Inside the reconstructions you will find 17 numbered information points containing details about the buildings, furniture and art.

To explore the site chronologically, start at number 1 and read in order.

Viking Trading Ship

Based on the Skudelev 3 wreck from Denmark

16 17

Saxon Nobleman's Longhall

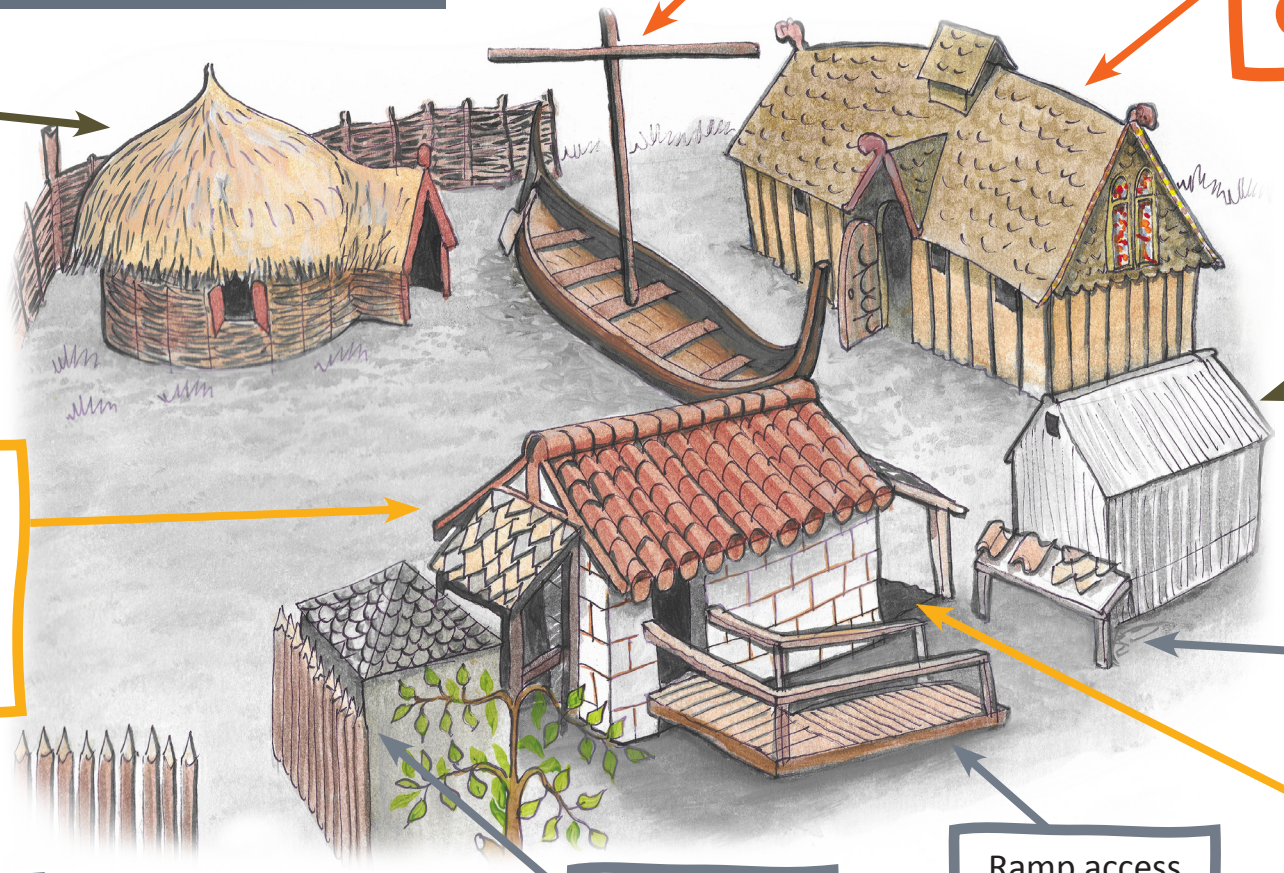
Based on one excavated at Cheddar, Somerset

10 11 12 13 14 15

Iron Age Roundhouse

Based on Glastonbury Lake Village

1



Bulleid and Grey Excavation Hut and Cinema

Includes short films on local archaeology

2 3

Roman Dining Room

Based on late Roman Somerset villas

5 6 8 9

Roofing display 4

Hypocaust Furnace 7

Entrance

Welcome hut and shop

Ramp access to villa

800 BC	IRON AGE	43 AD	ROMAN	410 AD	EARLY MEDIEVAL	1066 AD
	Glastonbury Lake Village 150-50 BC		Somerset villas 250-400 AD		Saxon longhall 890 AD	Skudelev Viking ship 1040 AD

Contents

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Iron Age Roundhouse

150-50 BC

The best evidence

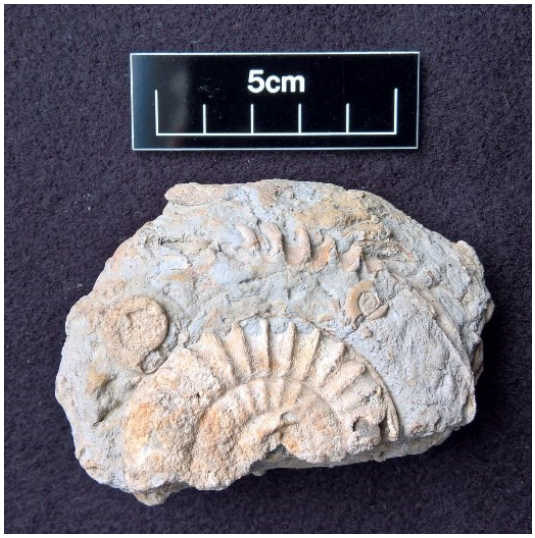
The roundhouse being built here is based on evidence from **Glastonbury Lake Village**, a site halfway between Glastonbury and Godney. The Lake Village was built on a patch of wet woodland surrounded by a huge area of reed beds and open water. The waterlogged peat allowed organic materials, such as wood, to survive and made the site one of the best preserved prehistoric settlements ever discovered in Europe.

How was it built?

Surviving wall posts show that the roundhouses ranged from 5 to 8 metres in diameter. Their doorways faced south-east or south-west to let sunlight in and some had a porch.

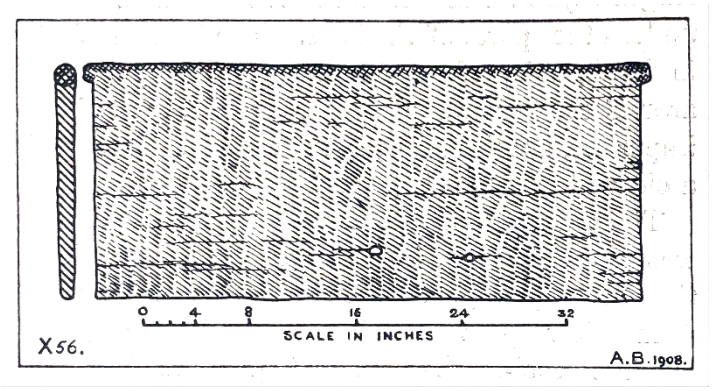
The wall posts (shown below) were surprisingly small, about 38 mm in diameter. They were made of willow or hazel roundwood and were pushed only a short distance into the ground. This suggests that the houses relied on the strength of their woven elements, like a basket does.

The walls were covered with daub – clay mixed with reeds or straw. The Lake Village yielded rare evidence that the daubed walls were decorated by having an ammonite fossil pressed into them (shown below). The floors had wooden foundations with clay layers on top. Reed was the most likely roof covering, but no proof survives.



Did they have windows?

There is no archaeological answer to that question. But small wooden planks were found at the Lake Village that had integral pivots on both ends. These could have been the lids of boxes, but could have functioned as window shutters – so we have included some in our design.



How long would a roundhouse last?

Recent new dating evidence from the Lake Village site suggests that each house would only have lasted for about a decade. One of the roundhouses was rebuilt nine times over a period of roughly 100 years. The whole village was occupied for about 150 years and had a maximum of about 14 houses in use at any one time.

What was inside them?

Every house had a central hearth, sometimes with a small bread oven just to one side. There would have been a large collection of pots for cooking and food storage together with many wooden containers such as stave-built buckets, turned bowls and steamed bentwood boxes. Metal containers such as cauldrons or bowls were rarer and more precious. A lot of these things were decorated with elaborate designs that may have had symbolic meaning.

Each family would have had a range of everyday tools and equipment, including looms for weaving cloth and rotary querns for grinding grain for bread. Woodworking and metalworking were taking place across the settlement.

Almost nothing is known about furniture, but the inhabitants were very able woodworkers and had the skills to make beds and seats if they wanted them.

How many people lived in each house?

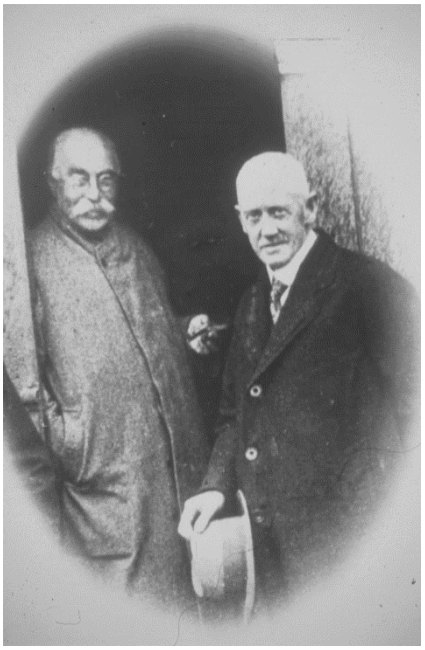
We don’t know. What do you think?

You can see a film about the recent excavation of the Lake Village in the Bulleid and Gray Hut along with a digital recreation of the settlement in its wetland landscape

The Bulleid and Gray Hut

This hut was purchased in 1910 by two local archaeologists, Arthur Bulleid and Harold St George Gray. It was used in their excavations at Meare Lake Village until 1956 and is believed to be the oldest surviving excavation hut in the world.

During the excavations, the side rooms provided an office for each man, while the middle was used for tools and storage. After 1956 it was left on site and rediscovered by the Somerset Levels Project in 1982. It still contained tools and finds, together with a pile of newspapers going back to 1890.



Bulleid and Gray standing in front of the hut in 1935

Displays

In the **main room** are displayed three reconstruction images of Glastonbury Lake Village made in 1911 by the artist Amédée Forrestier.

The **left-hand room** has been recreated as it might have looked during excavations. Feel free to read the newspapers papers dating from the 1930s, ’40s and ’50s.

The **right-hand room** contains our Bulleid and Gray cinema. Here you can watch a series of films about local archaeology, including recent excavations at Glastonbury Lake Village. The films can also be viewed on the iPad in the main room. The image on the wall is a modern reconstruction of Glastonbury Lake Village.

Bulleid, Gray and the Lake Villages

Arthur Bulleid was a keen amateur archaeologist from Glastonbury. He recorded local finds while training as a doctor. In 1892 he discovered the Iron Age settlement now known as **Glastonbury Lake Village**, one of the best-preserved prehistoric villages ever found in Europe. It is about four miles from here in the flood plain of the Brue valley between Glastonbury and Godney. Bulleid excavated there for six years before pausing to finish his medical

studies and to get married. He resumed work in 1904, now in company with **Harold St George Gray**, curator for Somerset Archaeological & Natural History Society of its museum in Taunton. Gray had been trained by General Pitt-Rivers, a pioneer of excavation techniques.

Work continued until 1907, by which time most of the site had been completely excavated. Because Bulleid had taken no salary for all his years of work, the total cost was only £687.

A reconstruction of one of the roundhouses from Glastonbury Lake Village is being recreated on this site.

Meare Lake Village

In 1895 Bulleid found another Iron Age settlement just north of Meare, less than two miles from this site. After the work at Glastonbury was finished, Bulleid and Gray excavated Meare Lake Village from 1908 to 1938, with an enforced break during the First World War. Bulleid was then 76 and Gray 66. After another break during the Second World War, Gray continued alone until 1956, when he was 82.

Excavations at Meare with the site hut in background

The Meare Lake Villages were not as well preserved as Glastonbury Lake Village. Nor did not they contain the wealth of organic materials, such as wood, which had made the Glastonbury settlement so special. Even so, they produced a huge amount of material and remain one of the most important Iron Age sites in the country.

Where are the objects from the Lake Villages?

The finds from the Lake Villages can be seen in two places. Some are on display in the **Museum of Somerset** at Taunton Castle. A larger number of objects, including most of the wooden items from Glastonbury Lake Village, can be seen in **Glastonbury Museum**, housed in a late medieval merchant's house on Glastonbury High Street.

Glastonbury Lake Village and Amédée Forestier

In 1911, drawings by Amédée Forestier in the *Illustrated London News* depicted life in an Iron Age village then being excavated near Glastonbury by Arthur Bulleid and Harold St George Gray. They were some of the first ever archaeological reconstruction drawings and used evidence from the excavations to create highly detailed and atmospheric images.

Forestier's image of dice throwers

The illustrations captured the public imagination and were widely reproduced. They had a profound influence on people's perceptions of prehistory and still rank as some of the best reconstruction images of an archaeological site ever produced.

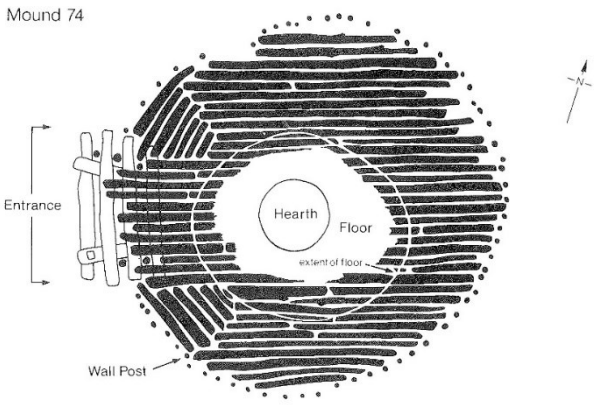
Three of Forestier's images are displayed here. Three others were also produced including one showing people gambling with dice.

The dice and shaker from the lake village

Glastonbury Lake Village

Forestier's first reconstruction shows Glastonbury Lake Village at the edge of a large swamp of reed, sedge and wet woodland. He based it on the excavation plans and section drawings made by Arthur Bulleid.

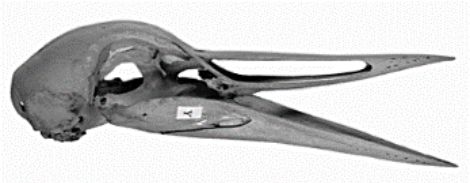
Although 40 roundhouses were discovered, there were probably only about 14 in use at any point in time.



Bulleid's plan of the roundhouse at Mound 74

The Landing Stage

The second scene shows the arrival of a group of hunters. The landing stage is a faithful replica of a structure found at the village, but the canoes are based on a nearby find that is now known to be of Saxon date (on display in the Tribunal Museum, Glastonbury).



Pelican skull from the lake village

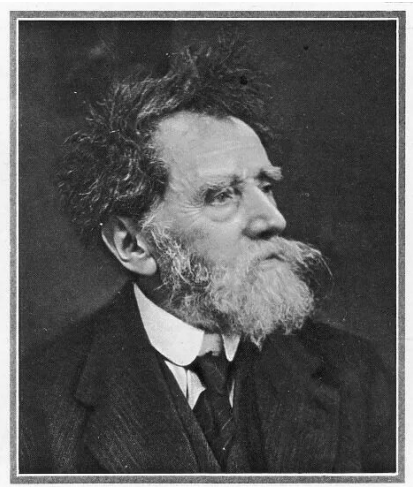
Swans and pelicans are shown in the picture. These are just two of the numerous bird species identified from the bone evidence – more than has ever been found on any other prehistoric site in Britain.

Around the Hearth

Forestier's final picture takes us inside one of the roundhouses, filled with objects from the excavations. One woman is holding a bronze bowl decorated by domed rivets. This is the 'Glastonbury Bowl', a sensational discovery made near the settlement's palisade. The bowl quickly became an icon of the site.

The Glastonbury bowl

Amédée Forestier



Amédée Forestier (1854-1930) was an Anglo-French artist and illustrator. After studying art in Paris, he illustrated news items and fictional stories for the popular magazines of the day. He specialised in archaeological and historical reconstructions, producing, amongst many others, images of Roman life and soldiers for the Royal Ontario Museum and the London Museum and, in 1922, an early human ancestor (later debunked) called 'Nebraska Man'.

Roofing Techniques Through Time

Wooden shingles on the longhall

The roof of the Saxon longhall is covered with wooden shingles. These are very thin, short pieces of wood that provide a lightweight covering. Shingles are depicted in Anglo-Saxon manuscripts and in the Bayeux Tapestry, which was made in Kent shortly after the Norman Conquest in 1066.

Modern shingles are usually sawn on both sides. But the ones on our roof were made in the more traditional way by splitting logs using a mallet and froe (a horizontal blade on a vertical handle). Shingles made in this way are called ‘shakes’.

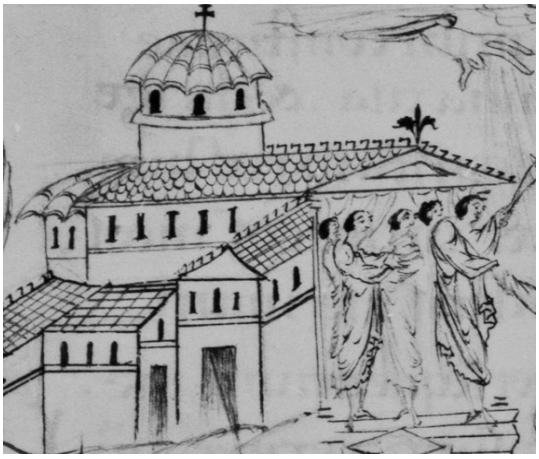
Our shakes are made from oak that has been radially split from the outside of the log to the middle. This method retains the natural strength of the wood and means the shake does not bend or split as it dries out. They should last for 25 years.

The longhall has shakes of various shapes. The 15,000 rectangular ones on the main roof were made by a company near Bath. Each of them would traditionally have been attached to a wooden baton by two pegs. But the ones on the main roof were nailed on to save time.

On the gable end of the longhall, the shakes were made by the volunteers in the more normal shape for the Anglo-Saxon period – with a curved, or slightly pointed, bottom end. Rainwater collects at that point and drops off, so helping water to shed more quickly and producing a more pleasing effect.

Scene from the Bayeux Tapestry showing a building with rectangular shakes on the main roof and curved ones on the gable ends. The Normans are burning it down.

Axeing shakes to shape



A building with shingles on the main roof. Harley Golden Gospel, 9th century

A building with shakes on the roof. Harley Psalter, early 11th century

Roman tile roof

The roof of the Roman building is covered with kiln-fired clay tiles. They were moulded in two shapes – the flat *tegulae* and the curved *imbrices* (singular *tegula* and *imbrex*). These ones were made in moulds developed for a reconstructed Roman townhouse built by Historic England at Wroxeter in Shropshire.

The ends of the roof have a row of *antefix* tiles which are decorative and also help to block the open ends of the *imbrices*. The double dolphin pattern copies one from Caerleon in South Wales. The Medusa head follows a design from Xanten in Germany. Both were made and fired by a local volunteer.

Some Roman roofs had a gutter (*canalis*). It would channel water towards a spout that projected the water away from the building. The spouts were sometimes decorative, such as a lion's head with an open mouth. Rainwater was sometimes collected in cisterns to be used for drinking, cooking and other purposes.

Roman stone roof

The porch of the Roman building is covered with stone tiles, another common roofing material in Roman Britain. Together they weigh as much as a small car. Such tiles were often shaped to form a decorative lozenge design where they overlapped. Stone of different colours could be used to create patterns on the roof.

Each tile would be held on with a nail, the holes being crudely made with a small pick. Local sedimentary rock, such as lias, splits easily into thin sheets and was very suitable for tile making.

Antefix from Caerleon with double dolphin design

Roman Dining Room

This is a reconstruction of the dining room of a typical Roman villa, based on Somerset examples. It has a **hypocaust** underfloor heating system as well as a **mosaic** and **frescoes** copied from archaeological evidence (information sheets 7, 8 and 9 provide more details about these aspects of the room).

The Walls

The walls are made of carefully-worked stone on the outer faces with a rubble core inside, all held together by a lime mortar. On three sides the walls are made of local blue lias stone but at the furnace end red sandstone is used which was salvaged from a real Roman villa excavated at Cannington near Bridgwater.

Some Roman buildings were made entirely of stone. Others may have used a timber frame and wattle and daub infill. Earth could also be rammed between wooden shuttering to create the walls or used in the mixture called ‘cob’.

Building With Cob

The walls above the stone foundations are made of cob – a traditional building material consisting of clay subsoil, small stones and straw or hay, all mixed together with a little water. After mixing, the cob is pitchforked on to the foundations to a height of two feet (60 cm) and roughly shaped, allowing for some shrinkage as it dries. After a few days or weeks, depending on the weather, the cob will have dried sufficiently for another layer to be added. It is protected from the weather by a lime render, though beside the ramp a small section has been left exposed.

Faking It

On three sides of the building a rectangular pattern has been scratched into the render and picked out in red paint. This is designed to give the false impression that the building is made of large stone blocks. Such tricks were commonly used by the Romans to make their building look more substantial than they really were.

The Roof

The roof is supported by oak beams topped with pine boards. Above these is a tiled roof. On the porch, split lias stone tiles have been used above the oak frame. More information about these materials can be found in information sheet 4 about the **roofing display**.

The Floor

The floor is made from a mixture of lime, sand and water. In the main room the mix includes crushed tile and in the smaller ante room wood ash has been added. Both these materials help to create a 'pozzolanic' reaction which forms calcium silicate and makes the floor more hard-wearing.

Roman Dinner Parties

This building has a floor plan commonly used for dining rooms in Somerset's Roman villas. Such rooms had underfloor heating and could be used for a formal dinner party (*convivium*) throughout the year. Informal family meals might be eaten in other rooms, with the diners either seated on chairs at a table or lying on a couch.

Stone relief showing 6 diners lying on 3 couches around a circular table and food being brought in from a monopodium on the right

The Three Couches

The formal dining room was called a *triclinium*, from the Greek for 'three couches'. The couches formed a 'U' shape around a small circular table, which held the food. The diners would lie on their left-hand side, supported by a bolster or cushion. The left hand would be used for holding bowls or drink containers while the right hand would bring the food to the mouth.

Linen napkins were used to protect the couch and clothing. Guests sometimes hid food in a napkin to take home after the party. Before lying down to eat, diners removed their shoes and their feet were washed by slaves.

Although lying down to eat seems uncomfortable to us, reclining on the left side allows the stomach to digest food efficiently and increases capacity.

The Entertainment

Entertainment during the party would take place in the small ante room. This could be music, singing, dancing, juggling or, if you were unlucky, the host reciting some of his own poetry.

Before being served, food and drink were left in the ante room on a *monopodium* table, so called because it was supported on a single stone column. Several decorated stone monopodia have been found in Somerset. The image to the right shows a monopodium from the reconstructed villa at The Newt in Somerset

Hosts and guests

Dinner parties were said to be ideal when the guests numbered between three (for the Three Graces) and nine (for the Nine Muses), with one to three people on each couch. There was a formal arrangement for the seating. The hosts were on the left-hand couch, the honoured guests in the middle and the less important guests on the right-hand couch. This was because diners seated on the right-hand couch had to turn their heads awkwardly to see the entertainment in the ante room. Males and females would be seated alternately if they were present in equal numbers.

Fashion changes

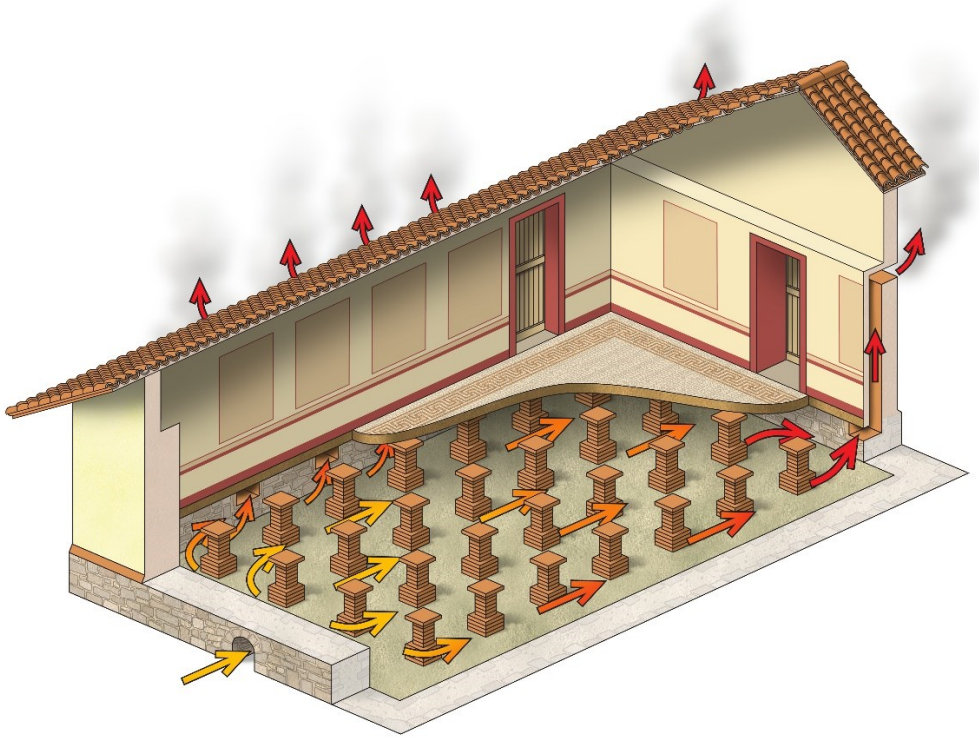
In the later centuries of Roman Britain dining fashion began to change. A horseshoe-shaped couch, called a *stibadium*, began to replace the three individual couches, providing a more equal dining space. The use of chairs and higher tables also became more common. This may have reflected the increasing dominance of Christianity and a feeling that sharing a couch was reminiscent of immoral behaviour from pagan times, as recorded in some literary descriptions of Roman feasts.

Party food

Formal meals usually had three courses consisting of an appetiser (*gustatio*) of eggs, seafood, cheese or vegetables, followed by the main course (*mensae primae*) of different meats and fish, and a desert (*mensae secundae*) of fruit, cheesecake or egg sponge.

Hypocaust Heating System

This dining room has a Roman underfloor heating system called a *hypocaust*, from the ancient Greek words *hypo,* meaning 'under', and *caust*, meaning 'burnt'. Hypocausts were used in bath houses to heat the hot and tepid rooms and the hot water bath. They were also used in a small number of other rooms in Roman villas, notably in the 'winter dining room'.



Raised floor

A void is needed under the floor for a hypocaust system. In Roman Somerset the void was usually created by raising the floor on stacks of flat tiles called *pilae*. Square stone slabs would be placed on top, each corner resting on a tile stack. The floor surface would then be laid on top.

Furnace and flues

At one end of the building is a simple tile-lined arch that opens into the underfloor void. This is the furnace where a fire can be lit, heating the air under the floor. Tile-lined flues in the walls, called *caliducts,* connect the underfloor space to the outside of the building, acting like small chimneys. This means that the floor gets warm, but the smoke stays outside.

The form of Roman flue exits is not known. In this reconstruction, a metal plate has been hung to prevent wind blowing down the flue and also to allow us to shut some flues. By this means we can try to lead the heat through the building and away from the furnace.

Who stoked the fire?

The furnace would probably have been tended by slaves. It takes quite a long time for the system to heat up and run efficiently, so it is likely that the fire was kept ticking over throughout the winter. The fuel would have been seasoned wood or charcoal. If wet wood is used it can stain the inside of the flues and may even show on the walls inside.

How hot would it get?

An experiment using the hypocaust for five hours showed that the floor inside the building nearest the fire reached over 50 degrees centigrade – too hot to stand on in bare feet. It would be hard to achieve that temperature throughout the building but the dining couches would all have been in the main room nearest the furnace.

Fresco Wall Paintings

What are frescoes?

Fresco is the application of water-based paint on to wet plaster so that the paint becomes an integral part of the plaster. At least two layers of plaster are applied to the wall. The lower one is coarser and the upper one thinner and much smoother. As soon as the topcoat is finished, the design is sketched on the wall with the aid of chalk lines. Then the paint is applied. Later details can be added using egg tempera paint, where egg yolks provide the binder to hold the pigment to the wall.

A well paid job

Wall painters were well paid in the Roman period and received three times the wages of a normal labourer. Figurative painters were even more skilled and got six times as much.

Colourful designs

The Romans liked designs on their walls that are bolder and more colourful than we are used to. Most of the designs used here copy examples from late Roman Britain.

Earth pigments, such as red and yellow ochre and green earth, provided the main colours. White was from lime, and black from charcoal. Egyptian blue was more expensive so was less often used.

The walls were typically divided into three – a narrow dado above the floor, a large main panel and a narrow frieze above. In the main room the dado and frieze are based on a local Somerset villa at East Brent (now partly under the M5). In the ante room the design copies one from Iwerne Minster (Dorset), with a bird and panther head frieze from St Albans.

Gods and goddesses

In the main room are depictions of three Roman gods and goddesses. On the back wall is **Bacchus**, the god of agriculture, wine and feasting, covered in grapes and feeding wine to his pet leopard. The original image is from Pompeii. It was buried under ash from the eruption of Mount Vesuvius in AD 79, as was the original of **Flora**, goddess of flowers and

spring, which was from nearby Stabiae. The other deity is **Diana**, goddess of hunting and the moon, copied from a fourth-century design found in Rome.

The snake depicted in the ante room is **Agathodaemon**, a serpent and 'good spirit' of vineyards and grain fields. The design copies one from Pompeii.

Fake stone to fried eggs

To avoid the expense of using real stone, the Romans painted fake marble panels on their walls, even including the detail of two nails in the corners. Over time, such panels became more stylised. This can be seen in the imitation breccia panels under the windows and in the fake puddingstone panels on the stub walls. They copy a design from Catterick and look rather like fried eggs or something seen under a microscope. The dado in the ante room shows how imitation marble was crudely made by flicking paint on to a base colour.

A new religion

Between AD 300 and 400 the Roman Empire underwent a religious transformation. At the beginning of the century Christianity was seen as a dangerous cult requiring persecution. By the end, it was the state religion and the pagans were being persecuted. As a symbol of this change, the ante room contains an early Christian symbol copied from a late Roman villa at Lullingstone in Kent. It is the **Chi Rho monogram**, which uses the first two letters (Chi and Rho, or XP) of the Greek word 'Christos' (ΧΡΙΣΤΟΣ).

Faces from the past

Two portraits are present on the division between the rooms. They are based on similar portraits from Sparsholt in Hampshire and Brantingham in Yorkshire which evidently celebrate members of the villa-owning families.

Look up!

In the ante room is a geometric ceiling design based on evidence from Collingham villa in Yorkshire and the baths at Wroxeter in Shropshire. The plaster is held on to the boards above using reeds and wooden laths, as can be seen in the corner by the door.

Mosaic Floor

What is mosaic?

A mosaic floor is made from small blocks of stone and tile, called tesserae, which are set in a lime mortar base to create a pattern or image. This mosaic was made by the volunteers and was the first time any of them had done such work.

How are tesserae made?

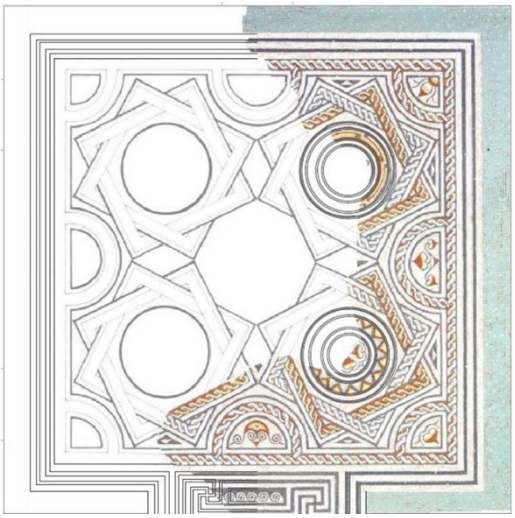
At least half the work involved in creating a mosaic floor was the production of tesserae. Sedimentary stone was often used because it splits nicely into thin slabs. The slabs were either sawn into rods or broken into smaller irregular pieces. Tesserae cubes were then created using a hammer and 'hardie'.

The hardie resembles a large chisel, set upright into a block of wood, and the hammer has a cutting edge at either end. The stone is laid on the top of the hardie and struck from above to create a cube of the required size. About **140,000 tesserae** are needed for a room of this size. The ones in the outer border are roughly 25 mm square on their upper surface and the others about 12 mm square.

What are the different colours?

Like the Romans, we have used local stone to produce the different colours. Various types of lias limestone provide the colours white and blue as well as a dark blue that is almost black. The yellow is Doulting stone and the red is from fired clay tile.

Is the design really Roman?



The design is based on a mosaic excavated at Hurcot Roman villa, near Somerton. It also incorporates elements from a villa at Hadspen, near Castle Cary. Many local villas share similar designs that probably reflect a 'school' of mosaic workers based at Ilchester. Ilchester (known to the Romans as *Lindinis*) was the

largest town in Roman Somerset and was the administrative centre of the area – a '*civitas*' capital for the local Durotrigian tribe.

How is the pattern made?

Mosaics can be made in two different ways. Either the tesserae are laid directly on the floor or, for very complex designs, the pattern of tesserae can first be created in a bed of sand. Where this more elaborated technique is used, the upper surface of the tesserae is then stuck to a sheet of cloth so they can be transported to the floor and set in mortar. The cloth is then detached. Most Roman mosaics were made on the spot using the simpler technique, and that is the method we have followed.

Our first task was to draw the intended design on the floor. Traditionally, the work of laying the floor then started at the centre of the room so any errors could be lost in the wide border at the edge. But sometimes the Romans started from the edge and that is what we did here because it was easier to begin with a solid wall defining one side of the mosaic. Only a small part of the pattern was worked on at any one time, the working area being defined by a wooden frame.

As the creation of each section began, the floor was soaked with water and a bed of lime mortar was laid down. The tesserae were pushed into the mortar to form the pattern drawn on the floor and then they were tapped down with a wooden block to make a flat surface. A thin wash of lime mortar on top filled in the cracks.

Where did the Romans use mosaic floors?

Mosaic floors are most commonly found in countryside villas or townhouses of Roman Britain's wealthy elite. Mosaics are usually restricted to the rooms where visitors would see them, such as the dining rooms used for dinner parties.

Loads of money

Every mosaic floor must have cost a great deal of money to create and was a very visual expression of wealth. Making the tesserae and laying them in a pattern took a long time. A *tesselarius* was paid the same as a skilled craft worker such as a carpenter and twice the rate of a labourer.

The Saxon Longhall

The longhall is based on a late 9th-century building excavated in the early 1960s at the Kings of Wessex school in Cheddar, Somerset. The site was probably owned by the Anglo-Saxon kings of Wessex and represents a high-status residence. The longhall was where the owners ate and possibly slept, and where all important formal functions took place.

The building may have been enclosed by a protective bank and ditch, within which were at least three other smaller square buildings and possibly even a bell tower. These other structures may have been used as accommodation for servants and for storage, cooking, or stabling animals.

Design

The longhall is 5.5 m wide, 15 m long and just over 5 m in height. It is slightly 'bow-sided', being half a metre wider in the middle than at the ends, and is also 'hog-backed', being higher in the middle of the roof. These two characteristics are typical of Anglo-Saxon longhalls and occur in more extreme forms in Viking buildings of the period. A small room at one end of the building had its own external door and may represent a bedroom for the owners, or perhaps just a storeroom.

Timber frame

The excavations at Cheddar Palace revealed the size and shape of the building, the spacing of its main wall-posts and internal features including three doorways and a hearth. That evidence provided the basis for the reconstruction which has an oak frame held together with treenails (wooden pegs securing a joint).

The framing timbers were given a carpenter's mark to show where in the building they should go – straight marks on one side of the building and curved ones on the other. Similar marks have been found on medieval framed buildings.

The walls

The space between the wall-posts was filled with 'wattle and daub' – a grid of small roundwood covered with a combination of clay subsoil, straw and water, to which animal

dung can be added to improve elasticity and durability. The resulting surface was covered with limewash coloured by yellow ochre.

On either side of the main doors another walling technique has been used. There, half split oak logs replicate the method used in the mid-11th-century church at Greensted in Essex.

Glass windows

The small windows of the longhall have shutters but the large windows in the gable end are glazed. Evidence for the manufacture of coloured window glass has been found at Glastonbury Abbey in the late 7th century. Such glass has often been found on monastic sites and also some high-status secular sites. The main pattern in the windows is from the monastery at Jarrow and the decorative lead strip replicates one from Monkwearmouth.

Floor

The top table is on an oak floor and the original hall may have been boarded throughout. Most of the floor is made of rammed earth, a mixture of sieved clay subsoil, lime, hay, milk and eggs. Some floor mixes also used blood to increase strength and longevity.

Doors

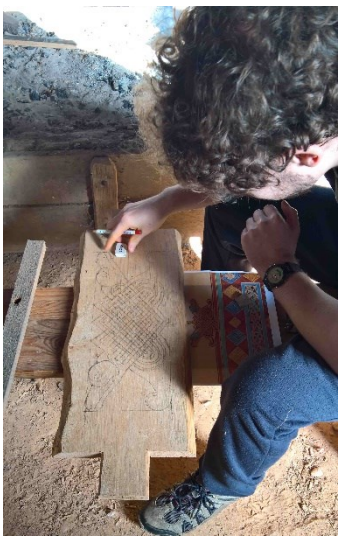
The two opposing doors in the middle of the building are based on early 11th-century examples from Hadstock church in Essex and Westminster Hall in London. The frames are secured with rivets and roves, a technique also used in boat building. The metal hinges copy designs shown in manuscript illustrations.

Oak shingle roof

The roof is covered with 15,000 oak shingles (see roofing display and sheet 4 outside for more information).

Woodcarvings

The decorative woodcarvings inside and outside the building are based on Saxon and Scandinavian designs and have been created by the team of volunteers. One or two volunteers were experienced carpenters but many had never done woodcarving before.



Designs

As wood almost never survives in the archaeological record the decorative evidence has been drawn from other materials such as metalwork, stone carvings and manuscript illustrations. Only a few of our designs are from Somerset, the best example being the intertwined dragon design that is from a stone cross base.

The dragon head on the end of the longhall roof copies a tiny piece of metalwork from a Saxon sword chape.

The main arch between the opposing doors, is decorated with animal designs based on marginal details from the Harley Golden Gospels, an early 9th-century manuscript compiled in Aachen (modern Germany). It was probably made for the Emperor Charlemagne.

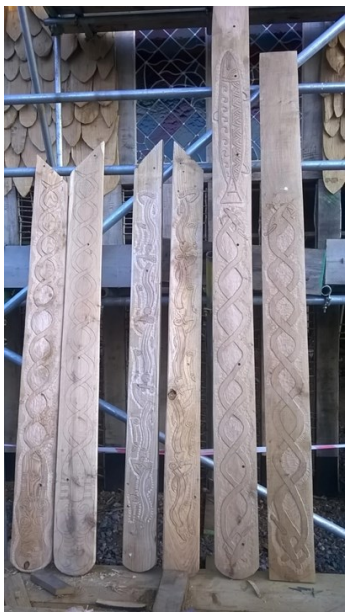
Some designs copy very small pieces of Anglo-Saxon art. The long carving on the arch facing the top table was inspired by an exquisite 11th-century walrus ivory quill case found in London.

Tapering walrus ivory box with sliding lid in the British Museum

The images depicting the story of Beowulf are loosely based on early medieval woodcarving styles from Scandinavia (see sheet 14 for the story of Beowulf and Grendel).

Colour

Many carvings in wood and stone would have been decorated with oil mixed with pigment. On one of the external doorways the animal designs have been coloured with red and yellow ochre.



Furniture

Creating furniture for the longhall was difficult because there are almost no relevant remains from Anglo-Saxon England. Wood is usually preserved in the archaeological record only in those rare circumstances where it has been constantly waterlogged. For that reason much of the furniture is based on Scandinavian evidence.

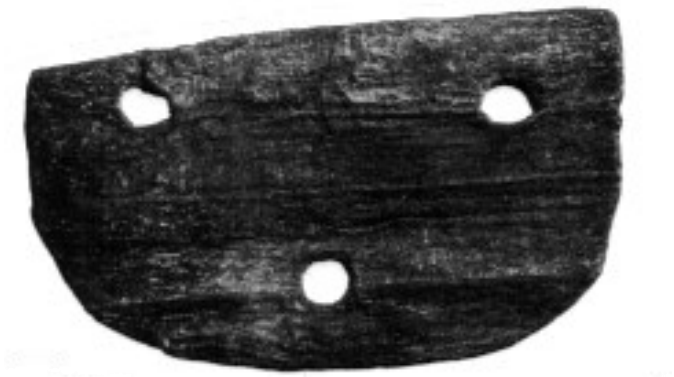
Benches and tables

We know from stories such as Beowulf that longhalls had high tables, benches and other tables. They were easily moved and probably based on some sort of trestle design. The reconstructed benches and tables are largely speculative in design, though they include some heads from real Viking art on the trestles. In the bedroom, a low table is based on a 10th-century find from a grave at Sala Hytta in Sweden.

Chairs

Two of the chairs at the top table are based on a real find from a 6th-century grave in Trossingen, Germany (shown below on the left). The other two chairs have joints and decoration inspired by beds from the Gokstad and Oseberg boat burials in Norway (late 880s and 834 AD respectively) but the decoration on the back plates comes from Anglo-Saxon manuscript illustrations.

In the bedroom, a three-legged stool is copied from a 10th-century find from Lund in Sweden (shown below) and is similar to stools known from Viking York and Dublin. The wooden chair is based on one made of beech from the Oseberg boat burial (shown above on the right). Traces of painted intertwined dragon designs survived on the Oseberg chair, a reminder that many items of furniture may also have been painted.



Bed

The bed is based on one from the Oseberg boat burial, augmented at the foot end with some extra carvings. They include heads from the Oseberg cart and a pair of semi-human figures featured on a timber behind the helmsman's head from the Oseberg ship. The fierce horse heads are based on ones from the bed in the Gokstad boat burial.

Chests

Various wooden chests also survive from Viking Scandinavia and several of these will be replicated for the longhall. They were used to contain food, tools or clothing and often had metal locks to keep the contents safe.

King Alfred and the Vikings Mural

The mural behind the top table tells the story of King Alfred of Wessex and his struggles against the invading Vikings. The mural focuses on key events that took place locally.

Art Styles

The art featured in the mural is based on images used in illuminated manuscripts from England during the 8th to 11th centuries. Some additional elements come from the Bayeux Tapestry, which was made in Kent shortly after the Norman Conquest in 1066.

King Alfred's Handwriting

The script on our mural copies Alfred's own handwriting. An example has been preserved in *The Hierdeboc* ('Shepherd-book'), an Old English translation of the *Cura Pastoralis* ('Pastoral Care') of Pope Gregory the Great. That document is prefaced by a letter written by Alfred to his bishops, instructing them to lead a programme of translation from Latin, the language of the Church, into English. The *Hierdeboc* is written in a local form of Old English, a language introduced by Germanic settlers from the mid-5th century.

The Last Kingdom

The mural depicts the dramatic events of AD 865 to 878 when a huge Viking army subdued the great Saxon kingdoms of East Anglia, Mercia and Northumbria. Wessex was left as the last kingdom holding out against the heathens. The Anglo-Saxon Chronicle records attacks by large numbers of Viking ships from the 830s onwards. But the army that arrived in 865 was larger and stayed to take over the land and settle it.

The Story

The story of Alfred and the Danes starts in the panel at the top left then moves to the panel beneath. All eight should be read in this way, from left to right.

"The large Danish ship-army comes to Wessex"

In AD 871 the Great Heathen Army attacked Wessex and fought several battles. Some were won by the Vikings and some by the West Saxons under King Ethelred and his younger brother Alfred.

"Ealswitha queen and Alfred king of the West Saxons"

In April 871, Alfred succeeded as King of Wessex after the death of his brother Ethelred. His Queen was Ealswith of Mercia.

“Alfred with a small troop built a fortification at Athelney”

Viking attacks continued, until, following an attack in January 878, Alfred escaped with a small band. He made a fort in the Somerset marshes on the island of Athelney and from there continued his resistance.

“In Devonshire the Raven banner was captured. Alfred rode to Egbert’s stone and all Somerset, Wiltshire and Hampshire came to join him”

A Viking host in Devon was defeated in battle with the loss of 840 men. Their magical Raven Banner was captured. Later in 878 Alfred left his stronghold at Athelney. He summoned the local militias (fyrds) from Somerset, Wiltshire and Hampshire to meet him at Egbert's Stone in Selwood, on the border of Somerset and Wiltshire.

“At Edington, Alfred fought against the whole raiding army and put it to flight”

In May 878, Alfred’s army defeated the Great Heathen Army at Edington in Wiltshire. They pursued the Danes to their stronghold at Chippenham and starved them into submission.

“Guthrum came to Aller and there king Alfred received him at baptism”

At Wedmore, Alfred and Guthrum negotiated a peace treaty requiring Guthrum to become a Christian and return to East Anglia. Three weeks later, the Danish king and 29 of his chief men were baptised at Alfred's court at Aller, a small island in the floodplain near Athelney. Alfred received Guthrum as his godson, who took his army to East Anglia and shared out the land.

“Alfred built the minster of saint Ethelwine at Athelney. The Old Saxon John was Abbot”

The Viking attacks had destroyed many monasteries across the land. King Alfred founded a new monastery at Athelney dedicated to Æthelwine, a 7th-century saint who had lived as a hermit on the island.

Alfred staffed the abbey with foreign monks, drawn chiefly from France, and appointed John the Old Saxon as their abbot. The Alfred Jewel may have been a gift from Alfred to Abbot John and was found nearby in the wetland at North Petherton.

“King Alfred ordered to be built strongholds at Watchet, Axbridge, Lyng and Langport”

This map of Alfred’s Somerset shows some of the forts (burhs) built across Wessex to protect against future Viking attacks. Three of them – at Axbridge, Langport and Lyng/Athelney – were positioned at the first bridging points over the rivers Axe, Parrett and Tone to stop Viking fleets from sailing further inland. Another burh was built on the coast at Watchet.

The Story of Beowulf and Grendel

At more than 3,000 lines, Beowulf is the longest epic poem in Old English that has come down to us. The oldest surviving version is in a manuscript written between 975 and 1025 AD which recounts events set in the 6th century AD. Oral versions of the heroic tale had probably been composed centuries earlier.

The story of Beowulf is briefly told in two wooden panels carved by our volunteers. Some scenes have a caption describing the scene in Anglo-Saxon runes.

King Hrothgar of Denmark, a descendant of the great king, Scyld Scefing, enjoys a prosperous and successful reign. He builds a great mead hall, called Heorot, where his warriors can gather to drink, receive gifts from their lord, and listen to stories.

“Grendel kills warriors in Hereot”

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But the jubilant noise from Heorot angers Grendel, a horrible demon who lives in the nearby swamp. Grendel terrorises the Danes every night, killing them and overcoming their efforts to fight back.

A young Geatish warrior named Beowulf hears of King Hrothgar’s plight and sails to Denmark with a small company of men, determined to defeat Grendel.

“Beowulf is greeted by Hrothgar”

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King Hrothgar, who had once done a great favour for Beowulf’s father, accepts Beowulf’s offer to fight Grendel and holds a feast in the hero’s honour.

“Beowulf rips off Grendel’s arm”

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Grendel arrives and Beowulf fights him unarmed, proving himself stronger than the demon, who is terrified. As Grendel struggles to escape, Beowulf tears off the monster’s arm. Mortally wounded,

Grendel goes back to the swamp to die. The severed arm is hung high in the mead hall as a trophy of victory.

Overjoyed, Hrothgar showers Beowulf with gifts and treasure at a feast in his honour. Songs are sung in praise of Beowulf, and the celebration lasts late into the night.

Grendel's mother, a swamp hag who lives in a desolate lake, comes to Heorot seeking revenge for her son's death. She murders one of Hrothgar's most trusted advisers, Æschere, before stealing away.

"Mere serpents. Mother of Grendel"

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To avenge his death, the company travels to the murky swamp, where Beowulf dives into the water and fights Grendel's mother in her underwater lair.

He kills her with a sword forged for a giant. Then, finding Grendel's corpse, he decapitates it and brings the head as a prize to Hrothgar. The Danish countryside is now purged of its treacherous monsters.

Beowulf returns to Geatland, where he and his men are reunited with their king and queen, Hygelac and Hygd. In time, Beowulf ascends to the throne of the Geats and rules wisely for 50 years, bringing prosperity to Geatland.

"Gold theft brings Dragon fire"

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When Beowulf is an old man, however, a thief disturbs a barrow, or burial mound, where a great dragon lies guarding a horde of treasure. Enraged, the dragon emerges from the barrow and begins unleashing fiery destruction upon the Geats.

"Nagling snaps. Wiglaf aids Beowulf"

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Beowulf goes to fight the dragon and his sword is broken. With the aid of his follower, Wiglaf, he succeeds in killing the beast, but the dragon bites Beowulf in the neck, and its fiery venom kills him moments after their encounter.

According to Beowulf's wishes, his body is burnt on a huge funeral pyre and then buried with the dragon's treasure in a barrow overlooking the sea.

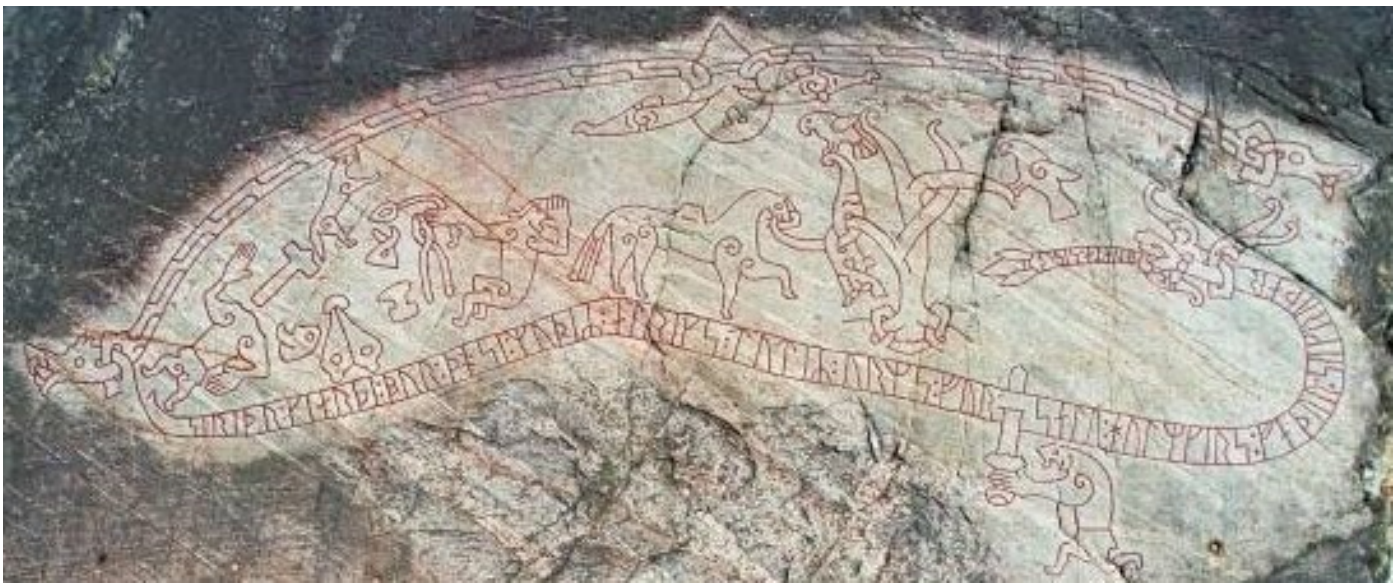
The Story of Sigurd and the Dragon

Heroes, dragons, cursed treasure, tragedy and betrayal all feature in one of the most popular stories from medieval northern Europe. It centres around a hero called Sigurd (or Siegfried in the German version).

How do we know the story?

The earliest evidence of the story is in the form of pictures carved on stone in Sweden, the Isle of Man and England between about AD 940 and 1000. The most complex carving is from Ramsund in Sweden. The tale probably had an earlier origin and Sigurd may be connected to Sigmund, the dragon-slayer mentioned in the legend of Beowulf.

Sigurd later occurs in various poems and stories from the 13th and 14th centuries. The earliest is the Nibelungelied, written in Germany in about 1200, and the Prose Edda, made in Iceland in about 1220. The Volsunga Saga, written in Norway later that century, contains the most detailed account of Sigurd's life.



The Ramsund carving of Sigurd slaying the dragon Fafnir and the smith Regin

Dwarfs, gods and gold

The story begins with a quarrel between the Norse gods and a dwarf magician called Hreidmar. His son Ótr can change into animal form and often catches fish while transformed into an otter. The gods Odin, Loki and Hoenir see an otter and Loki kills it with a stone. They give the otter skin as a gift to Hreidmar, who realises they have killed his son and demands that the skin is filled and covered in gold as compensation.

Loki catches a rich dwarf, Andvari, while he too is changed into animal form and claims the dwarf's gold as ransom. Andvari tries to keep a single gold ring for himself, but Loki takes it, prompting Andvari to put a curse of death on whoever owns the ring.

After Hreidmar receives the gold from Odin, he refuses to share it with his sons, Fafnir and Regin. Enraged, they killed their father, but Fafnir also refuses to share the gold. Instead he moves it to Gnita Heath where he guards it in the shape of a dragon.

Regin, a skilled smith, convinces his foster son, Sigurd to try to kill Fafnir, promising him a share of the treasure. To aid him, Regin makes the sword called Gram, which is sharp enough to cut an anvil in half. He also gives him a horse named Grani, a descendant of Odin's famous eight-legged steed Sleipnir.

Dragon slaying

Sigurd digs a pit on the heath along the route the dragon uses when he goes to drink water. Sigurd hides in the pit and kills Fafnir with his sword as the dragon passes overhead.

Regin then asks Sigurd to cook Fafnir's heart for him to eat. As Sigurd is cooking it, he accidentally burns his thumb and, putting it in his mouth, tastes some of Fafnir's blood. This allows him to understand the speech of birds, who warn him that Regin is planning to kill him. Sigurd cuts off Regin's head before he can betray him and then loads Fafnir's treasure on to his horse Grani.

Sigurd cooking Fafnir's heart and burning his thumb, late 12th century carving from Hylestad, Norway

The Drävle runestone from Sweden depicting Sigurd killing Fafnir, the cursed gold ring and the queen holding a drinking

Betrayal, shape-changing, doomed love, snake pits and death

The curse on the treasure eventually brings about Sigurd's death, but the details vary in different telling's. The plot focuses on Sigurd's marriage, his earlier love, denied to him by use of a magic potion, his deception of that first love by a shape-changing trick, and her later vengeance which leads to Sigurd's death. Almost everyone in the story suffers a violent end either by being murdered in their sleep, thrown into a snake pit, having their heart removed while still alive, being trampled to death by horses or being burnt alive in a mead hall. The treasure was hidden in the River Rhine and remains there to this day.

Viking Trading Ship

AD 1040

The Skudelev wrecks

This ship is a replica of a Viking coastal trading vessel. It is based on the **Skudelev 3** wreck, excavated from Roskilde fjord, Denmark, in 1962. That 14 m-long boat was built in Denmark around AD 1040 and was the sort of vessel that carried cargo around and across the North Sea and the Baltic.

It was one of five vessels that were deliberately sunk at Skudelev to create a blockade to protect the town of Roskilde. The other ships were a larger ocean-going trader built in western Norway, a smaller cargo vessel from the Baltic and two warships, the smaller of which was made in Denmark and the larger longship in Viking Dublin. That longship was just over twice as long as Skudelev 3 and could be rowed by up to 60 people.

The original Skudelev 3 in the Viking Ship Museum, Roskilde, Denmark

Skudelev 3 was built entirely of oak, except for the mast which was pine. The 3.3 m-wide vessel was clinker built, made from overlapping radially-split oak planks, secured by over 1,200 iron rivets and roves. It would have been crewed by five to eight people, and up to four tons of cargo would have been carried in barrels, boxes and sacks in the middle of the boat, where there was no deck.

The vessel was mainly sail-powered, as the six oar holes were probably just for manoeuvring in port. It was steered with a steering board at the right-hand stern of the ship.

Working Replica: The Roar Ege

In 1984 the Viking Ship Museum in Roskilde made a replica ship called the *Roar Ege* and sailed it for 32 years. The boat could reach a top speed of 10 knots (11.5 mph) and could sail up to 60 degrees to the wind direction, with a leeway (sideways drift) of 5 to 6 degrees.

When fully loaded the draught of the ship (the depth of the keel under the water) was just 80 cm. That meant the boat could travel up even small rivers and was easy to beach on sand or shingle.

Roar Ege at sea

Walrus Design and Construction

This boat called the *Walrus,* is based on the Skuldelev 3 Viking trading ship from Denmark. It was originally built for the National Maritime Museum Falmouth as a 1:1 'waterline' replica for a temporary exhibition.

Walrus

The Old Norse for walrus is ***hrosshvalr***, which literally means 'horse whale'. Sagas and poetry suggest that Vikings often gave their boats names based on sea creatures, mythical and real.

A new replica of the Skudelev 3 wreck being made in Roskilde, Denmark

Building *Walrus*

Some changes were made to ease the building process. Larch was used for some planking instead of oak, and steel nails replaced iron ones, though they were still hand forged. A gap was made in the side of the ship to allow wheelchair access. Decking has been inserted for the public across the whole of the boat's interior, but the original had no deck in the centre, where most of the cargo would have been stored.

Carving the stems

Building a Viking ship begins with the stems at the bow and stern. Carving these stems is a specialist skill, and in the Viking age the stem builder was known as the ***Stafnasmidir***. Danish master boat builder Søren Nielsen, from the Roskilde Viking Ship Museum, carved the stems from solid oak in the proper Viking way.

Steering oar

Rather than a stern rudder as used today, Viking ships had a steering oar near the stern and always on the right-hand side. The Old Norse word for a steering oar, ***styrisbord***, gives us the term 'starboard' for the right side of ships and boats today. So as not to damage the valuable steering board, vessels would dock in port on the other side, hence the 'port' (left) side of a ship.

Mast

The mast of *Walrus* is 10 metres tall and made from Douglas Fir. Vikings typically used fir and spruce trees for masts and oars since they grow fast and straight and are light and strong.

Clench nails

Iron was a valuable commodity. If a ship was beyond repair a Viking law code (the 'Gulathing law') said that the ship must be burnt and the nails salvaged from the ashes for recycling.

Smell the tar?

In the Viking tradition, *Walrus* has been treated with a mixture of pine tar (commonly known as Stockholm tar) and linseed oil to preserve the timbers.

Square sail

A ship like *Walrus* would have had a large sail, 6.5m square made from wool or linen.

Ropes and rigging

Hemp ropes were used for the rigging. Vikings commonly used lime bast, the inner bark of the Small Leaf Lime tree, to make ropes. Other known materials included hair from horses' tails and the hide from seals and walruses.