

MAMMOTH TRUMPET

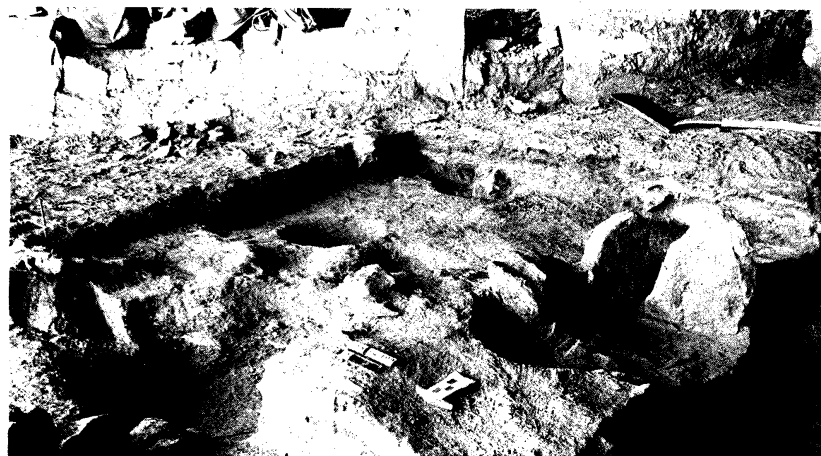


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Center for the Study of Early Man
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University of Maine

LINKING TWO AMERICAS



Partially excavated preceramic deposits in Guitarrero Cave. The holes are more recent ($\leq 2,500$ yr B.P.) intrusive pits which have been emptied of their contents in preparation for excavating the earlier layers. The stacked stones in the background are walls of ceramic-age tombs along the side of the cave. (T. Lynch photos.)

Although North American archaeologists tend to speak of the "peopling of the Americas," they sometimes forget that "Americas" is plural. Tom Lynch, long-time specialist in South American archaeology, is acutely aware of the need to correlate archaeological information from both continents.

In addition to some 20 field seasons spent in South America (Peru, Ecuador, and Chile), Lynch has worked in Spain, New York, California, Idaho, and the southwest U.S. He is the author of numerous publications, many dealing with the archaeology of South America.

His interest in the past developed at an early age. His father, he says, was a history buff, and his mother the family historian. As a boy growing up in the 1950s, he and his family frequently attended archaeological lectures at the University of Minnesota. Following his graduation from high school, Lynch entered Cornell University as a geology major. He quickly decided that the anthropologists were "much more open-ended" in their approach to the problems that interested him, and subsequently changed majors. Graduating with a double major in anthropology and sociology in 1960, Lynch went on to the University of Chicago, where he received a Ph.D. in 1967. He is currently on the faculty of Cornell University.

Although Lynch's archaeological experience is by no means restricted to South America, it is obvious when speaking with him that this area of interest is his first love. His enthusiasm for the culture and peoples of South America, as well as the archaeology,

is evident. This, Lynch calls, the "Anthropological Effect," stating, "We are sometimes at odds with our own culture and feel more at home somewhere else."

Lynch's involvement with South American archaeology began while he was still an undergraduate. Arriving in Peru to work with Alan Homborg, a Cornell University professor engaged in an applied anthropology project, the young Lynch found that he preferred working with the past rather than the present cultures. After one season of ethnology, he was put in charge of seeking early human sites in the area.

Lynch later returned to Peru for several years. At this time, most of the archaeological work there was being done by North American scholars, a period which Lynch terms, "A great flurry of North American activity."

One of the most important sites excavated by Lynch during his stay in Peru was Guitarrero Cave, a site which produced wood, textiles, baskets, and even food remains, in addition to the usual lithics. Unlike many South American sites which lack or contain only poorly associated organics, the abundance of dateable material in Guitarrero Cave allowed for a series of reliable dates. These dates, which fall consistently into the 10,000-11,000 yr B.P. range, indicate that Guitarrero Cave may be one of the earliest known South American agricultural sites.

With the passing of the 1960s, it became increasingly difficult for foreign archaeologists to work in Peru. North American scholars branched out into other countries, and Lynch moved on to Ecuador for a brief period. He then found himself in northern Chile at the invitation of Lautaro Núñez and Agustín Llagostero, affiliates of the Universidad del Norte. While in Chile, Lynch ran a field school for students from that university and Cornell.

A growing nationalism over the last two decades, which Lynch describes as "academic as well as political," has made South Americans increasingly aware of the importance of training their own archaeologists, rather than simply accepting the answers provided by Europeans or North Americans.

As the numbers of native South American professionals have increased, the changing role of visiting North American and European scholars is evident. Although foreign archaeologists are still welcomed on the South American continent by native professionals, the

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MANIS MASTODON SITE REVISITED

In August, 1977, on the Olympic Peninsula of the state of Washington, Carl Gustafson, Associate Professor of anthropology from Washington State University, leaned over, picked a fragment of mastodon rib out of the black mud of a bog, and "felt a bump that didn't belong there." The rib fragment was covered with black bog matrix, "miserable stuff," as Gustafson describes it, in which he had to stand nearly hip deep to excavate what has come to be called the Manis mastodon. "So," as he remembers, "I just stopped and washed that off. There was a piece of—in my notes I think I called it 'foreign bone'—embedded in this rib." This was during his first visit to the Manis site, which began as a salvage investigation.

"At this point we just shut the whole thing down and took stock of what we were going to do. Because this thing that was stuck in the rib looked for all the world like it might have been a bone projectile point." Now, an indication that humans had been hunting mastodons would be interesting anywhere in North America because it is evidence of human antiquity: mastodons died out somewhere around 10,000 years ago. It would be additionally remarkable because, although we have plenty of knowledge that humans hunted mammoths, there has been, for some reason,

little evidence north of Mexico that humans hunted their smaller relative, the mastodon. But such a discovery would be most exciting of all in the Pacific Northwest, where it would represent "far and away the oldest material that we have, going back to about 12,000 years ago."

Archaeology is part of the study of humanity by itself, and it is not surprising if it opens out, at least momentarily, into philosophical dimensions. One ponders how little, yet how much, it takes to alter the course of a life. How little, because Carl Gustafson has been excavating and lecturing about the Manis site for ten years now, though he has been without major funding since 1979, and all because of a piece of bone or antler embedded in a mastodon rib that he has been compelled to brood upon like Hamlet over Yorick's skull. And yet how much, for the chances against his having picked up exactly that piece of mastodon rib fragment are enormous.

There is plenty of corroborating evidence for human association with the Manis mastodon, beginning with the analysis of the piece of embedded bone or antler itself. X-rays taken at the Wallace Harms Group Laboratory near Seattle showed that the object

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C E N T E R N E W S

KEEPING PACE WITH THE PAST

What are the sources of multidisciplinary information about the early peopling of the Americas? With so much being discovered and reported, there are now numerous publications in which to search. There are specialist journals of the various Quaternary disciplines (archaeology, geology, and paleontology, etc.), many society and academy journals, monographs, and books. **Current Research in the Pleistocene (CRP)** is continuing to fill an important role through its timely publishing of a wide range of information in a single source. By using an extended abstract format with illustrations and references, we are able to publish an ever-increasing number of papers from researchers. This issue of **CRP**, volume 4, has almost doubled in size from last year, and includes 74 papers from eight disciplines.

The quick turn-around time (five months) for each volume makes the information immediately useful to others doing related research. To do this, **CRP**

must be focused, yet flexible. It is focused in its scope: articles relate to the Pleistocene peopling of the Western Hemisphere. It is also flexible: it has expanded opportunities for communications in specialized areas through the adoption of a Special Focus section. This year the focus is on South America.

The request for information about the Quaternary, in all its varying details, is enormous. And growing! Adequate dissemination of this information requires that almost everyone, not just the big libraries, be able to afford their own copy of **CRP**. We have streamlined **CRP** to get you the most for your money. The journal's ultimate success, however, lies with you. It is the contributors to and readers of **CRP** that keep it going. **CRP** 4 (1987) is going to press this month and will be in the mail by July. We want to hear from you, to know how you like **CRP**, and how we can best serve you.

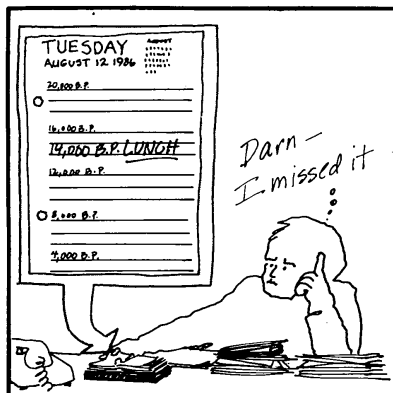
—Jim I. Mead

ARCHAEOLOGICAL SOCIETY UPDATE

The Center has contacted the following groups to establish a network of local archaeological societies to help keep us informed of Paleoindian research in their areas. If you belong to an archaeological or anthropological society that is not listed below, please get in touch with us. For starters, we would like the name and address of the society president so we can send him/her a survey. Any help you can give will be greatly appreciated. We would like to thank the following societies for taking the time to respond.

Alabama Archaeological Society
Alaska Archaeological Society
Arizona Archaeological Society

Colorado Archaeological Society
Delaware Archaeological Society
Florida Anthropological Society
Idaho Archaeological Society
Illinois Association for Advancement in Archaeology
Indianapolis Archaeological Society
Kansas Archaeological Society
Lovland Archaeological Society
Maryland Archaeological Society
Massachusetts Archaeological Society
Michigan Archaeological Society
Mid Columbia Archaeological Society
Middle Cumberland Archaeological Society
Mississippi Archaeological Society
Missouri Archaeological Society
Montana Archaeological Society
Nebraska Archaeological Society
Nebraska Association of Professional Archaeologists
Nevada Archaeological Society
New Jersey Archaeological Society
New Mexico Archaeological Society
North Carolina Archaeological Society
North Dakota Archaeological Society
Ohio Archaeological Society
Oklahoma Archaeological Society
Oregon Archaeological Society
Pacific Coast Archaeological Society
Pennsylvania Archaeological Society
South Carolina Archaeological Society
South Dakota Archaeological Society
Texas Archaeological Society
Utah Archaeological Society
Vermont Archaeological Society
Virginia Archaeological Society
Wabash Valley Archaeological Society
West Virginia Archaeological Society
William S. Webb Archaeological Society



Feel behind the times?

Current Research in the Pleistocene will keep you up to date on the latest findings and ongoing research in the Quaternary sciences as they relate to the peopling of the Americas before 10,000 years ago. For the cost of a good lunch, **CRP** serves up a smorgasbord of concise, timely reports from the fields of archaeology, taphonomy, and paleoecology (plants, vertebrates and geosciences).

Join us for volume 4 (1987), with a Regional Focus section of invited papers featuring South America. The price is still \$12.00.

The leftovers are good, too!

Limited quantities of back issues are still available at the same per volume price.
Volume 1 (1984) \$ 5.00
Volume 2 (1985) \$12.00
Volume 3 (1986) \$12.00

Make checks payable to Center for the Study of Early Man, 495 College Avenue, Orono, ME 04473.

Prices include shipping and handling and are subject to change without notice. All orders must be prepaid in U.S. funds. Add \$8.00 volume for all orders to be shipped outside North America. Allow 6-8 weeks for delivery.

ATTENTION MEMBERS

The Center for the Study of Early Man has re-applied for a major grant from the National Endowment for the Humanities Challenge Grant Program. The purpose of the grant is to launch the development of a humanities-based public education effort. This effort has several components, including establishment of a Textbook Publishers Resource Service (TPRS). The goal of the TPRS is to improve the coverage of prehistory in textbooks at the primary and secondary school level. A second component is the development of a newspaper for middle school-age students, modeled somewhat on the **Mammoth Trumpet**, but including a teacher's supplement. This paper will be called the **Ice Age Times**.

How can you help? In two ways. If you are a teacher who is involved or interested in bringing archaeology into the middle school (grades 5-8), please let us know who you are and your needs.

Secondly, your gifts can help. If we receive the Challenge Grant (\$100,000 spread over three years), we are required to raise a matching \$300,000 dedicated to these humanities programs. The grant, if awarded, is retroactive in terms of when the matching money may be raised. Thus, money raised now may be applied as match.

Please help us meet the NEH challenge! As you know, our nation's children, as well as the general public, know very little about our prehistoric heritage. The Center is in a position to make a difference with your support.

If you are able to help, please indicate that your gift is intended to meet the NEH challenge. Thank you.

NOTICE TO OUR CUSTOMERS

We anticipate that our prices will be going up in July. The current price structure will remain in effect for all orders postmarked before July 1, 1987.



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SUGGESTED READINGS

On Linking Two Americas

Lynch, T.F. (editor) 1980 *Guitarrero Cave: Early Man in the Andes*. Academic Press, New York.

Lynch, T.F. 1983 Chapter 3, The Paleo-Indians. In *Ancient South Americans*, edited by J.D. Jennings, pp. 87-132. W.H. Freeman, San Francisco.

Lynch, T.F. 1984 Review of "Early Man in the New World." In *American Anthropology* 86:1010-1011.

On the Manis Site

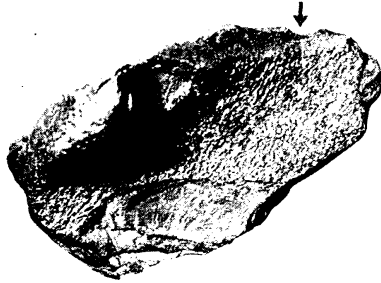
Petersen, Kenneth L., Peter J. Mehlinger, Jr., and Carl E. Gustafson 1983 Late-Glacial Vegetation and Climate at the Manis Mastodon Site, Olympic Peninsula, Washington. *Quaternary Research* 20:215-231.

Gustafson, Carl E., Delbert Gilbow, and Richard D. Daugherty 1979 The Manis Mastodon Site: Early Man on the Olympic Peninsula. *Canadian Journal of Archaeology* 3:157-164.

On Difference between Mammoths and Mastodons

Agenbroad, Larry D. 1984 New World Mammoths in a Nutshell. *Mammoth Trumpet* 1(2):5.

MANIS MASTODON SITE REVISITED (Continued from page 1)



A fragment of mastodon leg bone. The negative flake scar (top) indicates the point of impact on the external surface of the fresh bone, which resulted in the diagonal "spiral" fracture of the bone. (Photo courtesy of C. Gustafson.)

tapered to a point inside the rib, where it had penetrated about three quarters of an inch. Dr. Marvin Wallace diagnosed the wound as a typical penetration fracture, definitely made while the mastodon was still alive and not a freak product of the backhoe that had originally thrown up the rib, because the rib had clearly healed around bone or antler for at least 3-4 months and possibly for as long as a year. It was definitely *not* the cause of the animal's death, which may well have been simple old age. The Manis mastodon was an arthritic old fellow with highly worn teeth who was about 45 years old by African elephant standards.

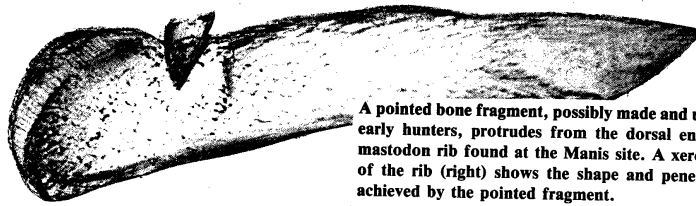
Gustafson's field crew proceeded to excavate, excited by the probability this was an early archaeological site. They quickly discovered that they were at first excavating only *half* a mastodon—and not only that but, logically speaking, the wrong half. The mastodon had died fallen on its left side, so that the right-hand side should have been lying topmost; yet those bones were missing altogether. The Gustafson crew imagined that if Pleistocene people had butchered only the right side of the mastodon and abandoned the left, they would probably have carried the meat and bones a bit northward. Sure enough, excavation about 2 m away produced the bones of the right side—not properly aligned like those of the left, but broken, scattered, and scored; as is the top portion of the carcass had indeed been butchered.

Subsequent pollen analysis by Peter J. Mehringer, Jr. and Kenneth Petersen suggested that the general area where the mastodon was found included patches of marshy, pond-like vegetation, particularly cattails. Reasoning that such an area would have been too low and wet for a camp, Gustafson decided to look for nearest higher ground—that is, on the ancient landscape. To do this, sediment cores were gathered about every two meters in a fan-shaped sample. About 25 m from the fallen mastodon they discovered that the ancient land surface sloped rapidly upward to a suitable camp area. Here, a shallow trench was excavated by backhoe and the ancient material adjacent to the trench (including the slope) was carefully removed, beginning with the marker horizon of volcanic ash known to have been deposited 6,700 yr B.P.

Beneath the ash layer they discovered a broken bison skull slightly downslope from a deposit of three charcoal lenses, the largest of which was about 2 m × 1.5 m. Associated with the lowest charcoal lens were fire-cracked rocks and a broken, charred bison metapodial (lower limb bone). Both the skull and the metapodial were found on the Pleistocene gravel surface.

The next task was to connect the feature on the knoll with the main site area; this was done in 1979 with a stratigraphic trench. They discovered that the glacial gravel surface immediately underlying both features was very slow to accumulate sediment, and that material found on that surface could have been deposited anywhere between about 12-10,000 years ago. Thus, although both site areas dated to the end of the Pleistocene, absolute contemporaneity could not be demonstrated.

From 1980 to 1983, lacking further funding, Gustafson and his son, Bradley, returned without a crew to excavate an area where evidence of a second mastodon had been found back in 1979, about 10 m



A pointed bone fragment, possibly made and used by early hunters, protrudes from the dorsal end of a mastodon rib found at the Manis site. A xerograph of the rib (right) shows the shape and penetration achieved by the pointed fragment.

A pointed bone fragment, possibly made and used by early hunters, protrudes from the dorsal end of a mastodon rib found at the Manis site. The drawing, done from a xerograph of the rib, shows the shape and penetration achieved by the pointed fragment.

from the original mastodon. The very fragmentary remains of this animal as well as fragments of bison bone were located stratigraphically just below the original mastodon, within the glacial debris; these bones show probable evidence of human butchering. More bison teeth and bone were found on the glacial surface (at the same level as the original mastodon); these bones also show evidence of human modification.

In 1984, with a small private donation, Gustafson again took a crew to the site. The goal was to stratigraphically connect and study the relationships among the three site areas. His current interpretation of that evidence is that the modification of bison and mastodon bones at all three of the site areas took place between 12,000 and 10,000 years ago. This was followed by a hiatus of cultural evidence lasting until just after the Mt. Mazama volcanic eruption, 6,700 years ago.

At the end of the 1984 season, as he was cleaning up the sides of one of the trenches, Gustafson discovered a curious feature that resembles a posthole. In excavation the following year, he found that the feature extends from just below material dated to 9,500 years ago, down through the sediments that contained the mastodon and bison bone, and down into the glacial gravels. Upslope from this feature was a second one in the same stratigraphic position, but which resembled a pit. In 1986 a third posthole like feature was found fairly close to the other two features. No decision has yet been made about continuing the excavation to search for further such features.

Work is now proceeding to complete the analysis and publish the results. Says Gustafson, "We've never had all this material together until last fall. It was stored in five different buildings, and some was stored at the site. We've just finished cataloging and preserving all of the specimens." Although much of the preliminary analysis was done as the excavation proceeded, it now remains to Gustafson to pull the entire picture together.

The history of this excavation illustrates the complexity of most archaeological investigations. From the need for cooperation between academic, public, and private realms to the ongoing need for funding, publicity, and staff, the Manis site runs the gamut of such experiences.

The Manis site attracted an overwhelming amount of public notice. For at least three weeks after the initial discovery, reporters converged on the site 15-20 at a time; constant interviews and tours had to be given. Over the years, 25,000 people from all over the world have visited it, many of them with car trunks full of fossils for the archeologists to look at. An irony atop this irony is that the land, located near the town of Sequim on Washington's Olympic Peninsula, is privately owned by Clare and Emanuel Manis, whose plan, when they moved near the sleepy retirement village of 1975, was to live quietly and self-sufficiently off the land, in a house which they had built with their own hands.

In August, 1977, "Manny" Manis decided to dig a pond with a backhoe in the middle of his front yard. But then he hit the two huge obstacles: what looked like two old mudcovered logs, 6-7 inches in diameter and four and six feet long respectively.

It takes a while to convince yourself that you have actually dug up elephants tusks out of your front yard in the middle of Washington state. It took Manis a

little longer still to convince his wife, who was called down to the spot grumbling and sceptical. But once she saw the size of the tusks, "she decided that someone needed to come out and see them, to find out if they might be important. She made phone call after phone call until she finally got through to somebody; and that somebody was Dr. Richard Daugherty," professor of anthropology and Gustafson's colleague at Washington State University. He and Gustafson converged on the site on the 17th of August, 1977.

"We just developed our own miniature corps of engineers and began putting in dams and excavating sumps, turned the water around and began spraying it onto the back dirt." Manis had already removed the top layer of peat, which he was selling to the nearby retirement community. What was left was the gravelly layer of glacial debris beneath, in which the tusks had been discovered. There was a pile of the gravelly material maybe 4-5 feet high and 15-20 feet long on the island, and (initially) a weekend to go through it—or so they thought as they washed away the mud and gravel, "leaving the bone up on a pedestal." Then Gustafson found the bone-embedded rib. "We ended up staying 5½ months," he says with a laugh.

Gustafson's life was not the only one to be transformed by that bit of bone; indeed, the discovery's effect radiated in a series of widening circles. First, it gave the Manises a whole new career. Daugherty, who had been through this kind of thing before, "had explained to them what might happen to their lives and their land if they allowed us to stay," Gustafson recounts. "Visitors and people from newspapers and TV would flock to the discovery. Bathrooms and parking facilities would be needed; their insurance rates would skyrocket; someone would have to be there 24 hours a day, 365 days a year." Daugherty "told them that he wouldn't blame them a bit—in fact, if he were in their shoes, he would probably say, 'Well, why don't we just cover it up and leave it alone?' But they wanted to be a part of it. They're really incredible people."

The Manises enabled the excavating to continue, and made themselves an integral part of it, by contriving to turn the very disadvantages of the situation into a way of life. In a daring move, they decided by November to sell the local bowling alley that they had been operating, which left them for the moment with no source of income. But the sale allowed them to build a lab onto their barn—and to convert the barn itself into what they called a "Mastodon Theater." They laid a slanted concrete floor, installed benches and audiovisual equipment, and did slide shows. This meant learning a great deal about the subject, but that was no problem for them. "They were tremendously interested, the best students I've ever had," Gustafson says, "and in many respects the best teachers I've ever had too."

Second, the publicity inevitably affected the Sequim community. Daugherty spent about three weeks meeting with people in the neighborhood, sometimes 3-4 times a week, to help them decide whether to bypass aspects of the neighborhood covenant, which did not allow for all the things that were going to be done on the Manis property.

To the archeologists themselves, the rib meant the sudden possibility (not to mention necessity) of funding. "It was our ticket, so to speak," says Gustafson, because it turned a salvage operation into an archaeological dig. He called Washington State University and said that he didn't have any money yet, but that that didn't matter: he had to have a leave for the fall semester because he was going to stay out there and work. Since it is on private property, the Manis site was not at that point eligible for federal funds;

(Continued on page 8)

Interview with Richard Leakey

"THE ETERNAL LANDSCAPE OF THE PAST"

Richard Leakey was the keynote speaker at a conference organized by the Center for the Study of Early Man and held recently at the University of Maine. What follows is an interview with Mr. Leakey held at that time, in which he discusses his vision for and role in developing national awareness and support for understanding the earliest human inhabitants of Kenya. In his case, these earliest inhabitants are synonymous with the earliest humans yet found. However, many parallels to archaeology in the Western Hemisphere can be made.

M.T. Could you talk about the history of the Kenya National Museum, particularly its public education function?

R.L. When I joined the National Museum in Kenya in 1969, it was just the single facility in Nairobi. It was very small. It was in part a research collection

in Kenya is being modernized so that youngsters can learn more about their own country. Instead of using examples from the standard western textbooks, in Kenya we're using examples taken from our own resources, and this is having a big impact on how people see themselves.

M.T. What is the impact?

R.L. I think the impact, really, is a growing awareness in Kenya amongst young people about their own country and about the role of their own country in development. These are big, big issues.

M.T. In this country we have what might be viewed as a problem where the aboriginal people are not necessarily the people doing the research, and people who are doing the research and the bulk of the general public, don't necessarily recognize aboriginal America as their heritage. Do you have some experience that is comparable?

is in no way abused or cheapened. And I think it works extremely well. Our antiquities ordinance, I think, is a model for many parts of the third world.

M.T. It's unusual to have such a popular support for what is perceived by many to be an academic area.

R.L. I think it is unusual, but I think it's because we've been fortunate to have fairly enlightened series of government ministers and cabinet members. There's been a certain amount of development of plurality. But it is a fact that whenever we have dignitaries from other countries, heads of state, visit Kenya, the vast majority of our VIP guests to the country end up visiting the museum to see the old fossils and to see 'Adam's ancestors'. And it's a very good thing for the museum, and a very good thing for personal contacts to work with.

M.T. If you had some advice to give countries like the U.S. or Canada about what they might do to engender the same kind of popular support for national heritage, or international heritage, or species heritage, what would it be?

R.L. I think it's a very difficult thing. I think the indigenous people of North America, and South America, and Central America have been so badly treated by the Caucasians in contemporary, in comparatively recent times, that it is very difficult to see how those wounds can be easily healed, and how any action can truly be recognized. I think one should focus on the international heritage, on the fact that there were many cultures and many peoples that are now lost, for all intents and purposes, to the world, and whatever can be preserved should be. To provide for this enriching of the total human experience, I think, is a more positive approach. I think it's extremely difficult for an indigenous or aboriginal American to see somebody whose origins are elsewhere claiming this is *our* heritage. It really isn't *our* heritage in that sense. It's the heritage of an oppressed people. Yes, the oppressed people are part of the world community and if its perceived as the world heritage, it's a slightly different approach, you see, and I think you might have a slightly better effect.

M.T. Those are good thoughts. We have tried to have a global perspective, to say that what we are about is looking at the final dispersion of the single species into the rest of the habitable world.

R.L. As long as you take it from a biological and cultural perspective in that sense it may justify a lot of work, but all too often it has been treated slightly differently.

M.T. It is a difficult role to play, sort of balancing on the knife edge between the academia of it and the advocacy position of it.

"Instead of using examples from the standard western textbooks, in Kenya we're using examples taken from our own resources, and this is having a big impact on how people see themselves."

of biological materials, in part public galleries that had very little outreach, very little relevance to the modern Kenyan. It was important I was able to expand the museum to serve several functions that had been identified but not been developed. The first of these was, really, public education. And in our country, where we have a very rapidly growing population, a very large body of young people in schools, without modern labs, without access to much three-dimensional information, it seems to me we could play a very important role in strengthening the learning experience by backing up some of the curricula through exhibitions.

We have a very strong education program. We have seven teachers on the staff in Nairobi who prepare programs for visiting groups of young people. And we get something like 150,000-200,000 children through Nairobi every year. But in a country that size, with transportation and things so difficult, it was quite clear that a large number of youngsters would never see this museum. They couldn't get at it, and if they could get at it, they got at it in such large groups the chances were that most of the children would only see the backs of the other children's heads as they went round the exhibits. So we moved to expand the exhibit program to a series of regional museums. And we set up a number of smaller museums, I think seven, where in high population density areas we have basically exhibitions on the same theme, with education offices and teachers attached to those.

M.T. Do you focus on regional history or prehistory?

R.L. The focus is really on Kenya. We have ecology, we have history, we have history of the Kenyan people, we have prehistory, geology, ecology. And they're really exhibits that are designed around the country and the country's own resources. We don't have any exotics. We don't attempt to introduce other countries' ideas at all, but we do provide a very strong support for teaching. It works extremely well.

The other part of the museum, of course, is research, and we have a very strong research component, not just in human origins and in archaeology, but in entomology, mammalogy, geology, and botany. It really could be likened to a small university. We have a variety of formal programs, a horribly large research budget, in which a good number of Kenyan scientists are engaged. And part of the benefit of this has been developing new materials for the teachers to put back into the schools. In the past, in other words, much of Kenyan education had been based on the colonial experience. But as we move forward now, the curriculum

R.L. Well, I think it's different, because in Kenya the indigenous people run the country. Here the foreigners run the country, and it's turned things around very much so.

M.T. But this wasn't always the case in Kenya.

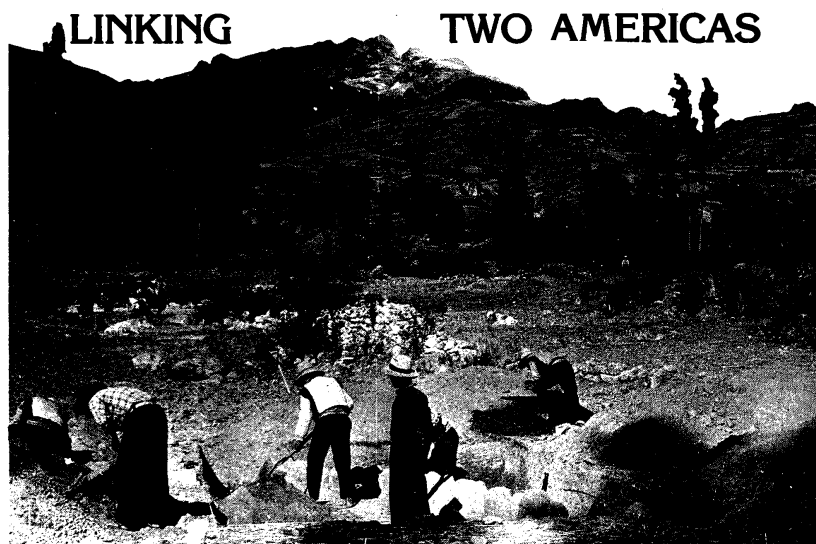
R.L. Well, no but it's been the case since I've been involved, and I don't think much of the work that we're doing in the earliest stages of humanity could ever be construed as relating to the present-day, living people. Indeed, I think many of the contemporary Kenyan leaders treat evolution rather as a legend anyway. They're not at all sure that it applies, and there's a certain distancing from it, so . . . we don't have those sorts of problems. Amongst the younger people, the intelligentsia, there's a great deal of national pride built around the fact that man as a species probably arose in Africa. The second being that, if you will, "Cape Kennedy" of paleoanthropology is in Kenya, and the center of exploration into man's origin is now focused in our country. We have a world resource, we have a top-flight museum, and the vast majority of people involved are, in fact, nationals of the country. There are very few foreigners doing this work in Africa.

"I think one should focus on the international heritage, on the fact that there were many cultures and many peoples that are now lost, for all intents and purposes, to the world."

There's a great deal of interest in what will be found. We are dealing with a population in Africa that's been very transient. People in Kenya today probably came into the area from other parts of Africa over the last 500 to 600 years. There's a great deal of interest in Africa about the origin of the language groups and tribal relations and that sort of thing. This work is perceived as very constructive, understanding the heritage of the land.

None of our fossil material, none of our artifactual material, leaves Kenya. We've put on very strict orders. Everything is kept in the country. Nobody can undertake any excavation or any search procedures without a license from the government. The licenses are strictly designed to insure that the fossil heritage

R.L. I think one of the things that would be very nice to see in this country, somewhere, would be a very large exhibition, as they have in Mexico, depicting the richness and the state of this continent at the time of European contact, and to use that exhibit to demonstrate the ghastly destruction, the despoilation, of this whilst dealing with history. I think that one could in that way engender a public pride in what has been and a public shame in what happened. I think a lot of the conservative elements in society in the United States wouldn't necessarily encourage such a depiction, but I think it would be a legitimate way to try and broach some of the issues that have to be broached if we are ever going to present the archaeology of this continent in the light that I think it should be.



Excavations at the Quishqui Punco site 25 km southeast of Guitarrero Cave. These are but two of many preceramic sites located so far in the Callejon de Huaylas, a high river valley between two mountain ranges in west-central Peru.

(Continued from page 1)

relationship has become a much more equal partnership. Outside scholars are no longer the sole sponsors or initiators of projects, but are instead participants in locally organized excavations. Lynch suggests that northern archaeologists may be particularly helpful in correlating and synthesizing information between the various South American countries, although the role too is beginning to pass to South Americans.

Accompanying the numerical increase in South American archaeologists is an ever-increasing amount of excavated material. Lynch emphasizes there is a current necessity for U.S. journals to open up their publications to South American submissions. At present, potential articles are often rejected by publishers because of format or language barriers. Lynch stresses, however, that the wealth of new information pouring out of South America today makes it imperative that these problems be overcome. Unlike 20 years ago, when the number of excavations in South America was small enough for U.S. scholars to easily keep track of what was going on, it is now impossible for professionals to remain abreast of the new South American discoveries unless these discoveries somehow find their way into the Northern literature. "Communication," Lynch emphasizes, "is the key."

There are both pros and cons of working in South America. While in terms of absolute dollars, South American archaeologists have far fewer resources, state-run universities are often more supportive of research faculty than their northern counterparts. Vehicles, equipment, time, and even labor are often placed at the disposal of researchers. In addition, the growing academic nationalism of the South American countries ensures great interest and cooperation by the local populace. On the other hand, there is frequently a shortage of university funding for scholarships, analysis, or even libraries. Unlike the U.S., private sources of funding are few. However, Lynch retains an optimistic view of events, suggesting South American archaeology is "in a period of expansion."

Lynch is currently involved in two ongoing projects in Chile, run in conjunction with the museum of the Universidad del Norte in San Pedro de Atacama. The first is a survey of the Punta Negra drainage basin in the Atacama Desert in the Desplazado of northern Chile. Although pre-Clovis materials have yet to be discovered in this locale, the recovery of "early to Archaic age" artifacts leaves Lynch hopeful about the possibility of finding evidence of pre-Clovis peoples, were they in the area. Like many of his North American colleagues, Lynch's major focus is on New World entry dates, early adaptations, and paleoenvironmental studies.

For variety, Lynch is also involved in the excavation of Catarpe Tambo, an Incan administrative center. Since 1983, he and the Museo Arqueológico Le Paige have run an international field school at this site.

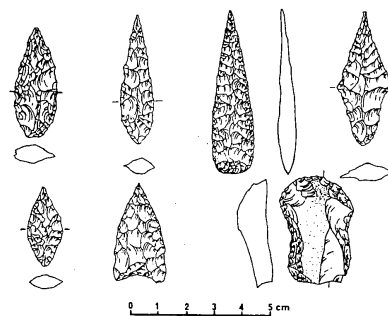
Despite this foray into more recent prehistory, Lynch's primary orientation is toward answering the early peopling questions. Although proof of very early (i.e., before 12,000 years ago) human sites remains generally lacking in North as well as South America, Lynch is enthusiastic about the progress which has taken place in such studies over the last twenty years. Archaeologists, he says, now have both a better idea of what they're looking for, and a greater awareness of the levels of proof they can reasonably expect. Radiocarbon dates, for instance, are no longer accepted as simple and easy answers, but are instead considered within the geological context and the type and association of the material dated. An early cave site date, for example, obtained from the bone of an animal which normally denned in caves, does not necessarily prove that humans were occupying the site at that time, only that the animal was.

Archaeologists have also come to realize that some things in nature can mimic human activity. "Fire," states Lynch, "is not the exclusive prerogative of humans, nor is all carbonized material produced by fires." "Lithics" made out of poor quality cave site material may instead be spalls that have been popped off of roof or walls by natural forces.



Graduate students Lynn Mestres (U. of Washington) and Brenda Kennett (Memorial U. of Newfoundland) mapping metate and roofing debris at the Incan site of Catarpe Tambo, Chile in 1985.

Finally, Lynch feels young scholars of today have a generally better grounding in Paleolithic archaeology than did their counterparts of 20 years ago. An Archaic-appearing material assemblage with a very early date is no longer likely to be accepted with open arms. As Lynch puts it, "People are thinking more carefully about things beyond the dates and looking at the artifacts as the boxes pass around the meeting hall. We've got to know not only that there are dates and that these are real artifacts, but just what is the nature of those things that are called 'hearthths' with quotation marks around them. Are these really cultural features or are they simply burned material that was dated? We have redepositions . . . we have animals



Projectile points and a scraper from Guitarrero Cave.

bringing what could turn into firewood into caves . . . yet will date to the time at which the trees died. There are so many of these complications."

What will pre-Clovis evidence in the New World look like if and when it is found? Lynch postulates that such an assemblage will be similar in form to Siberian Paleolithic materials. Particularly probable is a well-developed stone tool technology. Blades produced from prepared cores, end and side scrapers, some bifacial workmanship, and chopper and pebble tools will likely be in evidence. Bone tools, such as needles, awls, and shaft straighteners, are also to be expected. Other possible material items include netting, baskets, and various wooden tools.

Overall, Lynch is somewhat skeptical that an early entry date will eventually be proven for the appearance of humans in the New World. He points out that, despite the wealth of sites which have been excavated to date in both North and South America, none has yielded incontrovertible evidence of early entry. While conceding that some sites remain possibilities, he maintains that as a growing number of such sites is rejected, the statistical probability that there was a pre-Clovis occupation decreases. "As the certain occupation around 12,000 years ago becomes better known, the whole process looks very sudden. What we have (before this time) are a lot of possibilities that don't fit together in a coherent way."

How sudden was this process? When early New World sites are plotted as a whole on a time line, there is a changeover within a few hundred years from almost no dates to increasingly dense clusters. Interestingly, the cluster of early South American dates lags approximately 500 years behind the bulk of the North American 'Clovis' dates.

While the similarity of the North and South American Clovis dates seems to suggest an almost unbelievably rapid spread of humans throughout the New World, Lynch contends that such a sweep is feasible. Resources, he claims, would have been sufficient to support a relatively high rate of population growth, while groups would have been small enough to allow for effective migration. As Lynch proposes, "They came fast because they were not settling. They were looking for unspoiled game in the next valley over, on a generational or annual basis."

Given herds of unwary, gregarious game animals and a human population ignoring all but the choicest of environments, Lynch sees no reason why a movement from North America to the end of South America need have taken over 1,000 years. A somewhat analogous situation, Lynch suggests, may be one which occurred in historic times, when European fur trappers moved across the North American continent and decimated the beaver population in a few centuries. An enthusiast of a somewhat modified version of Paul Martin's extinction hypothesis, Lynch views the North and South American Clovis as a period of "fluorescence based on easily hunted animals." Although he says this big-game "honeymoon" proved ultimately unsuccessful because of the extinction, "it did work to move some people tremendous distances over not so many generations."

As in North America, the story of the early peopling of South America is still unfolding. As work on the southern continent continues to progress and the archaeological puzzle pieces fall into place, it is a certainty that Tom Lynch will remain an integral figure in bridging the information gap between North and South.

—Karen Turnmire

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SUMMER STUDY AND FIELD WORK OPPORTUNITIES

The Institute of Archaeology at the University of London has announced their 1987 Summer Schools programs. These are short courses, normally five days, held in June and July at the Institute in London, England.

Courses in archaeology include: Field Archaeology in Egypt, Archaeological Excavation Techniques, Surveying of Archaeological Sites, Geoarchaeology, Civilizations of Ancient America, Fortifications of N. Wales, Photographic Workshop, Identification of Roman Coins, Identification of Wood, Drawing of Archaeological Finds, Roman London, Identification of Animal Bones, Ceramic Technology, Landscape Archaeology, Ancient Pottery Techniques, and Nautical Archaeology.

Courses in conservation include: Restoration of Glass Vessels, Glazed Pottery/Porcelain Restoration,

Making Electroform Replicas, On-Site Conservation Seminar, Conservation of Geological Materials, Metallography of Ancient Metals, Conservation of Geological Materials, Conservation of Photographs, Stone Conservation, Wall Paintings Conservation Seminar, Color Dyes, and Pigments, Textiles Conservation, Identification of Fibers, and Conservation of Archival and Library Material.

There will also be a Jubilee Conservation Conference July 6-10 to celebrate the 50th anniversary of the founding of the Institute of Archaeology and the teaching of the conservation of objects within the Institute.

For further information on the Institute of Archaeology courses, contact Prof. Patricia C. Rice, Department of Sociology and Anthropology, West Virginia University, Morgantown, WV 26506, phone (304) 293-5801. For other information and bookings contact James Black, coordinator, summer schools, Institute of Archaeology, University of London, 31-34 Gordon Square, London WC1H 0PY, phone (01) 387-9651.

Human Origins and Prehistory in Kenya: The Koobi Fora Field School

Harvard University Summer School and the National Museums of Kenya are offering an international summer field school in paleoanthropology. The program is run in two six-week sessions and admissions is by regular Harvard Summer School application. Sessions dates: June 10 - July 21 and July 28 - September 7, 1987. Cost: \$2,650 for tuition, room and board, and transportation within Kenya. Mandatory international health insurance (\$40) and transportation to and from Nairobi, Kenya not included in above figure. Request Summer School catalog and application from: H.V. Merrick, Koobi Fora Field School, c/o Harvard Summer School, Department 008, 20 Garden Street, Cambridge, MA 02138.

The American Anthropological Association 1987 summer field school list is now available. This guide to summer field schools and volunteer opportunities in archaeology and anthropology includes a comprehensive description of field activities, and details on dates, locations, entrance requirements, tuition, and credits. To order, send \$6.00 and self-addressed envelope with 56¢ postage to: 1987 Summer Field School List, 1703 New Hampshire Ave., NW, Washington, DC 20009.

INFORMATION ABOUT FOSSILS

Bibliographies specific to certain disciplines are very hard to come by, especially on a regular, up-to-date basis. Occasionally, regional and specific bibliographic surveys are printed "once in a lifetime." These are invariably excellent data sources, but in a few years become outdated.

Probably one of the most comprehensive systems of bibliographic entries for a specialist field is in the Society of Vertebrate Paleontology's annual *Bibliography of Fossil Vertebrates (BFV)*. This provides a one-source publication of articles in vertebrate paleontology. This source is updated and published once a year. At a certain point in geologic time, the study of humans drops from anthropology (*sensu stricto*) and fades into the realm of vertebrate paleontology, or better yet, the two merge to a common ground. Thus, the *BFV* is also an excellent resource for the human osteological literature.

How does one obtain a yearly copy of the *BFV*? One way is to become a sustaining member of the Society of Vertebrate Paleontology (SVP) and the second is to convince your departmental or institutional library to obtain a standing order for the bibliography. As SVP members will tell you, this updated resource is expensive, but very rewarding and extremely important in this day and age of multiple publications.

For more information about the Society of Vertebrate Paleontology's bibliography contact Jim I. Mead, (Department of Geology, 6030, Northern Arizona University, Flagstaff, AZ 86011).

REPORTS, JOURNALS, DATA BASES

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EXHIBITS

April 5 - June 30, 1987

The New England Science Center in Worcester, Massachusetts has a special exhibit entitled *Mammoth Mania - 200 Million Years of our Prehistoric Past*. Craft activities for children and continuously playing video tapes along with dinosaur puppet shows are some of the events. For further information please call their Dino-hotline: 617/791-9215.

*New materials received by the Center library.

CONFERENCES

The Human Story: Bringing Prehistory to Life

The Center for the Study of Early Man (CSEM) underscored the occasion of Richard Leakey's recent visit to the University of Maine as a Distinguished Lecturer with a full weekend of archaeological events. One mandate of the Center, as *Mammoth Trumpet* readers are well aware, is to communicate information about the peopling of the Americas and our human ancestors to the public. This event which interfaced "hard science" and the humanities, represented the Center's first major attempt to do this in a conference format.

Over 200 people representing the general public, teachers, archaeology buffs, and scholars gathered Friday afternoon, February 20, 1987 to attend the conference, "The Human Story: Bringing Prehistory to Life." They were treated to nine slide lectures, four travelling exhibits, three workshops designed for teachers, Native American presentations, and a video festival. Richard Leakey lectured Sunday afternoon, February 22nd, to a standing-room only crowd of over 1,700.

Following the performance of "The Maine-Maritimes Melt" played by french hornist Harrison Roper on the newly-created "mammoth trumpet," members of the Institute for Quaternary Studies set the stage for the human story. Glacial geologist and Institute director Harold Borns led the audience through the retreat of the glaciers in the Northeast. Paleogeologist Ronald Davis then illustrated the dramatic changes in the vegetational communities, laying the groundwork for CSEM director Robson Bonnichen's presentation on archaeology, "Ice Age Colonization of Northeastern North America." This suite of presentations demonstrated the importance of a multidisciplinary approach in the holistic reconstruction of the past; such an approach is the hallmark of the Institute of which the Center is part.

The Archaic and Ceramic periods of the Maine-Maritimes area were the focus of slide lectures by David Sanger (University of Maine), Christopher Turnbull (New Brunswick Archaeology Branch), James Petersen (University of Maine, Farmington) and Bruce Bourque (Maine State Museum).

Dennis Stanford, Director of Paleoindian Programs at the Smithsonian Institution, challenged the audience by asking how the fluted point toolkit, which is essentially the same from Alaska to South America, from California to Maine (and which differs from any toolkit found to date in Siberia) could have spread to these far-flung areas of the Americas within just a few hundred years, for that is what appears to have happened.

Then Stanford jumped into the controversial question of possible pre-Clovis (pre-fluted point) cultures in the Americas, stating that there were 94 such "sites." He quickly added that each one is challenged by some expert or other on either dating,

artifacts, or context—or all three. Via slides he took us to the shores of Pleistocene lakes, sites where bone tools were excavated, and told his questioners he believes there were humans living in North America before the Clovis—he just can't prove it yet beyond a shadow of a doubt. Flaked bone evidence is one of the major factors leading Stanford to this position.

Thomas Lynch from Cornell University then took the podium and firmly restated that no sites exist in the Americas dating to earlier than about 15,000 years ago. He claimed that the cave shelters discovered in Brazil, some with cave art and recently dated to more than 30,000 years ago, may have been improperly dated. Likewise, Lynch believes, the artifacts: "All the fauna is modern. There is no extinct fauna. The site is probably late Paleoindian," he said. Because of coal deposits in the area which could have contaminated the ground water and therefore the C¹⁴ dated samples, Lynch calls for scientific testing of the ground water.

Three well-attended workshop sessions for teachers were held Saturday morning. English professor Kirk Vaughn and high school teacher David Cook linked storytelling and literature to the process of prehistoric reconstruction in their session "Startrekking in the Ice Age." Nova Scotian ethnohistorian Ruth Whitehead shared films and ethnographic details of Micmac life in her workshop "Singing Songs to Stones: Examining Native World Views." In a third workshop teachers learned how to present archaeology of the region to students from State Historic Preservation Officer Arthur Spiess and museum specialist Diane Kopec.

Penobscot and Passamaquoddy educators Theodore Mitchell and Wayne Newell noted that when the Europeans came to this area there were clear streams and a pristine environment, even though people had lived here for thousands of years. After 400 years is that still true? Native Americans have an important message about attitudes toward the land and its gifts to impart to non-Natives. Newell spoke of the role of the "survivors" of the Native American heritage and of the need for intercultural understanding as we face the future together. Linguist Robert Leavitt illustrated how world view is both created and reflected in language.

The excitement and crowds escalated as the time of Richard Leakey's lecture approached while waiting for the auditorium doors to open, the attenders could view some of the outstanding artifacts and displays of the Hudson Museum, directed by Richard Emerick and housed in the new Maine Center for the Arts on the Orono campus. Travelling exhibits about local prehistoric peoples included "Early Peoples in Northern Maine" produced by the CSEM, "The St. Croix—An International Heritage

River" produced by the New Brunswick Archaeology Branch, and "Active Archaeology in Maine: Five Mini-Exhibits" with contributions of slides and texts by area archaeologists. In addition, an extensive display of fossil hominid remains—replicas of all the famous ones from Africa—was there courtesy of Carolina Biological Supply Co.

The Center wishes to thank all the archaeologists and other researchers who contributed to making this conference a success. The conference was funded by a major grant from the Maine Humanities Council. Other contributors were the Maine National Bank and the Canadian-American Center of the University of Maine.

—Marilyn Roper

UPCOMING CONFERENCES

June 3-6, 1987 **LATIN AMERICAN INDIAN LITERATURES V INTERNATIONAL SYMPOSIUM**, Cornell University, Ithaca, NY.

Contact: Dr. Richard N. Luxton, LAILA/ALILA Symposia Chairman, P.O. Box 163553, Sacramento, CA 95816.

July 31-August 9, 1987 **XII CONGRESS OF THE INTERNATIONAL QUATERNARY UNION (INQUA)**, Ottawa, Ontario.

Contact: Dr. Alan V. Morgan, Department of Earth Sciences, University of Waterloo, Waterloo, Ontario, Canada N2L 3G1: 519/885-1211, or K. Charbonneau, National Research Council of Canada, Ottawa, Ontario, Canada K1A 0R6: 613/993-9009.

August 1-9, 1987 **FLINTKNAPPING WORKSHOPS**, Lynchburg, VA.

Short workshops in flintknapping. August 1-2 basic flintknapping designed for beginner. August 3-7 open to knappers of any skill. August 8-9 Master Class for advanced knappers. A lab fee of \$25 covers the cost of materials. Contact: Dr. Errett Callahan, Cliffside, 2 Fredonia Avenue, Lynchburg, VA 24503: 804/528-3444.

August 9-22, 1987 **THE PHYSICAL BASIS OF ICE SHEET MODELING**, Vancouver, B.C. Canada.

Contact: E.D. Waddington, Geophysics Program AK-50, University of Washington, Seattle, WA 98195.

September 9-12, 1987 **INDO-PACIFIC PREHISTORY ASSOCIATION/U GUAM MICRONESIAN ARCHAEOLOGY CONFERENCE**.

Abstracts and papers due June 1, 1987. Contact: R.L. Hunter-Anderson, WERI, University of Guam, Mangilao, GU 96923.

October 22-25, 1987 **NINETEENTH ALGONQUIAN CONFERENCE**, Museum of Natural History, Smithsonian Institution, Washington, DC 20560.

Contact: Ives Goddard, NHB Rm 85, Smithsonian Institution, Washington, DC 20560.

November 12-15, 1987 **CHACMOOL CONFERENCE**, 20th Annual, University of Calgary, Canada.

Contact: 1987 Conference Committee, Department of Archaeology, University of Calgary, Calgary, Alberta, Canada T2N 1N4.

November 18-22, 1987 **AMERICAN ANTHROPOLOGICAL ASSOCIATION**, 86th Annual Meeting, Chicago Marriot, Chicago, IL.

Contact: Victor Golla, George Washington University.

RECENT TRANSLATION

SPECIAL OFFER FROM THE SMITHSONIAN

The Arctic Ocean and Its Coast in the Cenozoic Era

A.I. Tolmachev, editor

This volume is concerned with problems of the origins, evolution, and paleogeography of the Arctic Ocean and its coast during the Tertiary and Quaternary periods. Much emphasis is placed on the evolution of modern Arctic flora and fauna, both terrestrial and aquatic. These problems are discussed on the basis of hydrological, paleontological, biogeographical, climatological, and archaeological data in 84 brief papers originally presented at the All-Union Symposium on the Cenozoic History of the Polar Basin and Its Influence on the Development of the Landscapes of

the Northern Territories, held in Leningrad in 1968. This is a unique encyclopedia on the Arctic, both in scope and subject. It presents information seldom available in the West that has a direct bearing on research regarding the early peopling of the Americas. It will be of interest to many researchers—geologists, geographers, biologists, archaeologists, and all who deal with the problems of the geological history and paleogeography of the Northern Hemisphere.

Originally printed in Russian in 1970, this book has recently been translated into English and publish-

ed by the Smithsonian Institution Libraries in cooperation with the National Science Foundation with funds made available by the Foreign Currency Program. Through special arrangement with the Smithsonian Institution, the Center for the Study of Early Man has obtained a limited number of copies of this book, which we will distribute on a first-come, first-served basis while supplies last. The book itself is free. You pay only the shipping and handling charges listed below. Inside U.S. - \$3.00, Canada - \$5.00, Mexico - \$7.00, outside North America - \$13.00 —per book.

To order, multiply the number of books ordered by the shipping rate to their destination and make checks for that amount in U.S. funds payable to the Center for the Study of Early Man, 495 College Avenue, Orono, ME 04473. Include your name and shipping address. Please allow 6-8 weeks for delivery.

MAMMOTH BRIEFS

Yan Jiagu (Xian Mine College) and Huang Weiwen (Institute of Vertebrate Paleontology and Paleoanthropology, Academia Sinica), China, report the discovery of a Paleolithic industry which includes stone bifaces. The Liangshan site consists of five terraces along the southern end of the Hanzhong Basin in the Dabashan mountain range. The Hanshui River, largest tributary of the Yangtze, flows from west to east nearby. To date approximately 1,000 artifacts have been found both within the sandy gravel of the terraces and on the surface of nearby hills. Many associated mammalian fossils have also been found nearby, including *Stegodon orientalis* (stegodon), *Ailuropoda melanoleuca* (panda), *Rhinoceros sinensis* (rhinoceros), *Muntiacus muntjak*, *Cervus* sp. (red deer), and *Bubalus* sp. (water buffalo).

The artifacts are of a typology and technology similar to assemblages found in South China and the Korean peninsula, but also to the Oldowan in East Africa. The primary difference between Liangshan and the latter is the lack of burins and awls at Liangshan.

The artifacts themselves consist of quartz cobbles, volcanics, and local quartzite and include cores and flakes, "tools," and debitage. Choppers, hammers, and picks are made primarily by using a bipolar split-cobble technique, while scrapers, points, cleavers and some choppers and picks are primarily "flake" tools. With the exception of the few scrapers and bifaces, the artifacts are large and "heavy duty" tools.

Yan and Huang feel the importance of this site lies in the similarity of the assemblage to "western" assemblages. "When we view evidence from the Old World objectively, it is hard to divide the Lower Paleolithic into two mutually exclusive cultural spheres, a Western hand-axe tradition and an Eastern chopper-chopping tool tradition, as had been previously theorized (by Movius). To the contrary, the cultural gap between East and West is disappearing more with each new discovery, and the Liangshan industry is one of these discoveries."

MASTODON SITE

(Continued from page 3)

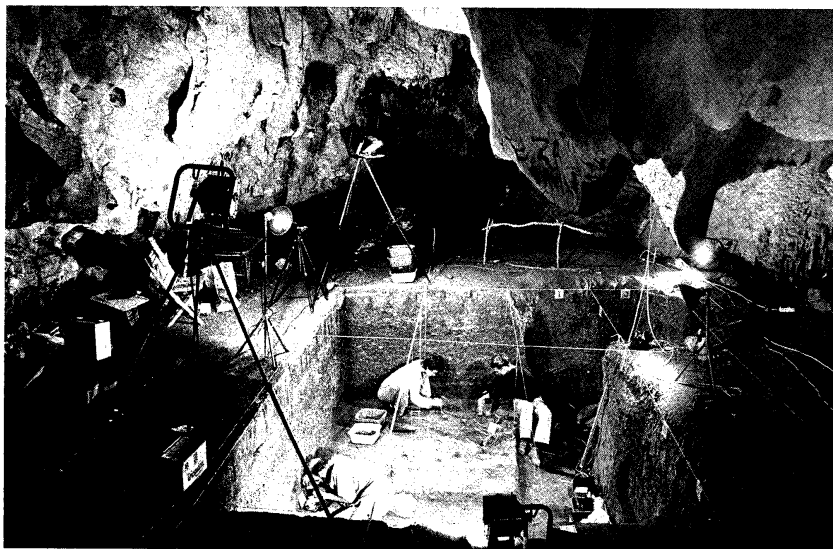
to get around this, Daugherty managed early on to get it on the National Register of Historic Places, after which the State Office of Archeological and Historic Preservation came up with funds matched by the federal government. In the meantime, a small grant from the National Science Foundation provided for equipment. In recent years, however, except for a small private donation, the Manis site excavations have depended on the determination and help from volunteers and students.

Yet the most poignant lesson in this decade-long odyssey is that of patience. It is infrequently appreciated that such lengths of time are required for the sort of interdisciplinary, meticulous, and thorough investigations that will, in the end, give us some answers.

The Manises have closed the site to the public and are trying to get on with their own lives. The original digging area has been reburied, filled with sediment again. And Gustafson has left part of the site intact for the future. The left portion of the skull and most of the bones of the animal's right side remain *in situ*, available should someone need to uncover it again. "With my kind of luck," he grumbles, "there's probably a projectile point or something lying underneath it."

It is the maddening inconclusiveness of the evidence that has kept Gustafson revolving around the site for a decade: the case is probable, but just not certain. "If Mother Nature is fooling us, and making this look like an archaeological site when it actually isn't, I think it behooves us to study *that* as well. Because, if this is the case, we've been fooled now since 1977. On the other hand, if it's really archaeological material, it's important. It's right at a borderline in time, between 11,500 and 12,000 years ago, that these events occurred. Consequently, it's an important transitional site, at a transitional time period. There are not stone artifacts associated with it; so we're dealing entirely with pieces of bone and tusk modified in a way that I can't explain without invoking humans."

—Michael Dolzani



Excavation in Corbeddù Cave, Sardinia (Photo courtesy V. Eisenmann)

PEOPLING OF THE MEDITERRANEAN ISLANDS

Readers of *Mammoth Trumpet* are used to discussions about the date of arrival of humans in the New World. It may surprise them that similar questions arise also in the Old World: they concern the time of arrival of humans on islands, and in particular on Sardinia.

During the Pleistocene, the Mediterranean islands had only a few species of mammals; their small number was, however, compensated for by their strangeness, e.g.: dwarf elephants, small cervids with very short limbs, bizarre bovids with ever-growing incisors, and hippos adapted to mountain niches. The model proposed by Dr. P. Y. Sondaar of Utrecht University suggests the forerunners of these strange animals reached the islands by swimming. Once there, they were at liberty to adapt to their new environments without being bothered too much by predators because carnivores and humans usually did not colonize the islands before the Neolithic period. In consequence, herbivores reduced their size, probably for food-economy, and acquired a sure-footedness for the uneven ground of mountainous islands, instead of keeping large dimensions or fast running limbs to discourage or escape predators. When humans and their domesticated animals eventually reached the islands, about 8,000 years ago, these peculiar animals were no longer able to compete or defend themselves and they all vanished.

Among the many islands excavated by P. Y. Sondaar and his team for more than 10 years, Sardinia appears to be an exception: The Pleistocene endemic deer of Sardinia is not small, nor has it lost the running proportions of its limbs. Could it be because of the presence of some large predator exerting pressure on the deer population, maintaining it in the "usual" anatomical and functional pattern? The Pleistocene fauna of Sardinia did contain a carnivore alongside the deer, namely *Cynotherium*, a small sort of canid. But now, new evidence points to the influence of a much larger predator: humans . . . not Neolithic humans as on the other islands, but Paleolithic humans.

In northeastern Sardinia there is a cave composed of a suite of four large halls. The cave was used as a shelter by turn-of-the-century bandit Corbeddù, and

is named after him. It had also been used in the Bronze age, and during the Neolithic, as shown by the studies of Dr. Mario Sanges, from the Museo Civico Speleoarcheologico of Nuoro. But it seems more and more certain that humans were also present there even earlier. As we have already seen, the first evidence is ambiguous. The Pleistocene deer of Sardinia could have kept its usual "continental" build because of predation by the small canids, possibly hunting in packs. The canids, however, could not have left the cut-marks found on several deer bones. Nor could they account for various strange taphonomical patterns currently being studied in detail by F. Braber and G. Klein Hofmeyer (Utrecht) on more than 10,000 deer remains already excavated. This year also, several pieces of limestone were recognized as human artifacts. Last but not least, a few human skeletal remains (temporal, maxilla, ulna), still under study by Dr. B. Wood (Liverpool), Dr. P. Y. Sondaar and F. Spoor (Utrecht), and by B. Senut (Paris), seem definitely to be different from those of modern humans. The temporal and maxilla were found in a layer dated (by ^{14}C on charcoal) to $9,120 \pm 380$ yr B.P., 25 cm below the base of the Neolithic levels.

While everyone hopes for the discovery of more human bones and artifacts as well as for more refined dating, it seems possible to accept, at least as a working hypothesis, that there was a very early arrival of humans in Sardinia, possibly as long ago as the lower Middle Pleistocene. At that time, P. Y. Sondaar points out that there occurs a sharp change in the Sardinian fauna, which could be partly related to the arrival of humans when sea level was temporarily lowered. In contrast with other islands, Sardinia could support a human population for a long time because of the presence, alongside deer, of a large ochotonid, *Prolagus* (studied several years ago in the same Corbeddù cave by Dr. Mary Dawson). This animal would easily furnish a relatively large amount of meat without danger of overkill and subsequent starvation, because of its high rate of reproduction. The Paleolithic peoples of Sardinia would thus have evolved in isolation, independently developing their own original culture, until the arrival of the very different Neolithic peoples.

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