



# Twenty years after



«Frozen graves are a remarkable archaeological phenomenon. The most ancient and outstanding burials with this kind of graves are located in Gorny Altai and belong to the Pazyryk culture, whose representatives inhabited this area from the 5th to 3rd cc. BC. What made this phenomenon possible is the unique combination of local natural conditions and Pazyryk cultural traditions.

According to the Pazyryk funeral ceremony, a larch framework was built at the bottom of the burial pit, and the mummified dead lying on a block or on a wooden bed was placed on top of it. The mound erected over the grave consisted of stones, boulders and pebbles and was water-

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A felt saddle blanket. Kurgan 1 of Ak-Alakha 3 burial ground. Photo by V. Vlasenko

In 1993, on the Ukok Plateau in Gorny Altai, Novosibirsk archaeologists explored a kurgan of the Pazyryk culture, in which a mummified woman had been buried. The study of this culture dates back to the second half of the 19th c., when Academician V.V. Radlov excavated the Berel and Katahdin kurgans in the Central and South-Eastern Altai. What makes the Ukok discovery unique is that for the first time in over a hundred years of studies an intact, "frozen" burial of a representative of the Pazyryk nobility has been discovered

The term "Pazyryk culture" is used in archaeology to denote the culture of the people who inhabited Gorny Altai in the Scythian Epoch. It derives from the name of the best-known Pazyryk group of kurgans, located in the valley of the Ulagan River.

The distinguished archaeologists M.P. Gryaznov and S.I. Rudenko explored five "tsar" kurgans there, which had been robbed in the ancient times. Found in these kurgans were the mummies of four people (two men and two women), now kept at the Hermitage.

We do not know what the people living at that time in Altai mountain valleys called themselves.

Key words: "frozen" graves, Gorny Altai, Pazyryk culture, Ukok, woman mummy



Kurgan 1 of Ak-Alakha 3 burial ground: a general view and layout of funeral construction inside the burial pit.

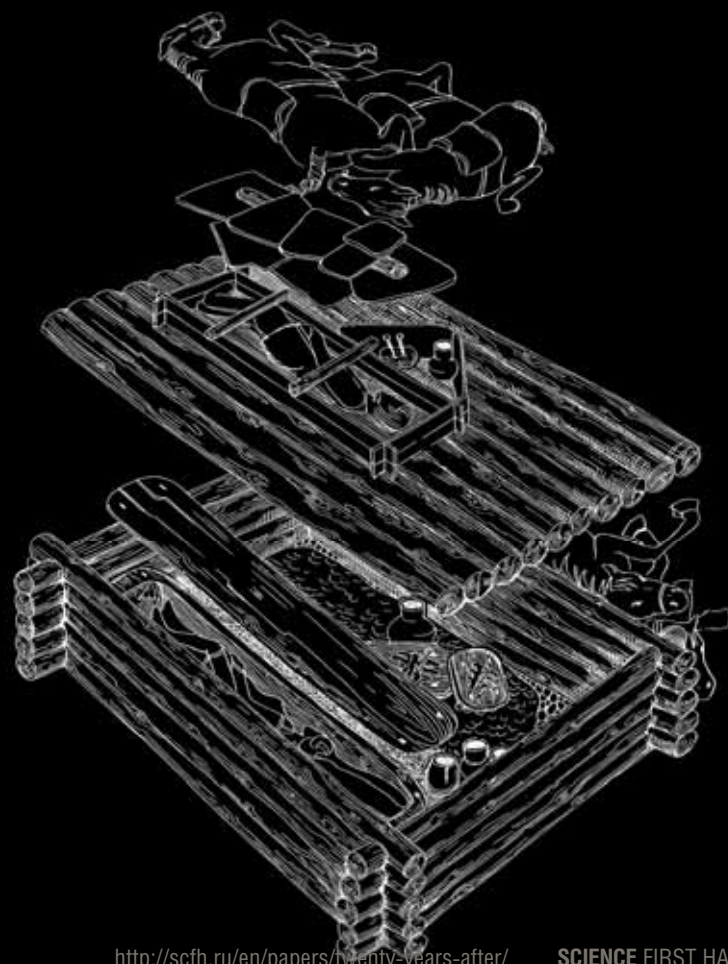
*Photo by V.P. Mylnikov*

*Drawing by Ye. Shumakova*

permeable. Summer and autumn rains and soil water flooded the larch sepulchral vaults; the water froze during the winter and often did not melt in the summer.

The permafrost rocks, which occur in the Ukok region, are known to have existed there for ages; they are of intermittent and insular nature and spread over approximately 60–80 % of the entire area. The permafrost soils are about three meters deep, and the depth of the burial pits is the same. It was impossible to dig a deeper pit – even modern iron spades rebound from the frozen ground.

In Ukok, sepulchral vaults were made in the permafrost. The buried bodies were put, as it were, into a refrigerator, where they have survived to this day. The Pazyryk people might



The burial chamber of the mound was filled with ice (above). After the ice melted, a larch block with a woman's mummy was discovered at the southern wall (right). In the foreground, beyond the northern wall of the chamber, there were burials of horses. The walls of the block on which the dead woman was lying were decorated with leather appliques (below)

*Photo by V. Mylnikov*



have done this on purpose: they were certainly aware of the cold's ability to prevent decay – the knowledge they had gained from their everyday life.

Thanks to keeping intact the objects that usually decay in the first place, such graves give a full picture of ancient culture – an exceptionally rare event in archaeology. The objects that have survived include things made of organic materials: the burial chamber itself, blocks, funeral beds, all kinds of textiles and furs, carved wood and leathers. Plants and herbs, paints and pigments, remains of funeral meals, stomachs, wool and tails of the horses that accompanied the dead and human mummies have preserved too. Such archaeological complexes are much more informative than ordinary archaeological sites. They vividly show how small the part of ancient culture accessible to archaeologists is.

Not surprisingly, this world, which has unexpectedly come to us from non-existence, leaves a lasting impression. Having touched it once, you will be fascinated forever

*Excavation still. The cover of the block has been removed; below is the ice from which separate details of the contents are melting out. The person taking pictures is Charles O'Rear.*  
Photo by V. Mylnikov

*Reconstruction of the funeral ceremony. The way it was. Drawn by William Bond*

by its reality and fragile incorruptibility. Indeed, this is "frozen time."

When you spend day after day in the ice vault, first one thing, then another appear gradually in the ice mass like in a transfer picture – you cannot recognize them first, then you can see them more and more clearly and finally they give you the joy of discovery... You are drawn into this alien world, keep thinking about it, return to the mound at night to see how it is, soak in its smells and for some time become part of it.

We had two realities that summer: windswept, desolate Ukok and the 5×4 meter square of the ancient grave, in which the miracle of rebirth was happening.

In the years that passed since then, the discovery has generated a lot of speculation and legends.

What happened in fact?

## A kurgan like a kurgan

Kurgan 1 of Ak-Alakha 3 burial ground, built of stones, was 18 meters in diameter. Such mounds are considered medium-size in the Pazyryk culture (small mounds are approximately 5–12 meters and the large ones can be up to 60 meters). The mound stones had been used for mod-

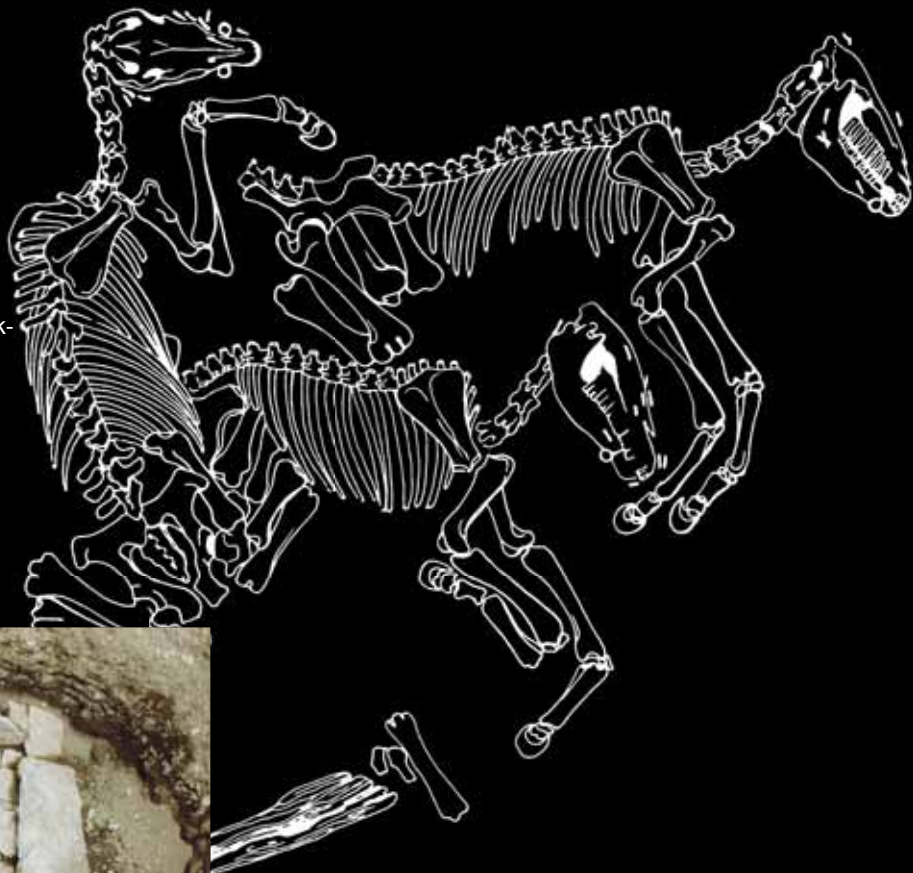
ern construction works; therefore, the mound had been destroyed. Next to it was a kurgan of a smaller size, whose mound had also been damaged. Its investigation showed that it belonged to the Turkic time.

As usual, all the work of removing the remains of the mound and clearing the kurgan area was done by hand. In the less damaged eastern part, we managed to trace the structure of the mound: a compact layer of large stones was put in the foundation while smaller stones and pebbles formed the upper part of the burial construction. The edges of the mound were heavily grassed; once the grass was removed, a round wall made of large stones appeared.

On the whole, the kurgan looked like a typical burial



Above the first human burial in Kurgan 1 of the burial ground Ak-Alakha 3 was the burial of horses.  
*Sketch by Ye. Shumakova*



On the ceiling of the vault with the mummy of a high-born woman there was another burial chamber with two dead people, made of blocks covered with slabs of stone (left). The back of the skull of one of the dead showed traces of a blow that must have caused his/her death (below). This grave had been violated by ancient robbers.

*Photo by V. Mylnikov*

*The photo of the skull by M. Vlasenko*



monument of the Pazyryk culture. The only distinguishing feature was that it stood alone whereas, as a rule, the Pazyryk burial grounds feature a chain of kurgans stretching from the north to the south.

In the center of the cleared mound area, a 5×4 meter burial spot could be easily traced, and above it was another one, almost square, made by grave robbers. This was an evident proof of an ancient robbery, and, of course, it did not contribute to our optimism. But it was in the first days of June, the field season was just beginning; therefore, we knew that after we had explored that kurgan, we would be able to get down to another one.

Already at a small depth (a little over half a meter), horse skulls were found in the burial pit. Step by step, we cleared three complete skeletons of horses, two of which had been laid on its side along the northern wall of the pit, heading east, and the third was lying on its stomach along the western wall, also heading east. The horses' skeletons had not been disturbed, all the three had iron bridle-bits in their teeth; we occasionally found thin gold foil of the decayed wooden decorations of the bridle.

Clearly, the horses had been buried bridled. They were killed with a hit of a horseman's pick on their heads; judging from the layout of the leg bones, they had been tied. An ordinary person was not buried with three horses; the number of the horses showed that the person buried in that grave had a special status.

The burial chamber was placed right under the horse burials. It was of an original, not a Pazyryk structure and consisted of a trapezium-shaped wooden "frame," 2.20 meters long, 1 meter wide at the head and 70 centimeter wide at the foot. The rotten wood meant that the structure could have had a wooden floor. Two small boards were lying across the "frame" – one at the head and the other at the foot – and a long thin pole was placed centrally along the "frame." These optional parts must have supported the ceiling made of thin stone slabs.

Adjacent to the head of the southern wall of the wooden "frame" was a triangular annex made of two stone slabs. The ceiling covering both the burial chamber and the annex had been damaged by robbers. The robbers, who came in through the northern part of the ceiling, moved several slabs and pulled the body of the buried person by the legs so that half of the body was outside the burial chamber.

Judging by the position of the skeleton bones placed in anatomical order, the robbers dealt with a corpse or a mummy. No objects were found next to the corpse. The fallen slabs and ground had seriously damaged the skull. Found in the annex were a smashed unornamented clay vessel and two iron knives with a ring finial. The latter must have been forced into a piece of meat (only the bones were remaining) lying on a nonextant wooden dish.

The two knives could have signified that there were two people buried in the grave. The study of the anthropological material supported this hypothesis – fragmentary bones of another person, probably an adolescent, were found. The available anthropological material is not sufficient for a comprehensive examination of the second buried person but his remains are currently being studied using the methods of paleogenetics, and some new data may soon appear.

The anthropological material belonging to the adult person was thoroughly examined by Doctor of History T.A. Chikisheva (Institute of Archaeology and Ethnography, SB RAS). She found that this was a man about 25 years old, killed by a blow on the back of the head inflicted with an obtuse object (the skull had a telltale hole about 5 cm in diameter). In annex, he had Spina bifida (literally, split spinal column), which was easily diagnosed by bones (in our case, by ossis sacri). This congenital abnormality is characterized by an incomplete closure of the spinal canal and vicious development of the spinal cord and its meninges. Judging by the bones, the disease must have resulted in the muscular dystrophy of the legs whereas the arms and shoulders of the man were developed normally.

## Companions to the "other" world

Based upon what we know, this double burial was arranged immediately after the main burial of the mummified woman in the larch vault.

After the excavation of the kurgan, all the attention was obviously focused on the woman's mummy, while the robbed burial and people buried in it happened to be in her shadow. It was time for them to come out of it as they were part of the same story and had been tied (though it was not yet clear in what way) to that woman, whose rebirth generated so much interest.

The stone and wooden box of the robbed burial had been placed on the ceiling of the woman's vault. It was conclusively established that one of the buried had been killed – in all likelihood, he was to accompany the dead woman to the "other" world, as was the adolescent found in the same burial. This is not typical of the Pazyryk culture. Actually, judging by the diggings of the "tsar" burials of the Pazyryk burial ground, the graves often contained two people – a man and a woman – and it was hardly the case of living a long and happy life together and dying on the same day. Undoubtedly, one of the two had been killed to accompany the dead one.

What is interesting in this story is that the people buried on the ceiling of the vault had saved the main burial and the woman's mummy from robbery and desecration. The



The woman's hands appeared unbelievably "alive."  
Photo by V. Mylnikov

**The mummy is considered to be much more informative of a person's physical appearance than the skeleton but this is not true. For example, a detailed anthropometric examination of the female/woman's mummy from the Pazyryk kurgan 1 of the grave ground Ak-Alakha 3 became possible only because not the whole of the dead body had preserved to the same degree and some bones of the skeleton including the skull were accessible for measurements**

robbers who had penetrated the kurgan (these could have been Xiongnu, who replaced the Pazyryks on this area in the early 3rd – late 2nd century BC) reached the first burial, robbed and desecrated it. The idea that there was another burial in the same kurgan must have never occurred to them, though the burial was right at hand. Having checked on one of the kurgans and satisfied themselves that there was nothing worthy of their efforts there, the robbers did not try their luck in the other kurgans located nearby. In this way, a whole complex of intact, often unique, "frozen" graves of Ukok Pazyryks has been preserved for archaeology.

Ultimately, the people buried on the ceiling of the Pazyryk vault had fulfilled their mission: they saved and preserved the incorruptible body of a respected woman. But what were they, inferior and dependable? And what was she?

The burial on the ceiling of the Pazyryk vault differs from the typically Pazyryk burials in the funeral ritual but not in the funeral inventory – it was similar though poorer. The general picture that we have today allows us to say that inside the Pazyryk community was a dependable part of the population, who buried the dead in stone boxes. In academic literature, they are referred to as Kara-Kobins.

## On the way to eternal life

The woman was buried in the second half of June. Evidence for this is the gastric contents of the horses buried together with her and killed on the day of the funeral. One of the stomachs contained mature larvae of the horse botfly (*Gasterophilus intestinalis*). The development stage of this parasite is characteristic of high-altitude spring, which in this region comes in June.

This conclusion was supported by the results of the examination of the plant residues found in the horse's gastric contents – some fragments of the sprouts of the vine osier, its last meal. The osier's annual rings had new cells, typical of this season. The fact that the burial took place in the natural-climatic conditions similar to the spring period of Altai highlands was confirmed by the analysis of pollen.



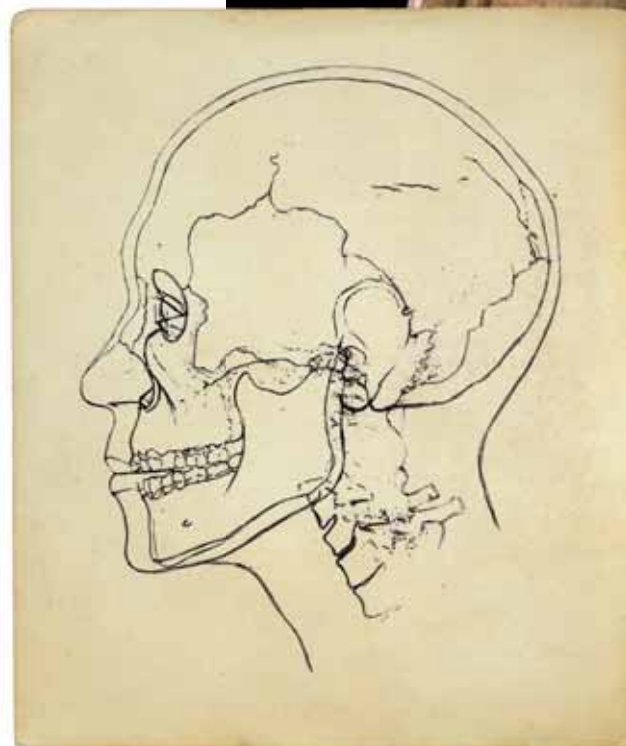
Fully robed - this is how the mummified body of the woman from kurgan 1 of the grave ground Ak-Alakha 3 came before the archaeologists. Around the dead woman's neck was a wooden torque with winged leopards, remarkably beautiful and well-preserved (top).  
Photo by V. Mylnikov

Photo by V. Mylnikov

(The horses' gastric contents were examined by W. Schoch, head of the Laboratory for Quaternary Tree Research in Adlisville, Switzerland; the enterozoons discovered in the horse's stomach were identified by Professor W. Schedl of the Botanical Institute, the University of Innsbruck, Austria). The woman must have died in January, at the earliest. According to pathologists, the condition of the mummy's skin suggests that the body had been preserved from three to six months.

Note that Ukok has always been a winter pasture. People used to come here together with herds of horses and sheep in late October and left for summer pastures in June. It must have been at that time that they buried those who had not survived the winter. The Pazyryks left the burials of their relatives in Ukok, and in so doing they secured this area for themselves.

The buried woman was from 28 to 30 years old, about 154 cm tall, with fair skin, blue tattoos on both arms. The reasons for her death are not clear. Bearing in mind that the average death age of the Pazyryk women, judging by the materials of Ukok burials, was 30 years old, the woman's death could have been the result of natural causes. Her body bears no signs of diseases or injuries. The x-ray examination has revealed no pathological changes in the skeleton bones. Since all the internal parts of the body had been removed during mummification, no conclusion can be made concerning their vital diseases. The only deviation from the norm, according to the pathologists' opinion, is the absence of two premolars, lost intra vitam. (The postmortem study of the mummy was performed in 1993 at the Institute of Archaeology and Ethnography, SB RAS, by Doctor R. Hauri-Bionda and assistant W. Blater of the Institute for Forensic Medicine of Zurich-Irchel University.)



On the crown of the woman's head, the anthropologists discovered a slightly flattened area, round in shape, which could have resulted from a defect of the nervous-vasomotor system in this part of the head. On the other hand, the reason could have been a special hairdo, when the hair was pulled in a tight bun. Indeed, though the woman's head had been shaved for wearing a wig, it had a lock of hair worn together with the wig



The skull of the woman's mummy lying in the burial block shows traces of the facial skin and stuffing in the neck area.  
Photo by V. Mylnikov

The intricate headgear-wig of the woman from kurgan 1 of the grave ground Ak-Alakha 3 is decorated with a depiction of a deer with bent legs, made of cedar; the deer's inserted horns are made of leather. The entire artifact was covered with gold-foil. On the right is an anthropological reconstruction of the woman's face and her headgear-wig. Made by D. Pozdniakov



The body of the woman had been mummified. For this procedure, the skull bones and some vertebrae had been separated from the body. In the lower part of the occipital lobe, a trephine opening (about 4.5 cm in diameter), through which the brain had been removed, was discovered. The thin bones between the eye sockets had been broken; there was a hole, about 2 cm in diameter, connecting the nasal cavity and maxillary sinus. In pathologists' opinion, eyeballs and the mucus of the nose and sinus nasales could have been removed through this hole. The gristle parts of the ribs and the breastbone had been removed; the abdomen had been dissected and cleared of internal organs.

The body mummification techniques are similar to those of an embalmer – the lost bodily volume is restored using hygroscopic materials. All cavities freed up after the dissection (the skull, breast, abdomen, pelvis, neck and arms) had been stuffed with dry grass growing on Ukok: sedge and cereals pulled together with the roots (the aromatic seeds, grasses and plants from the burial and from the mummy stuffing were identified at the Herbarium of the Botanical Gardens SB RAS by Ye. Kotolyuk, I. Artemov and M. Lomonosova), wool, tiny roots and a black substance resembling peat in consistency. This substance, examined by Senior Research Worker V. Stepanov at the Institute of Bioorganic Chemistry SB RAS, appeared to be the processed tissue of the internal organs. In this way, the internal organs of the buried woman came back inside the body after they had been transformed into a homogenous mass.

All the above-named actions, however, did not suffice to mummify and preserve the body because neither of these components have antibacterial or preserving properties. The X-ray fluorescence analysis of a fragment of the mum-

my's skin, conducted at the Boreskov Institute of Catalysis SB RAS (these and other examinations of the material composition of the findings were conducted by Doctor of Chemistry V.V. Malakhov, A.A. Vlasov, L.M. Pliasova and Candidate of Physics and Mathematics I.A. Ovsiannikova), showed that the conserving agent that was able to preserve the body until the burial was mercury, traces of which were discovered on the mummy's body.

### Frozen time

The mummification techniques used by the Pazyryks were diverse. In easier cases, only the abdomen was dissected, through which all the internal organs were removed, and the freed cavities were not even filled. This technique was applied for the mummification of the man from the burial ground Verkh-Kaldgin 2 (Ukok, excavation by

**The woman's left shoulder has a tattoo depicting a mythical animal. It is an ungulate with a bird's beak; it has semi-abstract horns of an ibex and deer, crowned with gryphon's heads. The same head is placed on the back of the animal. The animal itself is depicted with a "twisted" body. This depiction is typical of Pazyryk tattoos, whose main theme is predators fighting ungulates. Both can be depicted realistically or fancifully; similar images can be found in other samples of Pazyryk art; woodcarving and felt appliqué**



The remarkably well-preserved attire in which the woman from kurgan 1 of Ak-Alakha 3 burial ground was buried is now kept at the Museum of the Institute of Archaeology and Ethnography, SB RAS (Novosibirsk)

Fragments of the left arm of the tattooed mummified woman. Kurgan 1, Ak-Alakha 3. Photo by M. Vlasenko



On the left is the reconstruction  
of the woman's suit  
from kurgan 1 of Ak-Alakha 3  
burial ground.  
*Drawing by D. Pozdniakov*

These facts provide strong grounds to believe that mummification was part of the Pazyryk culture. All the dead bodies were mummified, but very few have preserved to this day. The reason for this amazing preservation is that all the Pazyryk mummies, including the woman from the Ak-Alakha kurgan, were discovered in ice. It is the ice of the “frozen” graves of Gorny Altai that is responsible for

This image displays three distinct pieces of indigenous art. The top piece is a light-colored wooden carving of a deer or antelope, shown in profile with its head turned back. Below it is a piece of rough, reddish-brown bark. The bottom piece is a red wooden carving featuring a prominent spiral or scroll design.

The mummified body of the woman from Ak-Alakha kurgan has spent over 2,000 years in an ice cube formed by the larch log structure 3.60×2.30×1.12 meter in size. According to pathologists, the degree of preservation of the body suggests that its frozen condition was permanent, i.e., it did not thaw from time to time.

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connected with the condition and life of the body. For all practical purposes, mummification was necessary to preserve the dead bodies for the long period between the time of their death and their funeral.

The remains of the woman were conserved again in 1993–1994 at the research laboratory with the Lenin Mausoleum (with direct involvement of Prof. V.L. Kozeltsev) using a new technology developed at the Moscow Research and Methodology Center for Biomedical Technologies. This unique method of long-term preservation of human remains does not interfere with scientific examinations and allows us to keep the mummy open to public.

## Treasures of Ak-Alakha

For the first time in the history of studying the Pazyryk culture, we have managed to discover a “frozen” intact non-routine burial that, like a huge refrigerator, had preserved everything in its interior.

Found in the ice was a larch vault, lying behind whose northern wall were six horses in beautiful harness, decorated with numerous wooden depictions of gryphons, covered with gold foil, with felt saddle blankets and tassels woven of woolen threads. On the floor of the burial chamber, covered with a felt carpet, there were two wooden tables with pieces of meat (forced into one of them was an iron knife), as well as ceramic, horn and wooden vessels filled with drinks – the buried was on her way to the gods’ feast.

The woman’s body lay in a larch block, decorated with leather appliques depicting deer with huge branching horns; the lid of the block was fastened with bronze nails. The block itself was filled up to the lid with nontransparent ice.

The woman was lying on thick soft felt, in the position of sleeping on the right side, with slightly bent legs. She was dressed in a long silk shirt of a golden color with red trimmings, a heavy woolen skirt sewn from red and white strips, belted by a tasseled thick string woven of woolen threads. On her feet were white felt high boots-stockings with red applique along the top. On her head she had a wig and a wood carved decoration covered with gold foil. Around her neck was a wooden breastplate with carved figurines of winged leopards, near her waist was a felt bag with a small mirror in a wooden frame, decorated with a carved depiction of a deer, a handful of blue glass beads and a few larger beads.

In front of the face of the buried woman was a small stone saucer filled with carbonized coriander seeds used as

incense: their odor was believed to be a “bridge to heaven.” All the wooden artifacts were originally covered with gold foil. (The gold foil and bronze artifacts from the burial were examined by Doctor of Geology and Mineralogy Yu.G. Shcherbakov and Candidate of Geology and Mineralogy N.V. Rosliakova at the Institute of Geology and Mineralogy SB RAS.)

One of the most important discoveries made in Ukok was the Pazyryk costume of which virtually nothing was known. Before the burial with the mummified woman was studied, nobody could have suggested that the Pazyryk women had worn long, striped, brightly colored woolen skirts, shirts, and wigs. (The nature of the textile fibers was examined and the dyes was identified at the Laboratory of Physical Methods, Vorozhtsov Institute of Organic Chemistry SB RAS, led by V.I. Mamatyuk.) This became a fact only after real objects were discovered. One of the main treasures of the woman buried in kurgan 1 of Ak-Alakha 3 burial ground was a silk shirt. It was made of fabric woven from wild silk – this silk artifact from the ancient nomads’ burial is in a class by itself.

An important revelation was not only what the woman was wearing but also how she was wearing it. The shirt was worn over the skirt; the ankle-long skirt was tied on the waist, with a large fall-over, with a belt-string; the shirtsleeves covered the hands; the shirt itself had been mended.

The woman who had the honour to be buried in a separate kurgan, together with six richly decorated horses, was undoubtedly above the ordinary run of mankind. This is evidenced by the tattoos on her arms, completely covered with the long shirtsleeves. These tattoos are not inferior to those made on the arms on the women from the Pazyryk “tsar” kurgans kept in St Petersburg the Hermitage, neither in their craftsmanship nor in the number of zoomorphic depictions. Her status might even have been higher: the women from the Pazyryk kurgans accompanied the dead tribe leaders while the woman buried in Ukok was accompanied herself and was buried with honors intended only for her. It is to be supposed that she owed this to her personal qualities.

The mummified bodies found in Ukok have shown that tattoo was an important feature of the Pazyryk culture. The permanent depictions of animals applied to the skin by painful manipulations made a person an equal member of society, initiated into its mystic secrets.

A long time ago Lev Gumilev wrote in a fit of anger, “To measure an alien culture by the number of secure monuments is entirely wrong. There may be a magnificent civilization built on the basis of non-persistent materials like leather, furs, tree and silk, and a primitive one that uses stone and noble metals. The former will leave no trace while the latter will abound in artifacts.” A good example to this statement is the findings from the “frozen” graves of Gorny Altai: had it not been for them, what would we have found even in the biggest and richest of the Pazyryk graves? Clay vessels, bits of gold foil, iron bridle-bits, buckles and knives, plain earrings, sometimes a few beads, cowries, bronze mirrors and poorly preserved iron daggers in men’s graves...In fact, nothing that makes the essence of this culture.

The woman’s burial found in kurgan 1 of Ak-Alakha 3 is important not only because it has some unique objects made of organic materials (a sufficient number of such artifacts were discovered in large Pazyryk, Bashadar, Tuektin and Berel kurgans, as well as in the ordinary burials of south-western Altai, examined by V.D. Kubarev), but also because of their intact interrelation. It the latter fact that makes this burial ground so prominent, informative and different from the others. This “frozen” burial has given us a chance literally to enter the Pazyryk world as if it were a strange home and to look around it without haste. This is just one life of one woman but she is a worthy representative of an ancient culture, who has come to us with a certain mission – to tell us about her people. This burial ground was the first whose archaeological materials belonging to the Pazyryk culture were examined using up-to-date equipment and new, material-adapted methods. We had a remarkable opportunity to study all the available objects and substances by the methods of natural and exact sciences at the research institutes of the Siberian Branch of the Russian Academy of Sciences (SB RAS). The results obtained have exceeded all our expectations and provided enough material for a few books. Basing on the new data, we have made good progress in the study of the entire Pazyryk culture.

It occurs sometimes that a unique case – the “frozen” grave of a mummified woman on the Ukok Plateau – helps to put together various facts obtained through decades-long excavations of dozens of burial grounds and to see what has disappeared as it were for good.

A Pazyryk horseman.  
Reconstruction by D. Pozdnyakov  
based on the artifacts  
found in Ukok burial grounds

An original kind of Pazyryk kitchenware – a vessel made of yak and argali horn (as detected by Doctor of History A.P. Borodovsky). Kurgan 1, Ak-Alakha 3

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