The Bow

Otzi’s bow was more than 1.82 metre long and made from yew wood. Yew wood was ideal for bow as it is tough and elastic) almost never splinters and has no resin. Otzi’s choice of material indicates that he was a very accomplished craftsman and had experience with weapon making. Clear traces of carving on the surface indicate carefully executed axe cuts and suggest that the bow was unfinished. The stave still needed to be shaped, rubbed down and polished using field horsetail as an abrasive.

Archaeologists believe that the Iceman carried his bow stave while he was escaping his attackers. When he arrived at the gully, where he died, he evidently leaned it against a rock, where it was found still upright thousands of years later. Generally on prehistoric bows the bowstring is attached to one end of the bow by means of a loop and bound at the other end.

There is no sign, however, of a bowstring, further indicating that the bow was unfinished. Harm Paulson, who is a specialist in Prehistoric Technology at the Schleswig-Holstein Landesmuseum, trialled the bow. Through a perfect reconstruction he has proven that wild animals could easily have been killed with the bow with considerable accuracy from a distance of 30–50 m. Close examination of the bow stave revealed that it was covered in blood. Archaeologists suggest that Otzi covered his bow in blood on purpose as it acted as a water repellent.

Source: http://www.iceman.it/en
When Otzi was discovered archaeologists found 2 arrows with flint arrow heads, which were broken, and 12 blank shafts. The unfinished shafts are between 84 and 87 cm long and made of the shoots of viburnum sapwood. The bark had been removed, but they had not yet been smoothed. All had notches cut into the ends.

Both complete arrows had flint arrowheads fixed to the shaft with birch tar and then bound with thread. The other ends bear the remains of three-part radial fletching attached with birch tar and thin nettle thread. The arrows, which were made of rosewood, have been the subject of considerate speculation among the archaeologists who have studied the Iceman's remains. The fact that the Iceman carried mostly broken arrows and a bow under construction supports the theory that Otzi was involved in a violent fight with other humans and fled into the mountains to escape. According to technical archaeologist Harm Paulsen, the two arrows could not have been made by the same person. The fletching shows that one was wound by a left-hander and the other by a right-hander. Furthermore, the arrow with the extended tip was too long for the Iceman’s quiver. Harm Paulsen’s analysis of the arrows support the theory that in Italy during the Neolithic period there were weapon makers and people who specialised in certain tasks.

Otzi was also carrying a fur quiver in which he stored his arrows. The rectangular, elongated quiver was made of chamois hide. It was stitched together along 3 sides and was supported along its length by a 92 cm-long hazel wood rod. There were 2 pieces of hide that folded down to cover the top of the bag to protect the feathers on his arrows and keep the rain out. The quiver contained two arrows ready to be shot, 12 unfinished arrow shafts, a coiled tree-bast string about 2m in length, four tips of stag antlers tied together with strips of bast, a bent antler tip, which is a universal tool that could be used, among other things, for skinning animals, and two bundles of animal sinew. The antler fragments could have been used to carve at least eight arrowheads, although the complete arrowheads were carved from flint, which was probably the preferred material.

Source: http://www.iceman.it/en
The most impressive of Otzi's clothing was the hemispherical bearskin cap which was found near the Iceman’s head when he was discovered. It was made of several bear hide strips stitched together. The cap, which was worn with the fur side out, was extremely well preserved. On the lower edge, two leather straps were attached which were tied under the chin to keep the cap in place. Most archaeologists including Mr. Judd Stephenson, The Museum Guide at the South Tyrol Museum in Italy believe it was a status symbol. Killing a bear, even during the Stone Age, would be a symbol of authority and power. The quality of the stitching was much more impressive compared to the quality of the stitching on his coat and the stitching he probably had to repair himself. This indicates that there may have been clothes makers over 5300 years ago. The different types of stitching suggesting that the bear skin hat may have been made for him. This may further indicate that people in Neolithic communities had begun to grow as a society with people beginning to specialise in different jobs.

Source: http://www.iceman.it/en
Coat and Loincloth

Otzi’s coat was made of individual pieces of goats skin, stitched together using fibres of animal sinews. On the inner side of the coat, numerous signs of scrapes are visible, which may indicate the process of cleaning the skin.

Scientific analysis specifies that the goat hides were first tanned using fat and smoke. Once tanned, the different sections were carefully cross-stitched together. The coat was worn with the fur side out; a striking pattern was created through the alternating pattern of darker stripes and lighter ones. The Iceman probably wore the coat with the front open, as there is no fastener, though he could have kept it closed using his belt.

Despite this the coat was very effective at keeping the Iceman warm. Nothing remains of the sleeves of the coat; it is therefore unclear whether the coat actually had sleeves. The dirt and sweat marks on the inside of the hide coat indicated that it had been used over a long period of time.

Further signs of wear are the torn seams that had been crudely mended with grass fibres, perhaps by Otzi himself.

The loincloth, a rectangular piece of 33 cm-wide leather, was fashioned from long narrow strips of goat’s leather cross-stitched together with twisted animal sinews.

The remains of the loincloth show that it was originally around one metre in length. It was pulled between the legs and fastened at the waist with a belt.

Source: http://www.iceman.it/en
The Grass Mat

The grass mat. The mat, woven from swamp grass, was found in three separate pieces. At first, archaeologists believed that these woven objects were parts of a sleeveless cape worn over the hide clothing.

However, doubts have since emerged about this theory, as the mat does not fit the shape of the body. In particular, the shoulder area would have been too narrow. Moreover, the way in which it was thought to have been worn would have been impractical. The backpack and quiver could not have been carried either under or over the grass cape.

Instead, researchers now believe that this mat was worn over his head...as a type of protection from the rain (or possibly even snow).

Source: [http://www.iceman.it/en](http://www.iceman.it/en)
The Birch-Bark Containers

The two birch-bark containers are shaped in the form of cylindrical pots. The slightly oval-shaped base has a diameter of 15–18 cm. The wall section is around 20 cm high and is formed by a rolled rectangular piece of bark. Holes were made along the edges of the individual parts, which were then stitched together with bast.

Compared to ceramic vessels, birch-bark receptacles were much lighter and less fragile, making them ideal for an excursion into the high mountains.

The interior of one of the containers was blackened and contained freshly picked maple leaves peppered with various plant remains and traces of charcoal. This container was therefore probably used for keeping embers alight, with the leaves serving as insulating material. The Iceman had probably kindled his last fire with those embers.

Source: http://www.iceman.it/en
Otzi’s bladed copper axe is one of the most stunning discoveries ever found with an ancient body. It is the only complete copper axe ever found from this era. The axe also influenced our knowledge of the Stone Age. Before the discovery of Otzi scientists believed that humans in Italy only started melting and shaping copper with such precision about 4,000 years ago. This was more than 500 years after Otzi’s death, forcing archaeologists to revisit what should be considered the copper age.

Judd Stephenson from the South Tyrol Museum of Archaeology believes that the axe was the first indication to how important Otzi was as an archaeological find. He believes it was a status symbol for Otzi, as it was the very early stages of the copper age and therefore it was of symbolic importance. However it could also be used a tool. The axe does have signs of wear on the blade. The handle of Otzi’s axe was 20cm long and made of yew wood. The blade was about 9.5cm long; its edges were slightly curved with small points at its tip. Surface analysis of the axe head shows the metal is 99.7 percent copper, 0.22 percent arsenic, and 0.09 percent silver. Arsenic and silver trace elements mean the blade was probably made of copper from a local source. It’s clear from the artefacts found on and around Ötzi that he not only was a skilled craftsman, but knew a lot about the proper material for each job.

In Algund, Italy, a holy object was found in a nearby vineyard, dating from the Stone Age. It is called a picture stone and it’s a piece of rock with carvings on it. This particular picture stone represents a person shown through the carvings of a face, a belt and several daggers. Most important, is the carving of an axe, which is an exact match of the axe found with Otzi’s body. This suggests that Otzi may have been a person of status in this community. Archaeologists also suggest that the copper axe was so special and coveted that he may have been killed for it.

Source: http://www.iceman.it/en
Otzi carried a small triangular flint-tipped dagger about 13cm long, with a handle made of ash, a wood still used today by artisans to make strong handles for implements.

The flint blade was inserted deep into the wooden handle and bound with animal sinews. The flint blade used came from quarries in the Lessini Mountains north of Verona, where it occurs in natural deposits. It was a coveted trade item during the late Neolithic period in Italy due to its exceptional quality.

The dagger had twin cutting edges so Otzi was able to carry it on his waist. It would have been used as multi-purpose tool, for jobs such as skinning animals, cleaning hides and cutting meat into strips.

The weapon was found inside a braided scabbard 12cm long. It consisted of a mesh of tree bark sewn along the longest side with grass fibres. The opening of the sheath was reinforced with double plaiting. On one side a leather eyelet allowed the sheath to be attached to the belt, making it easily accessible.

Source: http://www.iceman.it/en
The Leggings

The two separate leggings, which the Iceman was still wearing when he was discovered, are made of several pieces of goats hide carefully cross-stitched together with animal sinew.

The leggings were the oldest of their kind ever found. They only covered the thigh and calf. The top of the leggings were reinforced with a leather strip that was threaded through it. Two laces were sewn on to each legging so that they could be tied to the belt.

At the lower end, deerskin laces where sewn on, which were then tied to the shoes to prevent the leggings from rising as the Iceman walked. The leggings show sign of frequent repairs and thus heavy use.

Source: http://www.iceman.it/en
The Backpack

Several pieces of wood were found with Otzi’s body. They were a two metre long U shaped rod made of hazel wood and two narrow wooden boards of larch wood measuring 38 to 40.3cm with notched ends.

Archaeologists believe that these pieces of wood were parts of Otzi’s backpack. The hazel rod served as a frame, while the two boards served as horizontal connecting pieces. They were believed to have originally been bound together with grass strings, which were found next to the frame.

Numerous pieces of hide and clumps of hair indicate that a hide sack was attached to the frame to carry the Iceman’s possessions.

Source: [http://www.iceman.it/en](http://www.iceman.it/en)
Otzi’s shoes are the oldest of their kind in the world; they are sophisticated in design and have an inner and outer part. The inner shoe is covered in grass netting. Its purpose was to hold the dry grass which served as an insulation material and kept his feet warm even in deep snow. The outer part is made of separate pieces of deerskin.

The shoe is fastened to an oval-shaped sole made of bear skin with leather straps. Unlike the sole, the uppers were worn with the fur on the outside. The shaft around the ankle was bound with grass fibres.

A strip of leather was attached diagonally across the sole in order to give it better grip. Experiments carried out on the shoes, particularly reconstruction, have shown that the leather strip in fact does prevent slipping on rocky ground.

The shoes are warm and comfortable; however, they are not suitable for walking in the rain, as water soaks into them.

Source: http://www.iceman.it/en
The Site

The Iceman was discovered in a 40 m-long, 2.5- to 3 m-deep and 5- to 8 m-wide rocky gully surrounded by steep stone walls at an altitude of 3210 m above sea level. The bed of the gully is strewn with large boulders. The mummy lay on a large light-coloured granite slab at the western end of the rock formation. This formation protected the find from the enormous forces of the ice, which slowly built up above it. At the time the border was drawn in 1922, this area – now free of ice – was covered by a 20 m-thick layer of snow.

Why did Ötzi Remain Intact?

It was thanks to an incredible chain of coincidences:

1. He must have been covered by snow shortly after his death and later by ice. Only in this way could the body have been protected from predators and decomposition.

2. The deep gully, which runs perpendicular to the direction of flow of the glacier, prevented the body and implements from being ground up by the base of the glacier. The enormous mass of ice flowed over the gully, leaving the scene of the find unscathed.

3. The find was exposed to damaging sunlight, wind and weather only for a short period in 1991 between the time the mummy thawed and the time it was recovered.

Source: http://www.iceman.it/en
The Wounds

“Ötzi the Iceman… likely suffered a head injury before he died roughly 5,300 years ago, according to a new protein analysis of his brain tissue.

… His face, last meal, clothing and genome have been reconstructed — all contributing to a picture of Ötzi as a 45-year-old, hide-wearing, tattooed agriculturalist … and suffered from heart disease, joint pain, tooth decay and probably Lyme disease before he died.

None of those conditions, however, directly led to his demise. A wound reveals Ötzi was hit in the shoulder with a deadly artery-piercing arrow, and an undigested meal in the Iceman’s stomach suggests he was ambushed, researchers say.

A few years ago, a CAT scan showed dark spots at the back of the mummy’s cerebrum, indicating Ötzi also suffered a blow to the head that knocked his brain against the back of his skull during the fatal attack.

In the new study, scientists who looked at pinhead-sized samples of brain tissue from the corpse found traces of clotted blood cells, suggesting Ötzi indeed suffered bruising in his brain shortly before his death.”

Source: Extract from ‘Iceman Mummy Suffered Head Blow Before Death’ by Megan Gannon, News Editor, June 10, 2013
To conserve the Iceman it was necessary to artificially simulate the conditions of the glacier ice: a temperature of –6°C and a relative humidity of 98%. To achieve this, a sophisticated automated refrigeration system was developed whose numerous sensors transmit measurements such as air pressure, temperature, relative humidity, air composition and body weight as well as the functioning of the refrigeration system. To stop the mummy from gradually drying out, the cell walls are lined with tiles of ice.

The finding should be conserved as perfectly as possible for posterity while at the same time being made accessible to the interested public. Research work on the body should also continue.

The mummy itself is laid out nearly hidden from view in an apse-like darkened room and can be viewed through a window, past which visitors file. The viewing window into Ötzi’s refrigerated cell measures just 40 x 40 cm due to conservational constraints. A larger opening would have resulted in excessive temperature fluctuations inside the cell.

At the same time the designers of the exhibition wanted to provide an intimate atmosphere for the mummy for ethical reasons.

Source: http://www.iceman.it/en