

# THE DANISH VIKINGS

## The three centuries of the Viking era

In the year 793 The Anglo-Saxon Chronicle refers to a Viking raid on the Lindisfarne Monastery on an island off the coast of northeastern England:

“In this year dire forewarnings came over the land of the Northumbrians and miserably terrified the people; dragons were seen flying in the air. A great famine soon followed these tokens; and a little after that, in the same year, on the VIth of the Ides of January (Jan. 8th) the havoc of heathen men miserably destroyed God’s church at Lindisfarne, through rapine and slaughter.”

This raid, the first registered Viking raid in Europe, is now traditionally used as the date of the beginning of the Viking era. We do, though, have indirect information about earlier Viking raids on England and in Scandinavia several of the features characteristic of the social order of the Viking era go back to the earlier 700s so that the beginning of the period may well be dated to the first half of the eighth century.

During the following three hundred years or so Scandinavia played a prominent part in many important and dramatic events in Europe. In their open square rigged vessels the Vikings plied the coastal waters of Europe and disembarked as traders, buccaneers or colonisers – whichever the scenario might recommend.

The word Viking is seen on several contemporary Scandinavian runic stones, probably in the context of “one fighting at sea” or “battle at sea”. Elsewhere in the world the Norsemen were otherwise referred to. The Franks called them “ascomans” or “normanni” while the Anglo-Saxon sources frequently used the designation “dani”. In Byzantium and in the Arab lands they were called “rus” or “al-Magus”.

Sweden, Norway and Denmark had each their own sphere of interest matching their location. For the Swedes it was easy to cross the Baltic Sea and settle in the Baltics from where they proceeded down the Russian rivers to the Black Sea and the Caspian Sea. The sphere of the Norwegians comprised the Atlantic Isles, Scotland and Ireland. They also settled in Iceland and Greenland and visited Vinland in North America. The Danes sailed along the coast of western Europe and to east England. Often crews consisting of men from more than one of the countries would join on these voyages.

The three Viking centuries changed Denmark fundamentally. From being an almost unknown heathen area Denmark had by the end of the Viking period developed into a well-defined kingdom belonging to the European Christian societies. The Viking era ended around the middle of the eleventh century; often the year 1042, when King Harthacnut died, denotes the beginning of the new times. His death was the termination of the epoch during which Danish kings occupied the English throne.

### **In search of new territory**

There has been much discussion of what brought about this apparently sudden expansion from the Scandinavian countries in the early 800s. Probably it was merely an expansion of what was already going on during the centuries preceding the Viking era but a change of certain circumstances makes the departure nearly explosive. In the European perspective we are in a period in which the political and economic point of gravity has moved from the Mediterranean region towards the north. Arab penetration into the Mediterranean countries during the early 700s disrupted trade between Byzantium and western Europe. Trade between East and West must look for new routes and from now on travelled through the Baltic Sea and Scandinavia by the Russian rivers of the Dnieper and the Volga.

As a result of the unification of the Frankish realm commercial intercourse in northwestern Europe grew by leaps and bounds around 600 to 700, and already at the beginning of the Viking era solid trade relations had been established between Denmark and the Rhenish region. The city of Dorestad at the lower course of the Rhine was a major trade centre in northern Europe. From Dorestad goods were transported by ship to other parts of the Frankish realm and to England.

The Vikings were adventurous, curious and well-oriented about the unstable political conditions prevailing in several areas of western Europe. The shift of the European trade centres towards the north provided new openings for easy booty and the Vikings wasted no time in making the best of this new situation.

In this context the vessel was essential. The Nordic ships were seaworthy, swift vessels well suited for surprise attacks and speedy withdrawal.

## **Sources**

The Viking era offers the first written sources describing contemporary Denmark. Most information is attributable to foreign prelates who in their attempts to convert the heathen Norsemen to the true Christian faith described conditions in this Nordic country.

The Vikings themselves were, however, not entirely ignorant of writing. On the large memorial stones – the runic stones – they give ultra-short accounts of events and people. For the first time in history the Danes present themselves and speak in their own voice.

Archaeological pieces of evidence are, however, fundamental to our understanding of the contemporary society. Almost daily our knowledge is widened by new finds from archaeological investigations. Improved excavating methods coupled with the aid of technical and scientifically allied disciplines draw an increasingly detailed picture of the Viking era.

## **Society and housing**

Denmark is an agricultural country. During the Viking era, and all the way to our own day and age, agriculture has been the principal source of revenue. The grain cultivated was barley, rye, oat and wheat. Bone finds show that farmers kept cattle, pigs, horses, sheep and goats. Warriors for the ships and for the growing population of merchants and artisans were recruited from the agricultural class.

Together villages and farms constituted major units, settlements, and it may reasonably be surmised that the free inhabitants of the settlements largely managed their own affairs at regular public meetings where conflicts were resolved. Society was divided into social classes and three classes are easily discernible: the elite warrior class headed by the king; the free farmers; and the thralls without legal rights.

In recent years a number of extensive archaeological investigations have been conducted of farms and village settlements in Denmark. The village of Vorbasse in Jutland shows traces of uninterrupted building from the time b.c. and up to the village as we know it today. The Viking-era building at Vorbasse falls into two phases. The former ran from the 700s into the 900s, with a village of seven farms lining an 8-10 metre wide street. The farms were large, rectangular plots, delimited by fences and with a gate opening towards the street. Each farm consisted of a large main building, with one

part accommodating humans, the other part used as stable with partitioned pens, and finally a series of smaller structures. The main buildings were about 30 metres in length with room for humans and somewhere between 20 and 30 animals. The smaller buildings served as barns, workshops and probably as shelter for servants and thralls.

Around the year one thousand the structure of Vorbasse altered. The total area of the village was widened, new farms were built one of which was considerably larger than the farms of the former village. It was known as the farm of a great noble. People no longer lived under the same roof as the animals. Separate cowsheds accommodating up to 50 head of cattle were erected. At the same time the total number of farms in the village appears not to have increased.

The village of Vorbasse had easy access to low-lying wetlands suitable for grazing cattle, and the large number of divided pens clearly suggests that cattle farming must have been quite important. During the first phase of the settlement the number of cattle must have hovered around 150 head, a number apparently growing in the 11th century when new, separate cowsheds went up. The cattle supplied milk, meat, traction and hides and was probably bred also for purposes of sale.

It is difficult to estimate the size of the Danish population during the Viking era. Despite comprehensive research only a few settlements from the period have been excavated and suggest no substantial growth in the rural population throughout the Viking period. While the village is a continuation of existing construction the Viking era provides us with the first proper townships in Denmark.

The two oldest Danish towns are, naturally, located close to the European continent and at either side of the root of Jutland: Ribe in the west and Hedeby in the east.

As early as the 700s Ribe was a well-organised trade centre where markets were held regularly. From Ribe connections were good with England, Friesland and the Frankish empire and the town has undoubtedly been important as the gate of Scandinavia to northwestern Europe. Contact must have been close with the extensive Danish hinterland, and the many imported finds from the Frankish area – including large amounts of glass – suggest brisk contacts with the south. Remnants of a number of specialist handicrafts executed in the market place have been excavated, such as bead and comb objects, textile and leather work, smithery and amber cutting.

Ribe's commercial days of glory stretched from the 700s to the mid 800s when the market place seems to have been falling behind in importance. Perhaps it was Hedeby which took over part of the trade previously passing through Ribe.

Hedeby's location makes it the southwestern junction of the Baltic trade. The Frankish national annals state about the foundation of Hedeby that in 808 King Godfred ravaged a Slav trade market named Reric and that he moved the merchants from there to Hedeby while at the same time reinforcing the large ramparts of Danevirke as protection against enemies coming from the south. Like Ribe, Hedeby dates back to the 700s but probably it was not until the intervention of Godfred in the early 800s that the actual foundation was laid for the largest Viking era town in northern Europe. From then on Hedeby is often referred to in foreign written sources as well as on domestic runic stones and in skaldic epics.

Based on the archaeological investigations of Hedeby it looks like the development was from the very start established according to a regular layout. Streets were built parallel with each other and perpendicular to the watercourse traversing the town. The town was divided into fenced-in plots, the end of each house facing the plank-covered streets. The houses were rather small, their floor area rarely exceeding 60 square metres. They were built close to each other, without much outdoor space. In the harbour area remains of jetties stretching from the land into the harbour have been found, and the harbour basin itself was protected against maritime raids by a semicircular wooden palisade rammed into the water.

More than 340,000 antiquities were excavated when Hedeby was dug out. They are evidence of handicrafts, trade and daily necessities. The large semicircular rampart around the town was not constructed until the mid-900s during a period of unrest.

We have an eye-witness description from the second half of the 900s from the Spanish Arab At-Tartuschi who visited Hedeby. His account may be paraphrased as follows:

“Schleswig (Hedeby) is a very large town at the extreme end of the world ocean. In its interior one finds fresh-water sources. The inhabitants worship Sirius, except for a minority of Christians who have a church of their own there. They celebrate a feast at which all get together to honour their god and to eat and drink. He who slaughters a sacrificial animal puts up poles at the door to his courtyard and impales the animal on them, be it a piece of cattle, a ram, billygoat or a pig so that his neighbours will be aware that he is

making a sacrifice in honour of his god. The town is poor in goods and riches. People eat mainly fish which exist in abundance. Babies are thrown into the sea for reasons of economy. The right to divorce belongs to the women. They let themselves be divorced when they are so inclined. Artificial eye make-up is another peculiarity; when they wear it their beauty never disappears, indeed it is enhanced in both men and women. Further: Never did I hear singing fouler than that of the Schleswegians, it is a rumbling emanating from their throats, similar to that of a dog but even more bestial.”

The background for this creation of a town was to protect the interests of trade. Without peace and security merchants would stay away. It was up to the king to enforce market peace and take steps to do whatever possible to keep buccaneers from raiding the ships bringing goods to the market. In return for this protection he could collect dues from the merchants.

During the Viking age and in step with the increase of the king's power the creation of new towns in the rest of Denmark accelerated and by the mid-1000s the foundation stones were laid of several of the towns that still exist today.

### **Kings and religion**

The first indubitable king's name in historic sources crops up in connection with the earliest known mission in Denmark in the early 700s. At that time the English missionary Willibrord, archbishop of Utrecht, visited the tribe of the wild Danes. About this the legend says: “This is where Ongendus (probably a Latin version of the Nordic name Angantyr) is to have reigned, a man more cruel than a wild beast and harder than stone, but according to God's will he did treat the preacher of truth honourably.” This may be the very same Ongendus who founded the town of Ribe.

There is much to indicate that already in the early 700s a strong central power prevailed in Denmark, at least in Jutland. The oldest phase of the great defence rampart in the south – the Danevirke – dates back to the year 737, and in 726 a one kilometre long wood-lined canal was established across the narrowest part of the island of Samsø for the purpose of controlling navigation in the Danish belts. Projects of this magnitude must have required a firm organisation.

Throughout the 800s Frankish sources provide sporadic news about Danish kings. We have already mentioned King Godfred who founded Hedeby in 808 and who was sufficiently powerful to threaten Charlemagne. Other kings mentioned are Horik the Older and Horik the Younger who in the 850s allowed the missionary Ansgar to build churches in both Hedeby and Ribe.

But it is only in the mid-900s that we have adequate information to observe a coherent list of kings.

The territory which was later to constitute medieval Denmark was to all appearances more or less unified around the year 800. One thing is sure, namely that by the early 800s King Godfred reigned not only over Jutland but also over southern Norway and Scania.

The designation Denmark (Danmark) originates from “the Danes” – “the tribe of the savage Danes” – as they are referred to in connection with the visit of Willibrord the missionary. The name Denmark is used the first time in the travel descriptions of Ottar and Wulfstan as these committed them to paper at the English court during the second half of the 800s. Ottar lived in northern Norway and travelled northwards by ship around the North Cape and into the White Sea, and southwards to the trading place Skiringssal on the Oslo Fjord and then on to Hedeby. Part of Ottar’s account reads: “And he said that from Skiringssal it took him five days to sail to the commercial town of Hedeby. It is located between the Wends, the Saxons and the Anglians; to port was Denmark, to starboard the open sea for three days; and then, two days before arriving at Hedeby, he had Jutland and Sillende and many isles to starboard. This is where the Anglians lived before settling in this country (NB! the travel accounts were told in England). And during these two days he had the Danish isles to port.”

Wulfstan tells about a voyage from Hedeby to the town of Truso on the estuary of the Weichsel river in what is today Poland. Among Wulfstan’s accounts: “He left from Hedeby, reached Truso in seven days and nights, and the ship set sail the whole trip. The land of the Wends was to starboard while to port were Langeland, Lolland, Falster and Scania. These territories all belong to Denmark.”

The Wends mentioned by Wulfstan were the neighbours of the Danes to the south on the Baltic Sea. The land was inhabited by a number of West Slav tribes which in the 6-700s had penetrated from eastern Europe to the Baltic Sea and with whom the Danes alternated between belligerent and peaceful contacts.

By the mid-900s Gorm the Old was king of Denmark. “Gorm, King, raised this monument to his wife Thyra, benefactress of Denmark” is the text of the smaller of the runic stones erected at the church at Jelling. This is the first time the name of the king is mentioned in Danish territory. Gorm was succeeded as king by his son Harald. From thence the throne is inherited and has existed uninterrupted ever since. King Harald likewise placed a

memorial stone in Jelling the text of which reads: "King Harald had these memorials done in honour of Gorm his father and Thyra his mother, the Harald who won all Denmark and Norway and made the Danes Christians."

Harald's runic stone has been called the baptismal certificate of Denmark and is the official farewell of Denmark to the ancient gods. This faith in gods has been alleged by the missionaries arriving from the south; they fancied the designations heathens and wild barbarians about non-Christians. However, the most important written sources for the understanding of the Nordic mythology are the so-called Edda Poems: the elder Edda collected around the year 1200 by an anonymous Icelander, and the younger Edda by Snorre in the early 1200s. Snorre describes the mythology as a whole which begins with genesis and ends with ragnarok, the doom of the world. Odin is the august principal god while among the other gods Thor is especially prominent. Odin was the god of war and the paradise of the Viking warrior was Valhalla where time was spent on noble battle and feast. The most favoured god seems to have been Thor, however. Thor is invoked on the runic stones: "To Thor be devoted these runes." The name of Thor recurs in many local names and his hammer was a popular motif on jewellery. Thor was also a warrior god who showed himself in thunder: Thor crash. Undoubtedly noble battle ranked among the finest virtues of the Vikings.

Conversion to Christendom was hardly very sudden since missionaries had been active in Denmark for more than 200 years; nor does the conversion of faith appear to have reduced the lust for battle.

In addition to the famous runic stone Harald built two colossal mounds: kings' graves, and a church in Jelling. Most likely Harald was also the promoter of the construction of the four large circular castles strategically placed in various locations in Denmark. The common feature of the castles was the circular ramparts protecting a barracks-like military installation.

Around the year 987, Harald was displaced from the throne by his son Svend Tveskæg. Svend went for power and riches in England and in 1013 he conquered the entire country but died in 1014. In Denmark, his son Harald became king. However, as early as 1018 when Harald died, Cnute the Great was king of both England and Denmark. Cnute the Great died in 1035 and was succeeded in Denmark, and in 1040 in England too, by his son Harthacnute who passed away in 1042.

## **The Viking raids**

### **The west European continent**

To the south the powerful neighbour of Denmark was the Frankish empire. Around the year 800 Charlemagne had defeated the Saxons and the Frankish empire now bordered Denmark with the Eider river. In the 830s domestic conflict replaced many years of stable reign in the Frankish empire, ending in 843 with a tripartition of the realm and leading thus to a weakening of the naval defence along the west European coast.

Already by the beginning of the century the maritime raids by the Vikings had grown into problems of a dimension which forced Charlemagne to organise a coastal defence between the mouths of the Rhine and the Seine against pirates ravaging and plundering the North Sea. Events in the Frankish empire turned out to the advantage of the Norsemen, however, and from the 830s raids grew and spread.

The town of Dorestad was pillaged several times as were other places in Friesland. In 841 a Viking fleet sailed down the Seine for the first time, plundering Rouen, among other places. In 845 Danish King Horik dispatched a Danish fleet down the Elbe river. It devastated Hamburg but it was an exception that the king himself was involved. Magnates and expelled relatives of the royal family were often mentioned as leaders of the Viking raids but ordinarily the king was apparently not engaged in the plunderings. Several Danish kings have, indeed, assured the Frankish rulers that they had no part in the unrest.

In 845, on 28 March, Paris was devastated and the city had to pay a ransom of the unheard sum of 7000 pounds of silver. The rumour of this easily earned money probably spread swiftly for soon Viking fleets appeared on all major rivers in the western part of the Frankish empire. Towns, churches and monasteries were assaulted as described by the monk Ermentarius of Noirmoutier in the 860s:

“The number of ships is growing. Endless flocks of Vikings keep pouring in. Everywhere the Christians are massacred, burned and pillaged. The Vikings take everything that comes their way. Nobody is able to resist them. They have captured Bordeaux, Périgeux, Limoges, Angoulême and Toulouse. Angers, Tours and Orléans have been annihilated. A countless fleet moves

up the Seine, and all over the country viciousness is growing. Rouen has been devastated, plundered and sacked. Paris, Beauvais and Meaux are captured, the strong fortress of Melun has been razed to the ground, Chartres is occupied, Evreux and Bayeux plundered and all towns besieged.”

From the mid-800s some of the Vikings settle in various places of the Frankish empire. They were used as mercenaries in domestic French conflicts and were also bought, for money and land, to defend the coasts against raids from other Vikings.

Nearly every year up to the late 800s has its own stories of battles one place or the other south of the river Eider and all the way down to the Mediterranean. As time went on the defence against the Vikings became better organised, and towards the end of the 800s the good times for plundering along the west European coast began petering out.

In 885 a Danish army again reached Paris which had by now become well fortified. The Danes occupied both banks of the Seine, and for eight months besieged the Cité-Isle without being able to capture the city. This was considered a huge victory for the Franks.

In 911 chieftain Rollo was assigned several land areas around the Seine from Rouen to the ocean by the west Frankish King Charles the Simple in turn for defending the coasts against other Norsemen. This became the origin of the duchy of Normandy. Duke William the Conqueror who in 1066 defeated the English in the battle of Hastings was a direct descendant of Rollo.

The Vikings also made it into the Mediterranean area. In 844 they were in Spain and conquered Seville; the Arabs were militarily well-organised and usually able to reject the raids.

Arab sources furthermore tell about raids on the north African coast. Norway was spared. According to the written sources the Vikings in 860, believing it was Rome, conquered the north Italian town of Luna. At first they besieged the town but failure to make any real progress prompted them to use trickery. The Viking chieftain Hastings pretended to be dead and his men convinced the Luna inhabitants that the last wish of their leader had been to get a Christian funeral. The coffin, accompanied by a large group of mourners, was carried into the town but hardly had the funeral ceremony begun before Hastings dashed out, sword in hand, and cleft the bishop's head. Now the town was quickly conquered. Only then did it dawn upon

Hastings that it was not Rome he had captured and on the way back the town of Pisa had to suffer for the disappointment of the Vikings.

## England

England was the preferred goal and largest source of income for the Vikings. The country was divided into a number of small kingdoms which were often at odds, a situation the Danes knew how to make the best of. In 835 they plundered the area surrounding the estuary of the Thames. These plunderings can be considered the beginning of Danish activities in England throughout the next few centuries. There were plunderings, conquest of land with subsequent settlement. The end was the conquest by Svend Tveskæg and Cnute the Great of the entire country at the conclusion of the Viking era.

In 865 a large army of Vikings planted itself in East Anglia where it began several years of war and conquest. The crucial event took place in 876 when the military leader Halfdan allocated land to his men in Northumbria. This gesture was repeated the following year in the kingdom of Mercia where the Vikings received land and became permanent settlers on farms. The rest of the army was given land in 879 in East Anglia. This meant the creation of Danelaw, the country living under Danish law and reign. Together with the royal quarters at York, the five towns of Lincoln, Stamford, Nottingham, Derby and Leicester became the strongpoints of the Danish reign.

In the south, in the kingdom of Wessex, the English King Alfred continued to reign. In 866 a peace treaty was concluded between the Viking King Guthrum and King Alfred on peaceful relations between the two groups of people. Apparently the Danes did not consider the peace treaty particularly binding since already in 892 the Danes once again tried to subdue Wessex. A large Viking fleet arrived from the Frankish empire to England and with this as their ally the permanently settled Danes attacked Wessex. The battle went on for four years without the Vikings managing to vanquish King Alfred whereafter the Danish army disbanded. King Alfred died in 899 but his descendants gradually recaptured the Danish possessions, and by the 920s Mercia and Northumbria were once more under Anglo-Saxon supremacy. Today the Nordic settlement in England is easily discernible in the many surviving geographical names. The Vikings had brought their own name custom from home and we have examples of a number of place names identical to those used in the North, among them -by, -toft and -torp. Place names alone ending on -by are known in the former "Danelaw".

Through long periods of the 900s it was relatively peaceful along the west European and English coasts but by the end of the 900s hostilities returned. From 980 on sources tell of frequent raids and huge demands of silver for the marauding Vikings. In 1013 Svend Tveskæg subjugated all of England. He died in 1014 but in 1016 his son Cnute the Great reconquered power. King Cnute died in 1035 and with the conclusion of his reign stability in England was no more. The last Danish king occupying the English throne was Harthacnut who died in 1042.

As already said, it is not possible to discern Norwegians, Danes and Swedes from each other in the ships' crews arriving at the west European coast and England. The crews were often a mixed lot but sources clearly show that the Danes dominated in raids on England while the Norwegians played the most prominent part in the northern English isles, the Isle of Man, in Scotland and Ireland.

### **The Ship**

For good reason the ship has become a symbol of the Viking era. Seaworthiness and competent seamanship were the basis of the unification of the island realm of Denmark and a prerequisite of the numerous Viking cruises into other parts of the world. Contemporary west European sources provide scant information about ships and navigation but in the poetry of the later sagas the importance of the ship in daily life is treated more realistically. However, the all-important clue to the ship-building of the time originates in archaeological finds.

In Viking ship research the classics are the two Norwegian burial ships known as the Oseberg and the Gokstad which were unearthed in 1904 and 1880 on the west bank of the Oslo Fjord. They are magnificent royal ships, dating to the years 800 and 900, respectively. Burial by ship is known also in Denmark, at Ladby on the island of Funen.

The Nordic shipbuilders went for lightness, strength and resilience in their vessels. The typical feature of the Viking ship is that it tapers at both ends with a smoothly curved transition between keel and stern. Ribs and planks ensuring the interior shoring are placed symmetrically abeam and regularly distributed lengthwise in the boat, while the exterior shell has clinkered planks overlapping each other along the edges. The ship was steered by a lateral rudder placed at the stern end in the right side of the navigation direction. The propelling force was sail and oars. The ship had one mast and one rectangular sail: a square sail.

Speaking somewhat simply, the Viking ships can be divided into two categories: merchantmen and warships.

The merchantmen were tall and wide in proportion to their length. Fore and aft they were half-decked, with an open cargo hold amidships. The merchantmen had only few oars, meant for special manoeuvres but were otherwise constructed exclusively for sail.

The warships were low and narrow in proportion to their length and the deck ran the full length of the ship. Oar holes were evenly placed in the entire boat, two notches at each frame. The warships were a combination of sail and row boats.

The span of the Viking ship construction was well demonstrated in the five Viking ships found at Skuldelev in Roskilde Fjord. The ships, which were no longer in service, had been filled with stones and scuttled by the mid-1000s in order to close one of the lanes leading into the important commercial town of Roskilde. In 1962 a sheet piling was rammed down around the closure, the water was pumped out and the ships excavated. The five Skuldelev ships represent five different kinds of ship, two merchantmen, two warships and one ferry or fishing boat. The larger of the merchantmen was a hefty cargo vessel, 16.6 m long and 4.5 m abeam. It is probably the knarr type, an ocean-going freighter whose range included the North Atlantic to Iceland, Greenland and North America. The ship was built of fir, oak and lime. The building place may have been Norway as there was very little fir in Denmark during the Viking era. Its capacity was a cargo of 20-25 tonnes and it was propelled by a rectangular sail of approx. 86 square metres.

The smaller merchantman is an elegantly shaped oak vessel, 14 m long and 3.4 m abeam. The ship was well-suited for navigation in the Danish waters and the Baltic Sea and its crew comprised four or five people. The sail must have measured 45 square metres, and the capacity was about five tonnes of goods.

The smaller of the Skuldelev warships is built of oak, ash and fir. Its length is 17.5 metres and beam 2.5 metres, accommodating 13 pairs of oars and a crew of about 30 warriors. Along the gunwale a shield strap held the shields of the crew in place.

The other warship found at Skuldelev is a long ship, approx. 30 metres in length and with a beam of 4.5 metres, with room for 30 pairs of oars and a crew of 60-100 men. The ship is built of oak, and analyses of the wood have disclosed that it was probably built near Dublin in Ireland towards the end of

the Viking age. The ship's rectangular sail measured about 150 square metres.

The fifth ship found at Skuldelev is a small freighter, 12 metres long, 2.5 metres abeam. It was built of fir planks and may have served as a fishing boat or a ferry.

The navigation abilities of the Viking ships have been much discussed for many years. To investigate this problem more closely three identical copies of three of the Skuldelev boats have over the past decade been built under the supervision of specialised scientists. In 1983, near Ålesund in Norway, a copy was launched of the larger merchantman: "the knarr". The copy, named "Saga Siglar", set out in 1984 on a circumnavigation of the globe with the first part of the voyage following the ancient Viking route across the North Atlantic to Iceland and Greenland.

In 1984, in Roskilde, a copy of the smaller merchantman named "Roar Ege" was launched. The ship was built using exactly the same technique as can be read from the original find, i.e. entirely without the use of saw but with the axe as the essential tool for cleaving and trimming of all the ship's parts. The ship was equipped with modern electronic measuring equipment which accurately records the movements of the vessel over the bottom of the sea, and it has since been tested under all imaginable wind and weather conditions.

Finally, in autumn 1991, a copy of the small warship was launched from Skuldelev. It was named "Helge Ask" and is scheduled in the years ahead to be subjected to the same test sailings as the "Roar Ege". For the merchantmen the most important qualities were cargo capacity and seaworthiness while for the warships speed and manoeuvrability have been decisive.

The navigation tests done so far with the two copies of the merchantmen from Skuldelev have provided us with a good background for evaluating the sailing qualities of the freighters. On the basis of the tests it can be concluded that already by the Viking age a navigation standard had been achieved which fully matched that of the smaller merchantmen at the end of the sailing ship era shortly before World War I.

## **Selected general bibliography on the Viking age**

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### **Captions:**

Runic stone from Västres Strö, Sweden. Text: "Father let these runes be hewn in commemoration of his brother Asser who died in the north while on a Viking raid/as a Viking." Photo: Danish National Museum.

Part of the village of Vorbasse in the 800s or 900s. The farms were large, rectangular plots, fenced in and with a gate facing the street. Drawing: Flemming Bau.

The eastern part of the Ribe market place circa 725. The area was divided into plots in which artisans of various skills worked and sold their products. Drawing: Flemming Bau.

A selection of the numerous shards from Frankish drinking glasses found on the Ribe market place. Most glasses were funnel-shaped as the drawing shows. Photo: Rita Fredsgaard Nielsen.

Aerial photo of Hedeby. The semicircular rampart erected around the mid-900s is easily discernible in the growth of trees. Photo: Wikinger Museum Haithabu.

Silver and gold jewellery from the Viking age. The Hammer of Thor, symbol of the popular god Thor, was a beloved motif for small pendants. Photo: National Museum.

The runic stones at Jelling of Gorm the Old and Harald Bluetooth. Photo: Jørgen Borg.

Aerial photo of the circular castle at Trelleborg. Like the other three known circular castles it was built around 980. Photo: V. Richter.

Sword for ship's grave near Hedeby. Photo: Wikinger Museum Haithabu.  
Small bone cylinder with typical Viking ornamentation from the late 900s. The cylinder, assumed to have served as a small reliquary, is on display at the cloister museum of Colegiata de San Isidoro in the city of Leon in northern Spain. It may have been the Vikings living on the Isle of Man who brought this item to Spain. Photo: Viking Ship Hall of Roskilde.

Aerial photo of Viking housing and burial site at Lindholm Høje on the northern coast of the Limfjord. The individual housing plots are indicated in the foreground while on the burial site behind, stone ships frame the graves. To be buried with a real ship was the privilege of magnates so ordinary folks must have made do with a stone ship. Photo: Jan Slot-Carlsen.

The five Viking ships of Skuldelev: the merchantmen, the warships and the small freighter. Drawing: Morten Gøthche.

Construction of the Viking ship copy "Helge Ask", a precise copy of the 17.5 metre long warship from Skuldelev. Wedges and axes are used for cleaving and trimming of the various ship's parts. Photo: Ole Malling.

Silver brooch found at Lindholm Høje. The figures represent a fabulous being struggling with a snake, a motif well-known from the larger Jelling stone. Photo: Jan Slot-Carlsen.

Front cover: The Viking ship copy "Helge Ask". Photo: Ole Malling.

Jan Skamby Madsen who graduated from Århus University in 1978 is an archaeologist specialising in prehistory. Employed as museum curator at the Viking Ship Hall at Roskilde in 1980 and as Director of the Museum since 1983. His years at the Viking Ship Hall are notable for extroverted museum work in the form of large exhibition projects and, since 1982, by archaeological research in a shipyard from the second half of the 1000s on the island of Falster.

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