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Special Interest:

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- German Stonehenge
- Crete's Minoan ship goes to sea
- Drought destroyed Ancient Egypt
- Archimedes wasn't playing a kid's game
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- Can genes unravel a Viking mystery?
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- 700,000 year axe found in Norfolk, England.

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Stone Warrior delights Experts

Archaeologists are delighted by a 2,500-year-old stone statue that offers a rare insight into life in western Europe before the Roman conquest.

The stone torso, unearthed at Lattes in southern France, is one of just a few detailed figurines considered to have been made by the ancient Celts. The statue of a male warrior wears a style of armour worn in Spain and Italy and was life-size when it was complete.

It is around 79 cms in height and was discovered in the wall of an Iron Age house where it had been used as a building stone.

Some time after it was created, the statue was mutilated to be reused in a door opening. The head was removed, the left leg and arm hacked off and the crest of the warrior's helmet smoothed away.

The statue's pose is also unusual for Iron Age sculptures from

southern France. Most are shown cross-legged, but the Lattes sculpture was in a crouched position - a pose reminiscent of some Greek sculptures.

Experts say the statue provides a unique insight into early interactions between the inhabitants of western Europe and the classical world prior to the Roman conquest.

The style of armour worn by the warrior is similar to that found in graves and on statues associated with the Iberian culture of ancient Spain. However, the Iberians may have adopted this style of armour through links with Italy. This is unusual because the people of the eastern Languedoc region of France, where the statue was found, are generally thought to have had a Celtic culture, different from people from the Iberian zone to the west.

Michael Dietler, of the University of Chicago,



US, and Michel Py of the Centre National de la Recherche Scientifique in Lattes, France, propose that a cultural elite in the eastern Languedoc may have adopted exotic customs, while the majority of the people held on to their old ways.

Professor Greg Woolf, a historian at the University of St Andrews in the UK, told BBC News Online: "I can't think of anything to compare it to. But this could be the result of a broad range of interaction [in the Mediterranean]." He added that the statue was not necessarily a depiction of someone indigenous to that region. "Are they sure it's not a god? Not all pictures are self-portraits."

<http://newsvote.bbc.co.uk/2/hi/science/nature/3257146.stm>



Greece's Olympic treasure hunt



Bust of Homer

"I don't believe there was ever such a large-scale archaeological excavation in Athens"



Religious Icons

A CLOUD of white dust hovers over Athens' former international airport as crews using heavy equipment build sports facilities for the upcoming Olympics.

A few paces away, another team of workers, with only brushes and garden tools, carefully digs into the past. It's part of an unexpected gift for archaeologists - Olympic projects clearing the way for the single biggest antiquities treasure hunt in Athens and the surrounding areas.

Work on dozens of Olympic-related sites, from venues to highways, has touched off a flurry of archaeological excavations attempting to beat the bulldozers. The finds so far range from pre-historic settlements to 2,500-year-old cemeteries to ruins from the Roman period, when Emperor Theodosius abolished the Olympics in 394 after Christianity took root. He deemed them pagan.

"I don't believe there was ever such a large-scale archaeological excavation in Athens," said Dina Kaza, who heads the excavation at the old seaside airport.

Extra archaeologists and specialised researchers have been hired. Crews have worked round-the-clock shifts to keep pace with Olympic construction, which is moving at full speed to compensate for years of de-

lays. The Games are to begin on 13 August.

Ms Kaza, who oversees excavations in five Olympic-related sites, says the finds so far have not been headline-making - like the back-to-back discoveries in 1997 of sites believed to be the lyceum, or school, of Aristotle, and an ancient cemetery mentioned as the burial place of the statesman Pericles. But the quantity of finds adds richness to the understanding of how Athens developed over the centuries. "We never know what the ground is hiding from us," explained Ms Kaza.

One site, at the new tram-line storage shed, offered up 150 graves from the 7th century BC.

Another archaeologist, Maria Platonos, uncovered a ceramic vessel depicting a victorious javelin thrower at a cemetery from the Classical period, spanning from 500 BC to 323 BC, on a road to the Olympic Village north of central Athens. The athlete is being crowned with ribbons by two messengers from Nike, the Greek goddess of victory, said Ms Platonos, who heads excavations at the Olympic Village. The artefact, dating from 470BC, had been used at a victory ceremony and was later placed on the grave of the man awarded the prize.

"Finding this in the area of the Olympic Village was

truly something unexpected and very fortunate," she added. At times, the antiquities were so massive that relocation was not an option.

Ms Platonos's team at the village discovered an extensive system of underground pipelines from the Roman period used to supply Athens with water from the nearby Parnitha mountain. The system was in use until the 19th century.

At the rowing centre in Schinias, 18 miles north-east of Athens, researchers found three early Bronze Age dwellings from about 4,000 years ago.

Construction of a road to Athens' new airport uncovered another roadway and building foundations at least 2,500 years old. "They indicate an economically vibrant community," said Kasimi Soutou, who oversees the excavation.

The archaeological council ruled to preserve the ancient foundations around the old roadway, but the roadway itself will be paved over after any antiquities are removed.

News of the finds comes as British athletes called for Britain to return the Elgin Marbles. Allan Wells, the Scottish sprinter who won gold in Moscow in 1980 for the 100m, is among the group of athletes who say Greece has a moral right to the artefacts.



Drought destroyed ancient Egyptian civilisation

A team of scientists believe they have discovered why the world's first great civilisation, established in Egypt nearly 5000 years ago, crumbled and plunged into a dark age that lasted for more than 1000 years.

The researchers have produced new evidence linking the demise of the Egyptian Old Kingdom with decades of drought after a study of layers of sediment at the source of the Blue Nile at Lake Tana in northern Ethiopia.

The Sphinx and the pyramids at Giza are among the only remaining legacies of the Old

Kingdom, which lasted from 2575 to 2150 BCE, before the time of Tutankhamen, Ramses, and Queen Nefertiti.

The destruction of the pharaohs' power and the collapse of central government had followed 1000 years of cultural advancement, with its characteristic architecture, literature, and art. The famine that followed the drought was so severe that there is evidence people violated the royal dead and that some were forced to eat their own children.

Some of the theories for the collapse of the world's greatest dynasties have included political conflict and an invasion from Asia.

But most historians believe the initial breakdown was prompted by significant drops, over two or three decades, in the level of the Nile, whose annual floods were crucial for the irrigation of crops. Texts from the period say that the famine was brought about by the failure of the floods, but there has been little scientific proof of this.

Other scientific studies have shown a short-lived but pronounced decline in rainfall and reduced water-flow around 2150 BC over an area that extended from Tibet to Italy.

Sources: The Herald (11 November 2003), History News Network (12 November 2003)



Egyptian Isis with wings

“Some of the theories for the collapse of the world's greatest dynasties have included political conflict and an invasion from Asia.”

German "Stonehenge" marks oldest observatory

A vast, shadowy circle sits in a flat wheat field near Goseck, Germany.

No, it is not a pattern made by tipsy graduate students. The circle represents the remains of the world's oldest observatory, dating back 7,000 years.

Coupled with an etched disk recovered last year,

the observatory suggests that Neolithic and Bronze Age people measured the heavens far earlier and more accurately than scientists had imagined.

Archaeologists reported the Goseck circle's identity and age this past August. First spotted by airplane, the circle is 75 meters wide. Originally, it consisted of four concentric circles--a mound, a ditch and two

wooden palisades about the height of a person--in which stood three sets of gates facing southeast, southwest and north, respectively.

On the winter solstice, someone at the center of the circles would see the sun rise and set through the southern gates.

Source: Scientific American Online, 8/12/03



Venus of Willendorf



Archimedes wasn't just playing a kids' game



Mycenaean Religious
Idol

Among all of Archimedes' works, the Stomachion has attracted the least attention, ignored or dismissed as unimportant or unintelligible.."



Calyx from Chios

Twenty-two hundred years ago, the great Greek mathematician Archimedes wrote a treatise called the Stomachion. Unlike his other writings, it fell into obscurity. Little of it survived, and no one knew what to make of it.

But a historian of mathematics at Stanford, sifting through ancient parchment overwritten by monks and nearly ruined by mold, now appears to have solved the mystery of what the treatise was about. In the process, he has opened a surprising new window on the work of the genius best remembered (perhaps apocryphally) for his cry of "Eureka!" when he discovered a clever way to determine whether a king's crown was pure gold.

The Stomachion, concludes the historian, Reviel Netz, was far ahead of its time: a treatise on combinatorics, a field that did not come into its own until the rise of computer science.

The goal of combinatorics is to determine how many ways a given problem can be solved. And finding the number of ways that the problem posed in the Stomachion (pronounced sto-MOCK-yon) can be solved is so difficult that when Netz asked a team of four combinatorics experts to do it, it took them six weeks.

While Netz acknowledges that his findings cannot be proved with absolute certainty, he has presented the work to other scholars, and they say they agree with his interpretation.

On a recent Sunday morning at Princeton University, three dozen academics gathered to hear Netz speak, and then congratulated him, saying his arguments made sense. "I'm convinced," Stephen Menn, a McGill University historian of ancient mathematics, said at the end of the two-hour session.

Among all of Archimedes' works, the Stomachion has attracted the least attention, ignored or dismissed as unimportant or unintelligible. A tiny fragment of the introduction survived, and as far as anyone could tell, it seemed to be about an ancient children's puzzle — also known as the Stomachion — that involved putting strips of paper together in different ways to make different shapes. It made no sense for a man of Archimedes' stature to care about such a game.

In fact, Netz has concluded, the prevailing wisdom was based on a misinterpretation. Archimedes was not trying to piece together strips of paper into different shapes; he was trying to see how many ways the 14 irregular strips could be

used to form a square.

The answer — 17,152 — required a careful, systematic counting of all possibilities. "It was hard," said Persi Diaconis, a Stanford statistician who worked on it with his wife and colleague, Susan Holmes, and a second husband-and-wife team of combinatorial mathematicians, Ronald Graham and Fan Chung from the University of California, San Diego.

Independently, a computer scientist, William Cutler at Chicago Rawhide, a manufacturer of oil seals in Elgin, Ill., wrote a program that confirmed that the mathematicians' answer was correct.

"People assumed there wasn't any combinatorics in antiquity," Netz said. "So it didn't trigger the observation when Archimedes says there are many arrangements and he will calculate them."

Did Archimedes solve the problem? "I am sure he solved it or he would not have stated it," Netz said. "I do not know if he solved it correctly." As for the name, derived from the Greek word for stomach, mathematicians are uncertain. But Diaconis has a hunch. "It comes from 'stomach turner,'" he said. "If you get involved with it, that's what happens."

Source: © 2003 The Seattle Times Company



Ancient machinery drove cruelty at the Colosseum

The Colosseum in Rome was as sophisticated as a modern stage set, according to archaeologists who have calculated how an intricate system of gang-planks, trapdoors and levers was used to bring wild animals into the arena.

Under the 55,000-seat Colosseum, pulleys and ropes were operated at split-second intervals to connect passages, open gates and hoist cages from the basement to the floor of the arena. The system was run by teams of trained slaves who faced being fed to the animals themselves if their timing went awry.

A team from the German Archaeological Institute involved in an eight-year project to rebuild the arena - which dates back to about ad70 - has been astonished by the ingenious designs.

Although the basement of the Colosseum was due to be excavated in 1812, the watertable was too high at the time and the area was covered over again. Until now, it has never been properly investigated.

"We found the Romans invested an enormous amount of energy in making their games ever more spectacular," said Heinz-Juergen Beste. "We had to do a lot of research to recreate this stage. What we found was an extremely sophisticated system."

By measuring the floor

space and cavities in the walls where wooden lifts, levers and cages would have been constructed, and comparing their findings with contemporary accounts of how animals "magically appeared", the archaeologists have pieced together how the mechanisms worked.

Beneath the grandeur of the arena lay a netherworld of gladiatorial schools and storerooms for weapons and props, all linked by a network of corridors filled with pulleys and levers, animal cages and gladiators. "I walk down these passages now and it's covered in moss and damp, but you can still see how it worked," said Dr Beste.

"We can tell that two or three different mechanical systems were installed. We have found more than 28 lifts used to get animals into the Colosseum. With a pull of a lever they could send scenery, artificial forests or castles made of papier-mache into the arena. The animals were taken down into the basement where they were put into cages.

"From there they were hauled up to a second level, and the door to the cages opened. The beasts would then run up ramps and out into the arena."

The highlight of a typical Colosseum schedule was the afternoon gladiatorial contest, run to a tight timetable by teams of slaves who worked in poor

conditions.

"The spectators would have had plenty of light, but below ground it was a very different story," Dr Beste said. "It would have been very dark, with just a few candles or oil lamps to light the way."

The first recorded fights between gladiators took place in 264bc and spread rapidly with the growth of the empire. At the height of the Roman Empire, a network of at least 186 amphitheatres stretched from Westphalia, in modern-day Germany, to the Euphrates.

The Colosseum in Rome was the largest and most prestigious arena, where emperors consolidated their reputations by staging ever larger games.

Rhinoceros and bulls were originally pitted against each other in the ring but their popularity led to more exotic creatures being sought. Camels, zebras, tigers, lions and leopards were shipped to Italy from across the world.

Maltreatment was part of the Colosseum regime. "They were starved, had salt poured into wounds, were taunted and thrown straw dummies of men to make them fighting mad, and then they were released," said Dr Beste.

Source: Daily Telegraph, 11/1/04



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"We can tell that two or three different mechanical systems were installed. We have found more than 28 lifts used to get animals into the Colosseum.."



Roman Gladiator's
Helmet



Crete's Minoan ship goes to sea



Minoan Amethyst
Spiral Necklace

"The strangest boat in the harbour", said a bearded old salt gazing at the vessel rocking in the sheltered water by the stone quay."



Minoan Double-
Axe Pendant

SPRINKLED with holy water and to a fanfare of trumpets from a white-helmeted naval brass band, a newly built, 17-metre-long Minoan-style open rowing vessel slid sweetly down the slipway in Hania's old Venetian harbour at noon on December 1. President Costis Stephanopoulos had cut the blue-and-white ribbon tying her up, broken a bottle of champagne and announced her name, *Minoa*.

Hordes of schoolchildren were among the enthusiastic Haniots crowding the quaysides, the Venetian mole embracing the harbour seawards and lofty vantage points to watch the ceremony. As if in benign blessing, the sun shone through the clouds after a morning of intermittent rain beginning ominously before dawn with window-rattling claps of thunder.

"The strangest boat in the harbour", said a bearded old salt gazing at the vessel rocking in the sheltered water by the stone quay in front of the sole surviving operational pair of vaulted Venetian *neoria* (ship-building premises) where the boat has been taking shape since December last year. Under the aegis of the culture ministry and the expert supervision of Vice-Admiral Apostolos Kourtis, the vessel has been constructed to be as exact a replica as possible of a Bronze Age Aegean vessel of about 1500BC. Ancient building methods have been observed and materials identical to those of antiquity have been used.

Advising Kourtis in the

design have been seven other members of the Ancient Shipping and Technology Research Institute and the Naval Museum of Crete. Of particular help, says Kourtis, has been a precious wall-painting of a Bronze Age vessel at sea miraculously preserved for over 3,000 years under volcanic ash and pumice in the town of Akrotiri on Thera (Santorini), buried in the great Late Bronze Age eruption. Invaluable practical boatbuilding input to the project has come from Hania's last living master boatbuilder, Haralambos Kokkinakis.

Cypress trees were felled in the village of Anoskeli, about 25km from Hania, using a Bronze Age type of serrated, two-handled saw. The central beam (*tropida*) is from a single 22m cypress tree given a gentle curve by the warmth of a suitably distant fire. Overlapping timbers were put together using bronze tools: a bow-drill (*toxotrypano*), hammers and chisels.

To make the vessel watertight, a mixture of lard (from cows) and resin (from pine trees) was applied to the timbers like varnish, then covered with linen canvas, the whole plastered with lime. The timbers are expected to swell as the vessel lies moored in the harbour over the winter, awaiting spring weather next year to embark on her maiden voyage via Kythira and Monemvasia to the Saronic Gulf. The *Minoa* will skim over the sea powered by a crew of two dozen rowers clad in the dark-blue and white Greek Olympic Games uniform. Helmsmen will stand on either side of the skipper seated in the stern in an enclosure protected up to shoulder level by animal hides. As in antiquity, the vessel will stick as much as possible in sight of land and confine sailing to day-light hours.

A hope is that the Olympic flame en route from Olympia to Athens might be carried aboard the vessel on visits to some of the Greek islands. The *Minoa's* maiden voyage is being billed as part of the cultural build-up to the Olympic Games. Historians are clear that the Minoans of Crete were the earliest naval power in the Aegean. "The first person known to us by tradition as having established a navy is Minos," wrote Thucydides in the late 5th century BC. "He made himself master of what is now called the Greek sea, and ruled over the Cyclades, into most of which he sent the first colonies, expelling the Carians and appointing his own sons as governors."

An exhibition of magnificent photographs recording the building process is being held in the huge old *neorio* where the vessel was built.

Rain came again, but the town is full of exhibitions for the week celebrating the Minoan ship, and December 1, in any case, was festive for the 90th anniversary of Crete's union with Greece. Just before sunset, nature smiled again: the sun burst from behind clouds and a complete rainbow soared almost to the zenith of the sky above Halepa and craggy Akrotiri - a fitting climax to a memorable day in one of the oldest continuously inhabited towns on earth.

**ATHENS NEWS ,
05/12/2003,**



Can genes unravel a Viking mystery?

The grave of a mysterious Viking queen may hold the key to a 1,200-year-old case of suspected ritual killing, and scientists are planning to unearth her bones to find out.

She is one of two women whose fate has been a riddle ever since their bones were found in 1904 in a 72-foot (22-meter) longboat buried at Oseberg in south Norway, its oaken form preserved miraculously, with even its menacing, curling prow intact.

No one even knows the name of the queen, but the Oseberg boat stirred one of the archaeological sensations of the 20th century two decades before the discovery of the tomb of Egypt's Pharaoh Tutankhamen in the Valley of the

Kings.

Scientists now hope to exhume the women, reburied in the mound in 1947 and largely forgotten, reckoning that modern genetic tests could give clues to resolve whether one was the victim of a ritual sacrifice.

Companion in Valhalla

Almost a century ago, archaeologists concluded that the body of a woman in her 50s was the queen, and the second woman, probably in her 20s, was a slave or lady-in-waiting killed to accompany her mistress to an afterlife in Valhalla.

But DNA tests of genetic material might acquit the Vikings of sacrifice in A.D. 834 if they show

the two were relatives.

You never know if there's enough DNA left in old bones for analysis, but it would be fascinating to try, said Professor Arne Emil Christensen, the head of Oslo's Viking Ship Museum, where the Oseberg boat is on display.



Prehistoric Cave in the Dordogne, yours for a million Euros!

A prehistoric cave in the Dordogne, southwest France, that contains a 17,000-year-old engraving of a sorcerer has been put up for sale for €1 million (£700,000). Ernest Paluzzano, an Italian-born peasant who owns the cave in the Vézère valley, said that he is selling it because, at the age of 76, he is no longer able to show tourists around.

"I'm too old to go climbing up and down the steps," he said yesterday. "My legs won't take it any more."

Archaeologists in the Dordogne say that he is demanding an exorbitant price for one of the 50 caves in the Vézère valley containing palaeolithic art. M Paluzzano said, however, that ever since he put up a "For Sale" sign outside the cave, his telephone

had rung every ten minutes with estate agents and prospective purchasers expressing interest in the site.

The cave at St Cirq was discovered in 1952 by an amateur archaeologist. On the walls were engravings dating from the Magdalenian period between 22,000 and 15,000BC. They feature geometric signs, animals and three human figures, including one that has become known as "the sorcerer".

"This is an important prehistoric site, notably because of the human figures," Jean-Pierre Chadelle, deputy head of the Dordogne Council's archaeology department, said. He said the Dordogne's

limestone caves featured a unique collection of palaeolithic art and that the asking price was exorbitant. The French State had the power to preempt the sale, but was unlikely to do so.

In 1972, the celebrated Lascaux cave, also in the Dordogne, was estimated to be worth Fr1.1 million (£112,000) when bought by the Government.

M Paluzzano, who bought the land in St Cirq for a few thousand francs in 1969, said that the cave was rarely visited at the time. He developed the site and turned it into a tourist attraction that draws up to 10,000 visitors a year.

Source: The Times (7th Jan 2004)



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700,000 year-old axe found in Britain

A man walking his dog along the coast of Norfolk, England, has found a stone axe which could change the human history of Europe by 200,000 years.

Mike Chambers has been beachcombing for 10 years, and found the axe in clay below a cliff at low tide while walking between Yarmouth and Cromer.

Experts are trying to confirm the age of the axe by examining the strata of the cliff. It is believed it was used for butchering large animals such as rhinoceros or lions.

Approximately the size of a fist, it was worked

to a point which is still sharp, having been protected by the clay.

Mr Chambers gave the axe to Norwich Castle Museum, who have now lent it to the British Museum in London for the exhibition "Buried Treasure: Finding Our Past", a collaboration with other UK museums.

The idea behind the exhibition is to show how chance discoveries - including those made by metal detectors - have altered our understanding of history.

Included in the exhibits will be the Iron Age gold jewellery found in Winchester, the Bronze Age gold cup from

Ringlemere, Kent, Roman gold, and the Sutton Hoo helmet.

But JD Hill, the British Museum's curator of European prehistory, believes the axe is the most important artefact on display: "If it is 700,000 years old, it really does put back the history of Europe by an extra 200,000 years.

There are stunning objects in the exhibition, but this apparently insignificant piece is the most important thing."

"Buried Treasure: Finding Our Past" runs from 21 November until 14 March, then tours the country.

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