CSFA LEADER IS CHOSEN FOR JUSTICE JOB
Clinton Picks Harris to Head Criminal Unit

President Bill Clinton has chosen Jo Ann Harris, chair of the Advisory Board of the Center for the Study of the First Americans, to head the Criminal Division of the U.S. Justice Department. Harris, a New York City lawyer, will be the first woman to fill the important position if the Senate confirms the appointment.

Intensely interested in archaeology and prehistory, Harris says she hopes to continue to participate in CSFA activities during her tenure. Attorney General Janet Reno announced in late June that Harris was the President's choice for the position.

"Harris is a seasoned prosecutor who has been intimately involved in the investigation and prosecution of major criminal and civil cases, including complex white-collar crimes," said Reno. "She will be a tremendous asset to the Department of Justice and to continued on page 2

INSIDE
Butchered Wisconsin Mammoth Dated .......................... 3
The Case for a Pacific Rim Migration .......................... 4
New Brunswick Mastodon Died Accidentally ................. 6
Owner Sells Burning Tree Mastodon .......................... 7
Suggested Readings ............................................. 8

BUTCHERED MAMMOTH BONES MORE THAN 12,000 YEARS OLD
‘Net Stones’ May Have Anchored Meat in Lake

Mammoth bones with definite signs of butchering that were found on the bottom of a lake in northwestern Pennsylvania have proven to be more than 12,000 years old.

Dr. M. Jude Kirkpatrick, an archaeologist in the Anthropology Department at Gannon University, Erie, Pa., and Dr. Daniel C. Fisher, of the University of Michigan's Museum of Paleontology and Department of Geological Sciences, have reported details of the discovery in Current Research in the Pleistocene No. 10, which has just been published. An initial report on the find appeared in the Mammoth Trumpet 7:1 December, 1991. A diver, curious about what he had discovered in a lake in south Erie County, phoned Kirkpatrick and described the mysterious object as about two feet long and having three points. Kirkpatrick agreed to look at the object and found that it was the scapula of a mammoth. He soon organized an underwater search employing volunteer scuba divers that ultimately brought up about 80 percent of the skeleton of a young male mammoth from water about 20 feet deep. The location has come to be called the Moon Mammoth.

What made the discovery intriguing was the fact that the bones were in four separate groups along the shoreline of the lake, a kettle formed during the retreat of the Wisconsin glacial. Further, the bones were sandstone fragments that showed signs of human alteration. The circumstances suggested an underwater cache created by Paleoindians to safeguard meat from scavenging and predatory animals. Kirkpatrick contacted Fisher, who had previously found such evidence (Mammoth Trumpet 6:4 "Clues to Paleoindian Survival: Underwater Caches May Have Supplied Meat in Winter").

A fragment of the bone was radiocarbon dated at 12,210 ± 130 years B.P. Examination has determined that the mammoth was an incompletely grown male that died in late autumn or early winter. Though they acknowledge that more study remains to be done, Kirkpatrick and Fisher say the location and condition of the bones, the animal's age, its sex and the season of its death, resemble other sites believed to be examples of Paleoindian underwater meat caches. "The Moon mammoth shows patterns of bone modification similar to those observed at other sites suspected to represent butchered proboscideans," Kirkpatrick and Fisher say in their paper. They note particular bone damage that closely resembles that seen on the continued on page 8

WORKED FLINT FOUND WITH MASTODON BONES

Where the Wisconsin glacier met the highlands of the Allegheny Plateau in east-central Ohio, the ice sheet and its ultimate melting had profound effects on the geography. Streams were blocked by ice, and drainage patterns were altered and then altered again. The result is an area in Holmes County where Dr. Nigel Brush shows students examples of glacial landforms. There, about three miles north of the maximum advance of glaciation, a lake once abounded with snails and other small gastropods. A finger of land extended into its shallows, possibly creating a convenient place for large mammals to drink—and possibly a place for humans to trap and kill them.

Brush, a lecturer in anthropology, geology, and environmental studies at the University of Akron, had long heard that mastodon remains were buried in the farm field that had replaced the Pleistocene lake. This summer, with the help of several students learning field techniques in Pleistocene paleontology and archaeology, he proved the story true.

Brush discovered not only the remains of a mastodon, but eight clearly worked flakes of flint and two end scrapers in close association with the skeleton. The mastodon had first been discovered in 1938, when a farmer was cutting a drainage ditch through this formerly marshy area. The trenching machine apparently cut through the skull, as several teeth were brought to the surface. Eight mastodon teeth were eventually removed as well as a large leg bone. Brush received permission to excavate the site during July to search what might be left. The son of the farmer who discovered its teeth pointed out the vicinity of the discovery, and Brush and his students dug a series of test units, 2 meters continued on page 8

Dr. Nigel Brush removes a third flint flake found in association with mastodon bones.
Limited Season at Montana Site Focuses on Hair Film Crew Recording First-Americans Research

Work was under way in late August on another phase of the continuing investigation at the Mammoth Meadow site in southwestern Montana. The immedi-
ate objective was to establish multiple columns of large mammal bones along the sides of the site and to test the depth of the layers of ca-
nelling material. At the site, there is a rich source of hair that can be studied. The hair is considered to be one of the most significant aspects of the site because it establishes the presence of a wide variety of large mammals. In some cases, hair is the only evidence of the animals' presence. The site was rich in the remains of large mammals that were used by early peoples from the Plains and Rocky Mountain regions.

A new aspect during this phase of the investigation was to be the presence of a television crew. Principal investigator Robson Bonnichsen said pro-
duction from television's Learning Channel is mak-
ing series of half-hour archaeology films and plan-
to make one segment of a film about the search for the first Americans at Mammoth Meadow.

Mammoth Meadow's multidisciplinary scientific team was handed a disappointment earlier this sum-
mer when the U.S. Bureau of Land Management unexpectedly canceled the project's excavation per-
mit. Bonnichsen said he is confident that Montana RSM officials will resolve their problems with the Shoshone-Bannock tribes, members of which have questioned the need to investigate the history of the human presence on the vast Montana landscape.

The Mammoth Meadow hair record is a storehouse of data.

This year's abbreviated season is the eighth at this high-altitude site on a small tributary of the Missouri River that geologists say has followed a similar route down the slope near the eastern flank of the Continental Divide continuously for many

thousands of years. The persistence of the water course and continuous deposition has expanded the record of human occupation from historic to ancient times, but more excavation will be required to deter-
mine the full extent of that activity. Soil scientists, however, have confirmed the presence of ash from an 11,200-year-old eruption of volcanic Glaciar in a peak in northern Washington in a stratum that prelimi-
nary testing suggests is nearly a meter above the oldest cultural materials yet discovered.

When observed hair was first discovered rela-
tively deep in the excavation. Since mammals can be identified by the hair they shed, the Mammoth Meadow hair record is a storehouse of data on ear-
er environments at the site. Specific species include mammoth, bison, bear, caribou, ancient horse, human, and many small mammals. The hair, originally embedded in the site's soils, is being recov-
ered through the flotation process to which all exca-
vated material is subjected. After being soaked in commercial water-solting agents, the material is placed in fine-mesh screens that capture hair and other light sub-
stances. Heavier material from the tubs is then screen-
red.

This summer's investigation is to complete the hair record through upper strata in the same manner used for the lowest strata. At strategic points, col-

cumns of bone were excavated and tested for hair. Once accomplished, the faunal record should be rela-
tively complete from most-recent times to earli-
est times chronicled by the site.

Harris

continued from page 1

the Criminal Division in particular." The Criminal Division employs more than 400 attorneys to de-
velop, enforce and supervise the application of ap-
proximately 900 federal criminal statutes. It also formulates and implements federal criminal enforcement policy and provides advice and assistance to the Attorney General and Congress on matters of crimi-
al law. Observers expected Harris' Senate confor-
mation to go smoothly.

"Jo Ann Harris has all the right credentials, and she impressed [White House Counsel Bernard Rushmore and Reno during her interviews," said an administration official quoted by the Legal Times. The publication reports that crucial matters awaiting Harris' attention include the continuing Justice De-
partment probe into allegations that Dan Rosten-
kowski (D-III), chairman of the House Ways and Means Committee, improperly converted House postal vouchers into cash. She also could have an important role in shaping the administration's anti-
crime legislation.

Harris worked at the Justice Department from 1974 through 1983, first as an assistant U.S. Attorney and then as Chief of the Criminal Division's fraud section. The Legal Times termed her advancement to head the fraud section a "remarkable ascent by any standard." In that position, Harris had a reputation for her aggressive pursuit of corporations, including defense contractors, who were defrauding the gov-
ernment. "Under her stewardship," the Legal Times noted, "Justice Department lawyers prosecuted some of the first major cases under the Foreign Corrupt Practices Act." The periodical also noted that Harris played a major role in implementing a 1978 law that established inspectors general throughout the federal government, a move that was resisted by some bureaucrats. Harris gained notice for successfully prosecuting a tax-evasion case against the Rev. Sun Myung Moon, leader of the Unification Church.

Entering private practice in 1983, her specialty was white-collar cases involving taxes, securities, antitrust and fraud. Harris worked for the special prosecutor investigating corruption at the Depart-
ment of Housing and Urban Development in the Reagan Administration. She also has specialized in pro bono defense of indigents. Harris teaches law at Pace University School of Law in White Plains, N.Y. Formerly she taught at Emory Law School in Atlanta, Ga. She has also held an appointment as lecturer on the faculty of Harvard Law School.

Reno calls Harris an expert on evidence, trial techniques and advanced litigation. Center Director Robson Bonnichsen said he is impressed by her ability to convey complex legal issues to the public. Harris is a member of the Archaeological Center's Advisory Board who toured archaeological sites in Siberia with Bonnichsen in 1992. Earlier, she was active in arranging the Center's move from Maine to Oregon State University.

A native of Illinois, Harris received a journalism degree from the University of Iowa in 1955 and worked 14 years in publishing before entering law school. She was graduated from the New York Uni-

versity School of Law in 1972. She has written on Archaeologists Meeting in Maine

The Eastern States Archaeological Federation's an-

ual meeting has been scheduled for Oct. 20-31 in Bangor, Maine, with the Maine Archaeological Society as host.

Special events will include visits to the Abbe Mu-

seum in Acadia National Park and the Maine State Museum in Augusta, and a program chair James H. Petersen of the Archaeology Research Center at the University of Maine at Farmington (FARMINGTON, ME 04938) is accepting suggestions for symposia and papers.

Jo Ann Harris, pictured on a field trip to Siberia last year, displays the task of a Pleistocene elephant that she had just discovered.

The Mammoth Trumpet (ISSN 8735-6893) is published quarterly by the Center for the Study of the First Americans, Department of Anthropology, Oregon State University, Corvallis, OR 97333-6510. Second-class postage paid at Corvallis, OR 97333.

POSTMASTER: Send address changes to: Mammoth Trumpet Oregon State University CSRA/Weniger 355 Corvallis, OR 97333-6510

Copyright © 1993 Center for the Study of the First Americans. Permission is hereby given to any non-

profit or educational organization or institution to reproduce without cost any materials from the Mam-
thom Trumpet so long as they are then distributed at no more than actual cost. The Center further requests that notification of reproduction of materials under these conditions be sent to the Center.

Robson Bonnichsen Director and General Editor
Bradley T. Lepper Assistant Editor, Current Research in the Pleistocene
Joyce Pytkowicz Volunteer Coordinator

The Center for the Study of the First Americans is a non-profit organization. Subscription to the Mammoth Trumpet is by membership in the Center.
MAMMOTH KILL DATED 10,960 B.P.

Discovery of Tool Flakes Pleases Wisconsin Team

A large mammoth found butchered in Kenosha County, Wis., died 10,960 years ago, archaeologists Dan Joyce and David Overstreet say. Excavation at the southeast Wisconsin site, which started Aug. 3, 1992, was continuing this summer. (The discovery was reported on last December in Mammoth Trumpet &.)

There is overwhelming evidence that the eight-ton animal was butchered. In late July, the team found two stone-tool flakes in situ under the bones. The principal investigators say the flakes were "in perfect primary context.

"It's what we've been looking for," said Joyce, an archaeologist and Curator of Collections and Exhibits at the Kenosha Public Museum, in a telephone interview shortly after the discovery. "We're pleased with the context. There's no way they were introduced from above. They were underneath the pelvis; they were in a very dense, homogeneous clay matrix." Joyce said the flakes were of local material very typical of the Paleoindian complexes in the area, where lithic material is not abundant. Sources are glacial cobbles or beach cobbles from the shores of Lake Michigan, which is less than 10 miles east. Lithic material that had been found previously at the site revealed little about the Paleoindians who dined on the mammoth, a large Mammuthus primigenius.

Archaeologist Ruth Blazina-Joyce excavates behind a portion of pelvis at the mammoth-bone pile of the Schafer site. Bunks were left in place until the bones were pedestaled and photographed. By August, all bones but the skull had been removed.

Those lithic fragments were from good context, said Overstreet of the Great Lakes Archaeological Research Center in Milwaukee, but they were small. They appeared to be broken stone tools, "like crushed edges or shattered parts." Joyce expressed obvious pleasure at the new discoveries, which he called "perfect, no-doubt-about-it flakes," a rare commodity in southeastern Wisconsin. "The lithic resources in this area are so poor that I don't think they would have left things lying around like they might have out West," he said.

Even if a complete stone tool had been lost by the mammoth's butchers, Overstreet doubts that it would be of classic Clovis or Folsom typology. "I've done a pretty detailed survey of this particular part of southeast Wisconsin associated with these landscapes, and there just isn't any Clovis or Folsom-like material around," he said in a telephone interview. Overstreet suspects that during the declining time of mammoths there were regional populations of people that had little to do with the classic Clovis culture.

Last summer, work at the site involved exposing the bones and removing the outermost ones. When winter was approaching, the team built a structure over the central bone pile. The structure had insulated walls as high as ground level with an insulated flat roof that was covered with soil.

As of this writing, the all-professional team was continuing to remove bones while water-screening surrounding sediments. "We're getting down to the end of the bones," Joyce said, noting that the animal's skull would be the final challenge. "The skull's going to be our major problem getting out; it's in a lot of different pieces."

Along with flakes, obvious cut marks, crushed and stacked bones, narrow gouges, and two clumps of red ochre, the team has found one other obvious clue to human association. "We found a rib that was stuck vertically into the lake-bottom sediment," said Joyce, adding that it was "very deliberately placed." The rib, thrust about 25 cm into the sediment, would have stood above the shallow surface of the water and may have served as a cache marker. "I see no other reason for it to be there," said Joyce, noting that at the Heiser mastodon-kill site in Michigan a wooden post has been interpreted as a cache marker by investigator Daniel Fisher of the University of Michigan's Museum of Paleontology and Department of Geological Sciences (Mammoth Trumpet & 64 "Cues to Paleoindian Survival: Underwater Caches May Have Supplied Meat in Winter."

Investigators have found no evidence that there was more than one mammoth butchered at the Schafer site, but the immediate area is very promising. Three sites in Kenosha County have evidence of Paleoindian involvement, and investigation of others is continuing. The Schafer site is one of several megafauna sites in southeastern Wisconsin and northeastern Illinois. "Part of the emphasis of this project," says Overstreet, "is to get a good understanding of the immediate post-glacial environment." There are confirmed mammoth, mastodon, musk ox and caribou sites in a four-county area.

Examination of snails discovered in sediments indicate that the Schafer site was a lake or pond of fairly cold, still water two or three feet deep. The mammoth presumably got mired in mud and was either killed or scavenged by the people who left the red ochre and placed the rib-bone marker.

Wood associated with the kill initially seemed to provide puzzling evidence of the age, for it dated to about 2,000 years before the mammoth, which was radiocarbon dated by bone collagen from one of its femurs. However, Overstreet is confident that the bone date of 10,960 ± 100 years is correct. "I really like the date of the bone, even though the wood was in close proximity." The wood, he explains, dates an earlier fluvial event. "It's consistent with some other dates that we have on wood that was wind-rowed up on the shoreline."

The mammoth died on the shore of a small glacial lake with a bottom of silt. It later became a marsh, and though the site is now on farm land rather than a lake, it has not been particularly dry. "We have had continued on page 7"
THE IDEA that people came to the Americas by way of an ice-free corridor is so widely accepted in both academic and popular circles that it is easy to forget that there are other hypotheses. To be sure, mammoth hunters and herds of their quarry were widespread in North America, especially in the 10,000 and 12,000 years before present (BP) period. Many pieces of research is suggesting that people may have migrated from Asia much earlier than by way of the North Pacific coast.

Evidence presented by a variety of investigators is proposing that mullows and other bovids, rather than mammoths and other large land mammals, first brought people east out of Asia. These scientists argue that:

- Environmental conditions were suitable for a coastal migration.
- Pleistocene-age people did possess sailing technology to build boats and sail them across open water.
- The geological record provides evidence of extremely old sites that support the coastal-migration hypothesis.
- Dated stone tools show that ancient industries existed along the route.
- A growing chain of circumstantial evidence in linguistics, human biology, and ethnographic analogy supports the idea of a Pacific Rim migration.

If the first settlers were provided not by the movements of mammoth herds but by an abundance of crabs, mussels, crabs, fish, sea birds, and sea mammals, they would have prospered around the Pacific Rim as sea levels and tides permitted. The likely fledgling band of boats, and their progress would likely have been blocked for periods by glacial ice. They may have moved initially north out of Asia then south out of Beringia. Unfortunately, the likelihood of finding archaeological records of a coastal migration is slim because the post-glacial rises in sea level that made the coastal hypothesis unpopular with archaeologists. This coastal hypothesis also suffers because the earliest cultural pattern recognized and accepted by many archaeologists is based on the hunting of big-game mammals and is characterized by a toolkit containing fluted projectile points. Such points have not conclusively been found on the possible route along the coast of British Columbia or Alaska—at least none that is contemporary with, or older than, those found in mid-continent that date to an inland late-glacial hypothesis benchmark year of about 11,000 years BP.

Searchers may never find the coastal sites. However, the archaeological, linguistic, ethnographic, and biological evidence supporting the Pacific Rim hypothesis is growing. Although mostly circumstantial, the evidence points toward possibility of the Americas by a coastal migration that Simon Fraser University archaeologist Knut R. Fladmark contends was environmentally possible anytime during the past 60,000 years.

In papers published as recently as the 1990s, Fladmark rejected an inland-corridor route of migration. Basically, he said the southern extension of Beringia was little more than an inhospitable and constantly shifting swamp of ice water during various stages of Pleistocene glacial activity. As early as 1979, he suggested that the Pacific Northwest Coast had environmentally hospitable havens of ice-free land that could have provided the supply way stations for southbound Paleoindian migrants. And in 1999, Fladmark wrote that radiocarbon analyses of buried plant materials covering glacial till deposits in a deep channel at Cape Flattery near the northeastern end of British Columbia's Queen Charlotte Islands indicate minimum age for local deglaciation and establishment of a terrestrial and wetland community at about 16,000 years B.P. In 1979 Fladmark wrote in American Antiquity:

- There is no evidence that the North Pacific became permanently frozen during glacial episodes, although seasonal freezing of sheltered waters seems likely.
- The Japanese Current would have continued to bring warm sub-surface water masses along the outer edge of the continental shelf, undetected by any Arctic flow through Bering Strait, and mean annual temperatures at sealevel were probably above freezing.

Fladmark is not alone in seeing the coastal route as more hospitable to Paleoindian migrants than an interior route. Although this hypothesis supports a coastal route is far from conclusive, University of Oregon archaeologist Jon Erlandsone gives his “visceral” opinion (see Suggested Readings) that life along the coast had to be better than spending a winter in the bidding birdwing of Beringia.

And Ruth Gruhn, of the University of Alberta, has found that Paleoindians moving down the coast during the middle Wisconsin period between 60,000 and 30,000 years ago would have encountered environmental conditions similar to those today. Migrants would also have found a rich variety of shellfish, fish and migratory waterfowl.

Caribou that live on Queen Charlotte Islands today also suggest to Fladmark an ancient survival of cold-adapted land mammals on an island not far from the Bering Strait. Arctic and Pacific peoples, their hunting and herding techniques. And R. Gruhn et al. have found that coastal migrants have preyed on such Mammals as part of their subsistence base. “The Queen Charlotte Islands,” Fladmark wrote in 1999,

would seem to represent a particularly important ‘stepping stone’ along any coastal route of migration for early people moving south from Beringia, despite their presently isolated location. Indeed, the ‘Charlettes’ are currently the first area in Canada south of Beringia for which there is incontrovertible evidence for the existence of a terrestrial plant community, theoretically capable of supporting some animal and perhaps human life, during the peak of the last glacial period.

However, Gruhn has noted in a recent publication that it might be difficult to identify an exact middle Wisconsin coastline along the North Pacific, largely because of local uplifting of land. She says that deep-sea core samples from the Bering platform suggest that the middle Wisconsin phase was the best time for human movements along the south edge of the Bering Land Bridge. That significant environment, analysis of the core sample indicated, would have consisted of winter sea ice, with thawing in the spring uncovering a productive marine ecosystem capable of feeding people. And further south, the environment would only have become more hospitable.

Sheflsh Low In Calories

There is little doubt that, if the review by Fladmark and Gruhn of coastal environmental conditions is correct, early Americans would have used all the food sources available to them. Archaeologist David R. Yesner, in discussing the prehistory and ecology of maritime hunter-gatherers, has noted 150,000-year-old shell-midden evidence of marine foods as a central subsistence focus in South Africa. However, Yesner also observes that shellfish diets are notoriously low in calories and would not provide an adequate diet in a cold climate. Indirectly, that lends support to the need for Pleistocene coastal hunters to augment a water-based food supply with meat, as Fladmark suggests may have happened where caribu probably occurred on the Queen Charlottes. It also bolsters Fladmark’s contention that the “classic” big-game hunting tradition associated with fluted points might also have developed out of earlier cultural patterns adapted to hunting on coastal refuges. Fish, sea birds, and sea mammals could thus easily have added to humans’ meat supplies.

Extensive analysis by Erlandsone of shell middens on the California coast and offshore islands shows that by 10,000 years ago, and possibly earlier, people had adapted to a marine subsistence economy.

Mollusks, Not Mammoths

To establish a case for adapting to an oceanic coastal environment, Gruhn turns to ethnographic analogy of the Yahgan Indians of coastal Ti~erra del Fuego. Observed as early as 1787 by Sir Francis Drake, by Charles Darwin in 1832, and in the twentieth century by others, the Yahgan people were lightly clothed and lived in stick huts in a forest environment that sometimes includes snow in summer. Gruhn also notes that they hunted, fished and captured birds with a megac tool kit that included bone points on wooden spears, hand- made stone or mussel-shell knives, fish hooks and at least tipped arrows. They also used canoes made of several strips of bark cut from beech trees with a bone chisel or mussel-shell knife. The canoes were sewn together with lashing of whalebone or shredded saplings. The canoes leaked badly, Gruhn reports, but were adequate for the frequent movement of families along the coastline. As she wrote for the forthcoming book, Method and Theory for Investigating the Peolple of the Old World:

One could surmise that even a population as poorly endowed with material culture as the ethnographic Yahgan could have made it into the New World along the North Pacific coast during the middle Wisconsin interval.

Erlandsone suggests that exploitation of coastal resources 13,000 years ago might have provided another circumstantial tie to a coastal route of migration—if the near-coastal site at Monte Verde in Chile withstands careful scrutiny. Erlandsone notes that Monte Verde is about 50 km from the Pacific coast and contains trade resources such as salt, although the trade link remains to be established.

The Evidence for Boats

Boats of some sort seem mandatory for people to have lived and moved along the shore. So, too, would be the seafaring knowledge necessary to ply a frigid and dangerous Beringian seascape. No Pleistocene-age boats have yet been found. And authorities such as Jesse D. Jennings have declared that water-voyaging capabilities were not known until thousands of years later than Pleistocene people would have needed them for such trips. Although Erlandsone has reported that
maritime peoples lived in California, British Columbia, and southeast Alaska as early as 10,000 years ago, circumstantial evidence must be used to arrive at earlier dates. But that evidence offers some interesting possibilities.

Recent data from Greater Australia strongly suggest that boats were used as early as 11,000 years ago to reach the southern end of New Guinea, more than 15,000 km (about 200 km) from the New Guinea coast. Even more surprising is the evidence that seagoing boats enabled settlers to reach the archipelago of New Guinea by 10,000 years ago. This evidence is based on a combination of archaeological evidence and the analysis of shell-midden material obtained from the southern coast of New Guinea. This evidence suggests that seagoing boats were used to transport goods and people across the South Pacific, even earlier than previously thought.

The Pacific Rim Hypothesis

The Case for a Pacific Rim Migration

by George Wisner

On the Japanese main island, Oda writes in the book Man and Culture in Cogotai, the Koshimishina obisib is found in Paleolithic and Jomon sites on the Musashino Plain. It is also found in Paleolithic sites as old as 30,000 B.P., and in Jomon sites as far as 200 km from the source. Significantly, even during the late Paleolithic, when the sea level was 100-140 m lower than today, Koshimishina was transported from the Seto Inland Sea by a wide strait of water, making it impossible to acquire Koshimishina obisib without the use of dugout canoes or rafts. The early use of obisib from the Seto Inland Sea shows that people in Japan had already developed the means to travel by water, setting the stage for later developed water transport across Japan and the rest of the Jomon.

The earliest Jomon culture dates to 14,000 to 13,000 B.P.

Stepping Stones to the New World

Stepping Stones to the New World

In a 1992 paper on the origins of Japanese Paleolithic, archaeologist Charles D.SONAS says, "It is known when humans in the eastern Asia acquired the capability of cross large bodies of water. But, he says, that "humans of southern Chinese type" were on the island of Okinawa roughly 35,000 years ago "when that island was probably separated from the continent." Since 1992, it has been designed to support his contention that humans arrived on the continent 30,000 years ago. Although no Paleolithic sites have been found, the combined circumstantial evidence surrounding the obisib mine strongly suggests that there was very early boat travel in the North Pacific early enough to make possible a hypothesized boat voyage to the New World.

Erlanson suggests that at the height of the last glaciation the Kuril Islands, which form a crescent north and east of Japan toward the Kamchatka Peninsula, could have been stepping stones for Paleolithic peoples going from the Japanese archipelago to the south shore of Beringia and then possibly south through the Queen Charlotte Sound. This suggestion echoes those of Flannery and Binford.

Although many archaeologists remain skeptical of the sea travelers' route to the New World, Flannery has no problem defending the idea of a sea passage along the Northwest Coast. "Given any kind of steerable watercraft, people's ability to reach the sea-level refuges of the North Pacific from Beringia seems undoubted. The only difficult area is the Pacific Coast of the Alaska Peninsula west of Kodiak Island, where there is no direct evidence, as yet, of any unglaciated refugia," he wrote in a 1979 paper (see "The Sea Nomads").

If coastal migration by boat can be seen as possible, it is also seen as perhaps the most rapid method to settle the coastal areas of the New World and ultimately push human culture inland. That idea collides with that of Martin's prehistoric overland hypothesis. An element of that hypothesis suggests that a small group of Paleolithic hunters armed with new technology—fluted stone spear points—coped with population growth allowed them to move rapidly south through Beringia about 12,000 years ago, reaching the tip of South America approximately 1,000 years later. Flannery calls that slow. "Theoretically," he has written, "even primitive boats could travel the entire length of the Bering Strait in less than 10-15 years." Such rapid southward movement, coupled with an early entry into the New World, would help explain sites in South America that are estimated to be 11,000 to 20,000 years old.

Part of the Pacific Rim hypothesis assumes that Paleolithic migrants came from Asia, not elsewhere. Although few North American sites contain human fossil remains, D. Gentry Steele and Joseph F. Powell have analyzed available skeletal remains ranging from 8,500 to 10,000 years old and found that the closest affinities are with Asian populations. (See Mammoth Trumpet 72, "Paleoindian skeletal Data Re-examined.") Comparisons of recent American Indians with other populations indicate that American Indians are most similar to Asian populations, most notably northern Asians.

Arguments for Early Arrival

The timing of the colonization of the Americas also is an issue with support of a Pacific Rim hypothesis. Many such as Gruhn argue that paleolithic people arrived in the New World considerably earlier than the 12,000 years ago allowed by "late arrival" theorists.

Hard evidence for support of the Pacific Rim hypothesis is scarce, but various circumstantial arguments have been used to estimate timing of the arrival. In the late 1980s, linguist Ruth Gruhn regards linguistic evidence as the best available for estimating the arrival of the first inhabitants of the Americas. In a 1988 publication, she examines the distribution of Aboriginal languages and concludes that there is "great linguistic diversification" that implies a long period of time for the first human occupation of the Pacific Coast, the Gulf Coast, central America and South America. It has been estimated, he says, that there are more than 3,500 native languages in South America. There are more than 70,000 known languages in Mexico and Central America; and all but one of twenty language family groups identified on the Northwest Coast are considered independent languages. Such language diversity does not exist along the suggested inland migration routes, she adds, and therefore the linguistic support for contention that seafarers first reached the continent and moved south is not valid.

Genetic Markers Indicate Early Migration

Some scholars are also finding it difficult to agree on the biological record in an effort to determine when people began coming to the new world. Among these is Moses S. Schanfield, whose analysis of genetic markers of the CM-AM system on heavy chain immunoglobulin (a protein antibody) from living American Indian people indicates that their ancestors arrived in the New World in four different migrations from Asia (see "Crawford" entry in the Suggested Readings). "The estimates are that the first migration occurred before the last major Wisconsin glaciation in the period 17,000-25,000 years ago," he says. Schanfield stops short of offering a possible route for the migrants. But his study does appear to fortify arguments that people of Asian descent have been in the New World far longer than the 12,000 years suggested by the "late arrival" model, which posits migration by way of a land route south from Beringia.

Recent archaeological sites are considered to be the most direct evidence for establishing how early people entered the Western Hemisphere. If people came through a mid-continent ice-free corridor, it would follow that the oldest sites should be found in the north rather than in the south. But in the present time, the oldest site so far dated for the Americas come from the state of South America—Pedra Furada in northeast Brazil and Monte Verde in Chile. Dates as old as 20,000 years have been reported by Gruhn for sites in Mexico where extinct fauna such as camels, horse and mastodon have been found in association with lithic artifacts.

Incontestable proof of migration to the Americas by way of the Pacific remains elusive and may never be found, but dismissing it offhand also is becoming more difficult in light of the growing archaeological, linguistic, biological and circumstantial evidence being used to champion a position that Flannery and others have been trumpeting for more than a decade. As Paul Martin has reminded readers: "Absence of evidence is not evidence of absence."

Like other hypotheses, the Pacific Rim hypothesis may be proved or disproved by the testing of hypotheses that can be derived from it. Gruhn sees at least two predictions she believes could settle the issue: The model would be supported if an archaeological site of middle Wisconsin age is demonstrated in western Oregon, California, or Mexico. The model would be discredited if an archaeological site dated 50,000 years B.P., or older is discovered on the northern Great Plains, at the southern end of the Ice Free Corridor.

The coastal-route hypothesis offers a scenario for a peopling of the Americas that is tantalizingly different from that of the heavily armed hunters clad in mammoth skins tracking down a windswept Beringian landscape inland toward South America. Perhaps the quarry was mollusks, not mammoths.
COPROLITES GIVE EVIDENCE

MASTODON DIED ACCIDENTALLY

New Brunswick Find Dates to before Wisconsin Glaciation

Scientists with the Geological Survey of Canada and the
Canadian Museum of Nature have hard evidence that a
wellsaved mastodon discovered near the coast of New
Brunswick died, not by human hands, but as a result of its
own carelessness.

The animal, one of the most complete mastodon speci-
mens in Canada, was discovered in 1938, when a sinkhole
near Hillsborough, New Brunswick, was being excavated
to form a fishpond, but it has only recently been studied.
Newspaper accounts told of the recovery of 312 bones along
with "the hide with its hair" and "stomach contents." It has
been on display for decades at the New Brunswick Mu-
seum in Saint John.

What is unusual about the animal is its antiquity, condi-
tion of preservation, and the circumstances of its demise, as
explained by the authors, C. R. Harington, of the
paleobiology division of the Canadian Museum of Nature,
and D. R. Grant and R. J. Mott, of the Geological Survey
of Canada, in the June issue of the Canadian Journal of Earth
Sciences. They conclude that the animal was a young adult
that had weighed about 8.3 metric tons (more than 18,000
pounds) and dates to the latter part of the Sangamon inter-
glacial before the Wisconsin glaciation. Further, they are
confident that the lithified sphoroidal masses that were
described as "stomach contents" in 1936 newspaper ac-
counts are actually coprolites—potent dung balls. "We
have several dozen," Grant told the Mammoth Trumpet.

These coprolites provide Harington and his colleagues
covincing evidence that the trapped animal starved to
death. "The largest are roughly similar in size and shape
to dung boluses of living elephants and to some coprolites
that have been attributed to the mastodon." The difference
is "that the Hillsborough coprolites have surface corrugations,
which may suggest extrusion in pulses through the anal
spincter." They say the composition is "reasonably consis-
tent" with intestinal origin. "In particular, fungal remains
... include many components naturally related to dung."

In addition to the spheroides the size of elephant drop-
pings, up to 136 mm (6 inches) in diameter, there was a
second size group of much smaller nodules, down to 15 mm
(one-quarter inch) in diameter. The authors contend that
they too are fossilized dung. All have high mineral content,
which earlier investigators had suggested was clay that had
somehow gotten into the carcass, but the new study indi-
cates that the mineral matter was swamp mud ingested by
the animals before it died. "We think that the mined,
starved animal drank the muddied water and filled its gut
with whatever was within reach," they write. "We interpret
the spheroides as essentially normal size boluses represent-
ing a limited diet during the early stage of entrapment and
speculate that the nodules are abnormal smaller products
of a more impoverished diet near the time of death." Grant
provided the following explanation. "The size range and
ornamentation is interpreted to mean that the beast was
becoming constipated on the diet of mud that he was forced
to eat as he slowly starved to death."

What about the "hide with its hair"? Nothing of the sort
was found in the museum collection, so the authors sug-
gest they are a journalistic misinterpretation of some fibrous
pelt that was preserved along with the mastodon. All that
remains is bone and coprolites. The condition of the
bones indicates that the animal sank into the mud on its
right side, leaving the left side exposed to weather and
scavengers—and possibly a glacier.

Dating when the mastodon died raised problems be-
cause when it was cleaned for display in the museum, the
bones were treated with a thick coat of organic preserva-

These drawings indicate relative size of coprolites (the actual diam-
eter of the smallest is about 1 cm).
JAPANESE MUSEUM BUYS BONES OF BURNING TREE MASTODON

Bones of what is perhaps North America's most famous mastodon have been sold to a museum in Yokohama, Japan, for a record price of $900,000. The mastodon skeleton was discovered in 1989 at the Burning Tree Golf Course near Newark, Ohio. The 13,000-year-old mastodon received worldwide attention when researchers discovered that its intestinal bacteria had survived in the bog site, which preserved the animal's apparently butchered remains (see Mammoth Trumpet, April 1993). "Evidence of Mastodon's Last Meal: Bacteria Still Working After 11,000 Years." The sale touched off controversy in Licking County, Ohio, when it was reported several weeks ago. Golf-course owner Sherri Byers did not confirm the sale price or reveal the mastodon's new owner, but journalists and others close to the case learned that the sale was made at a fossil and mineral show in Tucson, Ariz., where scientific information compiled by the team of researchers who excavated and studied the animal was presented with a sales prospectus. Dr. Bradley T. Lepper, Ohio Historical Society archaeologist who excavated the mastodon, learned that the skeleton was purchased at the National Prefectural Museum of Natural History in Yokohama, which is planning a large hall that will be filled with fossil proboscideans. Leading paleoanthropologist Anne Wymer, a paleoethnobotanist at Bloomsburg University of Pennsylvania who also is a member of the team that studied the Burning Tree Site, was critical of the sale. "They asserted that it was the freely provided work of scientists that resulted in the high value of the skeleton.

Sherri Byers attributed the value to the animal's excellent state of preservation. He said he spent $10,000 recovering and replicating the mastodon bones. He expressed disappointment that Ohio could not come up with a way to display the skeleton locally. Byers reportedly sold one full-scale replica of the animal to a Japanese buyer for $50,000. He said keeping the bones himself was out of the question because of the high cost of upkeep.

SYMPOSIUM IN SOUTH DAKOTA WILL SALUTE LEADING PROponent OF OVERKILL HYPOTHESIS

A symposium this month in Hot Springs, S.D., is scheduled as a tribute to the father of the overkill hypothesis, Paul S. Martin. Thirteen speakers are scheduled Sept. 24 and 25 for the two-day symposium, "Late Quaternary Environments and Deep History," which will mark a 40-year Batification Conference sponsored by the Commission on Nomenclature of Bone Industries.

Martin is widely known for the argument that human hunters were responsible for the extinction of Pleistocene megafauna such as mammoths and mastodons. The symposium is sponsored by the Mammoth Site of Hot Springs, S.D., and Northern Arizona University. Organizers Larry Agenbroad and Jim I. Mead of Northern Arizona University note that there are many who believe Martin has done more to encourage Quaternary research than anyone else. He has stimulated multidisciplinary research in the area of pollen, plant macrofossils, nature and extinction worldwide. His "model for the Pleistocene overkill and large-animal extinction has provoked three decades of intense research.


The Eighth Meeting of Working Group No. 1 on Bone Modification is scheduled to follow, Sept. 26-30, at the same location. Hosts are the Archaeological Laboratory, Augustana College, Sioux Falls, S.D., and the Mammoth Site of Hot Springs, South Dakota, a nonprofit organization. Conference organizers are L. Adrien Hannus of the Archaeology Laboratory, Augustana College; Suzanne Miller of EG&G, Inc., Idaho Falls, Idaho; and Agenbroad of the University of Northern Arizona.

UPCOMING CONFERENCES

OCT. 29-31 — Annual Meeting, Eastern States Archaeological Federation, Bangor Motor Inn, Bangor, Maine. Contact: James B. Peterson, Archaeology Research Center, University of Maine, Farmington ME 04938, (207) 778-7012 Fax: (207) 776-7024.

NOV. 5-7 — Fall Meeting, New England Antiquities Research Association, Danbury, Conn. Contact: Roslyn Strong, R.R. No. 1, Box 3650, Edgecomb, ME 04650.


JAN. 5-8, 1994 — Annual Meeting, Society for Historical Archaeology, Underwater Archaeology, Vancouver, B.C. Contact: U.S. National Museum, Dept. of Anthropology, Simon Fraser University, Burnaby, B.C., Canada V5A-156. (251) 898-4000 Fax: (251) 898-0567.

MAY 23-29, 1994 — Symposium on Paleodinosaurs and the First Americans, Museum of Natural History of San Rafael, Mendoza, Argentina. Participants are asked to submit titles and abstracts of papers before Sept. 30. Contact: Committee on the Symposium on Paleodinosaurs and the First Americans, Archaeology Division, Faculty of Natural Sciences and Museum-Unlp, Paseo del Bosque s/n, 1900 La Plata, Argentina. Fax: (54) (21) 2572-2390 C.F., 7630 Necochea, Argentina, Fax: (54) 8062-2209.

Aug. 25-Sept. 2, 1994 — International Conference on the Arctic and North Pacific, Anchorage, Alaska, and Vladivostok, Russia. Themes include Natural Resources and Environmental Changes, Recent Discoveries about Beringia, Development and Adaptation, Prehistoric Subarctic Communication and Information Exchange. Contact: Dr. Gunter Weller, Geophysical University of Alaska, Fairbanks, AK 99775-0800, E-mail: GunterWeller@idno.gi.alaska.edu. Fax: (907) 474-7290.

square and 5 feet deep, that paralleled the drainage ditch. The first 18 units were largely an exercise in Ice Age stratigraphy. Below the row of the plows, excavations revealed a layer of dark peaty material, under that an almost-black organic clay, which overlays a shell-rich marl that indicates the gradually sloping bottom of the old lake. "We moved a lot of dirt," said Pepper, as she and the other excavators left the site at the end of a working day at that point.

In the 19th unit, between two and three feet deep, they came upon the crushed pelvis bones of the mastodon. We assume it is in a lot worse condition than it was in 1938 because of the lowering of the water table and the driving of tractors back and forth above it." The bones lay at the interface between the dark organic clay and the shell marl and were par- tially embedded in both of these horizons, Brush explained. Continuing excavation proved that the bones were dispersed, suggesting that they may have been scattered by scavengers or perhaps butchered. Discovery of the first flint flake, approxi- mately an inch and a half in diameter, made butchery a likely hypothesis. Within two more flakes were found, lying among rib and ankle bones, Brush left them in place and called Dr. Bradley T. Lepper, Ohio Historical Society archaeologist at the Newark Earthworks State Memorials. Lepper not only has experience excavating a mastodon believed to have been butchered, but his doctoral research on Paleoindians of nearby Cohocton County gave him expertise on flints of the area and their early use.

Lepper saw two of the flakes at site and agreed that they were clearly associated with the mastodon bones. One lay directly on the marl, and the other was only a few centimeters above in the heavy, dark clay. Lepper said it is extremely unlikely that they could have been displaced from above. Brush de- scribed the flake as being large enough to have served as cutting tools. Two are Upper Mercer flint, a dark material, while the third is light in color. The latter was in association with the bone of a deer- like animal and no more than two feet from a mastodon leg bone.

The bones are proving to be scattered over an area approximately 10 meters wide. "It was certainly disarticulated," Brush said. "We noticed. . . . that apparently one of the knee bones is in association with ribs." Handling the badly cracked mastodon bone was a challenge to Brush and her crew. They applied preservative to it and employed plaster casts to the last. Observing the quality of the bone, Lepper advised sacrificing a considerable amount for radiocarbon dating in order to assure the most reliable results.

Test excavations at the site, which has been termed the Martin's Creek Mastodon site, were con- cluded for the summer on Aug. 7. The discovery has not yet been dated, but Brush and Forrest Smith, professor of art at the University of Akron's Wayne College, are preparing the materials for analysis. Brush reported that the two endcrapers and four of the flint flake will be submitted for bone residue analysis. The flint flake and endcrapers will subsequently be studied for diagnostic patterns of edge wear. The mastodon bones will be examined for cut and pressure marks. Carbon, shell, pollen, wood, bone and soil samples will also be analyzed in an attempt to reconstruct the environmental setting of this probable Paleoindian butchery site.

---DAI

Butchered Mammoth

Our annual volume of abstracts. Current Research in the Pleistocene is an important publication in the field. Edited by Bradley T. Lepper, associate editor, CRP reports on progress in all areas of Quater- nary research. Papers are grouped under subjects of biology, physical anthropology, lithic studies, methods and paleoenvironments (the latter category includes plants, vertebrates and geocelss). Papers are brief and easy to read, with extensive references. CRP is an excellent resource for Volume 9 is now available and includes research in North and South America, and Japan. Volume 10 is expected this fall. Both volumes 4 through 8 are also available. Paper back, about 140 pages. $20 each. Order today from: Oregon State University CSAP/MNCR 355 Corvallis, OR 97331-6510.

Join the Center for the Study of the First Africans and receive a year's subscription to Mammoth Trumpet. Still only $15.

SUGGESTED READINGS

On Mollusks, Not Mammoths

Crawford, Michael H. (editor) June, 1992 Human Biology 64:271-283 (Special Issue on the Biological Anthropology of New World Populations includes papers by Rogers, Rogers & Martin; Schafkan; and Steele & Powers).


MAMMOTH TRUMPET VOLUME 8, NUMBER 4

CURRENT RESEARCH IN THE PLEISTOCENE

ON Butchered Mammoth, Mammoth Kill, and Flint Found


ON Coprolites Give Evidence Mastodon Died Accidentally

Hartington, C. C. 1900 Vertebrae of the Last Interglaciation in Canada, Geographical Physique et Quaternaire 44:375-387.

Mott, R. J. and D. R. Grant 1985 Pre-Late Wis- consinian Paleoenvironments in Atlantic Canada, Geographical Physique et Quaternaire 39:239-245.

