



# SCAN

SANTA CRUZ ARCHAEOLOGICAL NEWSLETTER



## Coming Up This Fall

### Ralph and Lisa Shanks to Speak on October 15

By Rob Edwards

In 1981, as part of the work of understanding the wonderful basketry collection of the Santa Cruz City Museum, the Santa Cruz Archaeological Society funded the services of resident basketry expert from the Lowie (now Hearst) Museum of the University of California at Berkeley, Lawrence Dawson, to come to the museum to indemnify and evaluate the Museum's collections and to give a public lecture. The lecture occurred on September 17, 1981 and was publicized with a beautiful poster by then-local artist, Eric Mathes. The Society printed 500 copies to provide public schools and other public agencies with a wonderful graphic about local Native American art.

It seemed appropriate as the final posters were given out this year (30 years later), that the publication of two new books on California basketry by Ralph and Lisa Woo Shanks, who were students of Dawson, be marked with another local lecture about basketry. The Shanks will be at the Santa Cruz City Museum on Saturday, October 15, 2011, at 5:00 p.m. to talk about their books—*Indian Baskets of Central California: Art, Culture, and History* and *California Indian Baskets: San Diego to Santa Barbara and Beyond to the San Joaquin Valley, Mountains and Deserts*—and to discuss cultural and artistic basketry design.

1 SANTA CRUZ MUSEUM - SANTA CRUZ, CA  
2 SMITHSONIAN INST. - WASHINGTON, D.C.  
3 AMERICAN MUSEUM OF NAT. HIST. - NEW YORK, NY  
4 SONTFEST MUSEUM - LOS ANGELES, CA  
5 BRITISH MUSEUM - LONDON

6 PRIVATE COLLECTION  
7 SANTA CRUZ MUSEUM - SANTA CRUZ, CA  
8 MUSEE DE L'INDOCHINE - PARIS  
9 STATE MUSEUM - SACRAMENTO, CA  
10 LOWIE MUSEUM - BERKELEY, CA

DESIGN & ILLUSTRATION - ERIC MATHES © 2011

THE SANTA CRUZ ARCHAEOLOGICAL SOCIETY  
PRESENTS  
**RALPH & LISA SHANKS**  
ANTHROPOLOGISTS & CALIFORNIA BASKETRY EXPERTS  
SPEAKING ON  
**THE BASKETRY OF THE NATIVE AMERICANS  
OF THE MONTEREY BAY REGION**  
OCTOBER 15<sup>TH</sup>, 2011 · 5 PM  
THE SANTA CRUZ MUSEUM OF NATURAL HISTORY  
1305 EAST CLIFF DRIVE · SANTA CRUZ, CALIFORNIA  
DONATION REQUESTED

## *Calendar*

All General Meetings are held at Sesnon House Cabrillo College  
6500 Soquel Drive, Aptos, California at 7:30 p.m. unless otherwise indicated.

For more information as it becomes available, please visit our website:

[www.santacruzarchociety.org](http://www.santacruzarchociety.org)

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|------------------------|---|
| Saturday, September 10 | <b>Ohlone Day</b> at Henry Cowell Redwoods State Park from 10:00 a.m. to 4:00 p.m. Come volunteer at the Santa Cruz Archaeological Society table! |
| Thursday, September 15 | <b>General Meeting</b> - Speaker to be announced  |
| October—entire month   | <b>Archaeology Month</b>  |
| Saturday, October 15   | <b>Lecture</b> by Ralph and Lisa Shanks, experts on California Indian basketry. Santa Cruz City Museum at 5:00 p.m..                              |
| Thursday, October 20   | <b>General Meeting</b> - Speaker to be announced  |
| Thursday, November 17  | <b>General Meeting</b> - Speaker to be announced  |
| Thursday, December 15  | <b>General Meeting</b> - Speaker to be announced  |

Items to add? Corrections to make? Please contact us at [editorscan@gmail.com](mailto:editorscan@gmail.com).

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Past newsletters can be viewed—in color!—online at:

<http://www.santacruzarchociety.org/newsletters.html>

Newsletters will be posted online approximately four months after they are mailed out.

## *SCAS Board Members 2010*

Ann Ramage	President	<a href="mailto:President@santacruzarchociety.org">President@santacruzarchociety.org</a>
Kären Johansson	Vice President	<a href="mailto:VicePresident@santacruzarchociety.org">VicePresident@santacruzarchociety.org</a>
Cathy Phipps	Treasurer	<a href="mailto:Treasurer@santacruzarchociety.org">Treasurer@santacruzarchociety.org</a>
Kathleen Crane	Secretary	<a href="mailto:Secretary@santacruzarchociety.org">Secretary@santacruzarchociety.org</a>
Pat Paramoure	Membership	<a href="mailto:Membership@santacruzarchociety.org">Membership@santacruzarchociety.org</a>
Cat Nichols	Newsletter Editor	<a href="mailto:editorSCAN@gmail.com">editorSCAN@gmail.com</a>
Rob Edwards	Professional Advisor	<a href="mailto:RobEdwardsAACC@gmail.com">RobEdwardsAACC@gmail.com</a>

## *Ohlone Day—Fun, Education, and a Volunteer Opportunity*

Ohlone Day will be held at Henry Cowell Redwoods State Park in Felton on Saturday, September 10, from 10 a.m. to 4 p.m. This event celebrates the traditions of the Ohlone People of California. Help build a tule boat as the Ohlone people share traditional songs, stories, dances, tools, musical instruments, useful native plants, language and history. Throw a spear with an atlatl, make cordage and other items with tule reeds, play Native American games, and make fire with a pump drill!

The Santa Cruz Archaeological Society will participate in the festivities by presenting archaeology-related demonstrations and activities.

Show how archaeologists look for clues to the past!

Help kids of all ages screen for artifacts!

In years past the Society has participated in Ohlone Day to the enjoyment of kids, adults, volunteers, and all others. Shifts will be arranged to allow volunteers the chance to enjoy the many exhibits, performances, demonstrations, and activities. For information about volunteering, call Lyn O’Niel at 831-338-9738.

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## *The Elections are Coming!*

Keep your eye on the mail for your 2011 Santa Cruz Archaeological Society Board ballot! The offices up for election this year are Vice President and Treasurer. If you are interested in serving in one of these positions, please contact SCAS President Ann Ramage (very soon!) for information. There will also be space on the ballot for write-in candidates.

### **What is required of officers:**

Nominees must be members of the Society in good standing who are willing and able to devote the time and energy required of the positions. Officers will:

- serve for a term of two years
- attend monthly board meetings
- attend General Meetings
- plan and help with various new and ongoing projects throughout the year

Ballots will be mailed to members during the latter part of August. Please vote and mail in your ballot postmarked by September 10, or bring it to the September 15 General Meeting.

In addition, our Secretary, Katie Crane, has had to resign her position in order to pursue other opportunities. We wish her the best of luck! As elections for the office of Secretary will not take place until September, 2012, the board is looking for someone who would like to fill in as Secretary in the interim. Please contact any board member if you would be interested in joining us, pen—or laptop?—in hand, at our monthly meetings.

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## Volunteer Opportunity at the Castro Adobe

*The Friends of Santa Cruz State Parks is staging a Garden Work Day at the Castro Adobe on Thursday, August 25, 2011, from 9 a.m.–2 p.m., and sent the Society the following message:*

The work is in support of the eventual restoration of the Potter-Church Garden. In June, Landscape Architect, Pam-Anela Messenger completed the Garden Restoration Report for the Potter-Church Garden, the pleasant garden surrounded by Cork Oaks, directly behind the adobe building.

Pam-Anela Messenger has been practicing landscape architecture in the Bay Area for over 30 years and is an expert on the design and restoration of Thomas Church gardens. Thomas Church (1902-1978) was a nationally known landscape architect and is recognized as the founder of the Modern movement in landscape architecture. Church was close friends with Elizabeth and David Potter, who owned the Castro Adobe from 1968-1988, and he consulted with the Potters on the design for the garden.

As part of the initial restoration effort, the Friends of Santa Cruz State Parks are having a volunteer workday on Thursday, August 25th from 9 a.m.–2 p.m. Work would include weed pulling, trimming ivy, raking, garden path cleaning and fence painting. There are also additional opportunities around the site.

To volunteer, please call Peg Danielson at the Friends Office (831) 429-1840 ext. 102 or email her [peg@ThatsMyPark.org](mailto:peg@ThatsMyPark.org). Lunch will be provided! If you have gloves, please bring them on the workday. Since parking is limited, we encourage volunteers to carpool.

We understand not everyone is available for a weekday volunteer opportunity, so if you can't make this event we hope to have another volunteer day in September.

We look forward to seeing you!

### *In Memoriam: Jean Stafford*

Santa Cruz Sentinel, April 23, 2011

Jean Stafford passed away April 6th at her home in Aptos, surrounded by her loving family. She was 82 years old. Born February 2nd, 1929 to Arthur and Claudina Ferrini, she grew up on the family's Rancho El Toro along the Salinas Monterey Highway, the youngest of four sisters.

Jean attended Washington Union Grammar School in Corral de Tierra when it was just a one room schoolhouse. She went on to UC Berkeley and received an A.B. degree with honors in general curriculum with a major in mathematics in 1950, the year she married. Jean was a member of the Chi Omega Sorority and continued to serve them throughout her life. She returned to U.C. Berkeley in 1962 and completed three exemplary years towards a PHD in anthropology, becoming a teacher's assistant, before leaving school to be a full time mom.

Anthropology remained a favored avocation. She was a member of the Santa Cruz Archeological Society for many years. She worked as an acting instructor at UCSC in physical anthropology, and later worked for Cabrillo College on numerous archeological digs. Rocks and bones often covered the dining room table.

Jean loved sewing, knitting, gardening, square dancing, backpacking, puzzles of every type, and doing anything she attempted well. She was adept at laying tile, exposed aggregate, crafting arrow heads and Indian baskets, and holiday meal presentations.

<http://www.legacy.com/obituaries/santacruzsentinel/obituary.aspx?n=jean->

*In California archaeology:  
Asphalt may have poisoned ancient Americans*

by Ferris Jabr

NewScientist, June 1, 2011

On the beaches of southern California you can sometimes find clumps of a sticky black substance with a texture halfway between molasses and rubber. Could these tar balls—collected by humans for thousands of years—provide evidence that our long-standing relationship with hydrocarbons was toxic from the outset?

Long before we started asphaltting roads, prehistoric people around the world used bitumen, which seeps from the ground naturally in places. Archaeological finds suggest that California's prehistoric locals, the Chumash people, eagerly collected the tar balls. They used them to caulk the seams of ocean-going craft and waterproof woven baskets to make drinking vessels, as well as for making casts for broken bones and poultices for sore joints. Some Chumash even chewed bitumen like gum.

We now know that bitumen can be a source of polycyclic aromatic hydrocarbons (PAHs)—pollutants that have been linked to a number of health problems. To find out whether California's tar balls had the potential to damage the Chumash's health, Sebastian Wärmländer of Stockholm University in Sweden and colleagues analyzed samples taken from Californian beaches and from the La Brea tar pits in Los Angeles. They found the tar contained 44 PAHs, including many known carcinogens.

Wärmländer's team then turned to the Chumash's bones to see whether the tar balls had had an effect on their health. Most symptoms of health problems caused by PAHs reveal themselves in the flesh, but studies have suggested that mothers who are exposed to PAHs during pregnancy give birth to smaller than average babies, who become shorter than average adults.

Wärmländer and his colleagues measured 269

adult skulls from burials made between 6500 B.C. and 1780 A.D. on Santa Cruz and Santa Rosa islands off California's coast. They found that, over the generations, the skulls of men decreased from 3370 cubic centimeters to 3180 cm<sup>3</sup>. The women's skulls decreased from 3180 cm<sup>3</sup> to 2980 cm<sup>3</sup> (*Environmental Health Perspectives*, DOI: 10.1289/ehp.1103478). Previous studies have shown femur length declined over this period, too.

The decreasing stature of the Chumash suggests declining health, says Wärmländer's team. This has been suggested before, but this is the first time bitumen has been considered as a contributor to this decline.

"It's pretty clear that health was compromised over time on the Californian Channel Islands," says co-author Sabrina Sholts of the University of California, Berkeley.

Patricia Lambert of Utah State University in Logan, who has studied the health of the Chumash, confirms that their stature declined over time. However, she says that the idea that bitumen poisoned the Chumash lacks direct evidence. "I'm certainly not excluding the possibility, though—it's a very interesting idea," she says.

Sholts says the team accepts the idea is still a hypothesis that requires more evidence. That evidence may be found by analyzing the bones for PAHs, says Carl Wendt at California State University, Fullerton, who was not involved in the study. "If PAHs became incorporated into actual bone collagen, we should be able to extract that."

<http://www.newscientist.com/article/mg21028154.300-asphalt-may-have-poisoned-ancient-americans.html?full=true&print=true>

## Scientists Fight University of California to Study Rare Ancient Skeletons

By Rex Dalton

Wired Science, May 20, 2011

SAN DIEGO—Two ancient skeletons uncovered in 1976 on a bluff overlooking the Pacific Ocean, during construction at the home of a University of California chancellor, may be among the most valuable for genetic analysis in the continental United States. Dated between 9,000 and 9,600 years old, the exceptionally preserved bones could potentially produce the oldest complete human genome from the continent.

But only if scientists aren't barred from studying them.

Attempts to unlock the skeletons' genetic secrets are stalled in a dispute pitting UC scientists against their own administration. Five of the scientists wrote with alarm in a letter published May 20 in the journal *Science* that UC administrators aren't allowing studies on the skeletons, which were discovered on property owned by UC San Diego in La Jolla, California.

Before samples can be extracted for genetic analysis, the scientists fear administrators will give the bones to politically powerful local Native Americans who could permanently block study.

"To give them away without study, would be like throwing the genetic crown jewels of the peopling of the Americas in the ocean," said Eske Willerslev of the University of Copenhagen in Denmark, who is among about a half dozen researchers who have unsuccessfully sought in recent months to sample or study the bones. "It would be a major loss for all, including Native Americans."

A few studies were done years ago on the skeletons before UC withdrew access to them, but recent technological advances would allow scientists to do much more, including a digital skull calibration and possibly a full genome sequence.

"The potential loss of the La Jolla skeletons would have a profoundly negative impact on our knowledge of the peopling of the Americas," wrote the authors of the letter, led by Margaret Schoeninger, an anthropologist at UCSD.

*Science* letter co-author Tim White, a prominent paleoanthropologist at UC Berkeley, told Wired.com, "Administrators are doing everything they can to ignore the scientific value of the specimens. They are trying to illegally repatriate them to a lobbyist for a dozen San Diego County tribes."

UC officials are seeking to provide the skeletons to the Kumeyaay Nation east of San Diego under a complex process guided by the federal Native American Graves Protection and Repatriation Act (NAGPRA). But critical scientists say NAGPRA requirements aren't being followed properly, setting the stage for a potential legal battle over the bones.

"This is Kennewick Man II," White said, referring to the long federal court battle in 2004 when scientists won the right to study bones found in Washington.

In a May 11 letter, Mark Yudof, president of the ten-campus UC system, authorized UCSD chancellor Marye Anne Fox to dispose of the bones—after clarifications are made to a report done under NAGPRA requirements, and other tribes that may be interested in the bones are consulted.

Steve Benegas, the repatriation spokesman for the Kumeyaay nation's twelve tribes, said they are entitled to the bones and to decide about future analysis. Some Native Americans believe scientific research amounts to desecration of remains, and Benegas said he personally is against studies.

"The university has handled this poorly over the years," he said. "We have no trust in them. They have treated the remains of our ancestors without respect."

One of the previous analyses done years ago showed the bones have connective tissue and amino acids that are used in cell function. This means it is very likely ancient DNA can be extracted. And two skeletons buried together offers a rare opportunity to compare their genomes to see if they were related.

Genetic reports on human remains this old on the continent are very limited. In 2007, researchers published about 7 percent of the maternally inherited mitochondrial genome of bones found in a cave in southeast Alaska that are about the same age as the La Jolla skeletons. But the full genome of that individual hasn't been sequenced and published, and DNA from bones found in wet caves can be more difficult to extract and analyze.

"The La Jolla skeletons are very special," said Brian Kemp of Washington State University. Kemp was part of a team that retrieved samples from the Alaska bones before they were repatriated in 2007 to local tribes in an exchange seen as model of cooperation among scientists and Native Americans.

Anthropologist Robert Bettinger of UC Davis, another co-author of the *Science* letter, says he and others would like a similar arrangement for the La Jolla skeletons.

Scientists say UC is overlooking two key points. First, there has been no official determination the bones are actually from ancestors of modern Native Americans. Though many tribes believe their history goes further back, scientists can only confidently trace the ancestry of Native Americans to about 7,000 years ago.

Second, scientific evidence shows skeletons around this age are not always related to those who now live near burial sites. For example, last year Willerslev sequenced the genome of a 5,000-year-old man in Greenland and found he was descended from Siberian ancestors, not today's Greenland tribes.

"It is unscientific to provide them to local people," said Willerslev.

Since the NAGPRA rules were first issued in 1990, thousands of bones have been repatriated, almost all of which were shown to be culturally affiliated to the tribes that received them. But last year, federal officials issued new NAGPRA rules that make it easier to return bones and funerary objects that are not culturally affiliated to tribes.

Scientists and museums have been considering a legal challenge to the new rule, fearing the loss of many valuable specimens. The La Jolla skeletons could end up as the case by which that rule is challenged.

UCSD scientists determined the La Jolla skeletons are not culturally affiliated to any tribe. In fact, isotopic analysis done 30 years ago in Schoeninger's lab (and published in 2009) showed the bones reflected a diet of seafood and marine mammals, not terrestrial foods such as nuts and wild fruits like the early Kumeyaay ate.

Schoeninger suspects UC's efforts to give the bones to the tribe stem from a plan to renovate the chancellor's house, and she says that Benegas, the tribe spokesman, told her as much.

UCSD officials want to rebuild the home, also known as University House, because it has become uninhabitable due to structural problems. They have received pledges totaling at least \$6 million for the project from wealthy donors. Earth moving for the renovation is expected to uncover more ancient bones, which could cause costly delays if the tribes make a political or legal issue out of it.

By providing the two skeletons to the Kumeyaay, Schoeninger believes UCSD officials are hoping that refurbishing the home will go smoothly.

When asked about this theory, Benegas chuckled as he told *Wired*, "We wouldn't be talking if they weren't trying to rebuild the chancellor's house."

<http://www.wired.com/wiredscience/2011/05/ucsd-skeleton-fight/>

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*Summer Theme: Conflict and Weapons Archaeology and Anthropology*

## *What Is War Good For?*

### *Sparkling Civilization, Suggest Archaeology Findings from Peru*

ScienceDaily, July 26, 2011

Warfare, triggered by political conflict between the fifth century B.C. and the first century A.D., likely shaped the development of the first settlement that would classify as a civilization in the Titicaca basin of southern Peru, a new UCLA study suggests.

Charles Stanish, director of UCLA's Cotsen Institute of Archaeology, and Abigail Levine, a UCLA graduate student in anthropology, used archaeological evidence from the basin, home to a number of thriving and complex early societies during the first millennium B.C., to trace the evolution of two larger, dominant states in the region: Taraco, along the Ramis River, and Pukara, in the grassland pampas.

"This study is part of a larger, worldwide comparative research effort to define the factors that gave rise to the first societies that developed public buildings, widespread religions and regional political systems—or basically characteristics associated with ancient states or what is colloquially known as 'civilization,'" said Stanish, who is also a professor of anthropology at UCLA. "War, regional trade and specialized labor are the three factors that keep coming up as predecessors to civilization."

The findings appear online in the latest edition of *Proceedings of the National Academy of Sciences*.

Conducted between 2004 and 2006, the authors' excavations in Taraco unearthed signs of a massive fire that raged sometime during the first century A.D., reducing much of the state to ash and architectural rubble. The authors compared artifacts dating from before and after the fire and concluded that agriculture, pottery and the obsidian industry, all of which had flourished in the state, greatly declined after the fire.

Based on the range and extent of the destruction and the lack of evidence supporting reconstruction efforts, the authors suggest that the fire was a result of war, not of an accident or a ritual.

Iconographic evidence of conflict in regional stonework, textiles and pottery suggests that the destruction of Taraco had been preceded by several centuries of raids. This includes depictions of trophy heads and people dressed in feline pelts cutting off heads, among other evidence.

Because the downfall of Taraco, which was home to roughly 5,000 people, coincided with the rise of neighboring Pukara as a dominant political force in the region, the authors suggest that warfare between the states may have led to the raids, shaping the early political landscape of the northern Titicaca basin.

Inhabited between 500 B.C. and 200 A.D., Pukara was the first regional population center in the Andes highlands. During its peak, it covered more than 2 square kilometers and housed approximately 10,000 residents, including bureaucrats, priests, artisans, farmers, herders and possibly warriors.

The civilization's ruins include impressive monolithic sculptures with a variety of geometric, zoomorphic and anthropomorphic images, plus intricate, multi-colored pottery in a variety of ritual and domestic forms.

War appears to have played a similar civilizing role in Mesoamerica, as well as Mesopotamia, Stanish said. To further test his theories on the origins of civilization, Stanish will begin a new project next year at a Neolithic site in Armenia.

<http://www.sciencedaily.com/releases/2011/07/110725162529.htm>

*Years after the end of the world's greatest conflict,  
new research reveals the true nature and extent of its impact*

Archaeology, May/June 2011

Between 1939 and 1945, the world was engulfed in a conflict fought on almost every continent and ocean, involving every world power, and ultimately costing more than 50 million people, both soldiers and civilians, their lives. More than a dozen nations, among them the United States, Great Britain, and the U.S.S.R., fought on the side of the Allies, joining forces against the Axis powers—primarily Germany, Italy, and Japan—who, at the apex of their power, controlled or were poised to control large swaths of Europe, Africa, the Pacific Ocean, and East and Southeast Asia. Perhaps the greatest difference between World War II and the wars and conflicts that preceded it was its ubiquity.

For the first time, there were no clearly defined front lines where battles began and ended, were won and lost. Instead, according to University College London archaeologist Gabriel Moshenska, who studies the archaeology of modern conflict, “Everyone was on the front line and that transformed the world. World War II made the modern world what it is more than any single event in history,” he says. “It changed the technology we use, it changed art and literature and the world’s legal, international, and political structures—everything from nations to families.”

This new kind of warfare, for archaeologists, requires a different approach to studying military action. The traditional methodology of battlefield archaeology—identifying a battle’s location, unearthing weapons and defensive structures, and evaluating historical and literary texts—is not sufficient to understand World War II’s geographic reach and social impact. What is needed, according to Tony Pollard, Director of the Center for Battlefield Archaeology at University of Glasgow, is a new kind of archaeology, one that he has dubbed “conflict ar-

chaeology.” “Conflict archaeology is valuable because it places the violent events of warfare within their wider social context,” he says, allowing for a broader understanding of twentieth- and twenty-first-century war.

The excavations and finds covered here do examine how familiar facets of war—tactics, weapons, technology, and intelligence—can be seen in the archaeological record. There are submerged tanks, downed airplanes, a cryptological machine, and a forgotten remnant of the nuclear weapons the United States used on Japan, which both helped end the war and changed the world forever. But the story of World War II is not only about the last century’s military technology. It is also about the particular ways global conflict affected civilians.

The study of World War II is at a critical juncture. We are now at a time when both veterans and civilians who participated in and lived through the war—on the battlefield and on the home front—are passing away in greater numbers. With their deaths, the chance to hear their stories and learn from their experiences disappears as well. “Their testimony is a living bridge between the present and the past that will soon be nonexistent,” says Pollard. But archaeology also has stories to tell. According to Moshenska, the degree to which archaeology can illuminate things that are not revealed elsewhere is only now being recognized. “These are not part of the official histories, and although they are sometimes part of people’s memories, those memories become more unreliable as more time passes.” The archaeology of this world-changing time supplements these memories, and in some cases tells us stories we would never know otherwise.

[http://www.archaeology.org/1105/features/world\\_war\\_II\\_warII\\_archaeology.html](http://www.archaeology.org/1105/features/world_war_II_warII_archaeology.html)

## Arrow origins traced to Africa

By Dan Vergano,  
USA TODAY, June 20, 2011

Back in 1991, archaeologists unearthed the frozen body of a man who died some 5,300 years ago in the Alps.

Nicknamed Otzi, for his resting place in the Ötztal Alps, the "Iceman" was outfitted with a copper ax, flint knife and bearskin hat, a surprise to archaeologists because they all were so well-crafted. His bow and twelve arrows, two of them nicely feathered and tipped with flint points, were likely less surprising, because they nicely fit with the then-current story of the bow and arrow's origins.

"The invention of the bow and arrow used to be closely linked to the late Upper Paleolithic (Stone Age) in Europe," less than 30,000 years ago, says anthropologist Marlize Lombard of South Africa's University of Johannesburg, in a study in the current *Journal of Archaeological Science*.

Last year, however, Lombard and her colleagues reported in the journal *Antiquity*, that arrows were around at least 64,000 years ago, and were first discovered not in Europe, but in South Africa. A single quartz arrowhead, bloodstained, had turned up at the Sibudu Cave site, dating to that time. In the new *Journal of Archaeological Science* study, Lombard reports more arrowheads and more evidence pushing back the age of the bow and arrow.

Why does it matter? Well, modern-looking humans turn up in fossils from as long as 195,000 years ago in Africa, but only spread worldwide starting about 60,000 years ago. Anthropologists have debated for decades about the innovations or changes, everything from language to genes to tools, that turned modern man loose on the world.

Arrows are one possibility for what helped people spread all over the world, either through hunting or fighting, as Lombard cautiously notes. "Although the existence of bow and arrow technology (more than 60,000 years ago) may have far-reaching consequences for hypotheses about human behavioral evolution and adaptation, it is by no means easy to establish," she says at the beginning of her study. In the study, she looks through the microscope at 16 quartz blades found in dirt layers as much as 65,000 years old at the South African site.

All but two of the ancient blades have blood traces on them and nine were deliberately hafted, or chipped, to fit onto a tool, she finds. More than half of the blades look like they were attached to arrows and eight carry traces of blood stains, Lombard concludes.

"It is therefore my reading that at least nine tools in this sample were probably used as transversely hafted arrowheads."

The others may have been blades used to butcher ani-

mals, she suggests, or fitted onto barbs or darts.

"I think the finding adds to growing evidence for the great antiquity of complex projectile weaponry in Africa," says paleoanthropologist John Shea of Stony Brook (N.Y.) University. "The real startling upshot of this finding is that it challenges longstanding archaeological beliefs that important changes in projectile technology only occurred very recently, less than 30,000 years ago, after humans dispersed into Europe."

In North America, Shea adds, "it also challenges the longstanding hypothesis that the bow and arrow were only invented a few thousand years ago and largely in conjunction with the origins of agriculture."

Even after prehistoric people invented arrows, they likely kept on using spears as well, Lombard suggests. Hunters in Africa still use spears to run down wildebeest and zebra, while using arrows only during part of the year to hunt for giraffe, eland, hartebeest and springbok. So, she concludes, archaeologists shouldn't be surprised when they find both heavier spear points and arrowheads mixed together at future archaeological digs.

"Complex projectile technology may have given our species a crucial ecological advantage in competition with other hominin (human) species as they dispersed from Africa," Shea says, by e-mail. That's one explanation for the disappearance of the Neanderthals, who have left only spear points behind at sites in Europe. Outgunned by modern humans and their arrows, the (literal) "killer app" of its day, the Neanderthals weren't able to compete for game and faded from the archaeological record (if not completely from our genes) about 30,000 years ago.

And the age of the bow and arrow may go further back, Shea says. "My own personal hunch is that the bow and arrow dates to at least 100,000 years ago based on stone tools found at sites in Ethiopia, Kenya and neighboring countries."

No wonder Otzi had such nice arrows. Archery was an ancient technology in his day. Unfortunately for the Iceman.

After a puncture wound was discovered in Otzi's left shoulder a decade ago, researchers at Italy's South Tyrol Museum of Archaeology, X-rayed the wound and found what had killed the Iceman—a flint arrowhead that severed a major artery and likely paralyzed his arm. "The Iceman probably bled to death within a matter of minutes," the museum notes, because of the arrowhead.

[http://www.usatoday.com/tech/science/columnist/vergano/2011-06-19-bow-arrows-origin\\_n.htm?AID=4992781&PID=4166869&SID=16sudg3nmbu75#](http://www.usatoday.com/tech/science/columnist/vergano/2011-06-19-bow-arrows-origin_n.htm?AID=4992781&PID=4166869&SID=16sudg3nmbu75#)

## SCAS Financial Statement

Fiscal Year

April 1, 2010 through March 31, 2011

### Account Balances:

Checking	\$ 614.17
Savings	\$ 1,236.06
6 Month CD #11013760	\$ 3,022.66
6 Month CD #11020435	\$ 3,046.91
Research Fund Checking	\$ 161.07
<b>Total Balance</b>	<b>\$ 8,080.87</b>

### Income:

Donation Income	\$ 39.85
Membership Income	\$ 1,420.00
Merchandise Sales	\$ 238.00
Other Income	\$ 40.02
<b>Total Income</b>	<b>\$ 1,737.87</b>

### Expenses:

Business Insurance	\$ 298.00
CCATP Field School Scholarships	\$ 450.00
Charity: CCATP Field School	\$ 339.80
General Mtg. Food & Supplies	\$ 129.62
Internet Expense	\$ 258.00
Merchandise Expense	\$ 453.92
Newsletter Expense	\$ 560.86
Office & Postage Expense	\$ 228.52
SCA Conference Expense	\$ 200.00
Other Expense	\$ 112.38
<b>Total Expense</b>	<b>\$ 3,031.10</b>

**Net Loss (\$ 1,293.23)**

## Skeletons of women and children massacred in Iron Age battles found at Fin Cop in Derbyshire

By Culture24 Staff, April 18, 2011

A 2,000-year-old ditch crammed with the "gruesome" massacred remains of women, babies and a teenager has been found on a hillfort built as last-gasp attempt to save war victims at Fin Cop in the heart of the Peak District.

The women and children are thought to have been slaughtered during tribal battles in about 440 B.C. Experts believe the mass grave represents the first selective Iron Age attack ever found in Britain.

Only ten meters of the 400-metre trench has been excavated, with archaeologists expecting to find hundreds more skeletons in further digs on the Derbyshire site.

"For the people living at Fin Cop the hurriedly constructed fort was evidently intended as a defensive work in response to a very real threat," said Dr. Clive Waddington, the Project Director for Archaeological Research Services.

"The gruesome discoveries have reopened the debate on the purpose of hillforts. In recent years there has become an almost accepted assumption that warfare in the British Iron Age is largely invisible."

The women and children were flung into the ditch at the bottom of the hillfort after dying of flesh wounds. The absence of adult males suggests men from the community may have been sold as slaves or forced to join the opposing army.

Bones of cattle, sheep, pigs and horses were also found, showing that the fort also sheltered animals.

The hillfort consisted of a four meter-wide stone wall behind a rock-cut ditch, built as a defence against lethal weapons.

The forts served as trading routes and centres for tribal gatherings and were usually built on acidic soils, but the limestone ground at Fin Cop has allowed the bones to survive.

Ann Hall, Project Manager for Longstone Local History Group, said the discoveries had changed the outlook of residents.

"Locals have always viewed the hill as a peaceful spot," she said.

"Now we have uncovered the sad evidence of an ancient massacre and learnt that our well-loved landmark is also a prehistoric war grave."

<http://www.culture24.org.uk/history+&+heritage/archaeology/art354459?&media=print>

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*There were too many articles related to the theme to fit them all in the printed newsletter. They are included here for further reading. --Editor*

## *Archaeology Begins Yesterday: Three Centuries of Industry and War*

By Mark Horton

### Introduction

Today's archaeologists realize that they can contribute better documentation provided by improved archaeological techniques.

The latest methods of archaeology, especially aerial perspectives, have given us exciting new insights into a past that remained previously undiscovered. In particular, two areas of historical interest, industry and war, benefit from these modern archaeological techniques.

\* \* \*

Modern warfare, like industry, has also left its mark upon our landscapes, and again the documentary evidence is often incomplete. There is of course no shortage of documentation for the campaigns or for the conditions of trench life on the Western Front during World War One, but archaeological evidence can provide a fresh insight. Some of the landscapes of the battles survive, with their trench systems and numerous shell holes, and excavating the area can add detail about the actual conditions for the soldiers.

Unfortunately human remains are still found on a regular basis at these battle sites, but they are now frequently excavated under archaeological conditions that provide information about the identity of the person found, and the small rituals that often accompanied their hasty burial. Other sites of interest in relation to World War One are found closer to home. A newly dis-

covered set of practice trenches can be seen at z Moor, near Sheffield, for example. These remain a poignant monument to the Sheffield City Battalion, whose soldiers were largely wiped out on the first day of the Battle of the Somme.

During World War Two a group of British illusionists, some of whom had worked in the film industry, set about deceiving the Germans into bombing decoy sites - thus sparing cities, ports and airfields from attack. Such sites are all over the country, on hills, moors or river estuaries, and have often been confused with ancient settlements—but were actually built between 1940 and 1945. Strangely we know very little about them, as few records were made; the best information is the actual physical evidence of the decoys themselves, as recorded by archaeologists, and the testimony of those few survivors who knew of the sites during the war.

Over the last ten years, there has also been a major study of the fortifications put up during the two world wars. The Defence of Britain project has compiled a major archive of many sites, from pillboxes to anti-aircraft installations. Many of these were put up in great haste, and many are not documented in any detail, so the remains provide a key insight into the planning and strategic thinking of the time.

*This is an excerpt from a much longer piece. For the whole article, please go to:  
[http://www.bbc.co.uk/history/ancient/archaeology/modern\\_archaeology\\_01.shtml](http://www.bbc.co.uk/history/ancient/archaeology/modern_archaeology_01.shtml)*

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## *Heavy Metal Hardens Battle: Body Armor Hindered Medieval Warriors*

ScienceDaily, July 26, 2011

The French may have had a better chance at the Battle of Agincourt had they not been weighed down by heavy body armour, say researchers.

A study published July 19 in Proceedings of the Royal Society B shows that soldiers carrying armour in Medieval times would have been using more than twice the amount of energy had they not been wearing it. This is the first clear experimental evidence of the limitations of wearing Medieval armour on a soldier's performance.

During warfare in the 15th century, soldiers wore steel plate armour, typically weighing 30–50kg. It is thought this may have been a contributing factor in whether an army won or lost a battle.

“We found that carrying this kind of load spread across the body requires a lot more energy than carrying the same weight in a backpack,” says lead researcher, Dr. Graham Askew from the University of Leeds Faculty of Biological Sciences. “This is because, in a suit of armour, the limbs are loaded with weight, which means it takes more effort to swing them with each stride. If you're wearing a backpack, the weight is all in one place and swinging the limbs is easier.”

The research team included academics from the Universities of Leeds, Milan and Auckland along with experts from the Royal Armouries in Leeds, UK. Researchers worked with highly skilled fight interpreters from the Royal Armouries Museum, who wore exact replicas of four different types of European armour. They undertook a range of walking and running exercises, during which their oxygen usage was measured through respirometry masks, providing researchers with a picture of how much energy was being used by the participants.

The study also showed that the armour had a clear impact on the soldier's breathing. Rather than taking deep breaths when they were exerting themselves—as they would have done had they not been wearing armour—the interpreters took a greater number of shallower breaths.

“Being wrapped in a tight shell of armour may have made soldiers feel safe,” says co-investigator Dr. Federico Formenti from the University of Auckland. “But you feel breathless as soon as you begin to move around in Medieval armour and this would likely limit a soldier's resistance to fight.”

<http://www.sciencedaily.com/releases/2011/07/110719194352.htm>

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## Did Peking Man wield a spear? New research suggests early humans were assembling weapons in China 700,000 years ago

Unreported Heritage News, April 27, 2011

Never underestimate Peking Man.

About 700,000 years ago, at a time when China's climate was chillier than it is today, a group of *Homo erectus* lived in a cave system in Zhoukoudian, China.

They had a striking appearance. With a heavy brow ridge, large robust teeth and a brain size approaching our own, these people had long since left Africa, their ancestors traveling thousands of kilometres into East Asia.

Until recently scientists believed that they lived in more recent times, perhaps only 500,000 years ago. That idea was repudiated two years ago in the journal *Nature*, when a team of scientists used aluminum/beryllium dating to show that Peking Man was about 700,000 years old.

When researchers arrived at that date it left them with a mystery.

"There is evidence that *Homo erectus* had physically adapted to the cold, but they probably also had to be doing something in terms of behaviour to handle the cold of a glacial period in northern China," said Professor Susan Antón, of New York University.

Today, thanks to new lab research, we have an idea as to what some of this behaviour may have been.

A team of scientists led by Dr. Chen Shen, of the Royal Ontario Museum in Toronto Canada, have been re-examining the tools that Peking Man used. Subjecting them to close microscopic examination the researchers have found that this group of *Homo erectus* was smarter than we

give them credit for.

"The new study suggests that Peking Man lithic technology was not simple as previously thought," writes Dr. Shen in the abstract of a paper presented at a recent Society for American Archaeology conference. "The micro-wear evidence indicates many types of tools were made for specific tasks related to processing animal substances."

That's not all. Peking Man didn't just know how to butcher animals, he also knew the best way to hunt them—with the business end of a stone pointed spear.

"Importantly, most pointed tools were probably hafted, and this provides arguably the earliest evidence for the composition tools in the Chinese Middle Pleistocene," writes Shen.

But if this is the case how exactly did they haft (assemble) these weapons? Did Peking Man use sinew or some sort of sticky liquid?

Unfortunately, we're going to have to wait a little bit for the answer.

In an email Dr. Shen said that he is in China right now, continuing his research. He and his team are in the process of getting their findings published in a scientific journal and, once that process is complete, will be able to grant media interviews.

So until then we are left with an enticing possibility. Perhaps *Homo erectus* adapted to a cold climate in much the same way *Homo sapiens* (modern humans) did—by crafting spears to hunt animals and tools capable of efficiently butchering them.

<http://www.unreportedheritagenews.com/2011/04/did-pekings-man-wield-spear-new-research.html>

*Further information about the possible effects of the use of tar on the Chumash people:*

## *Tar Shrank Heads of Prehistoric Californians Over Time?* *Toxic substance caused health decline in Chumash Indians, study suggests.*

Christine Dell'Amore  
National Geographic News, October 6, 2011

A long-term health decline—including a gradual shrinking—among prehistoric Indians in California may be linked to their everyday use of tar, which served as “superglue,” waterproofing, and even chewing gum, scientists say.

Naturally occurring polycyclic aromatic hydrocarbons (PAHs) in bitumen tar could at least partially explain a decrease in skull size over a period of about 7,500 years in the Chumash people, a recent study proposes. Decreased head size usually reflects decreased stature, which is a biological indicator of a population’s declining health.

The Chumash lived in dense villages of up to 20,000 people in the Channel Islands and used shell beads as currency. The hunter-gatherers collected tar from the plentiful natural seeps on the islands and used the gummy substance for everything from building canoes to casting broken bones to making chewing gum.

Though the PAHs in bitumen are known toxins, “this is a health risk that no one has brought up” in the context of the Chumash, said study co-author Sabrina Sholts, an anthropologist at the University of California, Berkeley.

The decline “we’re talking about is a very gradual process over thousands of years, and it could have been the chemicals, these carcinogens [the Chumash were] exposed to every day—the equivalent of smoking and breathing polluted air.”

Though the results are still preliminary, the idea that tar exposure caused the Indians’ health problems is a “reasonable” one, said Ronald Kendall, an environmental toxicologist at Texas Tech University, who wasn’t part of the project.

### **Toxic Tar**

In the modern world, PAHs are widespread as byproducts of fossil fuel combustion, cigarette smoking, road paving, and roofing.

Previous research has shown the chemicals are easily taken up by the human body through breathing, ingestion, or skin contact—and can be distributed to organs, tissues, and fetuses.

Major health problems—including cancer, altered hormone levels, and damage to internal organs—have been connected to PAH exposure.

While analyzing skeletons of 269 Chumash males and females from various periods, the team found a marked decrease in skull size over time, according to the research, published in May in the journal *Environmental Health Perspectives*.

To find out if PAHs in tar were possible contributors to the shrinkage, the researchers tested modern tar from seeps in ancestral Chumash territory. The tar turned out to have high levels of toxic PAHs.

Next, the team examined previous studies about how PAHs enter the human body and realized that the Chumash’s use of bitumen would have allowed the toxins to enter the Native Americans’ bodies in multiple ways, from direct ingestion to inhalation.

For instance, the Chumash would have literally drunk PAHs, since bitumen was used to water-

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proof tightly woven fiber baskets that served as water bottles.

The Indians also heated the tar to make it more malleable, producing fumes that could have easily been inhaled.

### **Tar Was Chumash “Superglue”**

The Chumash not only used the tar regularly, they used it more and more as the years went by, based on increasing levels of bitumen found in artifacts.

For one thing, the Chumash began building canoes with multiple wooden planks about 1,500 to 2,000 years ago, noted archaeologist Lynn Gamble. Tar was used to seal any spaces where the planks met and to plug holes, as well as as an adhesive in a canoe’s body and paddles, said Gamble, of the University of California, Santa Barbara.

Tar was also used as an adhesive in bone whistles, flutes, shell containers, abalone dishes, pipe mouthpieces, and musical rattles.

“It’s really the superglue of the Chumash,” said Gamble, who wasn’t part of the research.

Bitumen even factored into the culture’s dress, she said, as women wore grass skirts weighted with bits of tar.

In general, the study presents “an intriguing idea—it certainly deserves more research,” Gamble said.

### **Europeans Still Top Health Threat**

Despite the bitumen evidence, study co-author Sholts said, “the most significant health impact experienced by the population was contact with Europeans.”

Beginning in the 1700s, the new arrivals moved many Indians into Spanish missions on

the mainland. There, many Chumash died from diseases and mistreatment.

Today, many of the Indians live on a reservation near Santa Barbara.

Sholts also emphasized that there’s no established way to test for hydrocarbons in ancient bones.

The link between PAHs and bone change is “somewhat speculative—there can be numerous factors contributing to this skeletal change,” she said. “To actually target PAHs more specifically, we need to do a biochemical analysis of bone.”

Study leader Sebastian Wärmländer and colleagues intend to develop a skeletal PAH-detection technique as part of their next research effort, she noted.

Texas Tech’s Kendall emphasized that “there’s no methodology that’s available for us to validate a potential connection between” Chumash PAH use and skeletal shrinkage.

“At the same time,” he said, “I think the theory is plausible.”

### **Modern PAH Toxicity Still Not Understood**

The Chumash tar-use study is more than a history lesson. Examining PAH exposure’s long-term effects in a past population can help scientists understand the chemical’s toxicity today, study co-leader Sholts said.

“Currently the effects of modern PAH exposure—most significantly from major accidents such as the Gulf oil spill—are not fully understood,” she said.

“This is a great example of how studies of ancient human remains can shed light on contemporary problems.”

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