

On the following pages you'll find *ARCHAEOLOGY*'s annual list of the year's most exciting discoveries. From North America's earliest canals to evidence for chemical warfare at a Roman outpost in Syria, the list highlights the sites, artifacts, and scientific studies we feel most enrich our knowledge of the past.

Archaeology is an incremental science, and "eureka" moments are rare. Often the most significant advances result from decades of research, so we have included discoveries that were made in previous years but were only announced this calendar year. For instance, we feature the work of archaeologists who have dug for

four decades at a second-century B.C. Greek city in southern Russia. They were only recently able to identify a large structure at the site as the palace of King Mithradates VI, a legendary foe of Rome.

Two elite tombs unearthed this year made the cut, one belonging to a Moche lord in Peru and the other to a family of Iron Age priestesses on Crete. Each tomb yielded a rich array of dramatic artifacts and tells a compelling new story about the ancient worlds these people inhabited.

Top 10 Discoveries of 2009

Meanwhile, graves of a variety of animals now emerging at the Predynastic Egyptian capital of Hierakonpolis show that the city's rulers kept extensive menageries—the world's first zoos.

For the second year in a row, we've included a list of endangered sites around the world, ranging from the acropolis at the Hellenistic city of Barikot in Pakistan's troubled Swat Valley to a prehistoric stone mound in Alabama that was destroyed during construction of a Walmart megastore.

As always, some of us lobbied for stories that didn't make these pages. For those discoveries, such as the world's earliest pottery and a vast Neolithic "cathedral" in Scotland, visit www.archaeology.org. We also have expanded online coverage of the Top 10 list, featuring a look at the intriguing link between the Cretan priestesses and the cult of Zeus. We hope 2009's remarkable finds inspire you to make your own connections with the past, and whet your appetite for the discoveries to come.

—THE EDITORS

Lord of Úcupe

Úcupe, Peru

BEST KNOWN for the over-the-top jewelry their rulers wore to their own funerals, the Moche of northern Peru (A.D. 100–800) are also the subject of intense debate over how they governed themselves. Were the Moche a collection of squabbling city-states, each in its own valley, or was there a central authority?

A discovery in the village of Úcupe suggests the answer might be closer to the latter. Archaeologists found an array of gilded copper masks, shields, and diadems in the tomb of a local lord that strongly resemble those excavated in elite tombs up to 25 miles away. Since the tombs are all in different valleys, the discovery suggests a unified political order. “These guys were not independent,” says dig director Steve Bourget of the University of Texas. “I’m totally convinced there was a Moche state that spread its ideology and culture from south to north.” He notes there is a striking similarity between the discovery and the elaborate Moche burials 12 miles north of Úcupe known as the Tombs of Sipán. “You could take the whole tomb and put it in Sipán and no one would be able to tell the difference,” says Bourget. He thinks Úcupe was a satellite of Sipán, where the first unlooted tombs of a Moche dynasty were discovered in 1987. Both tombs date to around A.D. 450.

The find also marks a victory of sorts against looters. Grave robbers in the 1950s seem to have struck a tomb nearby and eventually would have found the Lord of Úcupe too, if not for local residents that keep a close eye on the site (“Guardians of the Dead,” January/February 2003). “It’s not an easy place to loot,” says Bourget.

—ROGER ATWOOD



First Domesticated Horses

Botai, Kazakhstan

THE WORLD’S FIRST BRONCOBUSTERS, it seems, hailed from Central Asia. New research proves that herders from the steppes were the first to tame horses 5,500 years ago. Since the 1990s, horse bones have been unearthed at the site of Botai, a village in what is now northern Kazakhstan that was occupied from 3700 to 3100 B.C. But a new analysis of bones, teeth, and pottery sherds leaves no question that the people of Botai practiced horse husbandry.

Researchers from the U.S., Britain, and Kazakhstan, including archaeologist Sandra Olsen of Pittsburgh’s Carnegie Museum of Natural History compared the Botai bones with those from two sites occupied by nomadic horse hunters at the same time as Botai and one from the Bronze Age (1200–900 B.C.), by which time horses had clearly been domesticated. They say the Botai equines are closer to domesticated horses than to wild ones. Most notably, their lower leg bones are robust, and show evidence of load bearing. Their teeth are also shaped in a way that suggests they wore bits.

Using a newly refined method of stable isotope analysis, the researchers detected horse milk on pottery sherds from Botai. In the past, it had been difficult to distinguish between horse-meat fats and milk fats on pottery. Horses were hunted by the nomadic tribes of the steppes, so the presence of meat fat would tell the scholars little. On the other hand, milk fat could only come from domesticated horses. “It is inconceivable that anyone would milk a wild mare,” says Olsen.

—JENNIFER PINKOWSKI





Early Irrigators

Tucson, Arizona

FOR YEARS, archaeologists in the American Southwest have wrestled with a frustrating puzzle: How did ancient farmers grow corn in the cactus-studded Sonoran Desert as early as 2000 B.C.? Some form of irrigation was clearly necessary, but until 2009 no one had ever seen evidence for one of these primeval watering systems. Now at the site of Las Capas outside Tucson, archaeologist James Vint of Desert Archaeology Inc. and his colleagues have excavated an enormous network of canals and fields stretching over as many as 100 acres and dating to 1200 B.C. It is the oldest documented irrigation system in North America.

After exposing the site with three backhoes, Vint's team traced the ancient flow of water from the nearby Santa Cruz River to a series of at least eight canals and a regular pattern of fields, each measuring about 250 square feet. Vint marvels at the latticelike design of the

Las Capas waterworks. "The site is located in an ideal place for canal irrigation," says Vint, "and in terms of moving the water, the builders had it figured out really well."

Preserved down to the finest details—including planting holes—the ancient agricultural system is now raising the question of just who the people were that constructed it. Researchers had long envisioned the region's inhabitants at this time as mobile hunter-gatherers for whom agriculture was largely a sideline. But the discovery at Las Capas, says University of Arizona archaeologist Suzanne Fish, "is making everyone rethink who these people were. There's just so much intensive labor there that it's hard to see the builders going off and leaving it."

—HEATHER PRINGLE

Anglo-Saxon Hoard

Staffordshire, England

IN JULY 2009, the largest-ever hoard of Anglo-Saxon gold was found buried in a farmer's field in Staffordshire, central England. Discovered by Terry Herbert, a metal detectorist, and then excavated by the Birmingham University Archaeology Unit, the hoard consists of more than 1,500 gold and silver items, all dating to the seventh century. The find is far larger than other significant Anglo-Saxon hoards, such as those discovered with the contemporaneous noble burials at Sutton Hoo in southeastern England.

Most of the artifacts are associated with warfare, including helmet fragments engraved with a frieze of running animals and elaborate gold sword hilts inlaid with garnets. In some cases, rivets were still attached to the hilt components, suggesting they were ripped off the weapons and hidden quickly. "It looks like war booty, perhaps taken from the troops of an Anglo-Saxon King," says Ian Wykes, head of archaeology at Staffordshire County Council. "By losing these prized objects, the king would have lost his status and authority."

The eighth-century poem *Beowulf* suggests there were frequent battles between kings and nobility during this time, dubbed the Insular Period because of the relative isolation of the British Isles from the rest of the Europe. But some items from the hoard suggest that England may not have been as cut off from developments on the continent as previously believed. "The garnets would have come from Sri Lanka, indicating that there was still some form of long-distance trade during that time," says Wykes.

—KATE RAVILIOUS





Popol Vuh Relief

El Mirador, Guatemala

WHILE INVESTIGATING the water collection system at the city of El Mirador in northern Guatemala's Petén rain forest, a team of archaeologists led by Richard Hansen of Idaho State University uncovered a sculptural panel with one of the earliest depictions of the Maya creation story, the *Popol Vuh*. "It was like finding the *Mona Lisa* in the sewage system," says Hansen. The plaster panel dates to approximately 200 B.C. and depicts the mythical hero twins, Hunaphu and Xbalanque, swimming into the underworld to retrieve the decapitated head of their father. The sculpture dates to the same period as some of the earliest artwork to depict the *Popol Vuh*, the murals at San Bartolo and a stela at Nakbe, two other nearby cities. Parts of the decorative panel extend beyond Hansen's excavation trench, so uncovering the rest of it will have to wait until next field season. In the meantime, the archaeologists have installed a climate-controlled shelter over the area to ensure the plaster remains intact.

The sculpture decorates the wall of a channel that was meant to funnel rainwater through the central administrative area of the city. According to Hansen, every roof and plaza in the city was designed to guide rainwater into reservoirs. While a rain forest may not seem like a place where drought would be a problem, the Mirador Basin gets very little rain from January through May, which would have made it difficult to maintain a large urban population. "Water collection may have been one of the factors that led to the centralization of authority," says Hansen. "Once that centralization was established, it gave them a leaping jump start ahead of everybody else in the Maya lowlands." That advantage may have led to El Mirador becoming the first Maya kingdom and to a rich ideology that held the *Popol Vuh* at its heart.

—ZACH ZORICH



Sites Under Threat in '09



Akapana Pyramid

Akapana Pyramid

A botched reconstruction of the Akapana Pyramid at Bolivia's Tiwanaku is putting the ancient city's inclusion on the UNESCO World Heritage List in doubt. Local officials decided to rebuild the 60-foot-tall pyramid with adobe bricks rather than stone, which was used in the initial construction between A.D. 300 and 700. The project was put on hold in the wake of international criticism, but the lower sections of the structure are now in danger of collapse.

Barikot Acropolis

During the Taliban's rule over Pakistan's Swat Valley, militants destroyed sites like the 27-foot-tall stone Buddha relief at Jahanabad. But the Pakistani army's recent effort to retake the valley may now be bad news for sites such as Barikot, a fortified Hellenistic city founded in the second century B.C. The Taliban vandalized a medieval Hindu altar at the site in 2001, but experts now fear the recent offensive will expose Barikot to heavy looting.



Barikot Acropolis

Guoy Cave

Thousands of tiny tree roots are putting the Paleolithic rock art of Guoy Cave at serious risk. The northernmost decorated cave in France, Gouy's limestone walls are covered with intricate engravings of horses and abstract symbols. But an unchecked network of roots has now grown through the fragile walls of the cave's entrance chamber and threatens to destroy the art.



Preah Vihear

Preah Vihear

The 11th-century A.D. Hindu temple complex of Preah Vihear on the border of Cambodia and Thailand was recently named a World Heritage Site. In 1962, the World Court awarded the site to Cambodia, but Thailand still maintains that it is the rightful owner. This year, the Thai military launched an offensive to seize control of Preah Vihear. At least seven soldiers have died in the fighting, and the temple has been damaged by small-arms fire.

Signal Hill Mound

During construction of a Sam's Club Walmart megastore in Oxford, Alabama, contractors stripped earth from a nearby hill, destroying a stone mound that was built in the Late Woodland Period, around A.D. 1000. Archaeologists have only recently begun to realize the significance of stone-mound networks in the eastern United States so few have protected status. After public outcry over the site's destruction, Walmart halted the project.



World's First Zoo

Hierakonpolis, Egypt

STRANGE ANIMAL BURIALS at the ancient Egyptian capital of Hierakonpolis point to the existence of a large, exotic menagerie around 3500 B.C. The 2009 field season produced 10 dogs, a baby hippo, a hartebeest, a cow and calf, and an elephant. The tally for this Predynastic period zoo now stands at 112 critters, including 2 elephants, 3 hippos, 11 baboons, and 6 wildcats.

Hierakonpolis, on the Nile south of Luxor, was settled by 4000 B.C., and by the time these animals were buried around 500 years later, was Egypt's largest urban center. The animal burials are in the city's elite cemetery, where rulers and their family members, along with retainers—some possibly sacrificed—were interred. Hierakonpolis Expedition director Renée Friedman found evidence indicating that the city's powerful rulers kept the animals in captivity, almost as in a zoo. Baboons (including the one at left), a wild cat, and a hippo show signs of bone fractures that can only have healed in a protected environment. A 10-year-old male elephant had eaten twigs from acacia trees as well as wild and cultivated plants from varied environments, suggesting it was being fed.

The animals were accorded special treatment in death. A large wild aurochs had been buried in human fashion, its body covered with matting and pottery, and accompanied by a human figurine. The newly excavated elephant had been buried lying on a reed mat and covered with linen. Friedman believes the menagerie was a display of power and that the animals were likely sacrificed on the death of a ruler. But this was not, she says, simply the power to kill and bury large and exotic animals. For the ruler, it was also the power to control them and potentially become them, taking their natural, physical power as his own. —MARK ROSE

Iron Age Priestesses

Eleutherna, Crete

THE DISCOVERY of a powerful female bloodline—uninterrupted for nearly 200 years—in the Iron Age necropolis of Orthi Petra at Eleutherna is illuminating the role of women in the so-called “Dark Ages” of Greece.

Last summer, the remains of four females, ranging in age from about seven to seventy, were excavated in an eighth-century B.C. monumental funerary building. Its floor was covered with thin strips of gold, once affixed to burial garments, and the women were surrounded by bronze vessels and figurines, and jewelry made of gold, silver, glass, ivory, and semiprecious stones imported from Asia Minor, the Near East, and North Africa. Other artifacts from the tomb—including a possible stone altar, ritual bronze saws and knives, and a rare glass phiale for pouring libations—suggest these women played an important role in Eleutherna's religious life. Dig director Nicholas Stampolidis of the University of Crete believes the oldest one was a high priestess interred with her protégés.

Adelphi University forensic anthropologist Anagnostis Agelarakis has found all four women shared a genetic dental trait. Further research is expected to confirm they were related to a dozen women unearthed nearby last year, each of whom also had the trait. The other women were buried in three connected pithoi (large ceramic jars) containing equally luxurious grave goods, though without ritual implements.

“This time period is erroneously called the Dark Ages,” says Agelarakis. “The finds show that these women were aristocratic. Their social standing was superlative. I mean, the phiale alone—it must have been sent from a ‘prince’ of Mesopotamia! And their matrilineage was not ruptured for two centuries. I don't think it was dark at all.” —ETI BONN-MULLER





Earliest Chemical Warfare

Dura-Europos, Syria

IN A NARROW TUNNEL under the fortress-city of Dura (now Dura-Europos) in the eastern Syrian desert, 20 Roman soldiers met their fate defending the city from the Sasanian Empire. The archaeologists who found them in the 1930s assumed they had died in a tunnel collapse, but University of Leicester archaeologist Simon James thinks they met a more unusual demise—as victims of chemical warfare.

Sometime around A.D. 256, forces of the powerful, expanding Sasanian Empire laid siege to the Roman fortress. They dug tunnels to undermine the city's outer wall, while the Romans excavated countermines to intercept them. Reexamining the site as if it were a crime scene, James noted that the bodies of the soldiers had been deliberately stacked where the Roman and Sasanian tunnels met. The Sasanians had apparently used their enemies' bodies as a barricade, behind which they could light a fire to collapse the tunnels and bring down the wall. But how had the Persians killed so many Roman soldiers in such a dark, confined space? "The Persians would have heard the Roman counterminers and, I believe, prepared a deadly surprise for them," says James.

Based on chemical residues and sulfur crystals in the tunnel, he concluded that the Sasanians readied braziers of pitch and sulfur, and lit them as the Romans broke through. The resulting cloud of sulfur dioxide, rising into the higher Roman tunnel, could have knocked the soldiers out in seconds, with their only escape from the dark, narrow space blocked by their comrades behind them. There was also a single Sasanian soldier in the tunnel (above). "I believe he was the man who started the fire," says James. "Lingering too long to ensure it was properly alight, he was himself overcome by the fumes."

Though the defensive wall did not fall, eventually the Sasanians broke through, killed or deported everyone in Dura, and left the city to fall into ruin. "The bodies probably constitute the earliest archaeological evidence, albeit circumstantial, of gas warfare," says James.

—SAMIR S. PATEL

Palace of Mithradates

Kuban, Russia

FOR THE PAST FOUR DECADES, archaeologist Vladimir Kuznetsov of the Russian Academy of Sciences has worked at Phanagoria, an ancient Greek city on the Black Sea that was home to Mithradates VI. The king of Pontus from 119 to 63 B.C., Mithradates was the most powerful king in Asia Minor during the first century B.C. Often called Rome's greatest enemy, he fought three wars against the Roman republic.

After a decade puzzling over the age and function of the incinerated remains of a large building on Phanagoria's acropolis (right), Kuznetsov and his team have now uncovered more than 300 coins (far right) in a small extension of the structure, including ones depicting Mithradates himself (above). The discovery finally allowed them to date the building to around 60 B.C. The Roman historian Appian mentions a citywide uprising at Phanagoria in 63 B.C. that culminated with the incineration of a huge public building. "We don't know for certain, but this building might have been [Mithradates's] residence," Kuznetsov says.

Recent underwater excavations in the area have also produced some exciting finds, including a marble gravestone inscribed with an epitaph to "Hypsikrates, wife of Mithradates VI." The historian Plutarch refers to Hypsikratia as a woman "who on all occasions showed the spirit of a man and desperate courage; and accordingly the king used to call her Hypsikrates [the male form of Hypsikratia]." Kuznetsov now believes that given the location of her gravestone, there is no doubt that Hypsikratia died at Phanagoria. "It is such a rich site that we're constantly making discoveries," he explains. "But this is one of those exceedingly rare cases where historical narratives and archaeological findings all support each other seamlessly."

—MARISA ROBERTSON-TEXTOR



Rubaiyat Pot

Jerusalem, Israel

RINA AVNER of the Israel Antiquities Authority (IAA) didn't initially know what to make of an unusual ceramic fragment unearthed at a housing construction site in the Jewish Quarter of Jerusalem's Old City. Not only was the sherd covered with a brilliant turquoise glaze and scrolling black floral designs, but it also was inscribed with a line of text. At first, Avner and her team assumed it was in Arabic or Turkish, since both languages were used in the city. But the text was Persian and, once translated, found to be a line from the *Rubaiyat*, a collection of four-line verses (*rubaiis*) written by Omar Khayyam (A.D. 1048–1131), the renowned medieval Persian poet, mathematician, and astronomer. The *Rubaiyat* is considered his masterpiece and the central work of Persian literature.



Rubaiyat

by Omar Khayyam

تسا هدوب []راز قشاع نم وچ هزو []ن []
This clay pot like a lover once in heat

تس هدوب []راگن فلز رس دنب رد
A lock of hair his senses did defeat

[]ن []ب []م وا ندرگ رب ه []تسد ن []
The handle that has made the bottleneck its own seat

تس هدوب []را [] ندرگ رب ه []تسد []تسد
Was once the embrace of a lover that entreat

Although vessels inscribed with Persian verses have been found elsewhere in regions once under ancient Persia's cultural influence, this is the first time such a discovery has been made in Israel. "The surprise lies in the content of this particular find," says Yuval Baruch, IAA Jerusalem district archaeologist. "Usually in archaeology, we don't find things that so directly speak to the lyrical or literary soul of Jerusalemites during this period." The vessel, which may have been decorative or used to store oil, dates from the 12th or 13th century A.D. and was made in Persia. It was discovered together with some coins in Middle Ages construction fill, leaving Avner to explain exactly how this vessel ended up in Jerusalem. Was it imported by merchants for sale in the bazaar or a gift to a lover? Is the story of its journey to Jerusalem as romantic as the lines of poetry painted on its surface?

—MATI MILSTEIN

