a detailed analysis of some genetic characteristics of 22 “putative Native American

*continued on page 20*

# Genetic Research Suggests People Were in Beringia by 34,000 B.P.

## Second Study Links Ancient Eurasians With Paleoindians

*Studies of Arctic and North American  
peoples suggest that ancestors of today's  
Native Americans left the far north  
as long as 35,000 years ago.*

## New Books

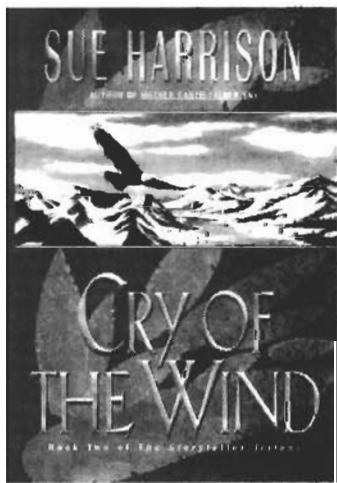
*Proceedings of the 1993 Bone Modification Conference*, Hot Springs, South Dakota. Occasional Publication No. 1, Archaeology Laboratory, Augustana College, Sioux Falls, S.D. 276 pages. 1997. \$20 plus \$3.50 postage (softcover). Available from the publisher at 2032 S. Grange Ave., Sioux Falls, SD 57105.

This volume contains 19 papers covering fabrication techniques; bone modification as an indicator of changing human diets; biological, chemical and mechanical alteration of bone; human cultural modifications as taphonomic indicators; nonhuman mammalian bone modification; patterns of antler and bone modification as human cultural indicators; and bone replication studies to test wear patterns in archaeological specimens. Contributors are from South America, Europe, the Middle East, Mexico and the United States and include Susanne J. Miller, Adrien Hannus, George Frison, Joaquin Arroyo-Cabral, Eileen Johnson, Marylene Patou-Mathias, Hugo Nami, Vivian Scheinsohn, Dixie Lee West, Larry D. Martin, Maria Gutierrez, Gustavo Politis, Lawrence Todd, Matthew Hill, Karel Valoch, and several others.

*Cry of the Wind*, by Sue Harrison. Avon Books, 1998. 448 9¼ x 5¾-inch pages, with glossary of Native American words, and pharmacognosia. \$24 (hardcover).

Scientists who investigate the peopling of the Americas could do worse than regard Paleo-Americans the way novelist Sue Harrison sees them—complicated individualistic people living in highly complex village groups. This is Harrison's fifth book, the second in a second trilogy of novels following many generations of people along the south coast and interior of Beringia. Possibly they could be part of a migratory "wave" of humanity moving from Siberia into the Americas, but migration is the farthest thing from their minds. Family life as well as interpersonal and intervillage relationships are all-consuming preoccupations for them.

This novel, set about 8,400 years ago, suggests certain factual material—microblade technology, for example, because some of her people have adopted bows and arrows, much to the detriment of others who did not. However, Harrison doesn't let technicalities get in the way of telling her stories, in spite of the fact that she has carefully studied the archaeology and anthropology of the region. The author (MT 10:1 "The Novel Approach") presents geneticists a formidable challenge by suggesting incredibly complex kinships and genealogies for Paleo-Americans. Her many characters are people the reader can relate to; she has a knack of making her villains as realistic



## Communication

### Experiments Confirm Likely Usage of Murray Springs Bone Tool

In reply to Dr. Louise Heite's proposal ("Communication: Spear Straightener or Spinning Tool?" *Mammoth Trumpet* 13:3): One of the best things about reconstructive archaeology, perhaps its main purpose, is that one can sometimes get into the minds (and hands, as it were) of ancient people and, through the making of real tools—weapons and the like—can sometimes even discover the probable uses of problematic objects.


During the 15 years that I was privileged to work with middle school students on their projects in experimental and reconstructive archaeology, we made and tried out several shaft straighteners similar to the Murray Springs tool. Not having a ready supply of mammoth bones at hand, we were forced to utilize other materials such as segments of the beams of large elk antlers. It is from this admittedly limited background that I venture onto the printed page to offer some limited observations about the possibility the Murray Springs artifact may have been part of a spinning tool.

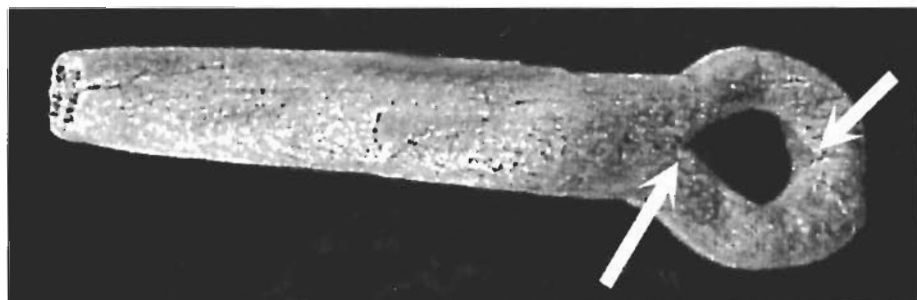
Dr. Heite probably is generally correct in her statement that straight spear-shaft saplings are not difficult to find "where forests grow naturally" (though I did find them extremely scarce in Siberia's Altai region). When we started constructing atlatl spears here in Wyoming we at first thought they were very hard to find indeed, but as we became more observant of species and habitats, we soon discovered that there were locations where relatively straight shafts could be found, but not in great abundance (only one sapling in hundreds would be the right size and sufficiently straight to work with).

Interestingly enough, we determined over time that the most suitable provider of shafts was the water birch or "red

as one's most vexatious coworkers, but as understandable as one's own darkest thoughts, and also capable of doing good at times. Her heroines and heroes are prone to tragic blunders and capable of both great cowardice and great bravery. The people who left the artifacts archaeologists study may well have been like Sue Harrison's characters.

*Anooka's Answer*, by Marjorie Cowley. Clarion Books, 1998. 152 8¼ x 5-inch pages. \$15 (hardcover).

This story of a young girl nearing adulthood in Europe about 12,000 years ago should be ideal for introducing a girl or boy to archaeology or prehistory. Like the characters in Sue Harrison's adult novels, Anooka faces problems and situations that are familiar to today's readers. Marjorie Cowley has a great deal of experience teaching prehistoric archaeology to students from kindergarten through high school ("Introducing Children to Prehistory," MT 10:3). 



PETE BOSTROM

birch," a relative of the Arctic species mentioned by Dr. Heite. However, the operative term here is "relatively straight." The rare shaft straight enough for constructing a spear almost always had a slight curve or an acute little bend that would render it incapable of a true trajectory.

So, it was apparent that we needed a process of "trueing up" these "almost straight" shafts. It may well be that the tree-line birch produces perfectly straight sprouts (my limited travels have never taken me anywhere near the Arctic, either in North America or Siberia, so I cannot personally confirm Dr. Heite's observation), but in my little corner of the world, once you leave the rather narrow zone of foothill stream valleys, you soon find yourself in an environment of few small trees and no straight ones. This is particularly true if you embark upon the vast grasslands of the High Plains. If my studies serve me correctly (which, admittedly, they well may not!), southern Arizona may have looked not too differently, during Clovis time, from my area of today's Wyoming. Certainly, it was far south of the Arctic birches.

It seems plausible that the Clovis hunters needed a way to straighten their spears, just as we did in my classroom.

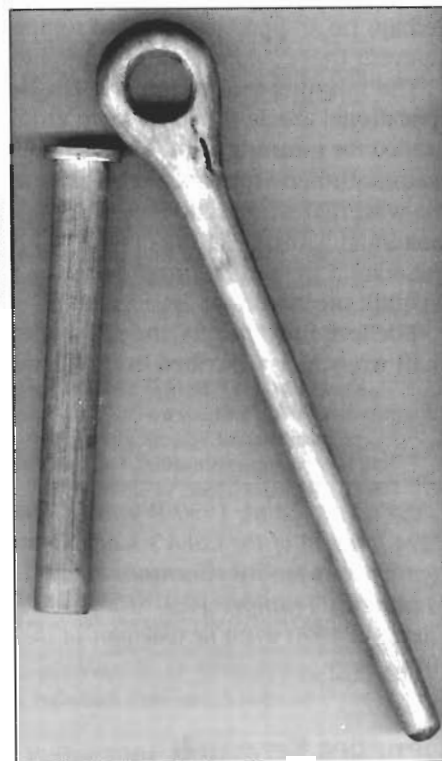
The opinion of Dr. Heite that the artifact under discussion is "the wrong tool" for straightening a spear shaft appears to derive from a basic misunderstanding of how it would be used, as indicated by the use of the word "somehow" in her first paragraph, as well as her question about why the tool has no means for being fitted with a blade for use in "shaving" the shaft. At any rate, we found that her statement that the tool would be "completely ineffective in producing straight spear shafts" does not bear up

Arrows indicate tapered grooves in the Murray Springs mammoth-bone artifact (*above*). Experimentation with similar tools made of elk antler indicated that the grooves need to be ground into the top and bottom of the aperture on both sides to accommodate the curved surface of a wooden shaft. An Icelandic spinning tool, the *madman* (*right*), is made of wood. Its spinner, to the right, about 30 cm long, appears similar to the Murray Springs artifact.

in actual practice. Quite to the contrary, we discovered that the tool, *used in pairs*, and used in conjunction with the application of heat (and, in the case of some woods, with grease) is quite effective in working the minor curves and bends out of a shaft.

You simply heat the area of the problem bend until it is too hot to grasp but *before* it catches fire, and then insert the shaft into both wrenches. Then you apply leverage against the problem. With birch, the wood will give very quickly with an almost audible "sigh." You hold the pressure for a few seconds before releasing, and the curve is permanently removed.

We found that there are two design features essential to our antler wrenches: the tool had to be strong enough to withstand the considerable stress resulting from the pressure

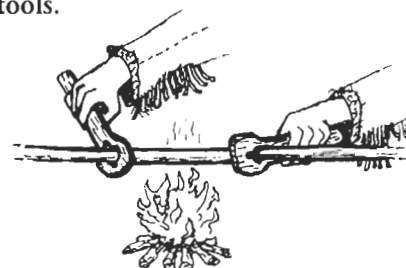


LOUISE HEITE

applied, and it had to have tapered grooves ground into the top and bottom of the aperture on both sides to accommodate the curved surface of the wood shaft. If these edges are left ungrooved the right angles of the hole will cut into the wood, causing breakage rather than the desired bending.

The grooves also serve to prevent the shaft from rolling away from the desired position. This is the clincher to me: look closely at the Murray Springs specimen—it has the necessary grooves for use as a straightener. Presumably, the spear maker lost this member of a matched pair in his tool kit and had to make a new one.

One of Laird's students uses tools fashioned of elk antler to straighten a shaft, which has been heated. Laird's drawing illustrates how Clovis people may have done the same thing with mammoth-bone tools.




BOTH: RODERICK D. LAIRD





Perhaps he dropped it and it got stepped on by the quarry, an event that could account for the broken handle!

The spinning tool pictured in Dr. Heite's interesting and educational article shows no such grooves (they wouldn't be needed for spinning), and I endorse her suggestion that the mammoth-bone tool should be examined for the telltale use-wear that she describes as resulting from use as a "madman." And speaking of which, I won't turn into a berserker if such marks do prove to be present, but I would be quite surprised.

I believe the object is, indeed, a spear-straightener, or shaft wrench, as described in the literature. 


—Roderick D. Laird  
P.O. Box 117  
Saratoga WY 82331

*Editor's Note: Laird, 1990 Wyoming Teacher of the Year and 1994 recipient of the CSFA's Marie Wormington Award for contributions to First Americans studies, was featured in Mammoth Trumpet 10:1, "Hands-on Prehistory." He was in Siberia in 1990 when he took part in the World Summit Archaeology Symposium in Novosibirsk.*

## Genetics Research

*continued from page 17*

haplogroup X and 14 putative European X mtDNAs." What they found was that the European and the Native American DNAs are not the same—and this difference rules out an affinity due to contamination—but that they share "an ancient common ancestor." Thus, the team has concluded that haplogroup X represents a fifth founding mtDNA haplogroup. Though the researchers have not yet been able to definitely identify this haplogroup X in any ancient DNA sample, this appears to be in part because ancient DNA is highly degraded, so it does not present sufficient information to definitely characterize it. Indeed, their research paper identifies several possible ancient DNA samples that could, if they were more complete, be categorized. Thus the search for additional ancient DNA samples could prove crucial. A second important point is that their examination of modern DNA in contemporary Native American population samples has shown haplogroup X only in northern peoples—Ojibwa, Sioux, Nu-Chah-Nulth, Yakama—and in the Navajo, a southwestern American population related to other Athapaskan-speaking populations of the Northwest. A third important point is that haplogroup X has not been identified in Asians—either from Siberia or from any other part of Asia—but the authors caution that a more extensive survey of Asian samples, and European samples, is required to fully deduce the origins of haplogroup X and to determine the meaning of its joint presence, in slightly different form, in Europeans and in American Indians.

Although archaeologists and molecular biologists may not agree about the best way to link their data sets, it is likely that all agree that that is ultimately an appropriate goal, and one that is evident in these two recent genetics papers. 

—Roberta L. Hall

# COMING CONFERENCES

**March 24–28 64th Annual Meeting of the Society for American Archaeology, Sheraton Chicago.**

Contact: SAA, 900 Second Street NE No. 12, Washington, D.C. 20002-3557. 202-789-8200. Fax 202-789-0284.  
e-mail: meetings@saa.org.

**April 8–10 Northwest Anthropology Conference, Holiday Inn, Newport, Ore.**

Contact: Loretta Wardrip, Dept. of Anthropology, 238 Waldo, Oregon State University, Corvallis, OR 97331. 541-737-4515.  
e-mail: lwardrip@orst.edu.

**April 20–May 1 68th Annual Meeting, American Association of Physical Anthropologists, Columbus, Ohio.**

Contact: Mark Teaford, Dept. of Cell Biology & Anatomy, Johns Hopkins University School of Medicine, 725 N Wolfe St., Baltimore, MD 21205, 410-955-7034.  
e-mail: mteaford@welchlink.welch.jhu.edu.

**April 28–May 1 Canadian Archaeological Association, 32nd Annual Conference, Westmark Whitehorse Hotel, Whitehorse, Yukon.**

Contact: Ruth Gotthardt, Programme Coordinator, 867-667-5983, Fax: 867-667-5377, e-mail: Ruth.Gotthardt@gov.yk.ca.  
For information: www.canadianarchaeology.com.

**May 16–20 2nd International Mammoth Conference, Natuurmuseum Rotterdam, The Netherlands.**

Contact: Natuurmuseum Rotterdam, P.O. Box 23452, NL-3001 KL Rotterdam, The Netherlands. Fax: 31-10-436-43-99.  
e-mail: mammoth@nrm.nl.

**Sept. 30–Oct. 2 4th Rocky Mountain Anthropological Conference, Hotel Colorado, Glenwood Springs, Colo.**

Contact: Marcel Kornfeld, University of Wyoming, P.O. Box 3431, Laramie, WY 82071-3431; 307-766-3548.  
e-mail: anpro1@uwyo.edu. Abstracts due July 1.

**Oct. 4–8 XIII Congreso Nacional de Arqueología Argentina, Córdoba, Argentina.**

Contact: Casilla de Correo 1082, Correo Central 5000, Córdoba, Argentina. Fax: 5451-68-0689. e-mail: 12cnaa@ffyh.unc.edu.ar.  
For information: www.filosofia.uncor.edu.

**Oct. 20–24 57th Annual Plains Anthropological Conference, Ramkota Inn, Sioux Falls, S.D.**

Contact: Archaeology Laboratory, Augustana College, 2032 S. Grange Ave., Sioux Falls, SD 57105. 605-336-5493.  
e-mail: HANNUS@inst.augie.edu.

**Oct. 28–Nov. 1 Conference: Clovis and Beyond, Santa Fe, N.M. Sponsors: Center for the Study of the First Americans, Museum of Fine Arts, Laboratory of Anthropology of the Museum of New Mexico, and the Smithsonian Institution.**

Contact: Clovis and Beyond Conference. 505-982-8520.

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