Editorial

Without their superior and well-built ships the Scandinavians of the Viking Age would never have made such a significant mark in history. The seas, lakes and rivers were their travelling routes and the ships were their most important means of transportation, carrying the Vikings across the waters in all directions, whether their journey had to do with trading, plundering, emigration, adventure or for whatever reason that took them away from home.

This time we will take you on a historical sail and focus on the Viking impact on some interesting places around the Baltic Sea, from the island of Saaremaa (Ösel) to some trading centres, forts and towns of Germany, Poland, Denmark and Sweden.

We will also take a closer look at two important parts of the ship equipment. How did the Vikings navigate? And how were the sails of the Viking ships made? The recent discovery of a wooden disc, found in archaeological excavations in Wolin, puts the discussion of the use of sun-compasses on the agenda once again. Read also about the interesting research on the production and use of woollen sails conducted by the Viking Ship Museum in Roskilde, Denmark.

Summertime is here and lots of activities connected to the Viking Age are happening in many places. Viking Heritage Magazine keeps you updated about what is happening in the Viking world, both 1000 years ago and today! And why not visit some of the events and take part when the Viking Age comes to life again!

The editorial staff wishes you all a good summer and pleasant reading!

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Editor

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Words of Wisdom

“Never laugh at the old when they offer counsel,
Often their words are wise:
From shrunken skin, from scraggy things
That hand among the hides
And move amid the guts,
Clear words often come”

From Hávámal
(Words of “The High One”)
The first two articles in this issue are a continuation of the series of articles from the CCC-project (Culture Clash or Compromise? The importance of regional strategies during the Europeanization of the Baltic Rim from 1100 to 1400) presented in VHM 1/02.

“The district of islands” at the crossroads of the Vikings

By Marika Mägi

At the crossroads of the eastern routes of the Vikings, the biggest Estonian islands – Saaremaa and Hiiumaa – are situated. The latter was sparsely populated until the modern times. Saaremaa, on the other hand, is archaeologically one of the richest regions in Estonia.

Saaremaa – known as Ösel in Swedish and German – actually consists of several islands that were referred to by same name until the Middle Ages. As the result of land mass elevation, many small islands and islets once surrounding “the big island” have now become part of it. Both the Estonian name Saaremaa and Eysysla mentioned in early Scandinavian sources stand for “the district of islands”, or archipelago. The total area of present Saaremaa, together with the island of Muhu and other smaller islands is about the same as that of Gotland.

In early medieval written sources, Saaremaa has been mentioned several times, usually in connection with piracy. In the 10th century, Olaf Trygvason, who later became the king of Norway, was taken prisoner and sold into slavery by Osilian pirates. Another later king of Norway, Olaf the Holy, tried to conquer the islands in the beginning of the 11th century. Already at this time but especially during the 12th and 13th centuries, the Osilians often initiated military actions on mainland Estonia and Latvia when the important trade routes into the East were threatened by foreign forces. They most probably participated in the ravaging and burning of Sigtuna, the capital of Middle Sweden, in the 12th century. In 13th century descriptions a kind of peace treaty between the Osilians and the Gotlanders has been mentioned, as the latter refused to attack Osilian ships sailing back after ravaging Denmark in 1203. At the same time, the Danish king Valdemar II organised two raids to Saaremaa but did not succeed in conquering it.

United troops of the Order of the Sword, the Bishop of Riga and the town of Riga were more successful. Their attack against Saaremaa in 1227 ended with the surrender of the islands, acceptance of Christianity and a peace treaty. Still, Saaremaa managed to retain most of its political independence during the following decades.

The pirate islands

How to describe the society on the islands inhabited by the aggressive warriors and pirates mentioned in written sources? Did they live in villages or single farmsteads? What did they produce for a living? What were the roles of men and women in their society, or the relationships between different social strata? These and many other questions can be answered only with the help of archaeology.

About dozen settlement districts of different size can be distinguished on Late Iron-age Saaremaa, separated from each other by the sea, wetlands or sandy infertile areas. The districts in a central position, with the best arable lands and most suitable harbour places were marked by strongholds. Archaeological excavations at some of the strongholds proved that they had been permanently inhabited. The chiefs of the districts, together with their retainers, probably resided in the strongholds at least some period of the year. Central power never did develop on pre-Christian Saaremaa, and the islands remained divided between different overlords – the Bishop of Ösel-Wiek and the Teutonic Order – during the Middle Ages.

Though the islands of Saaremaa...
archaeologically form one of the richest regions in Estonia, only a few Late Iron-age monuments have been excavated here up to now. Most of finds come from cemeteries demolished before the 20th century. Modern-standard archaeological excavations have been carried out at some strongholds, cemeteries and a harbour site.

Grave forms characteristic to Viking-age Saaremaa were stone circle graves, surrounded by a circular kerb of stones or low stone-wall. Inside the kerb, usually one cremation burial can be found. Similarly to the mainland of Estonia, graves dated to pre-Viking Period or the first half of the Viking Era are almost absent on Saaremaa, and graves with more artefacts appear only in the 10th century.

Twelfth century burial grounds were usually stone cemeteries without formal structures, large attractive stone heaps on the landscape. Calculations based on excavated prehistoric burial grounds suggest that only a small part of the population, probably the elite, was buried in stone graves. The location of the cemeteries only near the best arable lands on the islands support this interpretation. Starting with the 11th century, and especially during the 12th century, the dead were copiously furnished with weapons, jewellery and other grave goods, all deliberately smashed and burnt on the pyre. Only fragments of artefacts and cremated bones were brought to the stone graves.

When the Osilians accepted Christianity in the first half of the 13th century, burying in stone graves soon stopped. People belonging to the elite were now inhumed in churches or churchyards, in the beginning together with some grave goods. Several (semi-) Christian so-called village cemeteries outside churchyards are also known on Saaremaa. Thirteenth century burials in these are sometimes equipped with few pieces of jewellery or small gifts.

Sea unites peoples

Archaeological monuments and finds on prehistoric Saaremaa differ somewhat from these on mainland Estonia. At the same time, Saaremaa’s material shows several obvious features that parallel the archaeological evidence of the Livs and the Couronians in the territory of present Latvia, as well as that of the Gotlanders in Sweden. This phenomenon can be explained by similar circumstances where activities connected with sea played an important role, and by intensive communication between these areas.

Prehistoric Saaremaa seems to have had very close connections with North-Couronia that was inhabited by an ethnic Finnish population, the Couronian Livs. In addition to similar finds and grave forms, the earlier name of “the big island” of Saaremaa, Kuresaar (Kute/Kura Island) also refers to close connections with Kuramaa (Kura Land, Couronia) in the other side of the strait. The ethnological and folklore material collected from the Couronian Livs who have survived until our times, also has a lot in common with the Estonian islands.

Only a few sites of the prehistoric Couronian Livs have been investigated archaeologically, but a plentiful collection of finds has been unearthed from the monuments of the Couronians who inhabited the rest of the peninsula. Artefacts found in their cemeteries resemble those known from Saaremaa; still, several distinctive features can also be considered. Frequent occurrence of horse harness in graves and belts abundantly decorated with bronze fittings are characteristic to both of these areas. Cremation burials prevailed both on Late Iron-age Saaremaa and Couronia, and some common features can be detected in the grave forms.

The artefacts unearthed from the stone graves of Saaremaa have many counterparts in the graves of the Livs who inhabited large areas in present north-western Latvia around the Gauja River, and around the lower reaches of the Daugava River. The Livs practised, probably due to the influence of their Baltic neighbours, both cremations and inhumations. Especially in the latter case, their grave goods were pretty well preserved. Some 11th–12th centuries cemeteries with “Osilian” finds in West- and South-Estonia perhaps indicate more Livian than Osilian influence.

Viking-age Gotland and Saaremaa were linked firstly by a similar grave form – the stone circle graves. Several parallels can also be drawn when comparing bronze- and silver-decorated belts, luxurious weapons and some ornaments, especially the penannular brooches found on these islands. Gotlandic influence in artefacts, grave forms and settlement pattern is most obvious on west Saaremaa.

Changing times, changing society

In the 11th–12th centuries, a great number of weapon graves characterised the cemeteries of Saaremaa. This phenomenon correlates well with the piracy described in written sources and suggests that a plundering economy played an important role on the islands. Mighty Osilian hillforts with strong fortifications point to deeply stratified society. The strongest and most central was the Valjala hillfort, built of limestone in the 12th century. In the chronicles of the beginning of the 13th century, Valjala was described as the centre of the whole of
Saaremaa, and the chiefs residing there were called nobles while the usual name for the Osilian elite was seniores. Perhaps the power was gradually concentrating towards Valjala but the development was interrupted by the political events, the conquest by the Crusaders.

In addition to the “warriors’ graves” with weapons, about the same number of abundantly furnished women’s graves are known. Women were sometimes, as in other areas inhabited by Baltic Finns, buried with some weapons; bronze-decorated belts and pieces of horse harness also occur in female burials. Archaeological, as well as some historic and folklore material thus refers to society where women had a comparatively high position. Among the burials in Osilian society where women had a comparatively high position. Among the burials in Osilian stone cemeteries, richly equipped children’s graves are also recorded, both boys and girls.

During the war at the beginning of the 13th century the Osilians often took an active, leading position in military actions on the mainland, but the majority of the territory of Saaremaa remained untouched by direct hostilities. In the peace treaty of 1227, the Osilians kept most of their rights. The most relevant was probably the prohibition against keeping foreign troops or building foreign fortifications on the islands.

Almost immediately after the conquest and official Christianisation, and in one case even before that, churches were erected in the administrative centres of the islands. In the more important centres that were also marked by strongholds, the churches were initially built of stone while in centres of less importance wooden churches were erected in the beginning and only later re-built in stone. The stone churches of Saaremaa are the oldest in Estonia, which, taking into consideration the political history probably reflects the active part that the local elite played in church-building. The rapid acceptance of Christianity, at least by the Osilian elite, is also indicated by the sudden abandonment of stone graves and cremation burials. The old pagan elite probably accepted not only the new religion but also the principles and means of social manifestation it represented. In addition to the other signs, this is splendidly demonstrated in early 13th century gravestones with mixed pagan and Christian symbols in Osilian stone churches, where they probably covered the graves of local Christianised chieftains or the members of their families.

The epilogue: the fall of golden times
Where, after all, did the Osilian old pagan elite disappear? Even though written sources are scanty, it may be suggested that pagan-age seniores were re-arranged as feudal vassals, most of them possessing only small enfeoffments. Even as late as in the 15th–16th centuries, the majority of Osilian landowners had family names formed from local toponymes, which probably refers to their Estonian origin; but by the end of the 16th century, they had already disappeared from the list of the landlords of Saaremaa. The estates were enlarged mainly by selling and pawning of small manors. Since the vassalage of Saaremaa had the right to inherit the land through both male and female lines of descent estates were also united via marriages. Part of the old local elite families disappeared from written sources in this way. As the upper class in medieval Old Livonia consisted mainly of Germans, we may suggest that several of the Osilian families, first of all the ones who resided in the strongholds, were Germanised soon after the conquest.

The conquest brought integration into the West-European highly regulated feudal society with restricted possibilities for both plundering activities and barter initiated from local places. The poor quality of the arable lands on the islands did not permit a total re-orientation to agriculture, and the geographical position of Saaremaa in the near vicinity of the mainland was not favourable for the emergence of towns. The first towns were founded in West Estonia and Latvia immediately after the conquest and, over the following centuries, Saaremaa gradually became a periphery.

The Valjala church is one of the earliest stone buildings on the Estonian islands.

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Marika Mägi’s PhD thesis At the crossroads of Space and Time. Graves, changing society and ideology on Saaremaa (Ösel), 9th–13th centuries AD will be reviewed in the next issue of VHM.
In the decades around 1000 AD many segments of Scandinavian society faced a series of changes. Among other things new functions brought new topographic patterns to the urban agglomerations. As one example of many, we shall concentrate on what happened in the important city of Schleswig during the 150 years between the Viking and the Middle Ages (ca 1000-1150).

The topographic beginnings of this settlement are still not known. Scientifically secured data shows a half-century gap between the latest dendrologically known building date of its nearby forerunner Haithabu (Hedeby) in 1020 and the earliest founding date of Schleswig in 1071. This gap is, however, filled to some extent with data provided by written sources telling that this place had a high-ranking position within both secular and ecclesiastical organisation: thus the old bishopric (of Haithabu) was restored in 1026 in Schleswig. There are also records of great diets and celebrations in 1042 and 1052/53.

In the autumn of 1042, King Magnus, in the presence of the Archbishop of Bremen and two bishops, negotiated with the Saxon Duke Bernhard and their alliance was confirmed with a "State wedding"; in the winter of 1052, the two most powerful potentates of Central- and Northern Europe, King Sven Estridsen and Archbishop Adalbert von Hamburg-Bremen met in Schleswig to celebrate an eight-day 'feast of peace', negotiating successfully on the central question of a Christian kingship: Pax Christianorum; and finally, a diocesan synod was summoned to Schleswig in 1063. All these events required an established sacral and secular power structure in the settlement. They must have required at least a representative King's Hall and a Cathedral church, which, in turn, would have been possible only within an appropriate infrastructure.

According to our opinion this is also true for the place's function in terms of international trading and financial transactions. Until now it has been archaeologically ascertained that ship wharves, in other words topographic marks for transmarine trading, began to be built first around 1080. If all of the source
material is taken into consideration, most of it indicates that its function as an import harbour for continental silver, which was in great demand in the Baltic area, led to a gradual move from the semi-circular rampart of Haithabu to the northern shore of Schlei just opposite. So the suggested economical argument is of great weight.

From the beginning of the 9th century the economies in the Baltic Sea area were based on silver imported as coins from the Orient and valued by weight. When this stream of coins grew thinner, due to domestic policy reasons in the Orient, and completely ceased around the year 1000, a serious collapse would have threatened the socio-economic balance had not a new floodgate opened: coins from the European continent. They came from minting localities in the German Empire and were minted directly for the Scandinavian trade. (Additionally, there were English coins that came as payment of debts and later on through regular taxation.) Totally the sum of the foreign trading coins that originated from the German Empire in finds made in the Baltic area, amounts to more than 720,000 pieces. The economic value this reflects is very impressing: a probable total import (at 10,000 mints per stamp) of around two billion coins or 2000 barrels of silver.

According to numismatic research, around 50 percent of these originate from the towns situated in the estuary area of the Rhine with Friesland and Westphalia, first of all Cologne, followed by Deventer, Tiel, Dortmund and Soest. According to prevalent opinion these coins came by distant trading across the North Sea and the Eider – Treene-route to Schleswig, and from there drifted into the economies of the Baltic countries, or were buried shortly after arrival, especially on Gotland or in Russia. The enormous number of coins functioned in a trading system where money was changed for goods; they reflect the value of an intensely-run long-distance trade, where the countervalue was measured mostly in furs and wax.

To a growing extent Denmark had – until around 1030, even the Swedish town of Sigtna – a need for silver for its own minting. In other words: during the time when this system was in use, that is about 1000 and 1130/50, Schleswig functioned as an export harbour for minted silver from the towns on the western part of the continent and as an import harbour for furs and wax and other goods from the East. In Schleswig the two trading systems met head-on: the western monetary economy and the Baltic area’s system of weighing coins: each one of the many thousands of coins from the towns in the Rhine axis that have been found in the Baltic area had been weighed in Schleswig before they received their value. In this way, Schleswig filled a most important function in the exchange of money and goods during the time of transition between the Viking Age and the Middle Ages.

The trading net stretched from Novgorod, far away to the east, across Gotland and the countries around the Baltic Sea. But it also included the Norwegian coast along to Friesland in the west as well as to the towns along the Rhine with Cologne as the centre and the Westphalian metropolis in the inland with Soest and Dortmund. Before about 1130/50 the eastern and the western parts each established vast enclosed territories that had contact firstly via Schleswig.

We have tried to describe the role of Schleswig in the late Viking-age trade as a model, but it is archaeologically and historically well confirmed by finds of coins, scales and weights from the entire 11th and 12th centuries, furthermore through huge quay constructions along a distance of around 150 metres, of which five wharves were built in the year 1095 alone, and finally through commercial legal regulations in the town law, codified around 1150, but whose terms go back to the 11th century.

The annals and other written sources tell about the great importance of the harbour in the development of the early town. Traces of merchant ships have been found in the form of recovered pieces of wreckage from the 11th and 12th centuries, among them first and foremost a mighty knarr with a buoyancy of 60 tons built in 1025 and which later went down in the harbour of Haithabu. A similar cargo ship was stranded after 1130 in the middle of the Schlei.

The town structure was totally adapted to the main functions of the site: its extensive harbour location that included the settlement’s entire waterfront intended for commercial business, its secular power represented by a royal hall (aula regia) in continental style, and its religious function manifested as a bishop’s see with a cathedral and seven parish churches (mentioned in the year 1196). Its position of authority was so pronounced that a local prefecture was developed in Schleswig at the end of the 11th century, which formed the foundation of the latter dukedom.

In contrast to all Danish towns, no money was coined in Schleswig between 1050/70 and 1150. Obviously there was always enough foreign money in the town, and most likely the town lord who had princely monopoly on the weighing system, profited by the exchange of nominal- and weighing value of the coins. Of course the town’s merchants’ association also gained its share of profits from the trade. This economic prosperity has its equivalent in the constitutional structure: since in the 1130s the burghers were organised as a “commune”, a confederation, presumably after a model from Cologne and the Flemish towns with whom a lively trade also took place.

As a successor to the Viking-age metropolis, Haithabu (Hedeby), and as a predecessor to the Hanseatic town of Lübeck, considerable advancements were attained in Schleswig in all parts of the society. Of course, only a limited number can be illuminated here. Not until compared with European town history can the importance of Schleswig for the urbanisation research be truly estimated.

About the author
Christian Radtke M.A. is working in the Archäologisches Landesmuseum of Schleswig, Germany, with exhibitions and editing. He is a well-known specialist on the urban development of Haithabu and Schleswig in the early and high medieval periods, which he has written about in several publications.
Hedeby
– A Viking-age Trade Centre

By Florian W. Huber

The scientific discovery of Hedeby (Haithabu) is owed to the Danish archaeologist Sophus Müller. In 1897 he recognized a 24 ha-wide area near Schleswig, surrounded by a semi-circular rampart, as the location of the former town. In close cooperation, numerous archaeologists, historians and natural scientists have endeavoured to explore Hedeby's history. Hedeby is known to be northern Europe's oldest settlement organized as a town. From the 9th to the 11th century, it was the central point for the distribution of goods between Middle-, North-, and East Europe as well as a centre of manual production.

Towns in the North
The development of a well-organized trading system with international routes, meeting at trading centres and harbours, was one reason for the early growth of the towns.

There is not much evidence that towns existed in Scandinavia before 700 AD. After that date they certainly did and grew in number and size over time. Albeit the towns founded by Vikings in the 8th and 9th century were no towns in the sense as it is understood today. We know only little about how they were governed and they had no public houses built of stone.

Most information about these early towns is gained from three special sites, which are Hedeby, Ribe in Denmark and Birka in central Sweden. The names of these three towns are mentioned in the biography of Ansgar, the “Apostle of the North.”

Hedeby Town
For some time Hedeby was seat of the Danish kings and, as a gathering point for the army and fleet, an important military base. Important cultural impulses were conveyed from the South and West to the North and East via Hedeby.

The Christianization of Scandinavia originated from this place: Hedeby's first church was erected in approximately 850 AD and one of northern Europe's first church bells also sounded here, which is confirmed by the discovery of a bronze bell in the town's harbour. In 948 Hedeby was made a bishop's seat.

The decisive impulse for the settlement's development towards a leading trading centre in Northern Europe in the early 9th century is thought to have come from the Danish king Godfred. In 808, he destroyed the Slavic trading centre of Reric, which was very likely one of Hedeby's competitors. Taxpaying merchants were moved from Reric and settled in Hedeby, resulting in a rapid increase in population during the following time.

In the 9th and 10th century Hedeby was northern Europe's central trading centre. During this time 1000-1500 people lived in the town, which from today's point of view could be described as multi-cultural: Frisians, Danes, Swedish, Norwegians, Francs, Saxons and Slavs lived together and ran their businesses here.

Within the last century the sea level of the Baltic and the Schlei, which is connected to it, has risen about a meter. As a consequence water has flooded the Viking-age shoreline.

Owing to the ground's high moisture level, organic materials like wood, leather or textiles have been very well preserved. Building foundations are clearly recognizable. Hedeby's settlement structure differed greatly from those of high medieval towns: The houses were built exclusively of wood; stone buildings had yet not been attempted.

Despite this fact, the urbane Arabian merchant At-Tartūshi did not get the impression of having come to a village on his visit to Hedeby in 965 AD: “Schleswig is a very big town at the furthestmost part of the ocean. There are

Notes:
1 Hedeby (Haithabu) is located on the Schlei, a fjord near Schleswig in northern Germany.
2 Even At-Tartūshi calls Hedeby Schleswig.
He also mentioned that women have the right of divorce: a wife can get divorced whenever she wants. Furthermore there is an artificially manufactured eye-make-up, which, if applied, makes beauty never decrease, but even enriches it, in men as well as in women.

tartūshi said furthermore: "I have never heard more disgusting songs than the songs of the Schleswigians, a growl sounding from their throats similar to the barking of the dogs, only more brutish than this."

As archaeological research has shown, Hedeby's settlement structure differed clearly from rural settlements. Compared to a village it had a much higher population density and in consequence the limited area was far more densely developed.

One major difference from rural settlements is the lack of barns for large animals on the properties and storage room for fodder in the buildings.

The relatively narrow house units were separated from neighbouring properties by fences. Sometimes a forecourt separated the house from the street. In the backyards sheds for smaller animals were occasionally found.

The semi-circular rampart was built only in the second half of the 10th century as fortification against invaders from land.

Hedeby's harbour All important contemporary trading centres were major ports as well. For safety reasons they were usually not situated directly on the coast, but far from there in the hinterland.

In 1979/80 landing stages were discovered in Hedeby's harbour. As they reached far out into the water and were of such solid construction it is assumed that they supported storerooms or even stalls. Cargo ships no longer needed to land on the shallow beach but could be moored at the landing stages, so that loading and unloading became much easier.

Archaeological finds prove major trading activities on the landing stages, as many weights and coins were found here.

Hedeby's harbour was well fortified: a long line of posts was found rammed into the ground in 7–8 parallel rows. This construction is interpreted as the remainder of the harbour paliade surrounding the inner harbour in a semi-circle for protection. The harbour entrance was presumably flanked by two gate towers.

The Ships of Hedeby

Which ships were at home in Hedeby and which ships visited this harbour? Marine-archaeological research in Scandinavia and Germany has been able to prove that a very wide range of types of different vessels with special purposes was known in Viking times.

In Hedeby there have been three significant finds of shipwrecks (wrecks 1–3). An additional ship (wreck 4), assumed to originate from 1184 AD, will be examined in more detail in the near future.

Wreck 1

This Scandinavian battleship was excavated/dug up/raised in 1970 and probably originates from the 10th century. Traces of use indicate that it was not new when it sank after a fire. With a maximum width of approximately 3 m, the ship was about 28–30 m long. The crew would have numbered 50-55 men.

Wreck 2

The planks of this approx. 12 m-long ship are made of oak and beech as well as pine. The floor construction was made of oak planks, possibly joined by iron rivets; the middle planks of beech were held together with wooden nails as were the upper planks made of pine. While planks with iron riveting are

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About the author
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In 2000 during the archaeological excavations in Wolin managed by Prof. Wladysslaw Filipowiak, a perfect preserved wooden disc, which could be interpreted as a sun-compass, had been found.

This find was published for the first time in the article “Dysk drewniany z Wolina jako kompas słoneczny – następny krok w badaniach nad wcześnieśredniowieczna nawigacja?” (The wooden disc from Wolin as a sun-compass – the next step in early medieval navigational research?).

The first half-preserved half-moon shaped disc dated to about the year 1000 AD had been found in 1948 near Uunartaq Fjord in southern Greenland. The discovery of a wooden disc from Greenland divided into 32 points and with straight and curved lines interpreted as gnomonic lines incised on the surface was the first step of where research was going in the history of Viking navigation (see VHM 4/99).

### The find site

The wooden disc from Wolin had been discovered in the wooden landing-pier of the early medieval harbour with the remains of a Slavic ship as well as Slavic and Viking art and a lot of Slavic pottery. Next to the landing-pier two wooden houses built in the inter-postal construction typical for Wolin are situated. The first house is interpreted as the tanning workshop and the second house as the woodcarving workshop with plenty of wooden artefacts and production scraps.

This place (fig. 1) – archaeological site no. 4 parcel 2 (size 10 x 15 m) is situated between the Wolin – Old Town (site no. 1) and the production-commercial district of the early medieval Wolin – Silver Hill (site no. 5 and 6). Our wooden disc was discovered in the fourth archaeological level (-218 cm under ground).

### Dating and dimensions

Based on dendrochronology as well as coins (Saxon coin with cross) and the style of wooden amulet of a Slavic god (fig. 4a) we can date this archaeological level and wooden disc to the first half of the 11th century AD or rather to the end of the first half of 11th century AD. The dendrochronological dates of the wooden constructions of landing-pier and buildings done by Dr T. Ważny from Department of Art Conservation of Warsaw Academy of Art, are: 935 AD +/−7, 995/6 AD, 996 AD +/−7, 1005/6 AD and 1011 AD +/−8. The dendrochronological dates of the remains of the Slavic ship found next to the wooden discs are: 938 AD +/−7, 993 AD +/−7, 995 AD +/−7, 1005 AD +/−7 and 961 AD +/−8.

The level of charcoal on the top of this level could be connected with the destruction of this wooden construction during the invasion of Magnus the Good in 1043 AD.

The approximate dimensions of the wooden disc from Wolin are: about 81–86 mm diameter, 9 mm thick, with an axial hole 10 mm diameter in the disc. Maybe this hole is made for the gnomon. The artefact from Wolin has two sides. On surface A (fig. 2) three concentric circles about 2 mm and 24 lines more or less perpendicular to the central
hole are deeply incised. On surface B (fig. 3) one circle, 12 irregular triangles and four more irregular incisions are deeply incised. The conservation of Wolin disc has been done in the Maritime Museum in Gdansk.

**Discussion and interpretation**

To begin the discussion about the wooden disc from Wolin and its possible interpretation we can put forth the hypothesis that it could be a sun-compass. So it could be the next navigation tool to strongly support the interpretation of the artefact from Uumartaq Fjord in Greenland.

To first support this opinion, we find lines which may have been drawn to represent the shadow of the Sun, both for the equinoxes (side A) and for the summer solstice (side B). The straight line incised on surface A of the wooden disc looks like the gnomonic line for the time of the equinoxes and the curved line incised on surface B looks like the gnomonic line for the time near the summer solstice at latitudes 60° North. On both sides there are divisions that lead to the idea that it could have been a Sun-compass. These divisions are made after the 12 or 24-system, which was common in the Mediterranean Sea - whereas northern Europe usually used the 32-system. Unfortunately, on side B there should be 12 points each with 30 degrees between divisions, in some places there are a few degrees of error or divisions missing. However side A has 24 very clear divisions on the second concentric circle very nearly correct.

Next to the very important question – how could it be used? We have to ask the next question – who have been made it? Study of the archaeological context of our artefact would answer our questions whether it is:

- a local Slavic product (maybe made in the neighbouring wood-carving workshop), like the wooden Slavic god amulet (fig. 4a) with many parallels from the oldest excavations in Wolin;
- a Scandinavian import like the wooden sculpture of dragon or horse made Ringerike-style (fig. 4b) as well as the Scandinavian brooch;
- a local product by a Scandinavian newcomer living and working in Wolin like the wooden handle decorated Borre-style, typical for “the local Pomern school of Borre-style art” (fig. 4c).

The aim of this article other than presenting this very interesting artefact is to include it in the discussion about early medieval navigation. I hope this paper will open the discussion about them and will help to elucidate them.

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**References:**


**About the author**

Blazej M. Stanislawski, M.A.in 1995 from Poznań University. Since 1996 he is employed by the Institute of Archaeology and Ethnology, Polish Academy of Sciences in Wolin. Under Prof. W. Filipowici's supervision he is conducting the archaeological excavations in Wolin. He is the author of the PhD thesis, “The ceramic from early medieval Wolin in the background of the South-west Baltic Region”. Among many other fields of work and interests he is the organiser of the Wolin-Jomsborg Viking Festival and the Viking movement in Poland.

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Trelleborg in western Zealand, Denmark, is quite a unique institution among Danish museums. Centred round a huge, circular earthen fortress from the late Viking Age, it comprises the monument per se and a museum presenting the various archaeological finds from the excavations, as well as a reconstructed Viking settlement that is currently being established next to the rampart.

The Neighbourhood

The neighbourhood of Trelleborg – One of the circular Viking-age fortresses in Denmark and Scania

Trelleborg has no formal archaeological duties, and with the monument, exhibition and activity centre merged into one, the opportunities for presenting all aspects of Viking culture are extremely good. This has resulted in a rare chance to view original finds and high-quality replicas side by side, and offers the visitor a path into the past that is entertaining as well as educational.

Since it lacks archaeological duties, so far Trelleborg has been focusing strictly on the educational aspects of museum work. During summer, the reconstructed environments are manned with staff dressed in accurate copies of Viking clothing, demonstrating various crafts and activities and actively engaging the visitor in the process.

During the summer season, a number of special events take place, such as the annual Viking Market, the re-enacted Battle of Trelleborg, and the traditional midsummer’s bonfire (here taking the shape of a dead chieftain being burned in his magnificent long-ship).

The circular fortress Trelleborg is situated west of the village of Slagelse. Together with the similar fortresses, Aggersborg at Løgstør, Fyrkat at Hobro and Nonnebakken in Odense, they constitute a complex of large and distinguished monuments from the Viking Age.

Two Scanian sites in southern Sweden can possibly be added to this group; Trelleborg in Ystad belongs – although differing in details – to the group, which is also true of Borgeby in Lund, although excavations there have been limited so far. The engineering skills, demonstrated by the
forts' stringent geometrical construction, are a constant source of reflection.

As the first of the forts, Trelleborg was excavated as early as the 1930s, and today the fortress site can be regarded as quite well documented. The dating, to about 980 AD, could be determined when dendrochronology joined the archaeological dating methods; on the other hand there is no clear idea of or unity around the fort's function.

The earlier viewpoint that the fort had direct connections with the large Viking raids to England, has been replaced by others – as a stronghold in connection with Harald Bluetooth's national assembly or as a short-term barracks in connection with a military dispute against the German emperor.

These discussions will certainly continue. New wisdom can always be obtained from such a place, if new investigations are performed. Several investigations have been carried out previously, but on the whole everything regarding the circular fortress in archaeological terms has seemed to be in order until now.

The same cannot be said about the area surrounding the fortress. The interaction between Trelleborg and its immediate surroundings has never been thoroughly clarified, and this is a situation that recurs at many of our central localities. The question is interesting at any rate, because when such a gigantic fortress was suddenly placed in the middle of a local society around 980, it must have had quite an effect, to say the least.

For a long time the Museum at Trelleborg has wished to get a closer glimpse of this interaction, and when a research project in Vestsjaelland county opened opportunities to study the so-called central places from the late Iron Age more closely, the question could be raised again.

The undertaking had two different "parts". Firstly, the archives, collections and reports of finds were examined and registered to create a necessary survey of the archaeological localities in the region. Secondly, the ground in the immediate vicinity of the circular fortress was investigated. Both parts proved to bear fruit, the latter showing impressive results at least in its first round of activity. Not far from the fortress' rampart a large number of objects emerged from the ground. Even if they themselves weren't really magnificent objects, they were nevertheless worthy of attention.

The general conception is that the mighty fortress must have dominated its surroundings and that the properties immediately surrounding Trelleborg were subdued, but a considerable part of the new finds are quite expensive objects. Beautifully decorated buckles, fittings and jewellery in silver and bronze, a few of them even gold-plated, were found in a delimited area, which shows that they actually belonged to this place, and were not just lost by warriors on their way to and from the fortress. Several weights, Arabic silver coins and silver jewellery cut into pieces give evidence of lively trading activities in this place.

An almost insignificant, small funnel-shaped object among the finds plays an important role – a so-called casting-cone of bronze, occurring when the liquid metal solidifies in the mouth of a casting mould and then is broken off the cast material. A find like this will of course not attract hordes of visitors through a museum, but it has nevertheless great importance as proof of handicraft production. In other words, an industrious trading centre lay close to the fortress rampart, in the garrison's backyard so to speak. We weren't aware of that, to express it mildly.

Of course it is too early to draw any major conclusions from the find, but it makes us think that the surroundings were perhaps not so subdued as we've assumed until now. The impression is a flourishing activity that went on splendidly side by side with the Trelleborg. Perhaps future investigations will show that Harald Bluetooth not only brought pyres and fire when he built his fortresses.

That this trading place was founded in connection with the fortress doesn't seem probable. Some of the objects that have been found are centuries older than the fortress and the objects stretch over a very long period of time, from the Iron Age well into the 15th century. All in all, the find material gives the impression of reflecting civil activities. Only one piece bears witness to fighting and war, and that is an almost intact hilt, which has adorned a sword sometime during the 8th century.

There is a massive dominance of more peaceful objects. For instance two silver pendants shaped as male faces. One of them is brutally sawn off under the nose and has been used as a means of payment. Another pendant is made of bronze and is completely intact, aside from a broken loop. Such a wealthy trade and production place, that the amounts and character of the new metal finds give expectations of, is interesting in itself, but things are made...
At the time of writing, we are looking into the possibilities of starting a proper archaeological preliminary investigation and more systematic scanning. Additional guesses about the character of the new finds’ site – until further results are at hand – serve no purpose. However it should be mentioned that traces of an older civil settlement were found at Aggersborg, which was abandoned at the time of the fortress’s establishment, and that a number of production finds were found in the excavated part of Fyrkat.

On the very site of Trelleborg, evidence suggests older cult activities as well as a younger. These things may well play a central part in a coming review of these circular fortresses. Right now the new finds are being cleaned up, preserved and more closely analysed and, after that, hopefully exhibited at Trelleborg where they will contribute to placing the fortress in a wider perspective for the visitors.

The same goes for another find that is being preserved at the moment. The Tide stream, like many other waterways regulated in modern times, was brought back to its old location below the rampart in 1994. On this occasion, shaped wooden objects came to light, and, for want of something better, a local amateur archaeologist took custody of them.

During the following six years these finds were kept carefully in obscurity in a water-bath on a farm, but in the beginning of 2000 the Trelleborg museum got wind of the situation, after which the objects were brought to the National Museum in Brede, Copenhagen, for preservation.

Among the wooden objects were parts of a smaller boat, a wooden plate, different shaped wooden artefacts and a sharpened oak pole, where the annual rings will hopefully be able to provide an exact dating. A piece of woven material about 25 x 25 centimetres aroused attention among the curators, because the weaving technique seems unknown up to now. The material is unusually thick, almost like felt, but it is clearly not felted.

It is probably some sort of domestic textile, a horse-blanket or a cloak, but we need to await the completion of more detailed investigations before giving a final answer about its use. However the circumstances around the find may indicate that the textile is connected with the wooden objects time-wise – and thus, probably also with the fortress.

Unexpected, encouraging traces that have now appeared at the well-known circular fortress, individually seem to give promises of new knowledge. One can only hope that it will be possible to obtain the financial means to have these possibilities thoroughly examined. It is hardly the last time new things will appear at Trelleborg.

Further information – including a calendar of activities – can be found at www.vikingeborg.dk (English version available).

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www.skalk.dk

About the author

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Handicrafts

The establishment of towns in northern Europe in Viking times was linked to the movement of people from the countryside into the towns. This gave rise to a gradual division of labour between countryside and town. While the countryfolk were specialised in producing an excess of food to supply the towns, the townsfolk created increasingly specialised handicrafts, the products of which (e.g. jewellery and combs) they could then sell to the rural population.

Hedeby’s wealth of well-preserved finds enables us to reconstruct a detailed image of the handicrafts and trading activities of its population.

Highly specialised metalwork had reached a remarkable technological level. From the finds we can see, for example, the goldsmiths’ complicated methods of production. Specialised craftsmen melted glass and worked it into beautiful beads. Small stones for games, pendants and beads were made out of jet and amber raw materials. Knife handles, stones for games, dice, hairpins and combs were made of stag and reindeer antlers. Corresponding finds indicate that shipbuilding and repairs were also carried out in Hedeby, which is to be expected of such an important trading area.

The blossoming foreign trade required a developed payment system – a monetary economy. Coins were minted in Hedeby from 825 AD, making it the first and oldest mint in northern Europe. In the 11th century the settlement began to decline, the cause of which is still not clear. Lootings and pillage (1050 AD and 1066 AD) accelerated this process. Its function was taken over by the settlement of modern-day Schleswig, which is situated only two kilometres away on the north bank of the Schlei.

Only five percent of the area of Hedeby and one percent of the harbour have been excavated until now. However, this is a more extensive area than has yet been investigated in any other comparable Viking settlement.

Wreck 3

This ship is a large Scandinavian cargo ship. The ship was 24–26 m long and amidships 5.70 m wide. Its construction was particularly high-sided and robust, and had a load capacity of at least 40 tons. Five to six men were able to sail such a ship, and if necessary, the number could be increased.
Ale in the Viking Age

The construction of the Viking Age Village in western Sweden in the municipality of Ale, is being conducted as a training project in ancient building methods. Alongside the practical aspects of the construction work, the project training includes instruction in history and archaeology, presentation methods, forging, tillage and cultivation, wood-carving, needlework and the crafting of wooden tools. The courses are being run by archaeologists, drama instructors, building carpenters, specialist instructors and lecturers.

The following article is the first in a series of articles about the ancient handicrafts and the techniques that the Ale Viking Age Village project participants are learning as part of their training.

Herring-bone pattern

As part of our Ale Viking Age Village reconstruction work, we are endeavouring to replicate and use the types of tools and methods that were used during the Viking period. The first known method for creating a façade on buildings in this area was that of using an axe to hew out the timber to give it a decorative pattern. This method was widely employed at least from the Viking Age right up to the Black Death in 1350. When this epidemic swept across the country, about one third of the population was wiped out, with the result that practically no construction work was carried out for a whole century. Naturally, this meant that numerous skills fell into disuse, including the method of herring-bone pattern. When construction work finally got under way again, the only method that was applied was that of rough-hewing, whereby the carpenter used a broad-axe to hew more across the grain.

Herring-bone pattern has often been interpreted mainly as a technique for producing ornamental decoration, but the carpenters were, quite simply, extremely skillful in the way they handled their axes. The main purpose was to cut material in order to hew out the right dimensions. The herring-bone pattern comes from the carpenter's endeavour to always hew the wood in the same direction, in order to achieve a fair, smooth and water-repellent surface.

From the medieval buildings in Sweden and Norway where I have studied herring-bone pattern surfaces, there is a great deal to be learned about the design of the axe and the methods used by the carpenter. The basic principle for herring-bone pattern is that the timber is hewn along the direction of the wood's grain and that the axe cuts away from the wood, which is achieved by using an obtuse angle on the bevelled or short edge.

When the surface is illuminated at an oblique angle, the start marks are accentuated and since these still remain it is possible to see that the carpenter always hewed away from the finished surface, with the blade pointing in the direction of the unworked surface. Also, when the wood's grain was twisted, the carpenter often hewed several edges on a level down to the pith using the same grip. He would then turn the log upside-down and hew the other way. If the wood was straight-grained, he could hew in both directions on the same side of the pith. On such timber, it can be seen that the carpenter simply changed his grip on the axe at the end of the log and worked in the other direction on the same side of the log. The carpenter thus avoided any unnecessary moves. This resulted in the herring-bone pattern.

The pattern was not always symmetrical. It is evident that the experienced carpenter changed grip when he came to a branch. At that point he would instead hew a couple of distinct strokes towards the branch from the other direction in order to prevent the wood from splitting.

Obviously, the quality of the material was important, not just for the end results but also to make the work of the carpenter as easy as possible. It was aspects such as these that were taken into consideration by the craftsmen who only used edge-tools.

Magnus Börjesson, carpenter and instructor.

The Ale Viking Age Project was started by Ale Municipality in 1999, with support from EU’s Regional Fund/Norway through Interreg IIC Nordsjön (trans-national co-operation in the North Sea region) with the aim of collecting and spreading information and knowledge about the cultural heritage of the Viking Age in the North Sea region. In autumn 2001, the project became a cultural tourism project supported by the European Social Fund and the Ale Employment Office.

For more information about the Ale Viking Age Project, please call +46 303 - 33 09 35 or visit our website on www.alevikingeid.nu
Obituary

Thor Heyerdahl: Personal reflections on his last year

By J Bjørnar Storfjell

On 18 April 2002, Thor Heyerdahl, perhaps the best known Norwegian in the second half of the twentieth century, died peacefully in his sleep at the family home in Colla Micheri in Italy where he had gone to spend the Easter holidays with his nearest family around him.

On Saturday, 21 April 2001, at about 7:00 pm I greeted Thor Heyerdahl and his wife Jacqueline Beer Heyerdahl along with his assistant Anne Nyström in the lobby of the airport hotel in Moscow, Russia. I had just arrived from London, England where I had been living outside the metropolitan area for almost three months. Thor looked just the same as when I said goodbye to him and Jacqueline in Tbilisi, Georgia early in the morning on Saturday, 9 September 2000. At that time I had spent some time with Thor and his wife when they visited the Kish Excavation in Azerbaijan where I was working and he was renewing his interests in the history of the Caucasus region and its possible relationship with the early history of the Nordic region of Europe.

As early as on his first visit to the Caucasus in the early 1960s, Thor had been aware of the similarity of some of the Gobustan, Azerbaijan petroglyphs with petroglyphs in Scandinavia, especially the petroglyphs of Alta, Norway. Even though the two sites reflect different periods of prehistory, the similarity was still noticeable. Nevertheless, Thor was interested in investigating the possibility of other cultural connective links between the Caucasus region and Scandinavia.

That was the reason for his visit to the region in the autumn of 2000 when I spent a week travelling with him and his wife Jacqueline in Azerbaijan and Georgia. He was seeking to answer some questions that had arisen from his reading of Snorre Sturluson. According to Snorre, writing in the 13th century AD, Odin was supposed to have migrated from the region of the Caucasus or the area just north of the Black Sea near the turn of the era. Thor wanted to find out if there were any material cultural remains that could lend support to such a cursory reading of Snorre and consequently organised the Joint Archaeological Excavation in Azov in 2001.

That is why I met him in Moscow on April 21, last year. Thor had already made contact with Dr Sergey Lukhishko of the Institute of Archaeology at the State University of Rostov-on-Don. Following clues in the geographical descriptions in Snorr, Thor wanted to start his investigations in Azov, Russia.

I worked in the Scandinavian team together with two other Norwegian archaeologists, Katharina Lorvik and Ingar Gundersen, and two Swedish archaeologists, Gunilla Wickman-Nydolf and Nils-Gustaf Nydolf, and for a period of six weeks we carried out the excavation together with our Russian colleagues. The results of the first season of excavation in 2001 brought to light more than 35,000 individual pieces of material cultural remains, all numbered and registered. Most of these items would excite only an archaeologist and offer little occasion for joy to the uninitiated. I am referring primarily to broken ceramic vessels whose many sherds filled several buckets every day. It is these unglamorous sherds that, by revealing their secrets of when they were manufactured, help us assign dates to the various layers of soil in which they were found and consequently their importance far outshines their lack of glamour.

Among the more significant finds were several fibulae, the circular ring-pins used to fasten garments, from the first to second centuries AD. They showed a clear affinity with fibulae from the Baltic region and would not have been out of place if discovered there. The same can be said about a sword found in a burial from the surplus period. After just one season of excavation we can point to a modest level of cultural connectivity between the steppe region of the Black Sea and the Baltic. It is very likely that the great rivers of Russia were the conveyors of these cultural links, something that puts us right back into an environment that Thor Heyerdahl was very
familiar with, water.

The first season in this extensive project was in Azov, Russia. The total scope of the project envisions several more seasons of excavation in and around Azov. Then the investigation hopes to move to the Caucasus, where the As and Van peoples lived in the distant past. This is all reflected in the Norse Sagas, but, as early as 2000 years before, Snorre in Iceland wrote about these people. The Van groups were referred to as a geographical term in Assyrian contemporary records of in the 13th century BC. The As are known, also in contemporary Assyrian records, from as early as the 7th century BC. This literary evidence warrants continued research in the Caucasus, not just to test the statements of Snorre, but to help us understand more about a region that has figured so prominently as a cultural bridge early in human history.

For octogenarian, Thor was one of the most energetic persons in Azov. Daily he visited every excavation site, five in all, scattered throughout the city. We Scandinavians were excavating in a strawberry garden with the kind permission of the owner who decided to forego the berries in favour of history. In the many discussions at meal times the idea of a research centre that would carry out Thor’s archaeological work was aired and began to take shape. It would be more than half a year later before it would become a reality.

In the meantime, after the excavation, work shifted to analysis of the finds and the task of writing up reports of the fieldwork. Thor continued working on the manuscript of his last book that was published in Norway in November 2001; Jakten på Odin (In search for Odin). A couple of days after Thor returned to his home in Tenerife following the book launch in Oslo, Norway, I visited him in connection with the report writing, but he had other matters to discuss.

He had been offered funding for the second season of excavation in Azov if he also established a research centre bearing his name. I was asked to set up the centre and then to direct it; it would be located in England for a variety of practical reasons.

By the middle of February 2002, The Thor Heyerdahl Research Centre was a reality, organised and registered at Companies House in England and Thor Heyerdahl was the first Chairman of the Board of Management. Now his widow, Jacqueline Beer Heyerdahl holds that position and is eager to oversee the continuation of Thor’s work in Azov, the greater Caucasus and beyond.

Beyond is especially a new project that Thor was planning in Samoa in the Pacific. He had been made aware of the existence of a structure, pyramidal in shape, which is thought to be the largest of its kind in the Pacific. In February this year he visited the site with his wife and started making arrangements for an excavation in the autumn of 2002. He wanted this to be his last project. It was in the Pacific that he started his long and illustrious career, and there he wanted to finish it. The 18th of April 2002 conspired against him. Thor Heyerdahl, perhaps the best known Norwegian in the second half of the twentieth century, died peacefully in his sleep at the family home in Colla Micheri in Italy where he had gone to spend the Easter holidays, with his nearest family around him. The Norwegian Government gave him a State Funeral in the Oslo Cathedral on April 26, 2002. His urn will be placed in the garden of the family home in Colla Micheri. Even in death he belonged to the world. He is dearly missed by all who came to know him.

An article about the excavation in Azov 2001 was published in VHM 4/01 and a presentation of the book Jakten på Odin in VHM 1/02 (ed. note).

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The woollen sail – Research in long lengths

By Erik Andersen

Since 1977, the Viking Ship Museum has conducted research on the production and use of woollen sails. From the very beginning of our efforts, Norwegian researchers have worked in close co-operation with Roskilde, and the studies have involved weavers, sailmakers, boat-researchers, groups interested in the uses and customs of the sea, textile-researchers, etc. In the course of time Faroese and English colleagues have joined us.

Last year, in August 2000, the latest result of this international co-operation was presented: the 90-m² woollen sail for the Skuldelev 1 reconstruction, Ottar, woven in 2/1 twill. Some years will pass before we have a comprehensive view of the qualities (or shortcomings) of this sail.

Four larger woollen sails were produced earlier by the Viking Ship Museum, and three of these have been in use for many years. Experience with these sails suggests that, contrary to general belief, woollen sails are not inferior to sails of linen, hemp, or cotton, for example. In fact, the picture that has begun to present itself is that a good woollen sail is quite up to the standard of, for example, a linen sail. Because of its elasticity, a woollen sail has the ability to remain smooth when sailing. At the same time, a woollen sail can evidently have a very long working life.

Various types of woollen material in the Viking Age and later

After the Viking Age and the medieval period, woollen sails were in use well into the 19th century throughout a large geographical area that includes Iceland, the Faroe Islands, the Hebrides, the Shetland Islands, Norway, Sweden and Finland. In Norway woollen sails or remains of these are still available for study. Thus, there is a considerable amount of source material for the study of woollen sails that has not been fully explored.

Research has shown that three types of weaving or binding processes of the materials...
employed were used to make woollen sails in the past. These processes were dependent on the region, the resources available, and tradition. What is today referred to as ‘two-shaft’ (1 thread over and under 1 thread), ‘three-shaft’ (2 threads over and under 1 thread) and ‘four-shaft’ (2 threads over and under 2 threads), were, in earlier times referred to as einskept, tuskept, and priskept, respectively. Both the warp and the weft in these sail types would generally have been one-threaded with right-spinning in the warp and right- or left-spinning in the weft, depending on the weave.

In the middle of the 11th century, the period to which the Skuldelev ships belong, priskept was probably quite common in woollen sails, but einskept and tuskept may still have been used. Tuskept and priskept are what we would today call 2/1 twill and 2/2 twill. The possibility cannot be excluded that very large sails in the Viking Age and medieval period may have been two-threaded, at least in the warp, but the spinning direction in the thread seems to have been the same as in later periods.

For centuries in Iceland and the Faroe Islands, the thread for woollen sails was spun on a distaff and the cloth woven on an upright loom, but by the middle of the 19th century; the horizontal loom came in use. When this transition in loom types took place in the other regions of Scandinavia, however, is still unclear. In the Viking Age and early medieval period, the upright loom was probably dominant for the production of woollen textiles.

A few archaeological finds, however, suggest that the horizontal loom was not unknown, but where and to what extent it was employed is unclear, as is the emergence of the so-called round loom. A common misconception is that on an upright loom, one cannot weave 2/1 twill, but in fact, such a loom is actually very good at this task.

General scholarly opinion has held that on an upright loom, one cannot weave long lengths of material, but with a rolling-beam at the top of the loom this is quite possible. Incidentally, a rolling-beam has been found together with the remains of an upright loom in the excavation of the so-called “farm beneath the sand,” a Viking settlement by the Godthåb fjord in Greenland.

This particular rolling-beam is identical in size and form to those that were used on upright looms in Norway in the 18th and 19th centuries. From the Faroe Islands, we know that on an upright loom, a length of 9 ells, approx. 5 m, could be woven and this is actually quite sufficient to make the low Faroese square sails. In Iceland, on the other hand, it was possible in the Middle Ages and later to weave uninterrupted lengths of 20 ells, or almost 11 m, on an upright loom.

Considering the available archaeological material for sail manufacture for the Viking-ship reconstructions, we have used 2/1 twill (tuskept) woven wool, a type that is also documented in the available ethnological material. For the production of the large amount of 2/1-twill woollen-cloth for Ottar’s sail, the threads were spun on a spinning wheel and the material woven on a horizontal loom (a foot-powered loom).

At the same time several large pieces of specimen cloth were woven on an upright loom from threads spun on a distaff. This second, parallel trial was decisively significant, since it proved that the quality of the material was not inferior when woven on an upright loom. In addition, it appeared as though there were some interesting technical differences between the two products that must be studied more closely in the future.

Initially, an upright loom would appear to make work proceed slower than a horizontal loom, as indicated by Icelandic material from the 19th century. The upright loom does not require as much space as its counter-part, however, and weaving on it appears not to be so physically demanding. Several spinners and weavers shared the work at several looms of preparing a woollen sail, whose working-life would have been considerable. Based on experience from the parallel experiments, in one year five people would be able to spin and weave Ottar’s sail that would probably last for 30–50 years.

The type of square sail employed

When we are constructing a sail at the Viking Ship Museum, we have deliberately decided to work with one particular type of woollen sail. This type has continuous vertical lengths of cloth sewn together with round seams and with transverse rope reinforcements on the sail’s backside. These seams are sewn in such a way that they do not lock the movements of the cloth. In traditional square sails, round seams were used up to the present time. Round seams give sails completely smooth joins on their front side.

When sailing close to the wind with a square sail, low pressure gives a high windspeed, which should preferably be able to pass across the sail’s surface without hindrance. For Ottar’s sail, uninterrupted 11-m lengths of cloth have been used, as such lengths were probably obtainable in the 11th century. If short lengths of material had been joined with round seams at two or three
Iconography and the weaving-length

The sails of the ships on the Gotland picture-stones have led some scholars to suggest that the upright loom could only originally be used to weave short pieces of material, because the material’s length was dictated by the set-up and height of the loom. Such a limitation is not unlikely in early times, and the chessboard pattern on the sails on the early picture-stone ships may reflect this feature. Short pieces of material sewn together with round seams would probably have functioned well as a sail.

One can imagine that each individual Viking household produced a ‘square’ (this has been observed in more recent times in connection with boat-sails, such as at St. Kildan, Outer Hebrides). The square pieces may also have been produced in different colours. The picture-stones show sails with coloured bands of material, and such diagonal patterns are attested later in both texts and iconography, but it is not possible to determine whether such bands were for strengthening the sail, for decorative purposes, or both.

It is important not to neglect the decorative aim of the bands, a style that seems to have persisted until the 14th century. On some sails, the crossing points of the diagonal bands are emphasised with a dot. This pattern was common at the time and a similar style appears on the sideboards of the 9th century Oseberg sledges.

There is a possibility that the images of sails with thin diagonal stripes as well as those with chessboard-patterns represent pieces of cloth sewn together but this does not seem likely. Plaited sails with right angles or diagonal patterns, cannot be dismissed but would have required a lot of material.

The entire body of iconographical material serves as an important source for our research, but its application should be made with caution. One cannot automatically assume, for example, that a sail depicted with vertical pieces of cloth without diagonal stripes or bands, or with square pieces of cloth, represents a linen or hemp sail; instead, such a design may well represent wool.

On the other hand, linen sails may have been equipped with reinforcements as well, depicted as coloured bands that cross diagonally or vertically over the joins. In addition, these vertical stripes can also represent rope-lines, especially when the sail is shown from the front. Naturally we do not know what kind of woollen cloth ships such as the Skuldelev 1 and Skuldelev 3 would have had as their sails, and the possibility that Skuldelev 3 had a linen sail cannot be dismissed, either.

Finally, it is perhaps necessary to stress the following: in theoretical discussions regarding woollen sails at different periods, one must be careful with theories that claim woollen sails that developed in more recent periods were superior to those that existed earlier. There is little evidence to support this idea.

With the advanced construction of the sailing-ship hulls of Skuldelev 1 and Skuldelev 3, and the advanced sailing- and rowing-ship hulls of Skuldelev 2, 5 and 6, the use of a correspondingly high-quality sailcloth product would seem appropriate.
The Kensington Runestone Forum
at California Lutheran University,
February 24, 2002

A report by Olaf Engvig

8 Goths and 22 Norwegians on
discovery journey from
Vinland over the west we
had camp by 2 skerries one
day’s journey north from this stone
we were and fished one day after
we came home found 10 men red
with blood and dead AVM
save from evil
have 10 men by the sea to look
after our ships 14 days journey
from this island year 1362

Claimed to be a hoax and surrounded by
certainty for more than one hundred years,
the Kensington Runestone has developed a
life of its own. Hardly any relic in America,
including the Liberty Bell, has received more
attention nationally and internationally.
Hundreds of articles and books have been
written about this subject. Plays, shows,
songs and jokes developed from the
Kensington Stone early in the last century,
even in Scandinavia, and the jokes have
refused to go away. The controversy around
this famed stone has made its way around the
world. Today the Kensington Runestone is as
hot a topic as ever.

In February of 2000 the Scandinavian
American Cultural and Historical
Foundation (SACHF) at Thousand Oaks,
California arranged a Nordic Spirit
Symposium together with California
Lutheran University on The Vikings:
Westward Exploration, Expansion and
Settlement with speakers from England,
Canada, Norway and the U.S. In view of the
Kensington Runestone’s long and fascinating
history for more than a century as purported
documentation of Norse explorers reaching
westward into the interior of the North
American continent, it was included in the
symposium with a historical introduction
and short panel discussion. This topic was a natural
extension of the millennium
celebration in 2000 of Leif Erikson’s voyages
to North America.

Many Americans feel that the Norse impact
on America has been poorly investigated.
People tampering with the evidence have
compromised finds that could have shed
some light on the subject.

Contrary to earlier belief, some scholars
today say that the Medieval Norse as well as
the earlier Vikings could well have sailed the
interior of the Americas, venturing on such
expeditions using the natural highway system
of lakes and rivers. To accept that Norsemen
left behind this controversial rune stone has
not been easy.

SCholars still think it is a fake, as they
believe the runic language on the stone is
indicative of a 19th century origin rather than
a 14th century origin. The most common
statement has been that the farmer Olof
Ohman from Sweden who uncovered the
stone in 1898 made the runes himself or did
so with some friends.

The panel discussion two years ago
triggered new interest to a point that SACHF
was asked to include recent research in this
year’s Nordic Spirit Symposium on
Scandinavian immigrants. Whether the stone
is a hoax or not, it is an interesting aspect of
Nordic immigrants: if it is a hoax perpetrated
by late 19th century Scandinavian immigrants
in the middle of the continent, it is a witty
and interesting one whose existence tells
much about how Scandinavian immigrants
related to their new homeland and to their
old homelands. On the other hand, if the
inscription dates to the 1300s as it purports,
then it is an important document about
Nordic immigrants centuries earlier and is
the earliest documentation of Europeans in
mid-America.

Many people believe this stone, found by
rural Swedish immigrants in the
Scandinavian heartland of the old mid-
American prairie in the late 19th century, is

Overall view of the Kensington Runestone,
today on display at the Runestone
Museum in Alexandria, Minnesota. All
illustrations: Courtesy of LuAnn Patton,
Executive Director, Runestone Museum,
Alexandria, Minnesota.
indeed a document which revolutionizes American history. However, the majority of scholars reject it.

Because of the recent research being conducted and the resulting heightened public interest, organizers of this year’s immigrant symposium added a day in order to arrange a forum for a discussion of the latest studies on this stone with an introduction by three scholars who represent different views.

Howard Rockstad, chair of the symposium, opened the Forum with a brief introduction that summarized the major works and development of the stone’s history.

While clearing land on his farm in Minnesota in 1898, Swedish immigrant Olaf Ohman found the stone embedded in a tree’s roots. His ten-year old son noticed some strange markings on the stone. As local people couldn’t decipher the inscriptions, copies of the inscription were sent to various university professors including runologists of the University of Oslo who opined it was a fake. Scholars concluded some of the runes were modern inventions, probably made by a Scandinavian-American shortly before the stone’s discovery.

That was the end of the story for a few years until in 1907 a young historian Hjalmar Holand heard about the stone, and subsequently spent his lifetime researching and proclaiming the stone’s authenticity. Many other authors have written about the stone, either defending or opposing authenticity.

One opponent with major influence was Erik Wahlgren, a UCLA professor of Scandinavian languages who wrote two books, The Kensington Stone: A Mystery Solved (1958) and The Vikings and America (1986). Wahlgren ridiculed both the stone and Hjalmar Holand, and his books were generally considered authoritative in their arguments against authenticity.

On the side of authenticity, Robert Hall, Jr., a retired Cornell University linguist, argued that certain aberrant runes which had been used to prove the stone a hoax actually proved the opposite (The Kensington Runestone is Genuine, 1982). He claimed these runes had been used several centuries earlier but knowledge of them had been lost so that experts around 1900 did not know of their existence. Other scholars did not accept Hall’s conclusions and the controversy still continues.

Recent studies of the linguistics of the inscription by Richard Nielsen and scientific analysis of the stone’s surface by Barry Hansen and others are ongoing and formed the subject of this forum.

Barry Hansen, a scientist from Wisconsin, lectured on the recent geo-physical studies of weathering and crystallization of the stone’s surface and the geological and physical features of the stone. This is an entirely new approach for the study of this stone, as Hansen noted that until recently the stone had not even been studied under a microscope, let alone modern scientific analysis techniques.

The chemistry of the surface of the stone and of the carvings seems to be very old. The researchers also reveal that the stone had been in the ground long before Ohman discovered it. Root markings on the stone, which relate critically to the story of the stone’s discovery by Ohman, require further research as of today.

The stone itself is a hard stone from the vicinity of Manitoba well suited for rune carving. The geo-physical analysis is far from being concluded but the preliminary conclusion offers a strong defense of Olof Ohman. He could not have inscribed the runes as the physical features show that they were made substantially more than a hundred years ago. How long ago has yet to be determined.

Richard Nielsen, an American engineer who has studied in Denmark, compared the Kensington Runes to rune stones found in Scandinavia. He has also looked into old diplomas, or official records, from 14th Century Scandinavia to try to find...
explanations for some of the runes that make little sense. Nielsen suggests that documents of the 1300s confirm that the language of the Kensington Runestone agrees with the Old Swedish language of the 1360s. He is still investigating and looking for clues that could help solve the controversies. He is a strong believer that the stone is an authentic document from 1362.

Henrik Williams, a language professor at Uppsala University, Sweden discussed the linguistic issues. He is a runologist and pointed to evidence for and against the stone's authenticity. He does not belong clearly among the believers or the non-believers but takes the criminologists stand to try to find the best possible solution to the many unanswered questions.

He understands that common people are caught in the middle and don’t know what to believe as the scholars themselves are so bitterly divided. Although he does not believe Ohman carved the inscription, neither does he believe the mixed dialects of the inscription are consistent with a 14th century origin.

A series of questions from the participants of the lectures showed that the audience was very engaged in the issue. The empirical sciences were complemented for their new approach in an attempt to solve the mystery. Some have high hopes that the exact sciences will do better than the rune readers have done over the years, at least when it comes to pinpointing the age of the runes – an essential in understanding the language.

Barry Hansen and his team hope to get more funding to continue research of the stone's surface.

Another question was: How do we know that the current translation is the right one? Professor Williams answered that we don’t know and that it is not likely that today’s translation is the final one. Barry Hansen answered a question about the quarry, revealing that the Kensington Stone was obtained from a naturally shaped glacial stone which originated in Canada.

The final conclusion from the Forum was that only time and more research would tell. The Kensington Runestone is still much of a mystery, just as it was a hundred years ago. If it is a hoax it is probably one of the greatest hoaxes of all time.

The Nordic Spirit Symposium is a unique annual lecture/performance program for the public, celebrating Scandinavian contributions to USA’s history and culture. It is a project of SACHF and the Scandinavian Cultural Center at California Lutheran University in Thousand Oaks, California. The topic for 2003 will be Scandinavia during World War II.

New rune stone found north of Stockholm

A previously unknown rune stone has been found in Vallentuna situated about 40 km north of Stockholm.

A farmer was clearing big stones from one of his fields. He put one smooth, nicely shaped stone (200 x 70 cm) on the edge of the field. A couple of days later he and a helper were sitting beside the stone and picked some soil away from it. Suddenly they became aware of carved lines in it and understood that it was a rune stone. They called straight away to report their find and I examined the stone the very same day.

It proved to be a completely preserved rune stone from the second half of the 11th century. The inscription is very well carved with smooth thin lines. The circle animal is biting itself in the throat. The lengthy animal body follows the contour line of the stone and the tail bends upwards in the middle of the carved area ending right below a cross at the top of the stone.

All the runes are well preserved and easy to read. The text conforms totally with the so-called rune stone formula and reads, “Olög had the stone erected in memory of Holme, her son”. This is the first certain Swedish rune-evidence of the female name Olög.

The rune stone was found in its original location. Old maps show that a smaller road passed by here. Thus the rune stone has been standing beside the road that led alongside a grave field, which is situated directly south of the find site. The stone will be raised on the edge of the field.

Marit Åhlén
Under the Hammer

PART 2

BY MICHAEL CUNNINGHAM

Part 1 of this article was published in VHM 1/02

When one examines the archaeological record there are numerous finds of Mjöllnir represented as amulets and upon ornamented rune stones. The amulets were usually worn around the neck or hung from an arm-ring and there are examples of hammers with lavish and symbolic styling, such as chevrons, which may be suggestive of rain and lightning – facets of Þórr.

A famous example of this is a hammer from Scania, which has staring eyes, an eagle’s beak and a beard (it is interesting to compare the style of this hammer with the ceremonial axehead from a 10th century grave in Mammen, Denmark).

Hammers of relatively plain construct may be seen in the find of a hammer on a ring from Laby, Uppland. Nevertheless, I feel, the hammer amulet encompasses a physical representation of the wearer’s recognition of the protection and defence afforded by Þórr in respect of the individual and their kinfolk in many aspects of life.

Hammer amulets have also been found in valuable coin and metal hoards such as Cuerdale and Golborough, both in England, and various areas of Scandinavia. The hammers would have been purposely deposited with the hoards in a protective and/or votive aspect. The numerousness of hammers of this nature found with hoards discounts accidental deposition.

The hammer amulet when worn on a ring may have often been accompanied by other miniature objects such as swords, staffs, fire-steel or strike-a-lights, or even other hammers. A good example of this was found in the Anglo-Saxon burials from the cemeteries of Gilton and Ash in Kent, England while another was recovered from Sweden. Another factor from the lore is that:

“...if [Þórr] liked, [Mjöllnir] was so small that it could be kept inside his skirt” (Faulkes 1987).

And so here may be a symbolic connection between Mjöllnir and the miniature amulets worn by folk. The use of a ring, which was also a symbol of Þórr, from which the miniature hammer was hung echoes of the oath-rings of gold and silver, such as the one taken from Þórr’s temple in Dublin in 994 AD, and the one used when the Danes swore peace oaths with King Alfred in 876 AD.

Of course Þórr is the thunderer and objects such as small prehistoric weapons or tools such as axe-/adze-heads, flint arrowheads or fossils such as belemnites or those of sea-urchins and also crystals were long thought of as “thunderstones” or “thunderweapons”. It was said that such objects fell from the heavens during a thunderstorm and sank seven fathoms down into the earth where, after the passing of seven years, they would rise to the surface.

These would then be used as charms against thunder and there are many recorded instances of them having been found inside dwellings – for instance in 19th and 20th century Denmark where thunderstones where found placed in homes safely away from prying eyes and fingers. The presence of such charms is believed to safeguard the dwelling and/or possessor against the ravages of lightning and fire.

In East Prussia it was the custom to put a finger into the perforation of a prehistoric axe-/adze-head, spin it around three times in the midst of a thunder storm before throwing it against the door of the dwelling for which protection is sought from lightning and fire.

Thunderstones could be tested as to their validity by wrapping string around them and casting them into a fire where, it was said, if the string did not burn it would be evidence that the thunderstone was genuine. From the Viking Age there is a bronze brooch from Birka, Sweden, which has a thunderstone (a fossil sea-urchin in this instance) between two goat-like animals.

The small stone axes, such as those found in Denmark, were not only used to protect one from lightning and fire alone, no they would also ward off rats, witches and trolls; to protect from disease and stop milk from souring and the butter to come in the churn. On occasion they were added to water or had dust filed off them to make a medicine. They would also have been placed in the cot of an unchristened infant.

Returning to the lore we read in Thrymskvida how Þórr disguised as Freyja behind a bridal veil in Thrym’s hall recovered Mjöllnir when it was placed on his lap to hallow the bride. The hammer/axe was used as the symbol of a wedding and further employed in the hallowing of same (although some scholars question the periodicity of this).

If for a moment one considers the function of the hammer in the hands of the smith it may be said to enable the marriage of...
metals in a catalytic manner, the result of the marriage thus being the creation of a form. In this instance, I would submit, the hammer functions as a uniter rather than a sunderer. Gender aspects also enter the equation especially in respect of the axe which, along with the hammer, is construed as a male symbol which, for example, in Mediterranean regions was placed in a deep cleft in the earth or forced into the pillar or a tree trunk - the resultant image at once symbolic and wholly evident is the legacy it articulated.

Mjöllnir also had a connection with funerary rites and mortuary practices:

"...Thór took the goats and slaughtered them, then had them skinned and put into a cauldron. [...] Thór spread the skins out away from the fire, and told the farmer and his household to throw the bones onto the skin. Thjúlf, the farmer’s son, took firm hold of a thigh-bone of one of the goats and split it with his knife, breaking it for the marrow. Thór stayed there that night, and just before daybreak got up and dressed, took the hammer Mjöllnir, raised it and consecrated the goatskins. Then the goats stood up. One of them was lame of a hind leg...” (Young 1954).

A comparative, I feel, may be found in the practices of the Saami where they attach great importance to the catching and killing of the bear. Not one of its bones was allowed to be broken or discarded. Instead the bones were carefully collected and stored until they would eventually be buried. Indeed it was a common practice in the Arctic for the bones of a sacrificed animal to be restored to their anatomical order when the remains were committed to the ground.

Such sacrifices may have been made to the thunder god. This act may serve to placate the elemental forces and ensure the longevity of nature’s cycle of abundance in respect of food supply and favourable conditions for same.

The importance of the fact that the bones are left intact is made clear in the above extract and furthered with the Saami ritual practice. Mjöllnir signed and hallowed the staves and stones by which the hammer was not just reserved for men as its presence in female graves is well attested to in the archaeological record. Again an example is also provided from the literature:

"...Balder’s body was carried out on to the ship [...] Then Thór stood by and consecrated the pyre with Mjöllnir” (Faulkes 1987).

A further symbol cognizant with Mjöllnir was the swastika and this appears on cremation urns and weapons, primarily swords. An excellent example of the swastika is found on a memorial stone from Martebo, Gotland, dated to the 5th century AD. Here the largest swastika form exhibits the four arms with each arm forming a spiral and surrounded by warriors along with two dragon-like animals.

Further examples are the swastikas present upon a number of cremation urns. The Anglo-Saxon cemetery at Lackford, Suffolk, has yielded some exquisite designs of this image. The presence of the swastika, I would posit, upon cremation urns may be a deliberate assertion linking the symbol with weapon’s hallowing and the chevrons may display the tangible attributes of lightning and/or rain. Thus: a symbol invoking protection and strength to the wielder and doom to his foe.

Hallowing could also be performed by movements of the empty hand in the form of Mjöllnir. And once again evidence reaches one via the literature when Hakon the Good attended the autumn sacrifice at the persuasion his heathen subjects. The king somewhat perturbed by the ceremony was observed to make the sign of the cross over the cup, which was passed round to honour the Gods. A supporter of the king acted quickly to avert criticism saying:

“...the King acts like all those who trust in their strength and might - he made the mark of the hammer over it before he drank” (Heimskringla, Hákonar S. 60b).

The wish for Þórr’s protection is also well attested to on a number of grave-stones in Sweden. Invoked, through the form of Mjöllnir, to deliver and receive the ancestor and hallow the staves and stones by which they are recalled.

The presence and veneration of Þórr in Iceland during the Viking Age is well known. Many of Iceland’s harbours and headlands (Thorshofn and Thorness) carry his name together with the personal names of Iceland’s settlers which bore the element, Thor. A popular story recounted the cult of Þórr is that of Þórrlíf Mostrarskegg found in Landnámabók and Eyrbyggja Saga.

Indeed Þórr resided at Helgafell and in the early days of Iceland’s settlement duelling was regarded as an authorized way to acquire land and this was reinforced by the support of the Gods, particularly Þórr.

Naturally the journey by sea from mainland Europe to Iceland was fraught with dangers. One was at the mercy of the waves and the potency of the storm and Þórr was recognised as the God of seafarers and, with the dependency on farming to sustain Iceland’s early settlers and fledgeling economy, of farmers. Such factors, among others, may account for Þórr’s importance in Iceland.

Examining the distribution of the hammer amulets it has been suggested in comparative studies with that of mainland northern Europe, that the rarity of such artefacts in Iceland may be, in part, due to a lower frequency of thunderstorms. Given such other factors as seafaring and farming it may be said that Mjöllnir was inscribed on material such as wood or sail - materials which have poor survival rates in adverse environments in the archaeological record. It may be that future excavations and
subsequent finds may address the balance. An account in Njál's Saga tells of an encounter which took place between an Icelandic poetess, Steinunn, and the missionary Thangbrand following the wrecking of Thangbrand’s ship where the poetess proclaimed the fact that Bórr had crushed the ship while Christ had been no more than a helpless shadow.

The symbolism embodied by the hammer/axe was prevalent in northern Europe from the prehistoric through to the Roman and Viking periods but gradually, due to the politics of Christianity, its form was absorbed and clouded. The creep of Christianity into the indigenous cultures of northern Europe began to stain the literature, art, crafts and the ancient beliefs and practices of ancient northern Europe. A 10th century metalworker’s soapstone mould from Trendgården, Denmark, holds the moulds for both Mjöllnir and the Christian cross.

Culture contacts and the spread of missionaries no doubt brought to the attention of heathen nobles the riches and powers flaunted by the Christian priests, thus driving this alien faith between the folk and the Gods. Indeed many merchants from northern Europe may have received the ‘Prima Signato’ – the cross mark which was a facet of the Christian convert’s first rite of initiation and instruction undertaken before baptism. This mark was a requisite for trading between heathen and Christian markets, the soapstone mould mentioned earlier evidences this. The phrase “Prima Signato” was adapted to form the Norse verb, “primisigna”.

A silver pendant from southern Iceland also exhibits what could be a “joining” of Mjöllnir with the Christian cross crowned with a grimacing beast headed suspension loop which is undoubtedly a heathen element.

The climate of change and the encroaching refashioning of ancient symbols and the like, is interesting to note that a history of Denmark, written by Einoth, an Odense priest of Anglo-Saxon roots, in 1120 AD includes in the introduction:

“The Svear and the Götar, however, seem to honor the Christian faith only when things go according to their wishes and luck is on their side; but if storm winds are against them, if the soil turns barren during drought or is flooded by heavy rainfalls, if an enemy threatens to attack with harrying and burning, then they persecute the Christian faith that they claim to honour, and with threats and injustice against the faithful they seek to chase them out of the land” (Sawyer 1993).

Folktales also preserve the old beliefs and a story which was current in northern Iceland displays another aspect of Mjöllnir:

“If a man owns a ‘Thor’s Hammer’, he will know who it is who has robbed him if he loses anything. To make this hammer, one must have copper from a church bell, three times stolen. The hammer must be hardened in human blood on a WhitSunday, between the reading of the Epistle and the Gospel. A spike must also be forged out of the same material as the hammer, and this spike one must jab against the head of the hammer, saying: ‘I drive this in the eye of the Father of War, I drive this in the eye of the Father of the Slain, I drive this in the eye of Thor of the Aesir’. The thief will then feel pain in his eyes; if he does not return the stolen goods, the procedure is repeated, and then the thief will lose one eye; but should it prove necessary to repeat it a third time, he will lose the other eye too” (Árnason 1863-4).

Another method is for a man to steal a copper bell from a church between the Epistle and Gospel, and make a hammer from it. When he wants to know who the thief is, he must take a sheet of paper and draw a man’s eyes on it, or, better still, a whole face with two eyes, using his own blood, and on the reverse of the sheet draw a suitable magic sign.

Next, he must take a steel spike and set one end of it on the eye and strike the other end with the Thor’s Hammer, saying, “I am giving eye-ache to the man who robbed me”, or, “I am knocking out the eye of the man who robbed me”. Then the thief will lose one eye, or, both, if he does not give himself up first (Árnason 1863-4).

A hammer of the type alluded to above was seen by Konrad Maurer in 1858 (Maurer was a German scholar who toured Iceland for six months in 1858). A woman who had been supplying Maurer with information had informed him that the hammer had been given to her late husband by an old woman who was said to be learned in Magic. The hammer was made of copper, with a detachable handle, which served as a jabbing spike.

The punishment of a thief by knocking out his eyes was popular in parts of Scandinavia, both in esoteric literature and practice – the latter rite was nearly always carried out by a blacksmith. Again the image of the smith. The “suitable sign” may have been that of a variant form of the swastika. German scholars of the 19th century say, that on the front of a house at Osnabrück, and also on the city gates of several gates in Silesia and Saxony, there used to hang mallets accompanied by verses. Grimm was of a mind that these mallets were actually representative of the hammer symbol of Donar/Thunor/Thor, which had once been suspended or represented at the entrances to heathen temples, and that with the advent of Christianity they found a place on churches and gates to cities as dedicatory symbols of good luck.

The hammer in the context of northern Europe, from prehistory to the modern age, encapsulates the elements of creation and destruction as it spirals to and from Bórr’s mighty grip, its legacy unending.

About the author
Michael Cunningham is an archaeologist living and working in Ireland. His main interest is prehistoric Scandinavia. He is presently studying the Viking Age and its subsequent impact on North Western Europe.

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Some of the Viking Events in the summer of 2002

June

Viking Festival in Hafnarfjörður, Iceland
June 11 – 13
Festival with about 110 Vikings, crafts, fighters, music, drama, feasts, Viking tents and lots of other activities.
Tel. +354 - 565-291
E-mail: vikings3@hafnarfjordur.is
http://www.fjorukrain.is

The Viking Play at Lindholm Høje, Denmark
June 18 – June 30
Every summer a Viking play is performed.
Tel: +45 98 17 33 73
http://www.geocities.com/vikingespl/ind-frame.html

Althing 2002, Deception Pass State Park, Washington, USA
June 20 – 23
Workshops and demonstrations are planned on the Eddas, sagas, history, runes, ale and mead brewing, traditional crafts, story telling, and much more.
Marketplace. Awards will be presented to winners of the Viking games, and other activities. There will also be special activities for children.
Email: info@irminsul.org
http://www.irminsul.org/at/atnext.html

The Viking Play at Frederikssund, Denmark
June 21 – July 7
The festival features an open-air play performed by 250 "Vikings", followed by a traditional banquet set in a recreated Valhalla. This year's play is called "Holger the Hare Hearted". There is also a Viking market every year.
Tel: +45 47 31 06 85
http://www.vikingespl.dk/engelsk.html

Midsummer Festival, Scandinavian Centre, Burnaby, BC, Canada
June 22 – 23
At this event there will be a Viking village built up and people in Viking costumes so you can experience how life might have been like in the Viking Age.
Tel: +1-294 2777
http://www.scandinaviancentre.org

Jels Vikinge spil, Jels, Denmark
June 28 – July 14
In Jels, a Viking play has been performed every summer for 25 years, this year's play is called "Den Røde Viking". A Viking market is also held here June 29 – 30
http://www.jelsvikingeispil.dk/default.htm

July

Borre Viking Market, Horten, Norway
July 5 – 7
Email: amwerner@online.no
http://www.borre-vikinglag.org/

Viking Market at Trelleborg, Denmark
July 6 – 14
The big annual market is one of the many Viking activities organised for visitors during the year.
Tel. +45 58 54 95 06
http://www.vikingeborg.dk/

Viking Market at Bronzeplassen near Kristiansand, Norway
July 12 – 14
Vikings from all over Europe, crafts, battles.
Tel. +47 37 27 41 69
http://www.bronseplassen.no/

Viking Market in Nynäshamn, Sweden
July 19 – 21
For the second time a Viking Market will be held here with crafts, food, drama, music and storytelling.
Email: jan.jonsson@toren.nu
http://www.toren.nu/

Viking Market in Fagernes, Norway
July 25 – 27
Tel. +47 922 66 191
Email: drotn@yahoo.com

Hlisöver Viking Market, Åland, Finland
July 26 – 27
At this annual event you will experience a feast for Vikings, a marketplace, games, horseback riding, axe throwing, Viking songs and theatre.
Tel. +358 (0)18 24 25 9
http://www.qlnet.fi/rus-project/saitvikmarknad.html
http://www.goaland.net

August

Hombore Ting, Sweden
August 2 – 4
This great event will take the spectators back in time to the Viking Age. Play and market, 5000 visitors last year.
Tel. +46 – 525 34 52 3
http://www.homboreby.o.se/

The Battle at Trelleborg
August 10 – 11
Battle with over 300 fighters
http://www.vikingeborg.dk/

Viking Market in Wolin, Poland
August 9 – 11
Annual festival with 300 participants (warriors, craftsmen, music and ceremony groups), Viking ships and a large archaeological excavation
http://www.wolin.pl/

Viking Market in Körunda, Sweden
August 18 – 19
Viking market with crafts, food, fights, horses and more. Attracted about 2000 visitors last year.
http://hem3.passagen.se/bofa0123/
Tel. +46 (0) 85 20 30 498

Largs Viking Festival, Scotland
August 31 – September 8
The Largs Viking Festival celebrates the Viking heritage of Scotland and in particular Largs, where the Vikings were defeated in 1263. Festival favourites include the authentic Viking village, the Battle of Largs re-enactment, traditional boat burning ceremony and a spectacular fireworks finale. A ceilidh, concerts and craft fair are other integral parts of this extravaganza.
Tel. +44 (0)1 294 324482
http://www.largsvikingeestival.com/
http://www.vikingar.co.uk/main.htm

The Viking week at Foteviken
June 24 – 30
There will be different activities all week at Foteviken and during the weekend, June 28 – 30. one of the biggest Viking Markets in the Nordic countries will take place. It will be three days of feasts, competitions, performances, lots of craftsmen and exciting goods.
Tel. +46- 40 45 68 40
http://www.foteviken.se

The Story of Saint Olav, Stiklestad, Norway
July 25 – 29
A historic play dedicated to St Olav and the introduction of Christianity to Norway is performed here every year.
Tel. +47 74 07 31 00
http://www.snk.no/english/

Moesgård Viking Festival, Denmark
July 28 – 29
Annual Viking Market with crafts, Viking ships, horses, feasts and more.
Tel. +45-89 421100
http://www.8200.dk/indslag/vikingtraef.htm

Tel: +1- 294 2777
E-mail: vikings3@hafnarfjordur.is
http://www.fjorukrain.is
It might seem a bit strange to write about movies in the summer, a subject one might think more suited for dark, drizzly autumn. But when it comes to Viking movies, there is no season, you can watch and enjoy them all year round.

The concept of furry Norsemen in dragon ships has intrigued filmmakers ever since the early 20th century. But compared to Westerns, with which it has a lot of features in common, the Viking genre never took off, so to speak. There have been several brave attempts bring it to life, but most of them fell flat as the turkeys they were. There are, however, several movies that are well worth watching, or at least good for a laugh. This listing is far from complete; those who are interested may find several others.

Let us start with the oldest:

**The Vikings**
*1958, Directed by Richard Fleischman*

This is a real treasure! It features Kirk Douglas (Einar), Tony Curtis (Eric) and good old Ernest Borgnine (Ragnar) in a lovely piece so filled with anachronisms that you simply have to love it. Einar/Douglas is a great arrogant Viking warrior, Eric/Curtis is an ex-bondsman, but nevertheless they are half brothers. Ragnar/Borgnine is the Viking chieftain of your dreams, leaving very little to wish for. Here you can find most of the clichés generally considered ‘vikingish’; furry costumes, huge mead-smelling feasts, massive battles and much more. The only cliché they seem to have left out are the otherwise notorious horned helmets. Be sure not to miss the great scene where Douglas and others in his Viking crew show off by running on the oars of their dragon ship, it will keep you smiling for a week…

**The Outlaw (Útlagin)**
*1981, Directed by Ágúst Gudmundsson*

This is an adaptation of the saga of Gisli Súrsson, one of the shorter, but nonetheless epic Icelandic sagas. The story follows the original story to a great extent with blood feuds and intricate fatalism. Most things in the film are surprisingly archaeologically accurate, even though the many beards and late 70's hairstyles make it hard to separate the different characters from each other. A clear drawback though is that the pace of the story is slow enough to put all but the most devoted to sleep.

**When the raven flies**
*In the shadow of the raven*
*1984 and 1988, Directed by Hrafn Gunnlaugsson*

Here we have two movies made by the man who is credited with creating a whole new genre, the so-called ‘Cod Westerns’. This is especially apparent in the first of the two; it is actually a mere rip-off of Kurosawa’s Yojimbo, and more recently ‘A Fistful of Dollars’. The plot: a lone avenger who by treason and cunning takes revenge for his slain family. This film is the origin of the legendary line: ‘punngur knivur…’.

The second film is an adaptation of the Tristan and Isolde epic, set in an...
early Christian Icelandic environment. Both films are the opposite of ‘The Outlaw’. They are filled with action and breathtaking scenes, but one can’t help but wonder where all the nice, reasonably authentic clothing, weaponry etc. used in the former were when these two were shot.

Sadly Gunnlaugson seems to join wholeheartedly in the mud-plague-and-rag view of pre-history. The greatest asset in the two films is actually the late actor Helgi Skúlason. No one could stare as violently as he could!

Dragens fange/ I na kamnyakh rastut derevy
1985, Directed by Stanislav Rostotskij

This Norwegian/Russian co-production never really took off. That is, it has been available in Russia, but the Norwegian version was never released on the market. That is a tragedy! Even though it has its apparent flaws it is one of the most accurate Viking films ever made. The story centres on a Russian boy, Kuksa, who is abducted by plundering, but nonetheless quite civil, Norwegian Vikings and taken to Norway. The ship-fighting scene in the Nova documentary on Vikings stems from this film. If you can find a copy of the film itself, be sure not to lose it!

The Viking sagas
1995 Directed by Michael Chapman

Here we have a turkey if I ever saw one! The initial idea may have been good, but the result is of a kind that seldom reaches the shelves of VHS rental stores, cinemas being out of the question. This film tries to take the ‘goodies’ out of the Icelandic saga treasure and put them all in the same story. Most of the actors are Icelandic, but since the film was made for an international audience, all of them speak English. The hero is played by a broiler-like fellow that wears some kind of pseudo kilt for most of the film. During the crucial (or should I say notoriously inevitable?) fight at the end he slips into a very peculiar looking chain mail ‘waistcoat’ (I lack other terms to describe it…). One of the more disgusting scenes however is when the Broiler’s father is forced to coil his own guts around a large stone (which is quite obviously made from styrene plastic). If you are looking for a great laugh and the sight of talking, decapitated heads, this is the film for you!

The thirteenth warrior
1998, Directed by John McTiernan

When it arrived it was much awaited and was actually shown at cinemas. The story is a mix between two great, but very different written accounts contemporary to Scandinavian Iron Age: Beowulf and the incomplete ‘travel diary’ of the Muslim envoy Ahmad Ibn Fadlan. Antonio Banderas made a great number out of his character, Ibn Fadlan, and there are actually some brilliant scenes in the film, for instance when Ibn Fadlan ‘learns’ the language of the Norsemen he meets.

It is a sad fact though that filmmakers, even with a Hollywood-sized budget, can’t use existing sources based upon archaeology when they make movies. In “The thirteenth warrior” there a number of characters dressed and equipped in a manner more like an adaptation of “Hagar the Horrible” than anything else. Michael Crichton’s book on the other hand is well worth reading for what it is – a fantasy novel.

These are a few of the Viking movies that have been made to date. If you get the opportunity, watch them and enjoy, be it from real joy or in malicious delight!

About the author:
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International virtual university courses about Vikings in progress!

New and exciting university courses about Vikings will be run by Viking Heritage and Gotland University College from spring 2003! These will be organised by the new section of Viking Heritage called Viking Heritage Academy and become a part of Gotland Virtual University. The courses are organised as higher education on the Web, which will make it possible for students from all over the world to be admitted. We are planning both theoretical courses, but also advanced field courses concerning Viking history. And, as usual, courses at Swedish universities are free of charge.

Right now a team is working on the curriculum and study literature. Further information will be provided in the next issue of VHM and on our website http://viking.hgo.se
Some of the most fascinating remains from the Viking Age are the ships, found mainly in Norway and Denmark. Some of them are found in water as wrecks, but a few are excavated as part of a grave. Most well known are the ship graves from Oseberg and Gokstad in Norway, or for the same reason, also the very famous ship grave at Sutton Hoo in England. But even in Denmark, ship graves are found and excavated. One of the most fascinating and well-known ship graves in Denmark was discovered by pure chance in 1934 by Poul Helweg Mikkelsen, an amateur archaeologist.

The ship and its contents were excavated in the course of two consecutive years under the direction of Gustav Rosenberg, a conservator from the National Museum of Denmark. There was practically no wood left from the actual ship, but about 2000 rivets revealed its construction.

No skeleton was found, but it was clear that the ship had been used for the burial of a distinguished person, obviously a man to judge from the grave-goods, among other things weapons, table service and riding-gear. In the forepart of the ship were the skeletons of eleven horses and three or four dogs.

A first complete publication of this tremendous...
ship grave was made by Knud Thorvildsen in 1957, and is now followed by an extensive detailed analysis by Anne C. Sørensen. The main part of the book is her PhD, but there are also contributions by Vibeke Bischoff and Kenn Jensen about computer visualization of the find and the preservation situation from 1934 to 1999 by Peter Henrichsen. The book contains 293 pages and is well illustrated with both black and white and colour photos.

Anne C. Sørensen gives a thorough picture of the ship burial and its context and also the geographical location. In her study she uses the original excavation plans and descriptions and, with the help of modern techniques, gives a profound interpretation of the ship and its content.

She concludes that the ship was a good 21.5 metres in length and almost 3 metres wide amidships, constructed mainly of oak. It was a longship with sails and room for 30-32 oarsmen and a steersman, and can be dated to around the year 900.

The grave-furnishings include a large number of items, belonging to four or five sets of riding equipment of generally high quality and the combination of artefacts suggests that the buried person was a man of high social status.

Dan Carlsson
Associate Professor
Gotland University College

Visit the Vikings' Fröjel!

For the fifth year in succession, the archaeological excavations of the Viking-age harbour and trading place at Fröjel on Gotland continues this summer. A completely new exhibition will be shown this year, where you as a visitor can catch a glimpse of the world of the Vikings.

The excavations and the exhibition will be a thrill for all those who are interested in and curious about archaeology. If you go with a guide, their expert knowledge will give you an insight into the fieldwork of the archaeologists and how they can create an image of the Vikings from the traces they find in the soil.

The new exhibition will be opened on Saturday, June 29 at 2 pm. On Sunday, June 30 there will be an activity day that starts at 10 am with crafters and different activities for children. Guided tours will be available both days. Welcome!

Guided tours
Mon–Sun 10 am, 1 pm, 3 pm 1/7–18/8

Exhibition
Mon–Sun 9:30 am – 5 pm 1/7–18/8

Excavations
Mon–Fri 9 am – 4 pm 26/6–16/8

Coffee, tea, soft drinks and ice cream are available.

For more information:
http://viking.hgo.se

This summer's excavation at Kaupang

The new excavations at the Viking-age trading port of Kaupang in southeast Norway seem to rewrite the country’s early history. What was previously considered to be a seasonal trading centre could now turn out to be the nation’s oldest permanent town! Dagfinn Skre, who is in charge of the excavation that started in May 2000 and will continue for two years, says that the first year produced evidence that Kaupang was inhabited all year round. Last summer living quarters and craftsmen’s workshops were among the new finds and archaeologists have also discovered a large chieftain’s or king’s hall 1.6 kilometres north of the settlement.

This summer the excavation continues and is open to the public from June 18 to August 23. On weekdays there are guided tours several times a day led by skilled archaeologists and archaeology students. On these tours you will get an insight into how new knowledge about Vikings is gained and you will also have the opportunity to see the latest finds.

Guided tours
Tuesdays: 4 pm 5 pm and 6 pm
Wednesdays – Fridays: 1 pm, 2 pm and 3 pm
Mondays closed

You can also book a special guided tour for groups. Contact Larvik’s Tourist Office: +47- 33 13 91 00

For more information:
http://www.kaupang.uio.no

Viking-age silver hoard found in Denmark

A large silver hoard has been found and excavated at Duesminde near Vejleby in the southern part of Lolland, Denmark. The hoard weighs as much as 1.3 kg and contains silver pendants and belt accessories. Most of the objects are Frankish – only a few are from the Nordic countries. According to Lolland-Falsters Stiftsmuseum the hoard was buried sometime between 925 - 950 AD.

This spring the hoard was displayed at Lolland-Falsters Stiftsmuseum in Maribo, Denmark.
**Vikings going East**

A new travelling exhibition from the Museum of National Antiquities in Sweden, called *Vikingar i österled (Vikings going East)* opened in the end of April at the Estonian National Museum in Tartu. Full-scale copies of rune stones that tell about the eastern voyages of the Vikings are exhibited together with local original objects.

The rune stones, often called “east-traveller stones” (östfararstenar), are examples of the close contacts that have existed between the countries around the Baltic Sea for a very long time. On these stones, for the first time in text, different Baltic geographical names such as Estonia, Semgallen and Domesnäs are mentioned.

The exhibition is small in size but it includes seven copies of rune stones and a copy of the bronze weathervane from Söderala church, Sweden. The weathervane was placed in the mast or at the prow of a Viking ship and after that it was transferred to the church.

The idea of the exhibition is that it will act as a meeting place for contacts between Sweden and the Baltic region and that it will be the basis for different local events. Therefore the copies from Sweden are displayed together with local original objects chosen by different museums in the East. In connection with the exhibition different activities such as workshops and conferences will be held.

– This exhibition is an example of the National Museum of Antiquities’ international collaboration, says Mr. Kristian Berg, the museum director. Priority is given to the Baltic Sea region. The countries around the Baltic Sea have long been parts of a common cultural area, but during the Soviet era many of the contacts had been cut off. It is now important that the contacts be re-established and that we collaborate around our common cultural heritage.

After Tartu, the exhibition will go on to Kuressaare on Ösel (Saaremaa) and later on this autumn to the Historical Museum of Estonia in Tallinn. Thereafter displays are planned in White Russia, Ukraine and Russia.

*Vikings going East* is a collaboration between the National Museum of Antiquities, The Swedish Institute and the Swedish foreign authorities in the countries involved.

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**Well, a dating problem...**

Dating an archaeological remain is not always the easiest thing to do and that is what the archaeologists at Fröjel have experienced. The well that was found during last summer’s excavation at the Viking-age harbour and trading place at Fröjel now seems not to be of Viking-age origin. Instead it dates back to the middle of 16th century. The earlier dating was based upon a silver coin from the 11th century found in the well, but also on the fact that the wooden construction reminded of a well found in Kaupang, Norway, which was built in a similar way.

Before the Fröjel archaeologists could be really sure of the dating they sent the wooden logs for preservation and dendrochronological analysis. Now they have the answer from the analysis, which states that the logs in the well were chopped down in 1547 AD. It was a slight disappointment perhaps but not surprising since the field has been used as a meadow and pastureland by the farms nearby since the Middle Ages.
Birka, on the island of Björkö in Mälaren Lake, is one of the best-preserved examples of trading places from the Viking Age. In the museum the lives of the Vikings are described with finds from the archaeological excavations and models that fire the imagination. The magnificent objects from graves show the wealth of Sweden’s first town.

When visiting Birka you will be taken on a tour through its history both in the landscape and in the exhibition. Between the 29th of June and the 18th of August you can visit the excavations where the archaeologists from the University of Stockholm continue their investigations. Opposite the museum you can try Viking-age cooking and handicraft like forging, wooden and textile crafts or you can watch theatre with masks in a true Viking-age spirit. A storyteller will take the youngest visitors to the Viking-age world of sagas and myths.

The Masters of fire
This summer’s exhibition at Birka

During our prehistory the production of iron and the art of forging was a technical innovation of vital economic and social importance. The blacksmith and forging had, judging from Norse sagas, a special part in the Iron Ages and early medieval society. The technical knowledge and art skill appears to have led to the blacksmith and his work being ascribed almost magical characteristics in the world of the saga. Similar associations have been made about the blacksmith in the folklore of later years: the blacksmith has been considered able to protect against evil. A forging hammer underneath the marital bed increased the chance of healthy male offspring and letting the blacksmith blow with the forging bellows on nettle rash made the rash disappear.

The last four years archaeological excavations on Birka have given us deeper knowledge about the town’s defence and also on its craftsmen. Last summer a smithy was found in the Garrison area near the earlier excavated Warrior’s hall. In this year’s summer exhibition, The masters of fire – The blacksmith in Viking-age Birka, you will see the most exciting findings from the forge. The summer exhibition is about the Viking-age blacksmith and his work, about forging in Birka and the blacksmith’s role in society and in folklore.

During the month of July two skilful blacksmiths will be guests in Birka. Here you can hear them tell about their handicraft, see how the production of Viking-age jewellery and other objects might have been done and you can also try to forge yourself.

The museum of Birka is open every day 1/5 – 22/9. To get to Birka you go by boat. The Strömma Kanalbolaget has departures from several bridges around Mälaren Lake, for example from Stadshusbron in Stockholm, Sweden, tel. +46 (0) 8-587 140 00. You can also get to Birka with Mälarö Skärgårdstrafik from Rastaholm on Ekerö, tel. +46 (0) 711 14 57.

Ale’s ship-setting will be re-investigated

The well-known Ale ship-setting in the south of Sweden will be investigated again. For a long time there have been disputes about the interpretation of the ship-setting. Is it a burial ground or a sun calendar? Maybe an extended archaeological excavation will be able to disperse the questions regarding the ancient monument.

Now Professor Märta Strömberg has been granted permission to supplement previous investigations. Earlier pits will be re-examined and documented again. Test pits will be opened outside the ship. Also a metal detector will be used in investigation.

All the C14-datings done during previous investigations have indicated that the Ale stones were erected during late Iron Age.

From Artefact, Internet Malmö 2002
Viking ships to Russia in summer 2003

In the ancient Russian river routes between Scandinavia and the Black Sea, one of the links was the Neva River where the large city of St. Petersburg is now situated at its mouth in the Baltic Sea. This is the motivation for present-day Vikings in several countries to participate in the 300th-anniversary celebrations of the city in the summer 2003.

The idea is that ships from different directions will sail into the city and that the daily life in the Viking Age will be displayed on the spot to the local population and tourists for about a week. At the same time a special travelling exhibition about rune stones, produced by the National Museum of Antiquities in Stockholm, is planned to be on display in St. Petersburg (read more about the exhibition on page 32).

The project is led by a working team, consisting right now of Maria Bessmert and Yngve Lundin from the Viking village Storholmen close to Norrtälje in Sweden, Peter Olausson from the Vikingaleden Society in Värmland, Sweden, (owner of the ship, Glad of Gillberga) and Ola Olsson from the National Museum of Antiquities, Stockholm. In the early summer a smaller delegation will visit St. Petersburg to discuss the arrangements with the authorities as well as archaeologists and local Viking enthusiasts. This will be a reconnaissance tour that also is supported by the Swedish Institute in Stockholm.

Do you want to know more? Do you and your ship team want to be a part of the project? Welcome to contact the Vikingaleden Society at email: eneby.gillberga@telia.com

New discoveries at the Garrison in Birka

The latest years of excavations, in what has shown to be the Garrison of Birka, has revealed new knowledge about the Viking-age town. On the upper terrace at the Garrison, remains of a magnificent house, 19 m long and 9.5 m wide, have emerged. The house differs totally from the small square houses known from the harbour area of Birka and had a completely different function. Along the walls of the house a great amount of spearheads, parts of shields (shield bosses), locks, keys and chest fittings were found. The house had a special function as a warriors’ assembly hall, intended for gatherings, festivities and religious ceremonies. The warrior we meet here is a well-equipped, educated soldier who had connections from afar with Byzantium, for example., (For more information see Viking Heritage Magazine, number 2, 2001)

The Garrison constituted “a society within the society” which needed to be supplied with food, fuel and other necessities. A vital function, which ought to have been connected with the activities at Birka, is a forge. At the last summer’s excavation the remains of forging activity was found on a terrace next to the Warriors’ Hall. What appeared were forges (forging pits), iron slag and semi-manufactured products. We can see that the forging has been extensive and intensive. Weapons have been repaired and re-forged. Furthermore other objects, such as amulets of Thor’s hammer, have been made.

Most likely weapons have been made there as well. If this is the case, this will be one of the questions that they want to try and answer during the summer’s excavations. Another burning question concerns the construction of the forge. In May, a supposed foundation of a landing stage situated next to the shore below the Garrison will be excavated. For the warriors it must have been of vital importance to be able to quickly get to the sea to defend against hostile attacks.

The summer’s excavations will be going on from the first of July until the 16th of August. The participants are scientists and students from the Laboratory of Archaeological Science, Stockholm, Sweden.

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