FALL 2002 american archaeo ouv Vol. 6 No. 3

a quarterly publication of The Archaeological Conservancy

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a quarterly publication of The Archaeological Conservancy fall 2002

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COVER: In their search for information, the crew at Big Eddy has dug huge and deep excavation blocks. **Photograph by** Kevin White

american archaeology

Lay of the Land



The Foods of the World

hen Columbus stumbled on to the New World some 500 years ago, he started a process that continues at an ever accelerating pace today. He was making this planet smaller and more homogeneous. In this issue of American Archaeology, author Brian Fagan focuses on food and how Columbus's discovery changed what we all eat. Try to imagine Italy without the tomato, or Ireland without the potato. Try to imagine the Navajos without fry bread.

While the exchange of germs cost the lives of millions on both sides of the Atlantic, the exchange of food undoubtedly saved millions by diversifying the world's food supply.

Archaeologists are hard at work tracking down the origins of dozens of New World foods and their long and ponderous paths to domestication. Zea mays, or corn, took 3,600 years to become today's staple feed grain.

By the time Columbus arrived, Native Americans had domesticated 300 plants, far more than their European conquerors. Plant pollen and seeds preserve well for many centuries and they are telling archaeologists what was being grown hundreds of years ago. They also allow scientists to trace the progress from wild plant to domesticated staple. In modern archaeology, even the tiniest of remains can play a huge role in telling the



MARK MICHEL. President

story of the past, and in the case of food, that story is how the dinner tables of the world were filled.

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Making Sense of the Miami Circle

The summer issue of *American Archaeology* was outstanding. I lived in Miami from June 1999 to September 2001 and followed

the Miami Circle story in the press, but the story never made much sense until I read your article. It did a great job of telling a complicated story in a clear timeline.

I also enjoyed the article "Excavating the Gold Rush Ships." I've traveled to San Francisco often, but I've only seen one or two articles about the ships. That "Forest of Masts" photo is amazing.

Catherine F. Smith Fernandina Beach, Florida

Sending Letters to American Archaeology

American Archaeology welcomes your letters. Write to us at 5301 Central Avenue NE, Suite 902, Albuquerque, NM 87108-1517, or send us e-mail at archcons@nm.net.

We reserve the right to edit and publish letters in the magazine's Letters department as space permits. Please include your name, address, and telephone number with all correspondence, including e-mail messages.



Disburse or Disperse?

We were fascinated by the story of the Miami Circle and we hope you will follow up with a future article to describe what has been learned about the purposes of the circle and its possi-

ble future as a park.

Incidentally, it was interesting to read that "the police had to disburse the crowd" demonstrating for preservation of the site. Is this the way they distribute money in Miami?

> Carol Georgopoulos Salt Lake City, Utab

Too Narrow a Focus

I find it incredible and sad that David Grant Noble could not find a single place south of Phoenix worth mentioning in his article on archaeological sites in Arizona. The Hohokam town and its three-story-high puddled-mud building preserved at Casa Grande Ruins National Monument is the equal of any site mentioned in the article. The Arizona State Museum, the premier museum for Native American history and culture, is at least as important as the Heard. The Amerind Foundation, the Folsom site—these are not noteworthy?

There is abundant rock art around Tucson, and Colossal Cave and Kartchner Caverns also seem to be worth noting, since Boyce-Thompson Arboretum State Park is mentioned in the article.

> Werner S. Zimmt Tucson, Arizona

Editor's Corner

I have two dogs, and the idea of doing a story about dogs in the archaeological record greatly appealed to me. It's said that dogs were the first animals to reside with people and the only animals to live with people the world over. How did dogs become domesticated? What tasks were they assigned by humans, and did these tasks change over the course of time? Was there always an emotional bond between humans and dogs?

These and other questions crossed my mind. But as our feature "Dogs Throughout Time" reveals, the archaeological record, supplemented by historical and ethnographic accounts, can answer a number of these questions, but certainly not all of them. What archaeology does tell us is that the relationship between humans and dogs is a long, complicated, and at times paradoxical one. Dogs meant different things to different people, and to some people they meant little, if anything.

In those days when there were no slippers or newspapers to fetch, dogs served humans in various other ways, some of which cost them their lives. Some archaeologists surmise that there was an immediate emotional bond, while others think the emotional connection was awhile in coming. In any case, dogs have proven themselves to be remarkable animals. Today, as well as thousands of years ago, dogs have displayed an amazing ability to adjust to their human companions.



WELCOME TO THE ARCHAEOLOGICAL CONSERVANCY!

he Archaeological Conservancy is the only national non-profit organization that identifies, acquires, and preserves the most significant archaeological sites in the United States. Since its beginning in 1980, the Conservancy has preserved more than 245 sites across the nation, ranging in age from the earliest habitation sites in North America to a 19thcentury frontier army post. We are building a national system of archaeological preserves to ensure the survival of our irreplaceable cultural heritage.

Why Save Archaeological Sites? The ancient people of North America left virtually no written records of their cultures. Clues that might someday solve the mysteries of prehistoric America are still missing, and when a ruin is destroyed by looters, or leveled for a shopping center, precious information is lost. By permanently preserving endangered ruins, we make sure they will be here for future generations to study and enjoy.

How We Raise Funds: Funds for the Conservancy come from membership dues, individual contributions, corporations, and foundations. Gifts and bequests of money, land, and securities are fully tax deductible under section 501(c)(3) of the Internal Revenue Code. Planned giving provides donors with substantial tax deductions and a variety of beneficiary possibilities. For more information, call Mark Michel at (505) 266-1540.

The Role of the Magazine: *American Archaeology* is the only popular magazine devoted to presenting the rich diversity of archaeology in the Americas. The purpose of the magazine is to help readers appreciate and understand the archaeological wonders available to them, and to raise their awareness of the destruction of our cultural heritage. By sharing new discoveries, research, and activities in an enjoyable and informative way, we hope we can make learning about ancient America as exciting as it is essential.

How to Say Hello: By mail:

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PUBLISHER: Mark Michel EDITOR: Michael Bawaya (505) 266-9668, archcons@nm.net ASSISTANT EDITOR: Tamara Stewart ART DIRECTOR: Vicki Marie Singer, vickimarie@nmbiz.com

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American Archaeology (ISSN 1093-8400) is published quarterly by The Archaeological Conservancy, 5301 Central Avenue NE, Suite 902, Albuquerque, NM 87108-1517. Title registered U.S. Pat. and TM Office, © 2002 by TAC. Printed in the United States. Periodicals postage paid Albuquerque, NM, and additional mailing offices. Single copies are \$3.95. A one-year membership to the Conservancy is \$25 and includes receipt of *American Archaeology*. Of the member's dues, \$6 is designated for a one-year magazine subscription. READERS: For new memberships, renewals, or change of address, write to The Archaeological Conservancy, 5301 Central Avenue NE, Suite 902, Albuquerque, NM 87108-1517, or call (505) 266-1540. For changes of address, include old and new addresses. Articles are published for educational purposes and do not necessarily reflect the views of the Conservancy, its editorial board, or *American Archaeology*. Article proposals and artwork should be addressed to the editor. No responsibility assumed for unsolicited material. All articles receive expert review. POSTMASTER: Send address changes to *American Archaeology*. The Archaeological Conservancy, 5301 Central Avenue NE, Suite 902, Albuquerque, NM 87108-1517; (505) 266-1540. All rights reserved.

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■ NEW EXHIBITS

University of Michigan Exhibit Museum of Natural History

Ann Arbor, Mich.—Through photographs, memorabilia, interviews, and sound, the exhibit "Jiingtamok: Exploring the Powwow Highway" explores the meanings and traditions of Native American powwows, with a special focus on powwow traditions in Michigan. Numerous native peoples were interviewed for the exhibit, and their words tell much of the story. "Jiingtamok" is the word for powwow in the language of the Anishinabe, native peoples of the Great Lakes region. (734) 764-0478 (Through December 31)



Anchorage Museum of History and Art

Anchorage, Alaska—Created by the Smithsonian in close cooperation with the Alaska native communities it represents, the traveling exhibition "Looking Both Ways: Heritage and Identity of the Alutiiq People" combines art, archaeology, history, and oral tradition to follow the Alutiiq people of Alaska's south-central coast from ancient to present times. Included in the exhibit are hunting hats, masks, skin clothing, carvings, and archaeological treasures from the Smithsonian collections. (907) 486-7004 (Through December 31)



The Newark Museum

Newark, N.J.-The traveling exhibition "The Sport of Life and Death: The Mesoamerican Ballgame" examines the historical and religious aspects of the world's first team sport, which began around 1500 B.C. in southern Mexico with the early Olmec culture. Rubber ballgames, played in a variety of forms, became one of the defining features of Mesoamerican life. Included in the exhibit are 175 stunning examples of sculpture, ceramic vessels, jewelry, a rubber ball dating between 1200 and 600 B.C., headdresses, jade carvings of Olmec ballplayer kings, and more. Dozens of cultures are represented, from the early Olmec to the Aztec, the empire conquered by the Spanish. (973) 596-6550 (Opens October 4)

Museo de La Pintura Mural Teotihuacána

Archaeological Zone of Teotihuacán, Mexico-Located near the Pyramid of the Moon at the archaeological site of Teotihuacán, this is the country's first museum dedicated to the study and presentation of one culture's painted murals. Teotihuacán ("City of the Gods") was a multicultural city inhabited between 200 B.C. and A.D. 700 whose vast influence extended across Mesoamerica. The museum's collection of more than 30 restored painted murals is complemented by ceramics, sculptures, and other artifacts recovered from the ancient city that share similar themes. Guided tours are available. 011-52-594-958-3282, or e-mail the museum's director, Gerardo Ramírez Hernández at direccion,mpm.cnme@inah.gob.mx (New Museum)



Orlando Museum of Art

Orlando, Fla.-The new exhibit "Ancestors of the Incas: The Majesty of Ancient Peru" showcases more than 250 objects made by all of the major ancient cultures of the Central Andes region, including the Chavín, Nazca, Moche, Chimú, Hauri, and Inca. The pieces date between 1400 B.c. and A.D. 1530 and include exquisite ceramic portrait pots of Moche rulers, gold and silver royal vessels, rare inlaid wooden boxes, textiles, and jewelry of turquoise, mother-of-pearl, and shell. Included in the exhibit are 17 recent donations to the museum's permanent collection of Art of the Ancient Americas. (407) 896-4231 (Through July 20, 2003)







Turtle Bay Exploration Park

Redding, Calif.-Artifacts recently returned from the Smithsonian belonging to the McCloud River Wintu Tribe of northern California are part of the new exhibit "Journey to Justice: The Wintu People and the Salmon," which focuses on the tribe and its main food source. Numbering as many as 34,000 in the mid-1700s, the Wintu were driven from their lands when the area was settled in the 1800s. Due to disease and starvation, just a few hundred Wintu survived at the beginning of the 20th century. The 1,500 remaining Wintu are now seeking recognition by the federal government in order to receive tribal benefits and they hope that this exhibit, which includes baskets, ceremonial objects, and other artifacts will help their cause. (530) 243-8890 (New long-term exhibit)



Southwest Museum's 12th Annual Intertribal Marketplace

November 9–10, Southwest Museum—Mt. Washington, Los Angeles, Calif. Join a gathering of more than 100 artists and musicians representing Native American cultures from across the U.S. The market showcases thousands of handmade items and includes live music, dance performances, storytelling, and traditional foods. (323) 221-2164

CONFERENCES, LECTURES & FESTIVALS Rediscover Cahokia Mound Days

September 14–15, 10 A.M.-4 P.M., Cahokia Mounds State Historic Site, Collinsville, Ill. The site's largest event features ancient tool- and craft-making demonstrations, as well as dance performances by Choctaw Indians from Tennessee and the Haskell Indian Nations University in Kansas. The Missouri Atlatl Association Annual Contest & Demonstration is held in conjunction with Cahokia Mound Days, with experts competing with the ancient spear-throwing devices (atlatls) that were in use prior to the introduction of the bow and arrow. (618) 346-5160

Midwest Archaeological Conference

October 3-6, Ramada Plaza Hotel & Conference Center, Columbus, Ohio. This year's conference theme is recent Hopewellian research, hosted by the Ohio State University Department of Anthropology and the Ohio Historical Society. The conference features a Middle Woodland pottery workshop, a plenary session titled "Hopewell Anthropology," and a workshop on remote sensing and the use of other electronic tools in archaeology. Archaeologist Brian Fagan will make a presentation following the Saturday evening conference banquet. For on-line registration, visit http://monkey.sbs.ohiostate.edu/textiles/MACconf.htm or call William Dancey at (614) 292-4115.

2002 Massachusetts Archaeology Week

October 5-14, at numerous locations. Learn about Massachusetts' past, from the ancient Native Americans who first settled the area more than 10,000 years ago to the early European colonists and later immigrants. Events include archaeological presentations, demonstrations, tours of sites and archaeological laboratories, exhibits, and family activities. For a complete calendar of events, check the Massachusetts Historical Commission's Web site at www.state. ma.us/sec/mhc or call (617) 727-8470.

Gran Quivira Conference

October 10–13, Tubac Presidio State Park, Tubac, Ariz. This year's Spanish Colonial conference will focus on the 250th birthday of the Presidio, with papers presented by historians and archaeologists on recent research at Spanish Colonial sites in the Southwest. A Saturday evening program will be held at the nearby Tumacacori National Historic Park, and an all-day tour will be led on Sunday the 13th to the Taranate site just over the border in northern Mexico. (520) 398-2252

59th Annual Southeastern Archaeological Conference

November 6-9, Beau Ridge Resort and Casino, Biloxi, Miss. Symposium sessions will be held Thursday through Saturday morning. A Thursday evening reception will be held at the Biloxi Maritime & Seafood Museum, and on Saturday afternoon two 68foot Biloxi oyster schooners will take attendees on a tour of the Mississippi Sound and Biloxi Bay. For on-line meeting registration, visit the SEAC Web site at www.uark.edu/ campus-resources/seac/seac2002.html



Disposition of 10,600-year-old Spirit Cave Man Still in Dispute

NAGPRA review committee disagrees with Bureau of Land Management determination.

n August of 2000, the Nevada State Office of the Bureau of Land Management (BLM) determined that current evidence does not support cultural or biological affiliation between Spirit Cave Man and any contemporary native group. The Fallon Paiute-Shoshone, which claims affiliation with Spirit Cave Man, appealed the BLM decision to a Native American Graves Protection and Repatriation Act (NAGPRA) review committee last fall. Six of the seven people on the committee found that the evidence indicated cultural affiliation between the ancient remains and the contemporary tribe, and that the BLM did not give a fair and objective assessment of all available information. The committee recommended that the Nevada BLM office repatriate the remains and funerary objects to the tribe. Their recommendation is non-binding, however, and the Nevada BLM continues to stand by its original decision.

"We have undertaken an exhaustive review of the submitted evidence and have found no cultural or biological continuity between the remains and any contemporary group, and no evidence of a shared cultural identity with the Fallon Paiute-Shoshone tribe," said Pat Barker, an archaeologist for the BLM. The Nevada BLM chose not to attend the



This is a reconstruction of the head of the individual known as Spirit Cave Man.

review hearing, since it was unaware that the tribe had submitted new evidence to the review committee that challenged its decision.

The remains of the 45-year-old individual known as Spirit Cave Man were discovered in 1940 on BLM land near Grimes Point, Nevada. Spirit Cave Man and the items found with him remained in federal custody, stored at the Nevada State Museum, until radiocarbon dating of a bone in 1994 showed the remains to be about 10,600 years old, making it one of the oldest complete skeletons ever found in North America. In accordance with NAGPRA, tribes were notified about the remains and invited to file a claim for repatriation. The Fallon Paiute-Shoshone tribe filed a claim on behalf of all Northern Paiute people, but after a three-year review of the evidence, the BLM office rejected the tribe's claim of affiliation, which they say is based on weak archaeological evidence and vague statements regarding tribal traditions.

Spirit Cave Man and the materials found with him—a rabbit-fur blanket, a woven head covering, leather moccasins, and reed socks will remain in BLM control, which will consider any new evidence regarding affiliation that is submitted. The tribe can appeal BLM's decision to the secretary of the interior and take the case to court, if it chooses, a prospect that Barker sees as likely. "We've made our decision. Now it's up to the tribe if they want to pursue overturning it," Barker said.

According to Rochenne Downs, cultural liaison to the Fallon Business Council, the tribe is consulting attorneys as well as tribal elders and spiritual leaders and plans to continue to pursue this and other similar cases. "These 10,000-year-old remains are just as significant to us as more recent burials of members of our tribe," Downs said. *—Tamara Stewart*

in the NEWS

Ancient Canals Documented in Southern Florida

Canoe canal system near Lake Okeechobee is believed to be 1,600 years old.

ork at the Ortona site in Florida is revealing the presence of a sophisticated seven-mile system of handdug canals and a large earthen pond dug in the shape of a baton, a sacred symbol for many Southeastern Native American groups. While archaeologists have known about the site since the canals were originally described in 1839, its tremendous significance was not realized until researchers recently determined that the canals were built around A.D. 300 with the use of shell and wooden tools.

"The original surveyors thought that the canals were military fortifications constructed by Europeans because no one at that time believed that Native Americans were capable of such engineering feats," said project director Robert Carr of the Archaeological and Historical Conservancy in Miami.

Carr first visited the site in 1974 when he was an archaeologist with the state of Florida. He returned in 1985 and again in 1996 when, with funding from a state grant, he began to map and investigate the site. Layers of organic soil deposited in the canal soon after its construction yielded radiocarbon dates that show the canals were built about 1,600 years ago. More recent investigations of the 450-



Archaeologist Jeff Ranson excavates a test pit to determine the statigraphy of a small mound at the Ortona site. The mound, which is in Ortona Indian Mound Park, is adjacent to one of the canals.

foot-long baton effigy pond revealed the presence of butchered deer bones, red ochre, and organic sediments that yielded a radiocarbon date of about A.D. 700. Most of the site is on private property, and as a result of these findings, the owner of this portion of the site plans to preserve the effigy pond.

The Ortona canals are, on average, 20 feet wide and 4 feet deep. Researchers think that the Ortona people, ancestors of the Calusa and Mayami, the two principal tribes of southwestern Florida and the Lake Okeechobee area, used the canals for canoe transportation to the Ortona village site and to bypass rapids that were once located along the Caloosahatchee River. The Ortona site, part of which is located within Ortona Indian Mound Park, also contains a sand burial mound that rises about 20 feet above sea level, the highest mound in Glades County.

—Tamara Stewart

Ancient Shipwreck Discovered off the Coast of Panama



Treasure hunters working at the site claim the wreck is Columbus's *Vizcaina*.

A shipwreck discovered in the Caribbean Sea near Playa Damas off the coast of Panama has some explorers very excited at the prospect that it could be the *Vizcaina*, a ship that was scuttled by Christopher Columbus in 1503 during his fourth and last voyage to the New World. A group of private individuals who call themselves "treasure hunters" and who are backed by U.S. investors hoping to turn a profit from the project have begun excavations of the wreck.

The explorers' claim that the ship is the *Vizcaina* is based on various lines of evidence, including the wreck's location, which seems to match a description of the scene of the *Vizcaina*'s scuttling, and armaments that are typical of the late 15th and early 16th centuries. If the shipwreck is in fact the *Vizcaina*, it would be the first of the nine ships Columbus lost at sea to be found.

But experts remain unconvinced and are very concerned about the intentions and lack of expertise of the group investigating the wreck, calling the project an "archaeological disaster."

"All the 'evidence' the treasure hunters have that 'proves' this is the *Vizcaina* is circumstantial at best," said Donald Keith, an underwater archaeologist who heads Ships of Discovery, a non-profit organization based at the Corpus Christi Museum of Science and History. "The site is important not because of the claim that it could conceivably be the *Vizcaina*, but because it is early, because the artifacts discovered so far are unusual, because it is (or was) wellpreserved, and because it undoubtedly has a great story to tell. The problem is, the only way it will ever tell that story is if it is properly excavated by people who know what they are doing and know what it takes to carry a project like this through the years it will take to reach fruition."

Because the law regarding ownership of archaeological objects found at sea is unclear, as undersea technology improves, more shipwrecks are being found and plundered for profit.—*Tamara Stewart*

Legislation Proposed to Protect Galisteo Basin

Support for protection of New Mexico archaeological sites voiced at Congressional Hearing.

Recognizing the tremendous significance of archaeological sites in the Galisteo Basin of north-central New Mexico, U.S. Senator Jeff Bingaman, chairman of the Committee on Energy and Natural Resources, has re-introduced the Galisteo Basin Archaeological Sites Protection Act.

During a well-attended Congressional hearing held in Santa Fe in August, Bingaman outlined the tenets of the bill, which calls for publicprivate partnerships to protect approximately 4,591 acres containing 24 nationally significant prehistoric and historic archaeological sites located within the Galisteo Basin. The act is modeled after the Chaco Outlier Protection legislation of 1980, which gave the Department of the Interior authority and federal monies to assist with the management of sites associated with Chaco Canyon in northwest New Mexico. Testimonies in support of the Galisteo Basin bill were presented by the governors of Cochiti and Santo Domingo Pueblos, administrators of the Bureau of Land Management, Mark Michel, president of the Archaeological Conservancy, local landowners, and the State Land Office.

The Galisteo Basin, a rapidly developing, scenic area that lies between Santa Fe and Albuquerque, played an important role in Southwestern prehistory and early history. The basin contains a high density of prehistoric pueblos and petroglyph sites, including 10 pueblo ruins with more than 1,200 surface rooms, some of the earliest Spanish colonial settlements in the country, and Spanish missions dating from the early 1600s. The Galisteo Basin Protection Act failed to pass when it was first introduced in 1999, and since that time, vandalism, rural residential development, and erosion have irreparably damaged sites within the basin. Chairman Bingaman hopes that the bill will be included as part of a year-end compromise. To voice support for the act, contact New Mexico Senators Jeff Bingaman and Pete Domenici. — Tamara Stewart

in the NEWS

Temples Discovered at Farming Village near Cahokia

Large public buildings may have served administrative or religious purposes.

rchaeologists working at the Grossmann site, a prehistoric Mississippian farming village in Shiloh, in southwest Illinois, are calling the unique site a "Cahokia outpost" due to the particular structures and artifacts found there. It's thought that Grossmann is related to the nearby city of Cahokia.

The village, which is believed to date from about A.D. 1075 to 1125, was discovered by archaeologists with the Illinois Transportation Archaeological Research Program in 1997. The following year they excavated some 20 early Mississippian houses. During the last two years, archaeologists with the University of Illinois have excavated the site with funding from the National Science Foundation and the National Geographic Society.

The University of Illinois archaeologists, led by Tim Pauketat, have found four large, presumably public buildings at the site that they refer to as "temples." Pauketat noted that the average Cahokian house was 60 to 75 square feet, while these square buildings, which are unlike those found at other Cahokian villages, were between 300 and 435 square feet. Though Grossmann appears to be a farming village, these buildings may have been used for religious or administrative



University of Illinois archaeologists work at the Grossmann site. The tarps cover the floors of the village's houses, and the piles of dirt in the background cover the plaza.

purposes. Last year Pauketat and his crew discovered a cache of 70 stone ax heads made of imported material that were deposited in one of the site's temples. The site has yielded other exotic artifacts, including one of the few known carved red stone figurines.

"So far, my sense is that the Grossmann site excavations are pointing toward a Cahokia that had more control over the agriculture of the people than some archaeologists would have thought before our excavations," said Pauketat. "Cahokians didn't restrict themselves to the floodplain of the Mississippi River, but managed the settlement and farming practices of people all over the Greater Cahokia region."

The city of Cahokia served as a Mississippian center from about A.D. 1050 to 1300 and covered nearly six square miles during its peak in the 12th century. The Grossmann site is one of at least eight and likely more than a dozen large farming villages in the area that were established in A.D. 1050, the same time that Cahokia was founded, and appear to have served as satellites for the central city. *—Tamara Stewart*

Texas Fort Unearthed

The site marks the beginnings of the state's battle with Mexico.

n excavation at the site of Fort Anahuac in Texas, where one of the first armed uprisings of American settlers against Mexican rule took place, has uncovered the foundations of the fort's walls. The work confirms the site's location and shape.

Fort Anahuac, which is located on a bluff overlooking the Trinity River in the southeastern part of the state, was established in 1830 by Colonel Juan Davis Bradburn, of the Mexican army. The fort was one of several built in Texas to help the Mexican government collect tariffs on commercial imports and exports, prevent smuggling, and stop the entrance of more Anglo-American immigrants into Mexico's Texas territory.

The fort's remains are located in a park in Chambers County. In 2001, the county sponsored a magnetometer survey performed by the Texas Historical Commission (THC). "This work confirmed that the fort really was on the county park land, what shape it was, and that foundations remained," said James Bruseth, the THC's director of archaeology.

Following the remote-sensing project, the THC recommended that the county have further archaeological testing performed. The company Hicks & Co. was hired to trench parts of the site and to do some test unit excava-



The excavation has revealed this drain, or aqueduct, which was buried beneath the fort's plaza. The archaeologists are uncertain whether it was used to transport fresh or waste water.

tions over a two-week period in May. Rachel Feit, an archaeologist with Hicks & Co., said work has revealed that the fort was diamondshaped with two diamond-shaped bastions, and that contrary to written reports, the corners of the fort pointed north, south, east, and west, rather than northeast, southeast, southwest, and northwest. "It's kind of interesting," she said, "because the historical records are inconsistent." —*Martha Mulvany*



Antiquities Dealer Convicted in Landmark Case

Court's decision upholds foreign antiquities law.

New York gallery owner and antiquities dealer Frederick Schultz of Manhattan received a sentence of 33 months in federal prison and was ordered to pay a \$50,000 fine for conspiring to sell antiquities stolen from Egypt. The case has been watched closely by buyers and sellers of antiquities and by museum directors, who see the stiff sentence given to Schultz as an indication of the federal government's crackdown on sales of ancient objects taken illegally from their country of origin.

Egypt is one of several countries rich in archaeological remains that have banned the export of antiquities. The Schultz case has clearly established that U.S. courts recognize the Egyptian antiquities law, and that American dealers of such objects may be convicted of trafficking in stolen property. Only ancient Egyptian objects that were privately owned prior to 1983 can be legally bought and sold.

During last winter's trial, Schultz, former president of the National Association of Dealers in Ancient, Oriental and Primitive Art, had argued that he had been duped by the British antiquities dealer who had sold him the items and told him that they came from an old family collection. But the British dealer, Jonathon Tokeley-Parry, testified that Schultz had actually helped concoct the story and assisted in creating false labels for the objects, obscuring their origin. Tokeley-Parry was recently released from jail in Britain after serving a three-year sentence for smuggling thousands of ancient objects out of Egypt in the 1990s. Schultz remains free pending his appeal.—Tamara Stewart

Big Eddy is an exceptionally well stratified site in Missouri that contains the entire prehistoric sequence of the midcontinent. But this unusual site is being eroded by the Sac River, and archaeologists are racing to recover important information before it washes away.

KIVEP KUM

By Cynthia Barnes

s Annough It



A field school student checks the depth in an excavation square. This is undertaken periodically at the four corners and the center of each square to ensure that the floor is flat.



This student is using a square profiling shovel to straighten the walls of a shallow excavation unit. Thirteen students participated in the six-week field school.

he Sac River had much to give. Its waters teemed with fish and mussels. Gravel bars contained abundant cobbles and occasional boulders of chert-good stone to knap into projectile points that would bring down the animals that gathered each evening to quench their thirst at its edge. Vegetation clustered thickly along the banks and in the floodplain: Indian hemp to make fishing lines and nets, oak and hickory for food and fuel, marsh elder for oily nutritious seeds.

As the people lived and left and returned again, the river wrapped the site as neatly as a present. Periodic flooding deposited fine layers of alluvial sediment that stacked up like layers of a cake, preserving evidence of some 13,000 years of human occupation in the middle of North America.

In 1986, river erosion exposed artifacts to a group of archaeologists canoeing the stretch that runs through Cedar County in southwest Missouri. Archaeologists conducted preliminary tests that showed the site's potential, but over a decade passed before funding was secured for a serious excavation. The Center for Archaeological Research (CAR) from Southwest Missouri State University began excavating in 1997. After several months of fieldwork, the site was named Big Eddy for a whirlpool located next to it.

The river is now hastened in its natural course by the 5,000 cubic feet of water per second that the Army Corps of Engineers releases frequently from Stockton Dam, located about six miles upstream. What is being lost—at the rate of more than four feet per year—to generate electricity is an exceptionally well stratified site containing the entire prehistoric record for the midcontinent. Big Eddy boasts relatively rich Paleo-Indian horizons.

The archaeologists are excavating as quickly as possible. They know that like the river, time is always running. Like the water, it is moving fast.

THOUSANDS OF YEARS, AND NOT A MINUTE TO WASTE



It's a beautiful day, but Neal Lopinot is not smiling. A tall man with fair, fading hair, he's scowling at the fluffy clouds that offer the field crew relief from the strong June sun. Tomorrow's forecast calls for rain. Rain means more mud, sticky, silty clay loam that clings to shovels and accumulates on boots faster than it can be scraped off. But more importantly, rain means less time to excavate. At Big Eddy, every minute counts.

Lopinot cannot be on the site every day, although you get the sense that he'd like to be. His position as director of CAR keeps him closer to a desk than to the dirt, overseeing projects, writing proposals, cajoling the corps for more funding to support the costly excavations. "Being out here runs at least \$10,000 a week," he says. "You have to pay, feed, and house the crew, rent the trackhoe and



KEVIN WHITE

In addition to excavating, CAR director Neal Lopinot's responsibilities include raising money to finance this expensive project.

front end loader, keep the pumps going. It adds up quickly." Funding from the corps, grants from the National Geographic Society, the Green Foundation, the Missouri Department of Natural Resources, and donations from private supporters have helped finance the excavations. But as with time, there is never enough money.

It is one of the most extensive digs ever undertaken in this region. To date, 10 major excavation areas and two large trenches have been opened at the site. During excavations in 1997 and 1999, more than 3,000 cubic yards of deposits were machine- and hand-excavated at the site. During the excavations of 2001 and 2002, over 3,000 cubic yards have been removed from a single large excavation block, known as Block I. The field crews consist of as many as 30 people, not counting volunteers.

Radiocarbon dating of plant material and associated stone tools have established that the earliest levels of early Archaic occupation (about 11,000-11,500 years ago) of the site occurred at about nine feet below the surface. This is also near the top of the relatively rich late Paleo-Indian horizon that dates to about 11,500-12,500 years ago and extends down to about $10^{1}/_{2}$ feet below the surface. Below that, a horizon dating to about 12,500-13,000 years ago that has yielded two broken fluted points extends to about $11^{1/2}$ feet below the surface. "Pre-Clovis-age geologic deposits dating back to more than 15,000 years occur about 111/2 to nearly 16 feet below surface," says Lopinot."That's what we eventually want to see, although the stratified Paleo-Indian deposits are extremely significant and must be carefully excavated before continuing our search for artifacts in the pre-Clovis-age deposits." He looks up again, eveing the clouds.

Field Director Jack Ray shares principal investigator responsibilities with Lopinot, and he seems to be on site around the clock. While Lopinot is "the plant guy," Ray's specialty is rocks, identifying the geologic provenience of the minerals that humans and nature have deposited at Big Eddy. They work well as a team.

Having reached this depth, they would rather excavate the site carefully by trowel and plot every artifact, but time and budget constraints make that impossible. Instead, the crew is shovel-skimming, shaving thin layers of soil carefully from each excavation unit, listening for the telltale scrape that indicates an artifact being disturbed. They are also watching closely for the tiny flecks of charcoal



This aerial view of the excavation blocks at Big Eddy was taken in 2001. Block I is in the front center. The smaller blocks with Archaic deposits in the upper left have since been backfilled. The extent of the erosion is evident along the cutbank.



Gary Saunders, a field school student, washes out a bucket at one of six water-screening stations. Some of the dirt from the excavation blocks is put in buckets and hauled to the water-screening stations by a 4-wheeler modified to carry these buckets. The water is pumped from the river.



Jack Ray (with hat) instructs several students. From left to right in foreground are Dina Williams, Michelle Liss, and Shannon Taylor, a teaching assistant and crew member.

that can be radiocarbon dated and thereby date any lithic finds associated with the flecks. The shovels have had their ends cut off, which makes them less prone to gouging the clayey soil.

"At this depth, we're in the early Archaic deposits, roughly 9,000 to 11,500 years before present," Ray explains. "During those 2,500 years, we see a proliferation of projectile point styles—at least 12 different types." Eight of the 12 known early Archaic point types have been recovered in situ at the site, and another four have been found displaced on the cutbank. Ray smiles mischievously, eyes crinkling. "We expect to find the others as well. They're here."

TANTALIZING CLUES



The 1997 excavation established the site as the secondlargest known late Paleo-Indian workshop in the region (the largest is at Olive Branch in southern Illinois). Yet, it was much more than a place where people came to fashion new tools to replace broken or useless ones. The variety of both useless and broken tools, as well as those that could have continued to be used, indicates that the site sometimes served as a settlement for numerous peoples during a 1,000-year period.

People of the Dalton culture are thought to have lived in the region around 11,500 to 12,500 years ago, but few radiocarbon dates have been obtained from relatively undisturbed, well-stratified contexts. The only radiocarbon dates considered reliable by many Dalton experts are two from the Rodgers Shelter site, located in the nearby Pomme de Terre River valley to the east of Big Eddy. This meager number has now been expanded to at least nine as a result of the work at Big Eddy.

Big Eddy has also yielded the first reliable radiocarbon dates (about 12,500-13,500 years ago) for organic material associated with fluted points in the middle of the country. This was the first time that fluted points were found in a well-defined and separate alluvial stratum below Dalton points. This suggests what everyone has long believed: that the lanceolate, but typically unfluted Dalton style of projectile point evolved from the lanceolate, fluted Clovis point style. Yet, research at Big Eddy provides further reasons to reassess this simple evolutionary scenario and consider the possibility that the evolution of projectile point styles was more complex.

The fluted points at Big Eddy are now tentatively identified as Gainey and Sedgwick rather than Clovis. While they could represent relatively early, somewhat contemporaneous Eastern forms of Clovis, that is, simply spatial variations on a transcontinental theme, it is suspected that Gainey and Sedgwick represent two variants of intervening middle Paleo-Indian types between Clovis and Dalton. In comparison to Clovis, Gainey and Sedgwick points tend to be thinner, have more accentuated concave bases and team, but a few bifaces that may reflect Clovis use have been recovered by artifact collectors from the eroded cutbank at the site prior to the excavations.

more elongated flute scars that often extend to or beyond the middle of the points.

Gainey and Sedgwick points also exhibit some Folsomlike characteristics, a point type that postdates Clovis. Finally, the stratigraphic occurrence of the two fragmented points at Big Eddy and radiocarbon dates from the site and from other sites in eastern North America producing similar points suggest that they are middle Paleo-Indian and not contemporaneous with classic Clovis points found in the High Plains and elsewhere.

"There is still a great deal that we need to understand, including the geographic and temporal relevance of our point types, but Big Eddy has the potential to shed light on these issues if we can excavate a large enough area at the site, if we can recover enough diagnostic artifacts in situ, and, of course, if the most important early and middle Paleo-Indian deposits have not already fallen into the Sac River," Lopinot states.

Though a Clovis occupation has not been proven, radiocar-



Student Michelle Liss uses a hand lens to examine a Pitkin chert flake. Pitkin chert is an exotic material that is found in northwest Arkansas. A variety of tools and flakes made of exotic cherts are common in the early Archaic and Paleo-Indian deposits at the site.



Student Rena Payne takes notes while Burton Purrington, an archaeologist with Southwest Missouri State University, studies the floor of an excavation unit.

bon-dated materials associated with artifacts recovered in the fluted-point horizon indicate that the site was used during early as well as middle and late Paleo-Indian times. No Clovis-type bifaces have been found in situ by the CAR The presence of radiocarbon dateable charcoal in the deposits has allowed the CAR researchers to develop a sequence of changes in tool styles and adaptive strategies. Thirty-two samples of charcoal have been radiocarbon

The 1997 dig also revealed Mississippian, Woodland, and Archaic occupation levels, and artifacts such as ceramics, projectile points, and various tools. Mississippian utilization of the site appears to have been minimal, perhaps related to a few individuals hunting and gathering in the area, and dropping or discarding a few tools here and there. During Woodland times. the site also was used intermittently, although for a time it appears to have served as a hunting camp.

Archaic use of the site is another matter. At times, Big Eddy apparently was used intermittently and briefly, leaving little evidence other than a pile of debris generated from retooling activities, or a scattering of materials derived from brief episodes of camping and food-gathering. At other times, Big Eddy served as a settlement, with the accumulation of debris suggestive of seasonal and perhaps even year-round use.

Big Eddy's remarkable stratigraphy record offers the potential to establish a chronological record of changing human adaptations throughout prehistory. dated, and more samples will be dated in the future. Ultimately, Big Eddy will be one of the better dated sites in North America.

The researchers are also trying to reconstruct climatic and vegetational conditions from late glacial times to the present. Paleoenvironmental specialists from the Universities of Iowa and Kansas are providing a detailed record of dynamic environmental conditions that is necessary to better understand changes in human adaptation at Big Eddy and in the region as a whole. Forty-five soil samples



Two of the three Indian elephants used in the trampling experiment are led by their handlers. The point of the experiment was to see if the elephants could chip the cobbles and pebbles they walked on, just as mastodons might have done thousands of years ago. Ranging in weight from 6,760 pounds to 7,950 pounds, the elephants are approximately the size of mastodons, which apparently were more common in Missouri than mammoths.



An elephant tramples the gravel pit. The pit was excavated to a depth of about three inches and was lined with plastic to make the gravel easy to collect and remove. The gravel was taken from the deepest portions of the pre-Clovis age deposits at Big Eddy. It was examined prior to the experiment to ensure that it was unmodified.

were analyzed in 1997 for stable carbon isotopes, which indicate the relative abundance of grasslands and forests. From late glacial times to the present, general changes from forests to dryer grasslands and back to forests have been documented. This correlates with the pattern of usage at Big Eddy, which was occupied intensively during cooler, wetter periods.

In 1997, at the same time the Big Eddy excavation was taking place, the second volume of the findings at Monte Verde, a site in Chile that some archaeologists believe yielded evidence of a pre-Clovis occupation, was published. The excitement generated funds for an additional week at Big Eddy, during which time three exploratory excavation units were dug into levels beneath the lowest Paleo-Indian deposits. "Given that Big Eddy was so intensively used, it was a good place to look for evidence of pre-Clovis occupancy," Lopinot says.

During that week they found a boulder, weighing about nine pounds and resting in fine-grained alluvial sediment absent of pebbles, cobbles, or other boulders. Its isolation suggested that it could have been placed there by humans. An in situ flake, possibly a human artifact, was found one level below the boulder.

Their season ended, the archaeologists reluctantly left Big Eddy to spend a year analyzing artifacts and data and producing a monograph of almost 400 pages.

THE EXCAVATION CONTINUES



In 1999, having secured additional funding, the archaeologists returned to the site for further excavation. They reexhumed the disturbed fill from the 1997 excavation area and focused on the lowermost, as-yet-unexcavated Paleo-Indian levels. Radiocarbon analysis of charcoal found below the fluted point levels indicated that the geological deposits dated from about 14,000 to more than 15,000 years ago. Several items recovered from these deposits showed possible human modification: A large broken sandstone boulder may have been used as an anvil and an oblong cobble of chert as a hammer. In addition to these two items, numerous small chert flakes and chipped cobbles and pebbles were found throughout the deposits.

Three experts in human and natural modifications analyzed the sandstone boulder and chert hammerstone, two of whom concluded that the impact on the rocks resulted from nature. The third specialist left open the possibility of human intervention. But Lopinot, Ray, and their lead geoarchaeologist, Ed Hajic, a research associate of the Illinois State Museum, still believe these may be pre-Clovis artifacts for several reasons. Because the sandstone boulder was found in fine-grained sediments rather than gravel, they surmise it was placed there by a person. Also, similar anvilstone-like boulders have also been found in pre-Clovis-age contexts, roughly contemporaneous with those at Big Eddy, at the Lamb Spring site in Colorado, the Cooperton site in Oklahoma, and Bonfire Shelter in Texas.

As for the chert flakes and modified pebbles and cobbles, it was thought that they could have been the work of large mammals, such as mastodons. Putting this theory to the test, the archaeologists enlisted elephants at the Springfield Zoo to participate in an experiment recreating gravel bar conditions at the site during pre-Clovis times. Lopinot and Ray brought in unmodified stones from the site, which the elephants walked on. The results indicated that trampling by Ice Age behemoths likely caused the flakes and chipped cobbles and pebbles.

The archaeologists also investigated a large pile of late Paleo-Indian debris that contained a treasure trove of debitage, the flakes and other chipped stone fragments that are the byproducts of tool-making. Most interestingly, the feature also contained a San Patrice projectile point in addition to Dalton preforms (incompletely shaped objects). San Patrice projectile points have rarely been found as far north as Missouri and are more typical of the Gulf Coastal Plain, which includes portions of Louisiana, Mississippi, Alabama, Arkansas, and Texas. The occurrence of two different styles of points poses the possibility that two distinct cultural groups may have occupied the site simultaneously, at least for a short period of time.

Other artifacts found in the same late Paleo-Indian deposits—preforms, flakes, scrapers, and projectile points were manufactured from chert taken from many distant sources. These artifacts give credence to the Rendezvous Hypothesis, the belief that the Big Eddy site may have been a place where different groups met to trade goods, socialize, celebrate, and procure mates before going their separate ways.

Heavy rains in May of this year kept the field crew idle and made Stockton Lake much higher than normal. Water has been constantly released from the dam, and the river is high on the nearby bank. Consequently, most of the excavation units are flooded. The crew uses noisy gaspowered pumps to periodically siphon off the water. Small areas are bailed with gallon milk jugs that have been fashioned into scoops. On some days, Big Muddy seems a more appropriate name for the site.

Crew member Matt White has dislodged a Pitkin flake, creating a ripple of excitement and adding weight to the Rendezvous Hypothesis. The source area for this Pitkin chert is in the Boston Mountains of northeast Arkansas. It was brought here by trade or by a Big Eddy occupant who traveled to and from northeast Arkansas.

Four-thirty in the afternoon is usually quitting time. The crew has been here since 8:00 A.M., with two short breaks and a brief lunch. They are thinking about a shower and supper when the announcement is made that work



Projectile points recovered from Big Eddy include (from left) the base of a fluted Gainey-like point, a Sedgwick point, a late Paleo-Indian Dalton point, two early Archaic Graham Cave points, and a late Paleo-Indian or very early Archaic Packard or Eastern Agate Basin point. The Gainey point and the Dalton point are composed of exotic chert found in the White River Valley well to the south.



These artifacts were found at Big Eddy during May and June of this year. (Top row, from left) A Woodland Kings point, a late Archaic Afton point, and an early Archaic Hidden Valley point. (Bottom row, from left) Two refitted fragments of an early Archaic Graham Cave point, two Dalton points, a late Paleo-Indian San Patrice point worked down into a graving tool, and two preforms that may also be San Patrice.

will continue for another half an hour. There is a good chance of rain, and tomorrow may be lost. There is barely a grumble from the pit. "We're losing the site faster than we can excavate it, and the crew knows it," says Lopinot. "Our window of opportunity is limited. With more time and more money, we could do it. But we're trying to salvage what we can in the time we have. With luck, we'll find funding for another year."

He frowns once more at the clouds, picks up his shovel, and resumes digging.

CYNTHIA BARNES has written for Slate, Better Homes & Gardens, and other national publications.

Everything New Is Old Again

Tomatoes and potatoes, maize and chocolate: the New World made a remarkable contribution to the Old World's diet.

By Brian Fagan

e have praised and vilified Christopher Columbus for his deeds and misdeeds for over five centuries. But no one would argue the fact that he changed the diets of people all over the world without realizing it.

The conquistadors who followed Columbus to the New World came in search of gold, to "serve God and get rich."They found themselves in an exotic world of unfamiliar animals and plants, inhabited by expert farmers who grew a great variety of crops in every kind of environment imaginable: tropical rain forests, highland pastures, semiarid lands, and northern landscapes with brief growing seasons. Fifteenth-century Native American farmers were expert cultivators. They grew cereals like maize and quinoa, tubers and rhizomes like the potato, sweet potato, and manioc. They raised many varieties of beans, gourds, squashes, and pumpkins. Indians grew many varieties of capsicums, commonly known as chili peppers, as well as allspice, arrowroot, cashews, peanuts, tobacco, and

cacao. The list goes on and on. Columbus took back samples of the strange plants grown by Native Americans, but he had to throw many of them overboard when they rotted during the voyage. The food revolution, the socalled Columbian exchange, began with a few handfuls of seeds and tubers displayed at the Spanish court. Today, Native American crops like amaranth, maize, and potatoes feed millions of people around the world. In an irony of history, the wealth generated by the potato alone exceeds all the gold and silver exported from the Americas. A single year's global potato harvest today is worth more than \$100 billion.

The first success story was tobacco, whose seductive charms captivated courtier and commoner alike. Elizabethan grandee Sir Walter Raleigh gave the narcotic an apocryphal respectability by calmly smoking it before his execution for treason. European settlers began growing tobacco in Santo Domingo in the West Indies in 1531. By 1556, the French ambassador to Portugal, Jean Nicot, had introduced tobacco to France. Nicotine is named after him. Late 16th-century Spanish physicians developed a veritable herbal of tobaccos, which they claimed cured no fewer than 16 maladies. Tobacco smoking really took hold after Virginia colonists returned to England smoking tobacco in clay pipes. "Sotweed" smoking rapidly became the height of fashion. By 1610, Sir Francis Bacon wrote that tobacco smoking was hard to quit. Meanwhile, Seville, Spain, became a major center for cigar manufacture. Beggars patched together tobacco from discarded cigars and rolled it in paper, forming the first cigarettes. But smoking was not universally popular. Physician William Vaughn wrote in 1617 that it was an "outlandish weede. It spends the braine and spoiles the seede."

ON HIS SECOND VOYAGE, COLUMBUS BROUGHT HOME CACAO PODS.

But it was Hernán Cortés who introduced chocolate drinking to the Spanish court. He had observed Aztec nobles quaffing the brew, and he enjoyed it himself. The Aztecs had received large quantities of cacao in tribute from the lowland rain forests of their empire. As the Spanish took over much Maya agriculture and trade, they established a monopoly on cacao production and turned the beans into a major export. By 1590, they were growing cacao plants obtained from Venezuela on the island of Fernando Po (modern Bioko) off West Africa. Today, more than 8,000 tons of cacao leave the island annually, 70 percent of Bioko's export trade. The Spaniards also carried cacao to their possessions in the Philippines. Today, many Philippine households still enjoy hot chocolate made from cacao beans crushed the Aztec way.

> Chocolate drinking rapidly became fashionable throughout Europe during the 16th and 17th centuries. In 1727, Englishman Nicholas Sanders first blended chocolate with milk to produce a delicious hot drink. Physician and collector Sir Hans Sloane, founder of the British Museum, recommended "milk chocolate" for children. He praised its "lightness on the stomach and its great use in consumptive cases." During the 18th century, the Cadbury, Fry, and Rowntree families launched business empires based on chocolate. The brand names survive to this day. In about

> > 1780, Captain James Ferguson of the Royal Navy introduced cocoa to ships in the West Indies as a low-cost, nutritious

The physician Sir Hans Sloane (top) believed that chocolate had a salubrious effect. Once embraced by the Old World, chocolate became an industry. food. The cocoa issue, soon nicknamed "CI" or "kye", is widely used in the Royal Navy to this day.

Zea mays, Indian corn, was the staff of life for Native Americans from the St. Lawrence Vallev in the north to the Andes in the south. Maize cobs and beans powered Maya, Aztec, and Inca civilizations. In 1620, gifts of maize from the local Indians helped the Mayflower pilgrims to survive their first terrible winter. The following year, the newcomers planted 20 acres on their own account and enjoyed "God's good providence," a bountiful harvest. The subsequent feast



This garden at the Catawba Indian Reservation in Rockhill, South Carolina, is a re-creation of an Indian garden, circa A.D. 1200–1700. The garden features maize, beans, squash, and gourds.

with Indian guests found its way into American folklore as the first Thanksgiving.

Columbus and his successors brought maize to the Old World from Haiti in 1493. The first serious harvests took place in the warm climate of southwestern Asia. "Turkie wheat," so named by European observers because it was grown in Turkey, soon became popular in the Mediterranean and the Balkans. Unlike other plants like potatoes and tomatoes, maize was a cereal, and thus attractive to Old World farmers. It was productive, tasted good, and could be grown on soils that were marginal for crops like wheat. Portuguese and Spanish voyagers soon bore maize to tropical Africa, where it took hold at once, being more productive than the native millet and sorghum. Maize rapidly became a staple throughout eastern and southern Africa, contributing to significant rises in African farming populations. Maize meal also fed the human cargoes of slave ships crossing the Atlantic to the Caribbean and Brazil.

WHERE WOULD INDIAN CURRY BE WITHOUT THE INDIAN CHILI PEPPER

or Hungarian goulash without paprika? The pepperoni pizza of last night would have been ghastly without the peripatetic chili. Five hundred years ago, chili peppers were unknown in the Old World. Columbus sailed to the Indies in search of a new route to the spice lands of Asia. Instead of Asian spices he found aji, which he named "pepper," after the black pepper of the East that he was seeking. He took samples back to Spain. Within a remarkably short time, chili peppers traveled with Spanish and Portuguese voyagers to Africa and India, especially on the wings of the slave trade. By 1542, chilis had reached the Portuguese enclave at Goa and the East Indies. Before 1550, chilis had arrived in China. In a nice footnote of history, chilis traveled to Europe and Asia, and then back to North America, where European colonists were the first to grow them outside of the Spanish enclaves at Santa Fe and Saint Augustine. Today, the five originally domesticated capsicum forms have given rise to hundreds of varieties, many more than a single supermarket could stock.

The acceptance of new foods and new plants depended on their perceived utility, their appearance, and concerns as to their edibility and potential toxicity. Crops such as maize, beans, chocolate, and tobacco were quickly accepted in the Old World. The potato and the tomato, on the other hand, were not.

In about 1570, a Spaniard returning to Europe from South America brought a potato home with him. The unspectacular, lumpy tuber may have been an afterthought, a curio stuffed into a traveler's baggage to impress relatives back home. Not that the potato was new to the conquistadors. Indian farmers throughout the Andes cultivated many varieties of this important staple, often high on exposed hillsides. The tubers were misshapen and often downright ugly, but they were rich in essential nutrients and were easily stored.

Potatoes prevented scurvy, provided quick and cheap meals, and required simple implements to plant and harvest. Combined with milk or other dairy products, they made up a diet that was far more nutritionally complete than the bread- and cereal-based diets of 16th- century Europe. You would think that Europeans would have embraced such a crop with immediate enthusiasm, but they did not.

Conquistadors regarded the potato and the Andean Indians who grew them with contempt. It was poor peoples' food, vastly inferior to bread. Inevitably, strong social

VAGNER

BAIL E.



These six samples give an indication of the various types of maize. Much of what is known about ancient maize is based on the study of its shape and size. The types of maize, (from left) are strawberry pop, lady finger, Hopi blue, reventador, chapalote, and pod corn. Though their ages are not known, reventador, chapalote, and pod corn share characteristics with maize known to be several thousand years old.

prejudice accompanied the few tubers that came to Europe. Potatoes began their European career feeding patients in Spain in a Seville hospital for the poor in 1573, but they also became a botanical curiosity. The new plant spread from garden to garden in the hands of ardent botanists and their wealthy patrons. Potatoes appeared in the pages of herbals, where readers learned that the Italians ate them "in a similar fashion to truffles." In 1620, the English physician Tobias Venner praised potatoes in his *Via Recta ad Vitam Longam (The Right Road to a Long Life*), describing them as "though somewhat windie, verie

substantiall, good and restorative." He recommended roasting them in the embers, then dunking them in wine. However cooked,"they are very pleasant to the taste and doe wonderfully comfort, nourish and strengthen the bodie." Venner prescribed them for the aged and remarked that the potato "incites to Venus." Despite these good reviews, many people thought the tubers exotic and poisonous. Potatoes were a root crop, not the kind of leafy plant that could flavor or garnish roast meat. The English, not yet meat and potatoes folk, consid-

This wood block engraving of a tomato plant shows that, hundreds of years ago, this fruit bore little resemblance to the tomato of today. The first tomatoes to reach the Old World were lumpy and had an acidic flavor.

ered the potato an almost indelicate plant that did not belong in the diet of a 17th-century gentleman. Its only possible merit was as a famine food for the poor.

In 1662, a Mr. Buckland, a Somersetshire landowner, wrote to the Royal Society of London arguing that potatoes might help protect the country against famine. The Agriculture Committee of the Society promptly agreed and urged its landowning Fellows to plant such a crop. John Evelyn, the Society's gardening expert, wrote that potatoes would be good insurance against a bad harvest year, if for nothing else than to feed one's servants. In 1664, a pamphleteer named John Forster argued in a book titled England's Happiness Increased: A Sure and Easie Remedy against the Succeeding Dearth Years that the potato was a sure remedy for food shortages, especially when mixed with wheat flour. Deep-rooted social prejudices among the political and scientific elite prevented them from setting an example and eating potato dishes. As for the poor, many of them preferred to go hungry rather than to give up their bread.

French peasants resisted potatoes for generations. In bad years they made do with inferior or slightly moldy grain, suffered high prices and hunger, and often joined bread riots. Farmers in the Burgundy region were forbidden to plant potatoes, as they were said to cause leprosy, the white nodular tubers resembling the deformed hands and feet of lepers. Denis Diderot wrote in his great *Encyclopaedie* (1751-76): "This root, however one cooks it, is insipid and starchy... One blames, and with reason, the potato for its windiness; but what is a question of wind to the virile organs of the peasant and the worker."

In England, the potato was first animal fodder, then food for the poor. Across the Irish Sea, the Irish rapidly embraced the potato as a potential solution to their food shortages. Quite apart from other considerations, potatoes were far more productive than oats, especially for poor people without the money to pay a miller to grind their grain. Soon, the Irish poor depended on potatoes to the virtual exclusion of anything else, a reliance that laid the foundations for catastrophe a century and a half later. By the early 19th century, they cultivated an easily grown po-





This species of tobacco (nicotiana rustica), which has a higher nicotine content than common tobacco, was first described in Europe by Rembrandt Dodoens in 1554.

Elephant head amaranth can be grown on poor, arid, and even saline soils. One seed head of this plant can contain up to half a million grain-like fruits.

tato known as the "lumper." The British considered lumpers mere cattle fodder, but some Irish dockers brought them over from London's docklands, and the lumper became Ireland's staple crop. Unfortunately, lumpers are exceptionally susceptible to blight. When blight attacked the growing lumper crop in 1845, disaster struck. Over a million and a half Irish died over the next four years. A million more emigrated to the United States.

BRIGHT RED TOMATOES WERE ANOTHER BOTANICAL CURIOSITY.

They made their way across the Atlantic soon after Hernán Cortés conquered the Aztecs in 1521. Tomatoes soon became known as "love fruit," which seems like a strange name until you learn that tomatoes are a close relative of the eggplant, then called the "fruit of the Moors" (*pomme des Mours* in French), because it was a favorite food of the Arabs. By a slip of pronunciation, the tomato became *pomme d'amour*; or love fruit. The first tomatoes to reach the Old World were said by an herbal of 1544 to have been eaten with "oil, salt, and pepper." People were cautious of the then acid-tasting, knobbly tomato, unrecognizable alongside the smooth varieties of today.

Red tomatoes are said to have been introduced to Italy by two Catholic priests many years later. Italian cooks were the first to use tomatoes in sauces, but it was not until 1692, two centuries after Columbus, that the first recipe for tomato sauce appeared in an Italian cookbook, and that for a recipe in "the Spanish fashion." By the late 18th century, wealthy Italians regularly enjoyed tomatoes. They became a staple during the next century, as pizza eating spread through the country. But tomatoes suffered from one major disadvantage. They did not keep, and poorer Italians needed foods that could be stored for weeks. Once a man named Cirio succeeded in canning tomatoes, they became a universal staple.

The tomato fared less well in northern Europe, where its resemblance to deadly nightshade, a hallucinogen, caused alarm. Germans called them "wolf peaches," and they were avoided. Tomatoes did not become regular fare until the late 19th century, again with the advent of canning.

Many native crops are still little known outside their original homelands. Amaranth was a staple of Aztec life and a major tribute commodity. Twenty tons of amaranth reached the Aztec capital from the provinces each year, much of it baked into cakes used in religious ceremonies. The Spanish authorities thought these ceremonies mocked communion and banned the cultivation of amaranth under penalty of death. Fortunately, amaranth farming survived in remote parts of the Andes and Mexico. Thanks to UNICEF and other organizations, amaranth is now a major crop in Asia, which grows and consumes more of it than the Americas.

The Columbian exchange sparked a revolution in staple foods, saved millions from unpredictable food shortages, and has contributed to mushrooming population growth since the 17th century. But the Native American garden still grows many nutritious plants largely unknown to the outside world. The culinary revolution will continue.

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PALEO HIGH LIFE

THE LATE PALEO-INDIAN PERIOD IS POORLY UNDERSTOOD THROUGHOUT THE SOUTHERN ROCKY MOUNTAIN REGION. THE EXCAVATION OF THE CHANCE GULCH SITE IS GIVING ARCHAEOLOGISTS A GLIMPSE OF HOW THESE PEOPLE ADAPTED TO LIFE AT HIGH ALTITUDES.

BY MICHELLE NIJHUIS

hen hopeful gold miners christened Chance Gulch, a sagebrush-speckled valley under the high, clear skies and snowy peaks of west-central Colorado, they never could have predicted how well the place would live up to its name.

The valley's archaeological treasures have been discovered, lost, and chanced upon once again. This time, excavators hope their finds won't be forgotten. More than 20 years ago, archaeologists surveyed the patch of Bureau of Land Management (BLM) land because a uranium mill and tailings pile were proposed for the area. They found ground stone, thousands of flakes, and a Paleo-Indian projectile point on the surface, enough to stop the mill project and make Chance Gulch eligible for the National Register of Historic Places.

But these intriguing finds were apparently buried in agency bureaucracy. Just a few years later, said BLM archaeologist Julie Coleman-Fike, the agency burned sagebrush and planted grasses in the valley as part of a range improvement project. Five years ago, the BLM had more plans for Chance Gulch. This time, it hoped to dig out a pond for cattle. After a staff archaeologist made a routine check of the site, he immediately called Coleman-Fike. "He said, 'Julie, you'd better come take a look at this,'" remembered Coleman-Fike. "As soon as I saw it, I said, 'Ohhh-kay.' Right away we found several Paleo-Indian points on the surface, and I knew we had something unusual."

Coleman-Fike then called Bonnie Pitblado, who had just finished her dissertation at the University of Arizona,



Once the importance of the Chance Gulch site was determined, Bonnie Pitblado, an expert in Paleo-Indian spear points, was hired to direct the excavations.

where she studied late Paleo-Indian spear points from Utah and Colorado. The newly minted Ph.D. had accepted a visiting professor post at Western State College in Gunnison, Colorado, just a 20-minute drive from Chance Gulch. Pitblado's research had bolstered the idea that some late Paleo-Indian people adapted to year-round life in the mountains, and she was eager to investigate those adaptations in a new excavation. Pitblado believes that Chance Gulch was a frequently used campsite during the late Paleo-Indian period, roughly 8,500 to 11,000 years ago. If she's right, it's one of only a half-dozen such welldocumented campsites in the southern Rocky Mountains, and analysis of its artifacts may help to flesh out our sketchy ideas about ancient life at high elevations.



Jacob Dance Jr., of the Ute Mountain Ute tribe, and Amy Cordner screen for artifacts as other members of the crew excavate. Deposits from the site are screened through one-eighth-inch mesh so that tiny flakes, bones, and shells can be identified.



This fire-cracked rock feature was exposed in 2000 and a few flecks of charcoal were preserved. The tandem accelerator mass spectrometer radiocarbon technique, which can date pinhead-sized charcoal, was used to determine that the feature is about 9,000 years old.

Pitblado's crew of students and volunteers has uncovered about 15,000 artifacts and features, including more than a dozen in-place projectile points and a fire hearth containing 9,000-year-old charcoal. The finds are cause for celebration: The Rockies' brutal winter temperatures and soil-scouring winds have erased many of the clues to the hunting and gathering cultures of Paleo-Indian times. "We're never going to find 9,000-year-old sandals or textiles in an open site in the mountains," Pitblado said.



EVIDENCE OF A CAMPSITE

Pitblado's visits to Chance Gulch started off with a bang. In the summer of 1999, she and a few colleagues found 13 late Paleo-Indian projectile points on the surface. Most of the finely flaked points included intact bases, which helped Pitblado diagnose the points' late Paleo-Indian origin.

There weren't any Paleo-Indian artifacts in the first two test pits she dug, but the third "hit pay dirt." She uncovered two more Paleo-Indian projectile points, eight bifaces, hundreds of flakes, and several bone fragments. Radiocarbon dating indicated that flecks of charcoal in the soil stratum underlying these discoveries were more than 9,000 years old.

With these findings in hand, Pitblado secured a Colorado Historical Society State Historical Fund grant for a larger test excavation in the summer of 2000. The BLM provided matching funds and staff and logistical support, and Western State College supplied logistical help. Her crew uncovered even more late Paleo-Indian projectile points, stone tools, flakes, and animal bones, but the year's big prize was a fire-cracked rock feature. Hidden in the feature were flecks of charcoal that dated back about 9,000 years. The intact feature was a good sign that the stratigraphy was undisturbed over the last eight millennia. That theory was supported by Western State geologist John Stamm, who dug a series of backhoe trenches at and around the site.

The evidence from the summer was exciting: Chance Gulch was looking more and more like a busy late Paleo-Indian campsite. A full-scale excavation in 2001, funded by the same agencies that supported the project the previous year, yielded two more Paleo-Indian projectile points, more stone tools and animal bones, thousands of flakes, and what appeared to be a pit feature originating at the Paleo-Indian level. The bottom of the feature contained a large fragment of ground stone and charcoal flecks, and the latter were radiocarbon dated to about 9,000 years ago.

The crew continued to excavate the feature this summer. Early in the season, Pitblado speculated that the pit could be a storage feature, or even a prehistoric well. But after weeks of careful work, she concluded that the pit lacked the symmetry characteristic of a man-made feature. Excavators did collect a cache of seeds from the pit that will be analyzed by a botanist at the University of Arizona this winter, but Pitblado believes rodents most likely collected the seeds.The crew also found a second pit, one that



A sediment profile and a pollen column were taken at the Chance Gulch site last year. An analysis of the pollen samples determined that the most common plant species in all levels were pine, sagebrush, sunflower, and chenopods.



Volunteers Angelique Jacopin and her son Kevin record a Paleo-Indian biface found in place. The Chance Gulch project introduces archaeology to people of all ages and backgrounds.

Pitblado calls "unequivocally cultural" because of its sharp, linear margins. Though the field crew didn't have time to fully excavate it, Pitblado hopes to do this in the future.



Excavators have also turned up evidence of a middle Archaic occupation at Chance Gulch. Charcoal associated with another fire-cracked rock feature and a charred log and burnt daub were dated to 3,900 years ago. Projectile points, stone tools, bone fragments, and some 2,500 flakes have also been found at this level. Closer to the surface, the crew has found a 1907 British coin, a quartz crystal, a chunk of mica, an oyster shell, and a shark's tooth. Pitblado will send the shark's tooth to a fossil specialist, who will be able to identify its approximate age from its shape. She believes the tooth may have come from fossil deposits in the surrounding Gunnison Basin, but can only guess at how it arrived in Chance Gulch.

There are even more unanswered questions about the other objects. All of them came from outside the immediate area, but there are few clues as to how and when. "What some cowboy might have been doing with an oyster shell, we have no idea," said Pitblado.

Perhaps the most surprising of the recent finds—all of which were uncovered within an inch of the surface—

are seven smooth stones, ranging in size from an inch to two inches across and incised with simple geometric designs such as arrows and crosshatches. A member of the crew, Megan O'Banion, searched the archaeological literature for references to incised stones. She found a few descriptions of similar stones by Great Basin archaeologists, but no interpretations of their function or significance. Though Pitblado has shown slides of the incised stones at conferences and talked about them with colleagues, she hasn't learned of any other discoveries of such stones in the Rocky Mountains.

Since the stones were found so close to the surface, their incisions could have been made relatively recently, and therefore elders from Native American tribes might be able to identify them. Pitblado showed the stones to Ute elders in



This quartz crystal was discovered at the site. Crystals do not occur naturally at the site, so it's believed that a prehistoric person brought it here.



This Paleo-Indian spear point was found on the surface in 1999. The serrations around the blade are unusual.



This engraved stone is one of several recovered at Chance Gulch. The researchers believe these to be the only such stones found in Colorado and the Rocky Mountains.



Field Director Beth Ann Camp oversees the crew. She is a lithics specialist and a research associate at Utah State University.

Colorado, but they could not provide clues to the stones' origin or function. She will also show the stones to tribal members in Utah. What Pitblado described as "all of these really wacky things" could be much more than just a pile of curiosities. They indicate that Chance Gulch may have had some ceremonial or spiritual significance."These non-utilitarian objects suggest that something special was going on here," she said delightedly. "It's the type of thing we don't see very often, especially at an open campsite. These more recent artifacts are turning out to be as sexy as the Paleo stuff."



ORKING

Two new crew members were inspecting projectile points with Field Director Beth Ann Camp. Patrice Prosper, who had flown in from Brooklyn late the previous night, is a student at Hunter College in New York City, and Amber Preston is a senior at Western State College. Both were new to fieldwork. Camp, a lithics specialist who has worked with Pitblado for three years, gave Prosper and Preston a crash course in the site's history. Then, she fixed them with her clear blue gaze. "Don't worry, I'm always looking over your shoulder. You're never alone," she said with a friendly laugh.

It was obvious she wasn't kidding. The mood at the site was relaxed-the conversation consisting of speculation about the next cookie break and jokes about the latest discoveries-but Pitblado, Camp, and their longtime volunteers are sticklers for detail. Retired physicist Jerry Morrow, who met Pitblado at an excavation in Wyoming eight years ago, pinpointed the location of each artifact larger than one-half inch with the laser beam from his Nikon total station. As a metrologist with the U.S. Bureau of Standards, Morrow used to deal with microscopic measurements. He

needn't be quite that persnickety here, though he comes close. His total station is extremely accurate and extremely expensive (\$10,000). Morrow volunteers his services and the total station, which he purchased with his own money. Instruments this sophisticated require skillful operators, and over the course of a six-month period he taught himself to operate it.

The aptly named Chris Merriman, a student at Western State and one of the biggest jokers on the site, said the discipline is welcome. "Bonnie busts your stones," he said admiringly,"but you work hard, and you learn what you need to know." He plans to follow Pitblado to Utah State University, where she will be teaching next year. The crew ranges in age from Morrow, a World War II veteran, to teenager Mason Judson. There's some geographical diversity as well. Kevin Poulton, an archaeological student from London, was visiting the United States for the first time and was happy to be working on a "proper dig." Sara Lebensold, who studies anthropology in Montreal, was getting her first taste of fieldwork. "It's good to finally get dirty," she said.

Chance Gulch lies within the homeland of the Northern, Southern, and Ute Mountain Ute tribes, and Pitblado consulted with tribal leaders before she began her fullscale excavation. During her discussions, she met Ute Mountain Ute heritage specialist Terry Knight. A chance remark from Knight ("Wouldn't it be great to get some of our kids involved with this?") inspired Pitblado to recruit



Volunteer Carl Haberland excavates a pit feature. Haberland and his wife, Barb, are experienced avocational archaeologists who have worked at the Chance Gulch site for three seasons.

high school students from the three Ute tribes in Colorado and Utah. Two Ute students worked at the site in 2001, and five joined the project this year. Pitblado hopes such diversity will help her field crew learn about present cultures as well as past ones. "I want the people here to have a broader experience than just digging in the dirt," she said. Toward that end, one of the Ute students, Gerald Ketchum, addressed one of American archaeology's thornier problems: "A lot of our elders are very opinion-ated about archaeologists, and they say we should just leave the stuff in the ground, but I think we've got to learn from the past," he said, brushing his turquoise-dyed hair from his eyes. "Instead of being so secretive about it, we've got to share information."



After four seasons of fieldwork, Pitblado is ready to analyze her findings. "We finally have enough data to test our ideas," she said. Previous research in the Rockies, including Pitblado's dissertation work, indicates that late Paleo-Indians in the mountains had tool-making techniques distinct from those of their lowland kin. But no one knows how much time these people spent at various mountain elevations each year, and Pitblado hopes her analyses of Chance Gulch artifacts will help reveal at least part of the answer.

A huge variety of food, from antelope to pine nuts, was once available in this area, and water was also plentiful. So Pitblado believes late Paleo-Indians may have stayed put in the Gunnison Basin for relatively long periods, possibly even year-round.

She knows that almost all of the Chance Gulch tools were made from local stone, which suggests that the late Paleo-Indian people occupying the site had not recently traveled to a distant location and procured exotic materials. A closer look at the types of stone in the collection may give her more clues to group movements in the Gunnison Basin and beyond. Pitblado also infers the kinds of tools that people were manufacturing at the Chance Gulch site—projectile points, bifaces, scrapers, and drills—from characteristics of the thousands of waste flakes they left behind. She can even tell if microscopic flakes were produced by the manufacture of a projectile point or from sharpening a dull scraper by analyzing the flakes' wear patterns.

Pitblado doesn't yet know if late Paleo-Indians braved wintertime in Chance Gulch, but she hopes future lab analyses and fieldwork will turn up more information about seasonal use. Blood residue analyses of the stone tools may show which animals were hunted, and pollen analyses of the soil could tell her what the climate was like at that time. Comparative analyses of late Paleo-Indian and middle Archaic tools from Chance Gulch may also identify differences in survival strategies between the two groups.



These late Paleo-Indian spear points were excavated from the site. That these specimens are not intact bolsters the argument that Chance Gulch is a campsite. After a hunt, prehistoric people brought their spears back to camp, where they manufactured new tips and discarded the broken bases.

The unusually large number of late Paleo-Indian artifacts makes Chance Gulch an important site, according to Jim Benedict of the Center for Mountain Archeology in Ward, Colorado. Since archaeologists often assume that highelevation sites have shallow soil deposits, relatively few excavations have been done in the mountains. "We know so little that almost every bit of information helps," he said.

In order to catch up on analysis of the artifacts, Pitblado may not excavate at Chance Gulch next year, but she does plan to conduct additional surveys and excavations at Chance Gulch and other sites in the Gunnison Basin. "This basin is just too rich to leave," she said. "There's so much here, and there's hardly anyone looking at it."

Pitblado will also look for late Paleo-Indian sites near her new home in northern Utah, where little is known about late Paleo-Indian life. Pitblado has loved the Rocky Mountains since she listened to her father sing John Denver songs around the family campfire, and she's pleased to be establishing a career in her chosen home. "It sounds strange, but I've always known I had to be here," she said. She expects the mysteries of vanished Rocky Mountain cultures will keep her busy for decades to come.

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Dogs Throughout Time

Archaeozoologist Susan Crockford measures dog skulls in her laboratory.

The dog descended from the wolf and eventually became man's best friend. The archaeological record provides clues as to how it all happened—and fodder for lively debate. — By Dennis Johnson

erhaps no animal represents the wild beast better than the wolf. At the same time, its direct descendant, the dog, has become the symbol of hearth and home. Dogs were the first animals to reside with people and the only animals found in human societies throughout the world. But how and when were dogs domesticated and what roles did they play in early New World cultures?

Canine archaeological evidence, from intentionally broken or excised teeth to ceremonial burials, points to a decisive human touch in creating the dog and the more than 400 breeds we know today. Skeletal remains retrieved from geographically dispersed sites and dated over a broad span of time attest to the enduring relationship between man and dog. But as Washington State University archaeologist Karen Lupo asks: Did dogs migrate to North America with people or did they come on their own? Were they already domesticated when they arrived here or still essentially wolves?

Archaeozoologist Susan Crockford, who has lobbied for more detailed and consistent reporting of archaeological canid remains, cuts to the chase with a succinct question: What were the roles that dogs played in ancient human societies? Were they guardians, spiritual entities, companions, hunters, haulers, herders—or dinner?

Archaeologists like Lupo, an expert on prehistoric dogs of the eastern Great Basin in Utah, Amy Dansie, formerly with the Nevada State Museum and an authority on Nevada's western Great Basin, Crockford, Marion Schwartz of Yale, Darcy Morey of the University of Kansas, and other dog-struck colleagues are using skeletal remains, DNA testing, and sometimes tenuous and contradictory theories to piece together the elusive answers to these questions.

Amid this lively debate, archaeologists and other scientists can agree on at least one fact: DNA testing has confirmed that domesticated dogs descended from wolves. Some experts believe the Arabian wolf is the likely granddaddy of all canines. Besides their physical similarities, these wolves lived in the same areas as many early dogs. Be that as it may, other experts subscribe to the multiple founding theory: that dogs evolved from wolves at different times and in different locations that most likely include China, Europe, India, Israel, and North America.

Like most archaeologists, Marion Schwartz believes that dogs arrived in North America fully domesticated. The people who migrated brought these dogs with them, says Schwartz, evidenced by the paucity of dog remains in the New World, especially prior to about 10,000 years ago. While Old World archaeologists have been able to connect the dots between wolves and domesticated dogs by docu-



menting skeletal changes from about 14,000 years ago, the scattering of canid bones in the Americas is too scant to trace a generational progression.

There's growing evidence for more than one domestication event, including new genetic research indicating that ancient canids associated with particular geographic regions share distinctive mitochondrial DNA sequences. This is especially true among North American dogs. Early historic accounts describe indigenous Native American dogs that the archaeological record—now backed by genetic studies—indicates may have evolved independently of living Old World canines.

Archaeologists have identified at least four distinct breeds of aboriginal North American dogs. There is the wool dog (see sidebar on p. 36) and the wide-muzzled Eskimo dog, which is the largest of the indigenous dogs, resembling a small wolf in size and shape. The large Pueblo or Plains Indian dog was closer in size to a coyote, while the small Indian dog was comparable to a modern fox terrier and came in two varieties: short-faced or with a long, narrow muzzle.

In a survey she conducted of prehistoric canid remains in the eastern Great Basin, Lupo identified dog remains from 17 sites that covered a time frame from 500 to 10,000 years ago. Most appeared to be Pueblo Indian dogs because of their skull size and shape. Dansie found broader evidence of domestic dogs in the western Great Basin extending back some 3,500 years, and remains of similar dogs have been found in almost every pueblo excavation in the southwestern United States and other sites dating from A.D. 800



These late Archaic-period dog burials were discovered in western Tennessee. The above remains were found at the Big Sandy site and the lower remains at the Eva site. These carefully interred remains are approximately 5,000 years old. The purpose of these burials is unknown.



to 1250. By the late 19th century, however, this aboriginal dog was all but bred out of existence both through natural interbreeding with European dogs and purposeful cross-breeding for desired traits.

A PREHISTORIC DOG'S LIFE

Why the bond between humans and dog? Because the two species's complex social patterns and communication systems are so overwhelmingly in step with each other, explains Morey. "It was an incredibly social relationship," he states. Like humans, dogs are highly social animals with finely honed communicative and pack-hunting skills they inherited from their lupine ancestors, but which are less marked in other wild canids such as coyotes and jackals.

Prehistoric Native Americans did not possess domesticated goats, sheep, cattle, pigs, or horses. Dogs were their only domestic animal, and, according to Schwartz, Native Americans considered their dogs to be "ambiguous." Dogs were friends of humans, but akin to coyotes and wolves. As a result, Schwartz wrote in her book *A History of Dogs In Early America*, "dogs occupied and operated on several levels: they connected the wild and the tame, and they joined nature and culture."

Clearly identifiable dog remains date back to 14,000 years ago in the Old World and to approximately 10,000 years ago in the New World. By around 7,000 years ago, it's believed that dogs ranged across the Americas, having accompanied migrating human populations.

Though the archaeological record on dogs is expanding, it remains sketchy. But, supplemented by historic and ethnographic accounts, it indicates that dogs performed various duties in prehistoric times. "My guess, from all the evidence I've looked at, is their main role was spiritual," Crockford says. "It astonished me that you get the pattern of people being buried with dogs all over the world."

There's evidence in ethnographic reports of dogs having special powers, one of which is to be a guardian of the dead in the next world. A remarkable joint burial was discovered on the Braden farm in Weiser, in western Idaho, where at least a dozen human burials along with two domesticated dogs were exhumed. Radiocarbon testing of one of the dog bones dates the interments to about 7,500 years ago, making the canid remains among the oldest in western North America and perhaps the earliest known example of intentional dog burials associated with human burials in the Americas, according to Robert Yohe II of California State University at Bakersfield and Max Pavesic of Boise State University.

Both dogs appear to be associated with the remains of a middle-aged female who was buried with several large, ceremonial bifaces and a flaked stone drill. Since the dogs were of different ages and were laid directly with the woman (who shows signs of having been killed by a spear thrust to the spine), Yohe surmises they were likely her The Colima culture flourished in Western Mexico roughly between 400 B.C. and A.D. 500. Their artisans created hundreds of different types of vessels, the most famous of which are the pot-bellied dogs. Most of these vessels date from the late formative to the early classic period—A.D. 100– 500—and very few have site proveniences or firm dates.

These dogs represent a hairless breed raised and fattened for



consumption and sacrifice. It is believed that these dogs were also used for companionship, hunting, protection, and medicinal purposes. The dogs and the dog vessels were buried with the dead along with other ceramic forms, as well as objects made of cloth, wood, feathers, basketry and foodstuff. Evidence suggests that the buried objects were related to death and rebirth.

pets and were sacrificed to allow them to enter the afterlife with her.

The earliest known dog burial in North America marking definitive interaction with human society is in Koster, Illinois, located in the Illinois River Valley. There, archaeologists uncovered a shallow pit containing the complete skeletons of three dogs estimated to be 8,500 years old. Darcy Morey, who studied the dog remains, concurred with other archaeologists that this was an intentional burial and speculates that it demonstrated an affectionate human-dog relationship.

Although not associated with a human burial, Crypt Cave Dog was also treated with apparent reverence. The dog's intact skeleton, which was radiocarbon dated to about 7,500 years ago, was found in Nevada and analyzed by Amy Dansie. He was buried in fish netting, and Dansie notes that shrouding a dog in such a valuable commodity indicates the animal had great value. So does evidence of a severely broken leg so well healed that Dansie concluded a human must have tended to it. "He wasn't running around on this compound fracture," she says. "Someone fed him and took care of him."

Over time, dogs would assume multiple domestic roles. Dansie suggests that dogs in the Great Basin served as roving garbage disposals, subsisting on scraps in refuse middens, evidenced by the concentrated remains of dog populations in wetland areas, where food is more abundant, and their scarcity in the more arid eastern Great Basin. Dogs served to limit the accumulation of trash near human habitations while requiring little maintenance from human cohabitants.

In the western Great Basin, the Paiutes used dogs to dig out small game such as ground squirrels and gophers. The Paiutes went so far as to fashion protective boots for their dogs out of badger skin so they wouldn't hurt their paws. Dansie says the Paiutes also used their dogs as watchdogs, and the canines probably helped them keep warm during cold winter nights.

Indigenous West Coast Dogs



These illustrations of the village dog (above) and the wool dog (below) are based on historical descriptions and remains found at archaeological sites.



n the late 18th century, European explorers on the northwest coast of North America recorded two distinct breeds of indigenous dogs. One of them was a medium-sized, dingo-like animal sometimes used for hunting; the other was a smaller spitz-type, long-haired dog.

Archaeozoologist Susan Crockford calls the former the village dog and the latter the wool dog. Crockford, through the analysis of dog bones from some 20 sites near the U.S./Canadian border, has found evidence of two types of dogs that seem to match historical descriptions.

The wool dog was bred for its coat, which Indians sheared off with mussel shell knives and wove into ceremonial blankets. According to Crockford, measures were reportedly taken to keep the two types from interbreeding, with their handlers going so far as to sequester the wool dogs on an island when they couldn't otherwise be monitored. As a result, while remains of village dogs are found across western North America, wool dogs stayed exclusively on the Northwest coast.

With the arrival of sheep's wool and Hudson Bay blankets, dog wool lost its value. Wool dogs were no longer isolated and the breed rapidly became extinct due to interbreeding.

ROUGH TREATMENT

There is evidence that humans loved their dogs as well as evidence that they treated them roughly. Diane Warren, a doctoral candidate in Indiana University's archaeology department, has discovered a pattern of abuse in the bones of 2,500- to 5,000-year-old dogs from the southeastern United States. "I'm finding a high incidence of broken ribs, broken vertebrae, and healed cranial fractures consistent with the kind of injuries from dog abuse," says Warren, whose research on the health of late Archaic dogs may fill in some of the blanks about the health and habits—particularly what she calls the interpersonal violence—of people who lived in that time and place.

Ironically, many of the canine skeletons bearing signs of trauma came from ceremonial gravesites archaeologists uncovered in the 1930s. They found some dogs buried alongside humans, perhaps as a religious offering or for companionship in the afterlife, and others carefully interred alone. Warren calls it a "strange dichotomy" that people would nurture in death the same animals they harmed in life.

Morey also found evidence of trauma-induced pathologies in centuries-old dog bones, though from a vastly different era, culture, and clime. He and Danish colleague Kim Aaris-Sørensen, a zooarchaeologist with the University of Copenhagen, studied the skeletal remains of sled dogs from precolonial- and colonial-era archaeological sites of the Thule people in the Eastern Arctic. In a paper they published in the March 2002 issue of *Arctic* magazine, Morey and Aaris-Sørensen called such traumas consistent with the animals having been disciplined as part of their management in teams. The archaeological record also includes sled parts, trace buckles, whip shanks, and other evidence that pack dogs were a traditional feature of

In addition to being treated roughly, it's obvious that dogs were consumed. The Thule ate dog meat and used their hides for clothing, "We have archaeological evidence that the dogs were prized, but also eaten," Dansie states. There were times in the Great Basin when dogs were eaten during famines, she explains. "They didn't like to eat dogs, but if they had to, they would eat someone else's dog." Though the Paiutes ate dogs when food was scarce, Dansie says there is no evidence in the Great Basin that dogs were raised for food, as they were in Mexico during the time of the Aztecs.

Elizabeth Scott, an archaeologist with Illinois State University, has analyzed faunal remains at a number of late Woodland sites in the middle Mississippi Valley and Iroquois sites in the eastern Great Lakes. She has identified instances of dog consumption, but it amounts to "five percent or less" of these peoples' diets. Though the dog consumption could have been ritualistic, Scott's best guess is that it was simply "a food preference." She searched in vain for a pattern to their dog-eating habits. "I couldn't find any correlation with temporal changes in dog consumption. I couldn't find any correlation with social complexity."

In summing up her analysis of dog consumption, Scott says, "There's no hard and fast rules and patterns. It's as variable as human culture." Her statement could also describe the millennia-long, often paradoxical relationship between humans and dogs. "Among some groups," Schwartz writes, "eating dogs was strictly taboo, whereas other groups ate them with great relish. Some cultures relied on dogs for transportation and hauling. Others found them to be of no use at all. Dogs played



The skull of an adult male dog buried at Perry, a site occupied during the Archaic through the Mississippian periods, in northern Alabama. There is a large healed fracture above the right eye. Although great care was taken in burying this dog, its injury could have been the result of mistreatment.

key roles in the myths of some people; in other myths, dogs were scarcely mentioned."

The injured bones that Warren concluded show human-induced trauma came from ceremonial gravesites unearthed in the 1930s. There, dogs were buried alongside humans, perhaps as a religious offering or for companionship in the afterlife, while other dogs were interred on their own with obvious care.

As Schwartz observes, "There's so much mystery surrounding the peopling of America, including the number and timing of migrations." A similar mystery, partly due to the limited archaeological evidence, surrounds New World dogs. "When people are excavating they often don't recognize dog remains," Crockford says, "and therefore they aren't recorded carefully enough." Crypt Cave Dog is a glaring case in point. The remains were excavated in the 1950s and for decades sat on a shelf in the Nevada State Museum, collecting dust. "We had no idea that we had any dogs in the Nevada State Museum until I went looking for them," Dansie states.

The mystery is further complicated by the meandering trail *Canis familiaris* took into breed specification, occasional hybridization with wolves, and apparent extinction of some types, whether engineered by humans or not. But to a number of researchers, it's a mystery well worth solving.

Crockford believes that, given the dog's long history as a domesticate and its presence at the side of humans in every habitable corner of the world, it merits a very special place in archaeology.

Though a great many details of the complex and puzzling story of humans and dogs are yet to be revealed, Darcy Morey has succinctly defined it: "I think it was, and is, an intense relationship."

DENNIS JOHNSON is a writer based in Tacoma, Washington.

Thule life.

new acquisition

Learning About Louisiana's First Mound Builders

The Conservancy acquires the Mott Mounds.

n recent years, archaeological research in Louisiana has rewritten the book on North America's prehistory. Prior to 1994, most archaeologists agreed that the first sedentary society in America capable of constructing large mounds and earthworks was the Poverty Point Culture of the late Archaic period (circa 1700-700 B.C.). The type site for this civilization is the famous Poverty Point site in northeastern Louisiana. However, new research by archaeologists Reca Jones, Joe Saunders, and others has demonstrated that societies were sedentary and that mound construction began in Louisiana at least 2,000 years earlier during the middle Archaic period (circa 3700 B.C.).

These new dates for mound construction are attributed primarily to the bountiful environment of the lower Mississippi Valley. Though swampy and covered by a maze of bayous and waterways, this landscape was very attractive to the Archaic period people, as food was plentiful. These people had not yet learned of agriculture, which was usually a necessity for most sedentary societies. Nonetheless, the abundance of game, fish, and edible plants in the region allowed them to live off of the land. The myriad of waterways connected to the Mississippi River also helped to connect these bayou people to other parts of the continent through trade. The textbooks had to be rewritten. The Poverty Point people were the beneficiaries of at least 2,000 years of mound building tradition.

Mound building in Louisiana continued to flourish long after the Poverty Point culture had vanished as societies grew more complex and as agriculture was established. Between A.D. 800 and 1200, corn agriculture was introduced to the region, leading to radical social changes. Around A.D. 800, the Coles Creek culture arose in the region. Exhibiting traits of both the earlier Woodland and later Mississippian cultures, the Coles Creek people developed some agriculture, and, archaeologists believe, lived in a stratified society that had developed elaborate ritualistic practices.

Coles Creek mound sites were not fortified like



A view of a corner of mound "A". This is one of the largest mounds in Louisiana, covering over two acres at its base.

the later Mississippian ones, indicating that there was little warfare, but their mound centers were equally as large and complex and seem to serve ceremonial purposes. The Coles Creek people constructed both burial and platform mounds, along with other earthworks, around plazas that were the antecedents of the later Mississippian period sites. "The ceremonial centers of the Coles Creek culture were the earliest examples of the rectangular



mound-and-plaza arrangement, which became widespread in the southeastern U.S. after A.D. 1000," stated University of North Carolina archaeologist Vin Steponaitis. "The Mott site is among the largest and best preserved of the Coles Creek mound sites, and is an extraordinary example of this early style."

The Mott site is located in northeast Louisiana on the west bank of Bavou Macon, an ancient channel of the Mississippi River rich with fish, game, and other resources. Mott is among the largest mound centers in the Southeast, covering nearly 200 acres and containing at least 14 mounds. Most of the mounds stand between 3 and 12 feet high and most measure about 175 feet across. One of the mounds is among the largest in Louisiana, standing over 28 feet tall and covering a little over 2 acres at its base.All of the mounds were constructed around a 48-acre plaza.

Archaeological investigation of the Mott site began in 1913 when it was first described by pioneering archaeologist C. B. Moore. Moore tested all of the mounds and observed that many had numerous stages of construction. Later investigators from Harvard University determined that at least some of the mounds were constructed during the Coles Creek period upon earlier Poverty Point and late Paleo-Indian occupations. However, due to their size, the construction dates for the largest mounds have not yet been determined.

Recent investigations on other major mound groups in Louisiana have found that those sites were constructed earlier and



This illustration gives a bird's-eye view of Mott. The site contained at least 14 mounds built around a 48-acre plaza.

were inhabited longer than was previously believed. A few sites have even proven to contain very early mounds from the pre-ceramic, Middle Archaic period. Joe Saunders of Northeast Louisiana University plans to take core samples from Mott's mounds this winter in the hope of determining when mound construction began.

The Mott Archaeological Preserve is one of the Conservancy's largest acquisitions in the Southeast. Because of the site's significance, the Conservancy had been trying to acquire it for over a decade. Ownership of the site was divided between the Cupit and Penick families, and recently both families decided to sell.

"A site the size of Mott, and its excellent condition, provide archaeologists with a unique opportunity to study the social dimension of prehistoric cultures," said Saunders. "It will be possible to establish the chronological sequence of mound construction at the site. This will provide the baseline data necessary to estimate the population size and level of social organization associated with the development of Mott."

-Alan and Jennifer Gruber

Conservancy Plan of Action

SITE: Mott Mounds CULTURE and TIME PERIOD: Late Paleo-Indian (9000 B.C.), late Archaic (1700–700 B.C.), Woodland (500 B.C.–A.D. 1200), Mississippian (A.D. 1200–1550). STATUS: There is the potential threat of looting, land leveling, and timber harvesting. ACQUISITION: The Conservancy needs to raise \$200,000 to purchase the site. HOW YOU CAN HELP: Please send vour contributions to The

Archaeological Conservancy, Attn: Project Mott Mounds; 5301 Central Avenue NE, Suite 902; Albuquerque, NM 87108-1517.

new acquisition

Prehistoric Mesa Verde Pueblos in Southwestern Colorado Protected

These two well-preserved sites will answer questions about a little-understood time.

uring the 12th and 13th centuries A.D., when Mesa Verde was flourishing, Pueblo people living in what is now southwestern Colorado built their most elaborate villages, created beautiful pottery and jewelry, and developed a different form of village layout, possibly indicative of a change in prehistoric social and political organization. But what led up to this cultural climax, referred to by researchers as the Great Pueblo period? The Conservancy's two most recent Colorado acquisitions, the Bement and the O'Brien sites, could answer questions about the evolution of Puebloan social organization during the periods preceding the better known Pueblo III or Great Pueblo period.

The 16-acre Bement site is located near Mancos and contains seven masonry architectural units, two probable towers, multiple pit structures or kivas, midden areas, and an enigmatic series of six parallel sandstone walls. Two occupation periods are represented at the Bement site: The first lasted from about A.D. 750 to 850, and the second from A.D. 1000 to 1150. The 13-acre O'Brien site, located about one mile from the Bement site near Dolores, contains several 11-unit pueblos that date from about A.D. 1000 to 1150 and an isolated field house that dates to between A.D. 750 and 1150.

"Recent research in the Mesa Verde region has focused on the investigation of individual households or on larger communities comprising many households," said Mark Varien, director of research at Crow Canyon Archaeological Center in nearby Cortez. There has been almost no research on villages such as the O'Brien site that were larger than a household but smaller than a community. "Research



Bement



This unusual parallel-wall feature was found at the Bement site. Though archaeologist Mark Varien has worked in the region for 23 years, he has never seen a feature like this.

there can contribute a great deal to our understanding of community organization during this time in prehistory. Further study of the unique features and well-preserved units at the Bement site will also make an important contribution to our understanding of ancient history in the Mesa Verde region." —*Tamara Stewart*

Conservancy Plan of Action

SITES: Bement and O'Brien

CULTURE & TIME PERIOD: Mesa Verde Anasazi, A.D. 750–1150 **STATUS:** Residential development and vandalism threaten these sites.

ACQUISITION: The Bements have agreed to sell 16.2 acres containing the Bement site for \$100,000, and the O'Briens have agreed to sell 13.6 acres containing the O'Brien site for \$85,000, both as bargain-sale-to-charity transactions. Additional funds are needed for fencing, stabilization of portions of the Bement site, management plans, stewardship, and the creation of public displays and informational handouts. The Conservancy has received a \$145,210 Colorado Historical Fund grant and must raise \$78,190 in matching funds by March 2003. **HOW YOU CAN HELP:** Please send your contributions to The Archaeological Conservancy, Attn: Project Bement & O'Brien; 5301 Central Avenue NE, Suite 902; Albuquerque, NM 87108-1517.

acquisition



Point-2 Campaign Launched

wo years ago, a member of our board of directors presented a very special proposal to the Conservancy. He offered to give us \$1 million if we could raise another \$1 million to match it. The funds would be used to quickly acquire highly endangered archaeological sites around the nation—sites that were in imminent danger of being sold or destroyed, as well as those sites for which a cash offer is required in order to make the purchase.

We called it a project to "Protect Our Irreplaceable National Treasures" or POINT, and it has been a great success. We raised the \$1 mil-



lion matching funds and we are quickly spending the money to save highly threatened sites from coast to coast. It has been so successful in fact that one of our original directors, Richard Woodbury, has pledged a substantial sum to kick off a second POINT campaign. We need to raise \$1 million in matching funds by the end of 2003. It is quite a challenge in these unsettled times, but one I know our loyal benefactors will support.

We plan to use the POINT-2 funds to continue to buy highly endangered sites across the country. Areas of special focus are the Algonquian sites of the Northeast, the large mound sites of the Mississippi Delta, the villages and mounds of the Ohio River Valley, the Anasazi sites of the Four Corners, and the village sites of California's Central Valley, and nationally significant earlyhuman sites. —*Mark Micbel*



POINT Acquisitions



Saving Mound Spring from Development

Ancient springs in arid southern Nevada provided oases for prehistoric peoples.

ound springs are formed when mineral deposits from spring seepage accumulate over hundreds, perhaps thousands, of years. In arid areas such as southern Nevada, these once-abundant springs provided rich sources of plants and animals for native peoples, who used the springs and left archaeological evidence in the areas surrounding them. But rapid development in the Pahrump Valley, about 50 miles northwest of Las Vegas, has destroyed most of the mounds there.

With the help of amateur archaeologist Don Hendricks, who assisted with negotiations, the Conservancy used POINT funds to purchase 2.5 acres containing a portion of one of the few remaining intact mound springs. The site contains prehistoric deposits that date from the Late Archaic through the Ceramic period, indicating human use of the site for the last 2,500 years. A later historic component has also been identified at the site when Mound Spring likely served as a water stop for wagon freights and stagecoaches that ran through the Pahrump Valley in the late 1800s and early 1900s.

Although very little research has been undertaken at mound spring sites, investigations at one in the



This is one of the few remaining mound springs in the Pahrump Valley, where years of ground water pumping has lowered the water table to the point that the springs no longer flow.

Pahrump Valley revealed a prehistoric habitation site that appears to have been seasonally used for several thousand years, most recently by Southern Paiute people who occupied the region after about A.D. 1000. Mound springs in the valley have also been known to contain the remains of Pleistocene megafauna that date as far back as 11,000 to 13,000 years ago, although no evidence of human activity associated with the remains has yet been found.

"Mound Spring is a significant

part of the archaeological record," said Greg Seymour, an archaeologist with Las Vegas Springs Preserve, who has conducted excavations at mound spring sites in the nearby Las Vegas Valley. "Sites such as these can provide evidence for reconstructing ancient environments and information about prehistoric adaptive strategies of native peoples in this region. Because most mounds have been lost due to development, the importance of this particular one has increased significantly." —*Tamara Stewart*

new POINT acquisition

Machias, Maine, and the *Margaretta*

The Conservancy preserves the site of the first naval battle of the Revolutionary War.

n June 1775, the people of Machias on the eastern coast of Maine captured the small British warship Margaretta in the first sea battle of the Revolution. Local residents and Indians from the area soon captured two more British vessels. Machias was a prosperous lumbering and farming community located around the upstream head of a tidal estuary. The town then prepared for defense by building a series of earthworks at the "Rim," a peninsula commanding a sharp bend in the upper river, subsequently named Fort Foster.

In September 1776, the original defensive works were strengthened with the construction of a temporary fortification, or breastwork; a lookout; and living quarters for guards. These defensive works, stretching over 200 yards, were associated with a floating log-and-iron-chain boom stretched across the river to prevent ships from passing up to Machias. On August 13, 1777, two British frigates and an armed brig arrived off Round Island below Machias. The frigates could go no further up the river, so the brig with all the marines aboard and another small vessel proceeded. The British force was stopped by the boom at the Rim. An exchange of fire began until the local militia at the earthworks and blockhouse abandoned the fortifications. The British landed and took possession of the battery.

The following day, after cutting the boom, the British proceeded up the river but found strong opposition from more militia and Passamaquoddy,



Fearing that this beautiful site would be purchased for residential development, the Conservancy used POINT funds to purchase Fort Foster.

Penobscot, and Malecite Indians. The fortifications at Fort Foster were retaken by the militia and Indians, while the British ships retreated down the river a short distance. The defending forces followed the ships and exchanged fire with them for about three hours. The retreating brig ran aground at the Rim and came under such heavy fire that the crew had to remain below deck. Eventually the brig refloated and continued its downstream retreat. The British fleet eventually departed and Machias was not threatened again during the Revolution.

The site of Fort Foster is now wooded, but the breastwork and trenches are visible as ditches and raised berms of earth parallel with the shore. The exact locations of the lookout and guards' quarters are unknown, but these archaeological features and the expended ordnance and other debris from the exchange of fire with the ships, successful assaults by British marines, and later by militia and Indian allies must still exist in this undisturbed battlefield.

The location of Fort Foster was never forgotten by local historians. Recently, Alaric Faulker of the University of Maine confirmed that the land, now grown to woods, had never been plowed. Leon Cranmer of the Maine Historic Preservation Commission mapped the earthworks in 2001 as part of the American Battlefield Protection Program, sponsored by the Department of the Interior. In contacting the landowner, he learned that the entire extent of Fort Foster was contained within one parcel of land of 13.5 acres, that the land had been for sale for many years, and that the battlefield had never been disturbed.

-Donald Craib

CONSERVANCY FIELD NOTES

Mammoth Skull Excavated at Lamb Spring

SOUTHWEST—Researchers at the University of Colorado at Boulder have excavated the skull and tusks of a mammoth that died more than 10,000 years ago on the Conservancy's Lamb Spring Preserve south of Denver this summer. The mammoth skull was originally found by Smithsonian researchers in 1981 and reburied for later retrieval.

Led by archaeologist James Dixon, the researchers recovered the ancient skull and took it to the Denver Museum of Nature and Science, where a mold and cast will be made. The museum also will have the skull on public display. A cast of the skull and tusks will be displayed at Lamb Spring next summer as part of an ongoing project to develop a museum at the site.

"This site is exceptional because it has well-preserved bones of iceage animals in the spring deposits," Dixon said. "And because it is located in the Denver metropolitan area, Lamb Spring provides unusual opportunities for public education and participation in science."

The excavation, funded in part by a \$75,000 grant from the Colorado State Historical Fund and a \$25,000 contribution from the Douglas County Historic Preservation Board, is part of a larger plan to develop Lamb Spring into a museum and education facility. Another grant from the Colorado State Historical



University of Colorado Museum and Field Studies instructor Paul Murphey (right) talks with graduate student Erin King (left) as classmates Andrew Ericson (foreground) and Amy Moe help excavate an intact young female mammoth skull from the Lamb Spring dig site southwest of Denver.

Fund was used to help purchase Lamb Spring. The site was discovered in 1960 by landowner Charles Lamb when he was digging a stock pond and came upon the mammoth tusks. Shortly after the discovery, researchers from the Smithsonian Institution and the U.S. Geological Survey excavated the site and found the bones of several mammoths, bison, and other ice-age mammals. Radiocarbon dating has shown that some of the mammoth bones are more than 13,000 years old. In the early 1980s, Dennis Stanford, a Smithsonian archaeologist, found spear points and other evidence indicating that people hunted and butchered bison at the spring between 8,000 and 9,000 years ago.

"The Lamb Spring site is significant for many reasons, one of which is that it has served as a focal point for human activity since the end of the last ice age," Dixon said. "The spring attracted animals, and the water and animals attracted humans. As a result, the remains of many ancient camp and hunting sites are located around the spring."

The Conservancy Purchases an Addition to the Sumnerville Mounds Preserve

MIDWEST—The Archaeological Conservancy has entered into an agreement to purchase two additional acres of land adjacent to our recently established Sumnerville Mounds preserve in southwestern Michigan. The new parcel includes the largest mound in the complex and a smaller mound. With this POINT Program purchase, the Conservancy has taken possession of all the identifiable mounds in the Sumnerville mounds complex except for one located in a public park.

Originally encompassing about six acres and including six or more conical mounds, the Sumnerville mound group likely dates to the fourth century A.D. and has been considered a late manifestation of the Goodall tradition. Goodall is a regional variant of the Hopewell culture found in northern Indiana and southern Michigan. It is very similar to the Havana Hopewell of Illinois, and archaeologists originally speculated that it represented a migration of Havana Hopewell people up the Kankakee River to a new homeland. More recent research has demonstrated that the Goodall tradition is at least as ancient in Indiana as the Havana Hopewell is in Illinois. It now seems more likely that Goodall is a result of Indiana's local middle Woodland period inhabitants adopting aspects of the Havana Hopewell lifestyle.

Old Mobile Celebrates Tricentennial

SOUTHEAST—The Conservancy's Old Mobile Preserve in Alabama has seen a great deal of activity as the City of Mobile prepared to celebrate its 300th year since French colonists first settled the site on 27 Mile Bluff above the Mobile River.

Last December, Jay Johnson of the University of Mississippi and Berle Clay of Cultural Resource Analysts, Inc., joined Greg Waselkov of the University of South Alabama in Waselkov's ongoing research at the site in an ambitious remote-sensing project that hoped to locate the remains of Fort Louis de la Louisiane. The log and earth fort served as the capitol of French Louisiana from 1702 to 1711. Despite extensive research at Old Mobile, the exact location is yet to be determined.

The researchers employed a variety of remote-sensing technologies including thermal imaging, conductivity tests, gradiometer surveys, and ground penetrating radar (GPR). Some methods proved more successful than others in revealing new features. While GPR was successful in identifying some features, the conductivity tests revealed others including three large anomalies. One is believed to be a proto-historic Mobile Indian occupation; however, the other two features remain unidentified. Waselkov hopes to identify them when he excavates these anomalies later in the year.

In January, 400 people turned out for an on-site ceremony to commemorate the 200th anniversary of Jean-Baptiste Le Moyne de Bienville's landing at Old Mobile. The ceremony marked the kickoff of a year of special events planned to mark the 300 years since French colonists first settled Mobile. The Conservancy has been hosting a number of events and educational tours throughout the year.

Bienville selected the location at 27 Mile Bluff, with the approval of his brother and expedition head Pierre Le Moyne d'Iberville, in mid-January of 1702 as a suitable location at which to build Fort Louis de la Louisiane and a town. From this locale, the French settled the Gulf Coast and the Mississippi Valley in an attempt to thwart British control of the North American interior. However, within a few years, the location of Fort Louis proved to be unsatisfactory due to its damp location, occasional flooding, and its inconvenient distance from the coast. The town was then moved downstream to its current location. Bienville later founded New Orleans.

THE ARCHAEOLOGICAL CONSERVANCY





Maya expert John Henderson points to El Castillo at Xunantunich, Belize.

The Amazing Maya

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Our tour begins on the coast of Belize, where you'll visit Belize City and take a boat ride up the New River to Lamanai, a Maya trading center established before Christ and occupied until A.D. 1641. From the coast you'll travel to the inner reaches of Belize and explore the magnificent mountaintop palace of Cahal Pech.

A ferry ride will take you to the ruins of Xunantunich, once an important trading center. There you'll tour



This full-scale replica of Rosalila Temple is featured at the Sculpture Museum at Copán. Rosalila Temple was originally built in A.D. 571 and buried within another temple.

El Castillo, a classic example of the Maya technique of constructing a pyramid within another pyramid. From Xunantunich you'll travel to the recently discovered ceremonial site of Caracol, possibly the largest Maya site in Latin America.

You'll spend several days investigating the magnificent city of Copán, considered by many to be the crown jewel of the southern Maya. Copán's famous monument, the Hieroglyphic Stairway, has 63 steps that contain more than 2,000 intricately carved glyphs.

More of the Maya Maya of Palenque and Yucatán

When: February 13–23, 2003 Where: Southern Mexico How much: \$2,495 (\$295 single supplement)

From A.D. 300 to 1200, the Maya flourished in the Yucatán Peninsula of Mexico. Their splendid cities, which still tower over the rain forest, testify to the sophistication of the mysterious people who built them. Our tour will visit some of the most spectacular of these cities. You'll explore the Pyramid of the Magician at Uxmal, one of the



The Palace and the Temple of the Inscriptions at Palenque are two of the greatest architectural achievements of the Maya world.

largest of the Maya cities. At Kabah, you'll see the stone mosaic of masks that adorns the Palace of the Masks. At Chichén Itzá, a magnificent city founded in the 5th century and occupied until the 13th century, you'll see the largest ballcourt found in Mesoamerica, as well as El Caracol, a two-tiered astronomical observatory dating from the 10th century.

Located deep in the rain forest is the city of Palenque, where you'll spend a day touring many architectural wonders. Inside the Temple of the Inscriptions is the tomb of Pacal the Great, who ruled Palenque from A.D. 615 to 683.

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Powhatans and their Predecessors By Helen C. Roundtree and E. Randolph Turner III (University Press of Florida, 2002; 272 pgs., illus.; \$40 cloth; 800-226-3822)

Before and After

Jamestown: Virginia's



Rock Art of the Lower Pecos CD-ROM (Rock Art Foundation, 2002; \$35; 888-525-9907)

The Rock Art Foundation of San Antonio has produced an exceptional CD-ROM for Windows or Macintosh vividly illustrating the spectacular rock art of the Lower Pecos River in Texas. Containing more than 200 high-resolution photographs, this CD-ROM is an outstanding example of what can be done with computer technology.

Maps and timelines complement the rock art photography, giving viewers a comprehensive picture of the artistic tradition. Virginia ethnologist Helen Roundtree and archaeologist Randy Turner have joined forces to create the first comprehensive overview of the Powhatans—the people who met Captain John Smith at Jamestown in 1607 and who have occupied the Virginia tidelands for the past 1,100 years.

Powhatan was the name of the main village and of the paramount chief of the region when the English landed at Jamestown. It soon became the name of the cultural tradition. Starting with six districts, Powhatan expanded his domain to about 30 districts by 1607, according to Captain Smith. Pocahontas was one of his many children. The Powhatans were the first native people to come into extended contact with the English. Yet they are largely a forgotten people as historians and archaeologists alike have focused on the English settlers.

Roundtree and Turner tell us the Powhatans were part of a larger Algonquinspeaking tradition that dominated the entire northern half of the Atlantic coast. They lived in palisaded villages and they resisted the European invasion and European customs for 100 years.

Before and After Jamestown pieces together a wealth of archaeological and other data to give us an account of the Powhatans. We hope it harbingers a revival of interest in the Indian side of English settlement of America.

Homol'ovi: An Ancient Hopi Settlement Cluster

By E. Charles Adams (University of Arizona Press, 2002; 320 pgs., illus., \$50 cloth; 800-426-3797)



Archaeologist Charles Adams has conducted 15 years of research at Homol'ovi, a cluster of five Hopi villages and related sites on the Little Colorado River near Winslow, Arizona, some 60 miles south of the present Hopi villages. Established about A.D. 1260 by the Hopis, Homol'ovi became the center of a robust trade in cotton between the Hopis and the diverse peoples of the region. Attracted by the river's resources and the ideal climate, the Hopis developed a thriving community that lasted only until about 1400. Floods, drought, and soil depletion may have forced them to move elsewhere.

The katsina (kachina) religion reached Homol'ovi around 1350, and the power and beauty of its ceremonies must have had a profound impact on the entire region. At about the same time, large, enclosed plazas with big kivas with murals appeared. Some of the villages grew to more than 1,000 surface rooms.

Adams deftly uses his research to tell the story of Homol'ovi. This is a fascinating tale of the rise and fall of a very important settlement at a critical time for the people of the Southwest. Well written in a narrative style, it will appeal to the archaeologist and the layman with an interest in the people of the Southwest and the Hopi in particular. It is a fine example of how archaeology can make an ancient place and people come alive.

Today, most of the ruins are preserved in Homol'ovi Ruins State Park just off busy I-40, where Adams's research is being developed and interpreted for the visitor. Homol'ovi II is open to the public. For more information see www.pr.state.az.us/parkhtml/homolovi.html. —*Mark Michel*

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