

Frozen Siberian Mummies Reveal a Lost Civilization

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I used to be a big "lost civilization" fan, even have the book Frozen Tombs of Siberia I bought when I was not able to afford such.

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Global warming may finally do in the bodies of the ancient Scythians.

by Andrew Curry

That the warrior survived the arrow s strike for even a short time was remarkable. The triple-barbed arrowhead, probably launched by an opponent on horseback, shattered bone below his right eye and lodged firmly in his flesh.

The injury wasn t the man s first brush with death. In his youth he had survived a glancing sword blow that fractured the back of his skull. This injury was different. The man was probably begging for death, says Michael Schultz, a paleopathologist at the University of Göttingen. Holding the victim s skull in one hand and a replica of the deadly arrow in the other, Schultz paints a picture of a crude operation that took place on the steppes of Siberia 2,600 years ago.

The man was crying, Help me, Schultz- says. Thin cuts on the bone show how his companions cut away his cheek, then used a small saw to remove pieces of bone, but to no avail. Pointing to a crack in the skull, he describes the next agonizing step: An ancient surgeon smashed into the bone with a chisel in a final, futile effort to free the arrowhead. Hours or a day later, the man died, Schultz says. It was torture. The slain warrior s remains were found in 2003, buried with those of 40 others in a massive kurgan, or grave mound, in southern Siberia at a site that archaeologists call Arzhan 2.

To find out more about the lives and deaths of these ancient people, Schultz has spent years teasing out the secrets of their bones, using techniques like those employed at crime scenes. In April he announced the results of his research on the wounded warrior. His body, Schultz says, bore some of the earliest evidence of battlefield surgery. (Prior to this announcement, in October 2007, Schultz had reported a

Frozen Siberian Mummies Reveal a Lost Civilization

finding on a prince buried at the center of the Arzhan 2 mound. Using a scanning electron microscope, Schultz found signs of prostate cancer in the prince's skeleton. This is the earliest documentation of the disease.)

The Arzhan 2 skeletons, which belong to warrior–nomads the ancient Greeks called Scythians, are part of a spectacular series of finds in remote sites in central Asia. One of the discoveries dates back to the 1940s when mummies were found in the Altai Mountains, which run through Siberia and Mongolia. Later, after the fall of the Soviet Union, when some of the sites became more accessible for excavation, the pace of Scythian–related discoveries picked up. The warrior skeleton Schultz is talking about, for example, was found on a plain not far from the 1940s discovery. More recently, other well–preserved mummies not skeletons have been found at altitudes of 8,000 feet in the valleys of the Altai Mountains. Still other discoveries have been made on the coast of the Black Sea and the edge of China. Together, the evidence illuminates aspects of the Scythians' unusual culture, from tattooing warriors to creating intricate metalwork.

Never constituting an empire, the Scythians were a network of culturally similar tribes that ranged from Siberia to Egypt almost 3,000 years ago and faded away around A.D. 100. The Greek historian Herodotus describes the Scythians as murderous nomads. As for how the Scythians who did not have a written language perceived themselves, only their artifacts and human remains are left to speak for them.

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For Hermann Parzinger, the 49–year–old German archaeologist who excavated the tombs of the wounded warrior and the cancerous prince, the Scythians have been an obsession. Even so, he and his Russian colleague Konstantin Chugonov were surprised to find that the grave mound contained the bodies of 26 men and women, most of them apparently executed to follow the ruler into the afterlife. One woman's skull had been pierced four times with a war pick; another man's skull still had splinters in it from the wooden club used to kill him. The skeletons of 14 horses were arranged in the grave. More impressive was the discovery of 5,600 gold objects, including an intricate necklace weighing three pounds and a cloak studded with 2,500 small gold panthers.

After the Arzhan 2 finds, Parzinger who until this year headed the German Archaeological Institute was tantalized by the possibility of finding a well–preserved mummy that would give archaeologists and pathologists insights into the Scythian culture that bare skeletons never could. High in the mountains, you can find remains in a preserved condition that just doesn't exist in other places, Parzinger, now head of the Prussian Cultural Heritage Foundation in Berlin, says. Instead of archaeology, it's a kind of ethnography.

In the summer of 2006, his search took him to a windswept plain in the

Frozen Siberian Mummies Reveal a Lost Civilization

Altai Mountain range that is peppered with Scythian grave mounds. Parzinger worried that mummies in the highlands may not be around much longer, as global warming reverses the chill that has preserved them for millennia. A team of Russian geophysicists had surveyed the area in 2005, using ground-penetrating radar to look for telltale underground ice. Their data suggested that four mounds could contain some sort of frozen tomb.

Parzinger assembled 28 researchers from Mongolia, Germany, and Russia to open the mounds, on the banks of the Olon-Kurin-Gol River in Mongolia. The first two mounds took three weeks to excavate and yielded nothing significant. A third had been cleaned out by grave robbers centuries earlier.

The radar data for the fourth mound barely a bump on the plain, just a few feet high and 40 feet across were ambiguous at best. But a thrill went through the team as they dug into it. Buried under four and a half feet of stone and earth was a felt-lined chamber made of larch logs. Inside was a warrior in full regalia, his body partially mummified by the frozen ground.

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Researchers recovered the mummy intact, along with his clothes, weapons, tools, and even the meal intended to sustain him in the afterlife. He shared his grave with two horses in full harness, slaughtered and arranged facing northeast. Mongolia's president lent the team his personal helicopter to shuttle the finds to a lab in the country's capital, Ulaanbaatar. The mummy's body spent a year in Germany; his clothes and gear are at a lab in Novosibirsk, Russia.

Before Parzinger opened his grave, the warrior had lain for more than 2,000 years on an ice lens, a sheet of ice created by water seeping through the grave and freezing against the permafrost below. The mummy had been dehydrated, or desiccated, by the ice in the grave, Schultz says.

Scythian mummies show signs of primitive embalming: Internal organs were removed and replaced with grasses, for instance. The combination of ice and intentional preservation resulted in remarkably resilient specimens. When Schultz shows me the mummy, housed in the same lab as the skeleton of the wounded warrior, the temperature is a comfortable 70 degrees, and sunlight streams onto its leathery flesh.

The mummy's facial features were destroyed. But in this instance unlike the case of the wounded warrior skeleton the destruction was inflicted by nature. When the ice lens formed under the burial chamber, it expanded upward. The extent of the ice was so high, the body was pressed against the logs on the ceiling and smashed, Schultz says. The skull shattered, making facial reconstruction impossible. His chest, too, was crushed. Still, a lot can be learned. You can establish a kind of biography from the body, Schultz says.

Frozen Siberian Mummies Reveal a Lost Civilization

He notes that the mummy's teeth are surrounded by pitted bone evidence of painful gum disease, probably the result of a diet rich in meat and dairy but lacking in fruits and vegetables. Between 60 and 65 years old when he died, the man was slim and just about 5 feet 2 inches. At some point he had broken his left arm, perhaps in a fall. His vertebrae show signs of osteo-arthritis from years of pounding in the saddle. Badly worn arm and shoulder joints testify to heavy use. That kind of osteo-arthritis and joint damage is very characteristic if you handle wild horses, Schultz says.

The clues reinforce what Parzinger and others have suspected: He belonged to the Scythians, a seminomadic culture that once dominated the steppes of Siberia, central Asia, and eastern Europe. Beginning around 800 B.C., the Scythians thundered across the central Asian steppes, and within a few generations, their art and culture had spread far beyond the steppes of central Asia.

The Scythians' exploits struck fear into the hearts of the ancient Greeks and Persians. Herodotus wrote about their violent burial customs, including human sacrifice (which the Arzhan 2 find tends to confirm) and drug-fueled rituals. He speculated that they came from mountains far to the east, in the land of the gold-guarding griffins.

Archaeologists say the Scythians' Bronze Age ancestors were livestock breeders living in the highlands where modern-day Russia, Mongolia, China, and Kazakhstan intersect. Then something changed, Parzinger says. Beginning around 1000 B.C., a wetter climate may have created grassy steppes that could support huge herds of horses, sheep, and goats. People took to horseback to follow the roaming herds. Around 800 B.C., all traces of settlements vanish from the archaeological record.

Archaeologists usually draw their clues from ordinary artifacts and human remains, so while the grave gold from the nomadic Scythians is sumptuous, the real prize is the ancient people themselves. A century of digging at lower altitudes and in the warm Ukrainian plains rarely yielded more than skeletons or jewelry.

In the late 1940s, Soviet archaeologist Sergei Rudenko traveled to the Pazyryk region of the Altai Mountains and made some stunning finds. Richly appointed wooden chambers contained well-preserved mummies, their skin covered in elaborate, twisting animal tattoos. Their brains, intestines, and other organs had been removed and the corpses sewn up with horsehair. The dead had been dressed, armed, and laid to rest in chambers lined with felt blankets, wool carpets, and slaughtered horses.

In 1992 Russian archaeologists began a new search for ice lenses and mummies. Natalya Polosmak, an archaeologist in Novosibirsk, discovered

Frozen Siberian Mummies Reveal a Lost Civilization

the coffin of an elaborately tattooed ice princess with clothes of Chinese silk at Ak-Alakha, another site in the Altai Mountains. Other finds in this area included a burial chamber with two coffins. One coffin contained a man, the other a woman armed with a dagger, war pick, bow, and arrow-filled quiver. She wore trousers instead of a skirt. The find lent credence to some scholars' suggestions of a link between the Scythians and the legendary Amazons.

In the early 1990s, just a few miles from that site, Parzinger's partner Vyacheslav Molodin uncovered the more modest mummy of a young, blond warrior. The burial style resembled that of Parzinger's mummy, the one found at the Olon-Kurin-Gol River whose face was crushed by ice.

Parzinger fears global warming may soon put an end to the search for Scythians. Rudenko's dig diaries contain reports of weather far colder than what modern archaeologists experience in the Altai. When you read descriptions from the 1940s and compare them with the climate of today, you don't need to be a scientist to see there's been a change, Parzinger says.

Geographer Frank Lehmkuhl from the University of Aachen in Germany has been studying lake levels in the Altai region for a decade. According to our research, the glaciers are retreating and the lake levels are rising, Lehmkuhl says. With no increase in the region's rainfall, the change can only come from melting permafrost and glaciers.

As the permafrost thaws, the ice that has preserved the Scythian mummies for so many centuries will thaw too. In the Olon-Kurin-Gol grave, the ice that once crushed the mummy against the roof of the burial chamber had receded nine inches by the time the chamber was opened. Within a few decades, the ice lenses may be completely gone. Right now we're facing a rescue archaeology situation, Parzinger says. It's hard to say how much longer these graves will be there.

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