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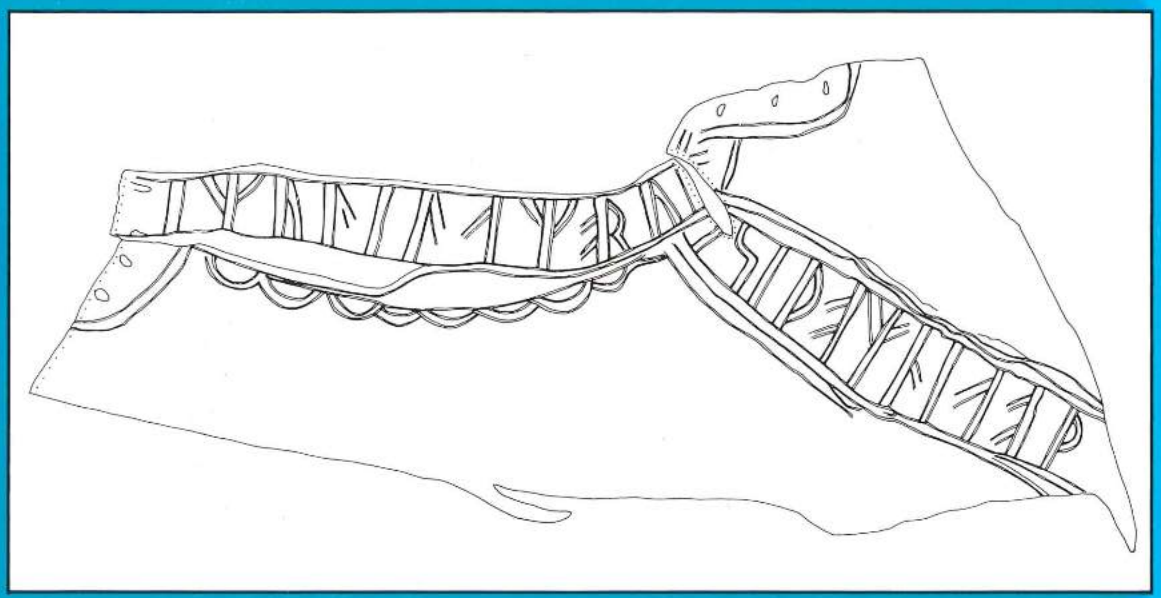

FOOTWEAR FROM THE GULLSKOEN AREA OF BRYGGEN

Arne J. Larsen

SCANDINAVIAN UNIVERSITY PRESS

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CONTENTS

FOREWORD

The remains of footwear make up one of the largest categories of finds from the excavations in Bryggen. Since it was felt that the northern part of the excavations, the site of the modern tenement of Gullskoen, would provide the best continuous cross-section of the historical development from the eleventh to the early sixteenth centuries, the work on the shoe finds presented in this volume of *The Bryggen Papers* has concentrated on the finds from this part of the site.

With such a voluminous amount of material at his disposal with its richly differentiated possibilities for dating, the author has felt the need to offer a more consistent typological classification than the somewhat divergent definitions which have hitherto characterized archaeological studies of footwear from North European sites.

In addition to the finds, the author has made use of documentary and iconographic sources with the aim of discussing footwear in a social context. The study also takes up the question of whether shoemaking was carried on in the Gullskoen area of Bryggen, even though legislation designated another location for the shoemakers in the medieval town.

The publication of this volume has been financed by the Norwegian Research Council for Science and the Humanities (NAVF).

Bergen, May, 1992
Asbjørn E Herteig
Chief Editor

PREFACE

The work involved in this study of the shoes from the Gullskoen site in Bryggen has been going on with varying degrees of intensity since the end of the 1970s, and over the years there have been many people who have aided in its completion through their help and advice.

On account of the difficult circumstances with regard to the storing of the finds, a large amount of the leather material had dried out and become hard. I am very grateful to Conservation Technician Svein Ove Agdestein at the Historical Museum in Bergen, who succeeded in solving this problem by discovering the preparation "Lederweicher", which rendered the leather supple again.

I am also grateful to Lasse Hjertholm, Senior Consultant in electronic data processing, who during his period of non-military service at the museum laid the foundations for the computer processing of the footwear data, and to Inger Kløvfjell for her help with the computer. Elin Carlsen, senior secretarial assisant at the Historical Museum in Bergen deserves a special word of thanks for typing and correcting the many versions of the draught manuscript.

The illustrations in their final form are the work of Svein Skauge, draughtsman at the Historical Museum, who has been assisted by Torfinn Finngan. I am most grateful to them both for their informal but effective collaboration.

I would also like to express my deep thanks to the Editorial Committee, consisting of Professor Knut Helle, Senior Curator Asbjørn E Herteig and Senior Curator Svein Indrelid, for their thorough study and guidance through several draughts of the manuscript.

Clifford Long from the Central Office of Historical Monuments and Sites has translated my Norwegian text into English. I am grateful to him both for the linguistic work and for his helpful comments concerning the content.

INTRODUCTION

The original intention was to investigate all the footwear recovered from the archaeological excavations at Bryggen between 1955 and 1968, but owing to the volume of the material and its condition the task had to be limited to the northernmost and easternmost area of the excavations. This covered some 2,500 sq m and corresponded at the time of the fire in 1955 to the property of Gullskoen (fig 1). It was not, however, identical with the original property known as Gullskoen, whose history can be traced back to 1305–08 (Helle 1982, 236, 706). As the shoe material is not connected particularly with the historical development of this tenement, there is no reason to pursue this question here.

The finds from the Gullskoen area were chosen because the excavations on this part of the site extended from the backfilled harbour area and the beach zone on the western side to the original dry land to the east. It covered therefore the earliest as well as the later parts of the settlement at Bryggen.

In all, 9,624 accession numbers have been identified as the remains of footwear, consisting mostly of separate uppers, soles, toecaps, thongs and strips of leather. In only a few cases have the pieces been found so close together that they can be shown to belong to one and the same boot or shoe.

Two objectives were defined in this study of the footwear from the Gullskoen site: to classify and date the material in order to record the changing fashions in footwear, and to consider the finds in a social historical context and in association with the history of the shoemaker's craft.

When classifying the material, greatest emphasis has been placed on identifying and defining the main types and their variants. The classification criteria are based on the form of closure and the height of the upper. A relatively large number of soles are so well preserved that it has been possible to measure the form and establish a classification system based on this.

Within most of the types, decorated examples have been found. The commonest form of decoration is embroidery, which have been divided into seven types based on the patterns. The decoration is dealt with separately, but is also mentioned in connection with the basic types of footwear on which it occurs.

This presentation does not contain a catalogue of the footwear from the Gullskoen site. The data on which the classification is based are stored in the Computer and Drawing Archives of the Bryggens Museum in Bergen.

For practical and economic reasons, it has not been possible to undertake a systematic analysis of the raw material, but randomly selected samples from three different types of upper and one sole have been analysed at the *Garveriforsøgsstationen* (Tanned Leather Research Centre) at Tåstrup in Denmark. According to the analyst's report the samples were made from calfskin, goatskin, sheepskin and horse hide. To what extent these four samples are representative for the raw materials which were used for the finds from Bryggen can only be confirmed or disproved by analysing a large number of samples.

The dating is based essentially on local circumstances, but comparisons are made with dated material both from other Norwegian sites and from sites abroad. The dating system for Bryggen is based on the fire-layers which were revealed and recorded during excavation. The significance of these layers of charred timber and burnt detritus has been discussed in depth by the director of the excavations, Asbjørn E Herteig (1985, 22).

During field-work, the various structures and finds were related to seven fires, numbered I–VII, which on the basis of the literary evidence were limited to the period 1170–1702 (op cit, 26). In the course of the post-excavation analysis over the past few years, it has become clear that the original number of fires and their dating had to be adjusted, and this has included the introduction of a new fire, Fire VIII, pre-dating the earliest recorded fire of 1170/71 (op cit, 33).

The time-intervals between the fires form the basis for 9 periods, each limited by a lower and an upper date, with the exception of Period 1, which represents an undefined period of time ending with the undated Fire VIII. The latest period, Period 9, covers the time-span 1702–1955. Within each period a varying number of burnt and unburnt building phases have been identified (fig 2).

The majority of the remains of shoes probably reached their final resting-place with other refuse as part of the levelling-up operations following a

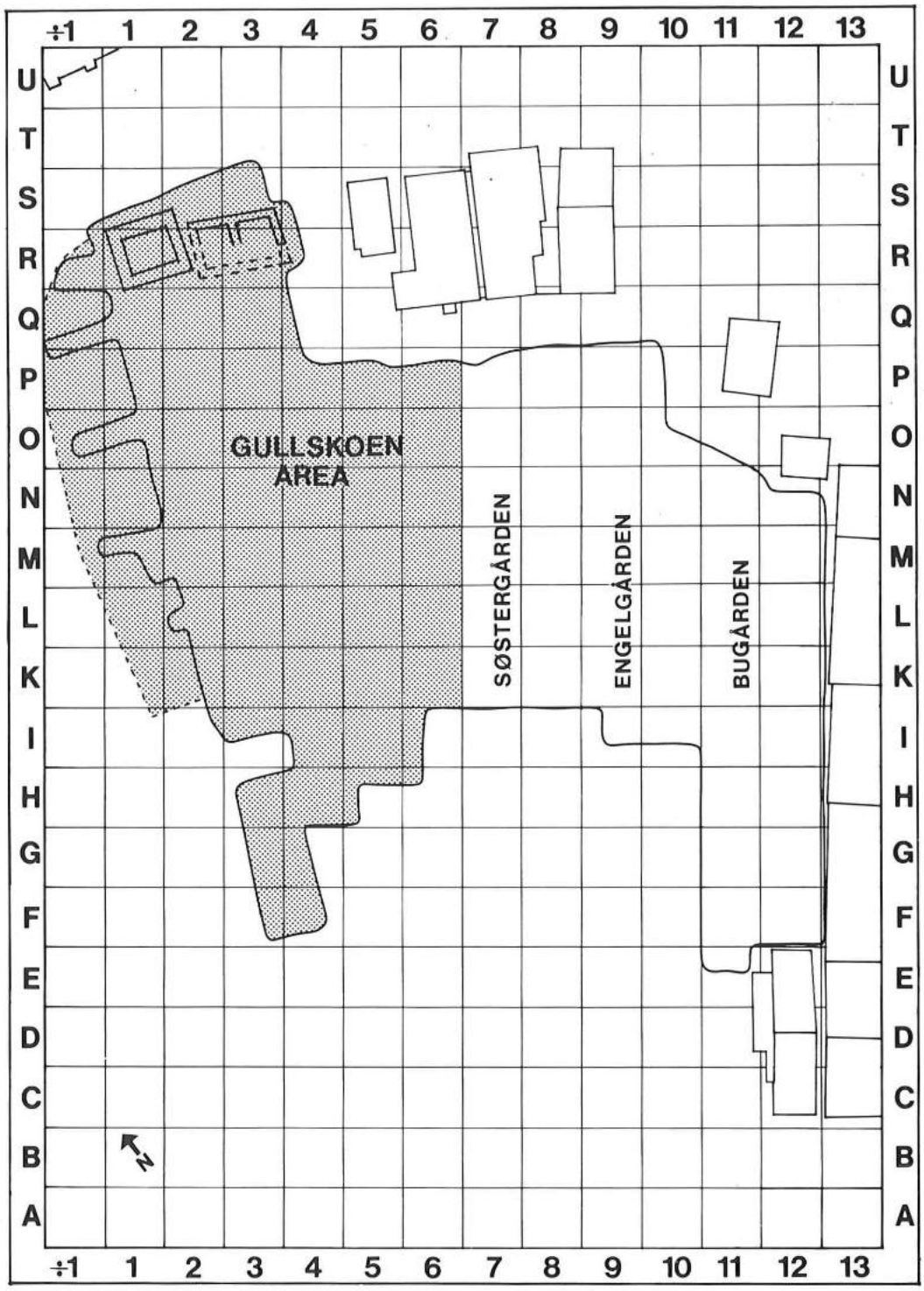


Fig. 1 The site of the excavations. The Gullskoen area is hatched.

fire or in connection with a new building phase. The circumstances in which the material was found imply that the period of use for a shoe is unlikely to be identical with the archaeological period to which it is related. For example, a shoe which is placed in Period 3 (1198–1248) on the basis of the level in which it was found was probably in use during Period 2 (1170/71–1198). However, since the changes in form or fashion for footwear clearly took place slowly, it seems justifiable to deal with the development and changes within the established archaeological periods. Remains of footwear were found in every period except Period 1, but the majority come from Periods 3–7, corresponding to the time-span 1170/71–1476.

The Gullskoen area was excavated in stages, in some places archaeologically from the uppermost deposits immediately under the 1955 fire-layer right down to the bottom layers, and in other places by mechanical excavator down to the top of fire-layers V or VI, after which the archaeologists took over. The stages of excavation and the various levels are shown in the general plan of the site (fig 3).

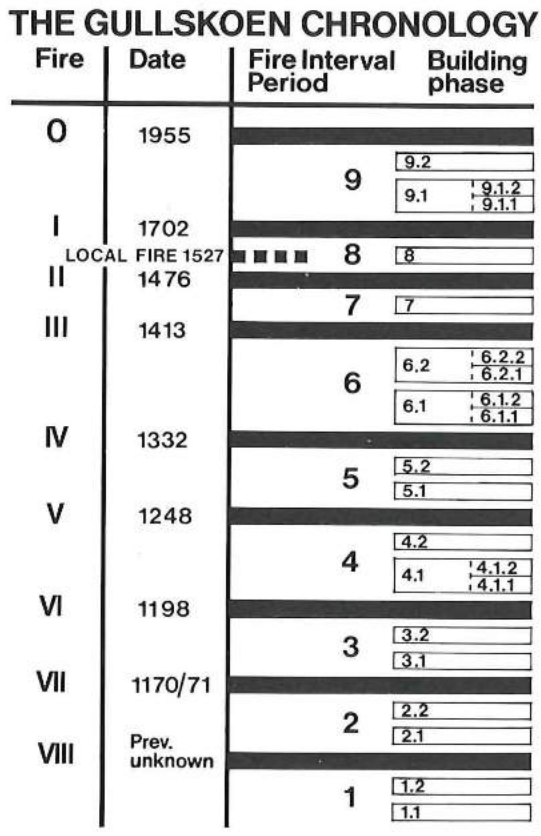


Fig. 2 The Gullskoen chronology.

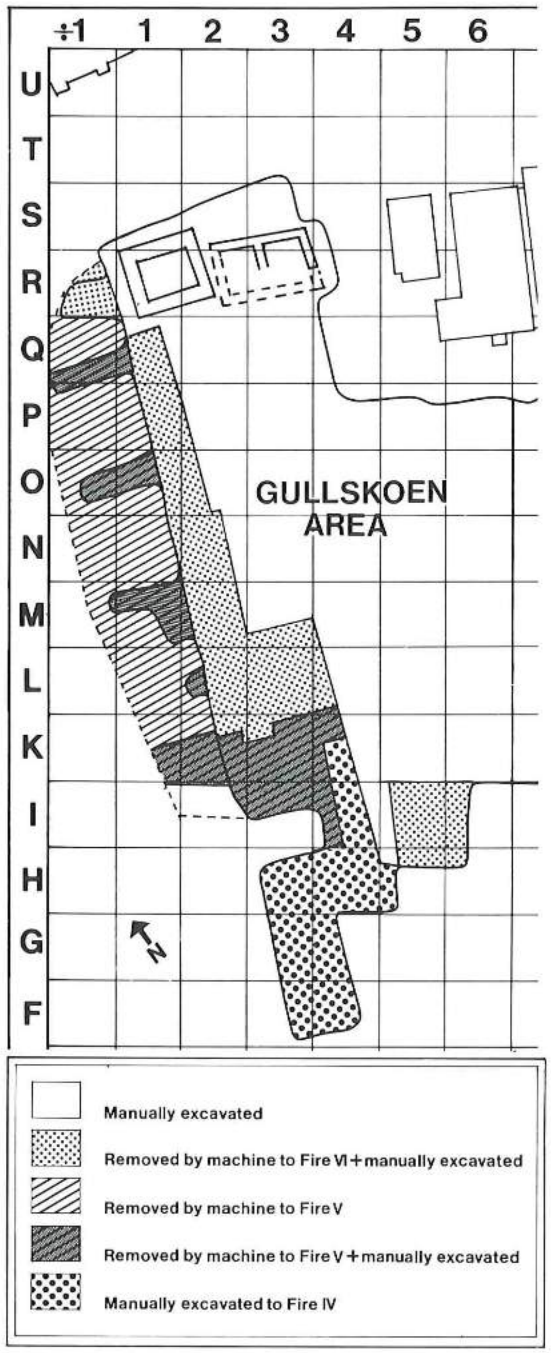


Fig. 3 Plan of the site showing the stages of the excavation and the different levels.

This variation in the excavation process has led among other things to a bias in favour of finds from the earlier periods. The chronological distribution has also been affected by the fact that organic material was better preserved in the deeper, waterlogged, practically anaerobic deposits, than in the upper, drier layers. Despite the uneven distribution between the early and late material, it can be assumed that the footwear from the Gullskoen site is representative for that which was in use at Bryggen and in Bergen generally from the mid-twelfth century to around 1500, at least as far as the main features are concerned.

For comparative material, the published finds of shoes from several prehistoric and medieval sites both in Norway and abroad are referred to.

The cultural-historical section of this report includes a discussion on the possibility of dividing the finds of footwear into groups based on sex and age, partly on the archaeological evidence, partly on conclusions drawn from literary sources.

As with other items of clothing, footwear has been and still is an indicator of the wearer's social status. Archaeological finds derived from refuse deposits, such as here, provide by themselves little opportunity for sociological interpretation. However, when taken together with the literary and iconographic evidence, the finds from the Gullskoen site can be discussed in a social context.

The footwear has not been analysed from a technical point of view, but questions concerning the location of the shoemakers in medieval Bergen are discussed. According to the Town Laws of 1276 the shoemakers were to be situated as far away from the built-up area as possible, and the quarter which was allocated to them continued to be occupied by shoemakers for several centuries. In the High Middle Ages, German merchants and craftsmen had a strong and at times dominating influence on the commercial life of Bergen. With legal consent, the shoemakers' trade was thus carried on exclusively by Germans for a long time. The question of whether shoes were made at Bryggen itself and if so, then to what extent, is discussed on the basis of the very few shoe lasts which were found and the documentary evidence.

From Viking times or earlier, less than ten shoes or shoe fragments have been recorded in Norway. The earliest are from the counties of Nordland and Trøndelag, while the best known are those which were found in the Oseberg Viking ship burial in Vestfold. During the latter part of the nineteenth century, finds of footwear were collected from more or less systematic excavations in Oslo, Bergen and Trondheim, and Sigurd Grieg dealt with some of this material in his book on archaeological finds from Bergen and Oslo (Grieg 1933). It was not until the extensive medieval urban excavations began in the middle of the 1950s that finds of footwear were collected systematically and properly recorded. The most important sites are the market settlement of Borgund in Sunnmøre, and the towns of Bergen, Oslo, Trondheim and Skien.

When the work of analysing the vast and complex collection of shoe finds from Bryggen started, there was no previous research to turn to in Norway concerning the study of archaeological finds of footwear. In Sweden, on the other hand, shoes from excavations, particularly in Lund, had been the subject of research by both master shoemakers and archaeologists (Jäfvert 1937; Blomqvist 1938, 1945; Blomqvist & Mårtensson 1961).

Jäfvert divided medieval footwear into main categories based on the way the shoe was fastened and held to the foot, and his system was taken up and developed by later researchers of Swedish shoe finds. When work was to start on the finds from Borgund, Sunnmøre, it was natural to adopt the Swedish system, supplementing it where necessary and adapting the terminology to Norwegian (Larsen, A J, 1970). The shoes from other urban excavations in Norway – Oslo (Schia 1977) and Trondheim (Marstein 1989) – have been classified according to the same system.

Outside the Nordic countries there is a large number of significant shoe assemblages from sites in both western and eastern Europe. Of the western European sites, Haithabu (Hedeby) is important since the finds here contain pre-medieval as well as medieval features (Groenman-van Waateringe 1984). There are rich assemblages of shoes from the British Isles, especially from London, which have been partly published (Grew & de Neergaard 1988), and from Dublin. Among the east European sites, Staraja Ladoga and Novgorod in the USSR, and Gdansk and Opole in Poland are among the most important. The east European material is published in reports of varying length in Russian and Polish (eg Ojateva 1962, 1965, 1970; Wiklak 1960).

With regard to the way the finds have been classified, the east European material differs from the west European by making greater use

of ethnological parallels when describing and categorizing the archaeological material. In all the published material, both east and west European, there seems to be a certain indecision concerning the classification system. For example, some features can be used to separate types counter to the primary classification criteria, such as the method of closure.

The analysis of footwear is a relatively new archaeological subject and this is probably the main reason why it has mostly concentrated on the classification and chronology of shoes and less on more cultural-historical aspects. It is hoped that the present report will contribute to the use of a stricter and more consistent classification of archaeological assemblages of footwear. Questions are also raised which help to place shoes in a cultural-historical context.

I THE FINDS

1 THE CLASSIFICATION SYSTEM

1.1 Terminology in general

In this report the parts of an upper are referred to as follows:

vamp	the front part of the upper
top edge	the edge of the upper around the foot opening
bottom edge	the transition between the upper and the sole
quarters	the sides and heel section of the upper
leg piece	the part of the upper which continues in a straight line between the instep and the top of the back
edging	the strip of leather which is folded over and stitched to the top edge around the foot opening and to the edges of other openings
heel reinforce	the internal piece strengthening the back of the boot or shoe
complete shoe	a term used for the upper (plus the leg where applicable) together with the accompanying classifiable sole

Usually most of the upper is cut out in one piece, which is referred to as the *main piece.*

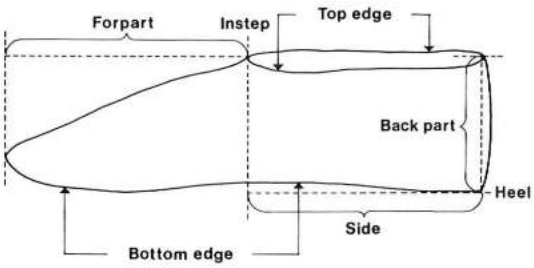


Fig. 4 The main parts of a shoe.

The terms shoe and footwear are used interchangeably for shoes with low or high uppers with or without a closure device, and for high and low boots.

On the basis of the form of closure, shoes have been divided into six main types: thong shoes, laced shoes, strap shoes, pumps, low boots and high boots.

1.2 Thong shoes (figs 5–7)

A thong shoe is defined as a shoe in which the fastening consists of one or more thongs running around the upper, passing either through a series of slits or through loops formed by vertical strips pushed through holes from the inside of the shoe. The shoes are fastened and opened by tightening or loosening the thong or thongs (fig 5a, b).

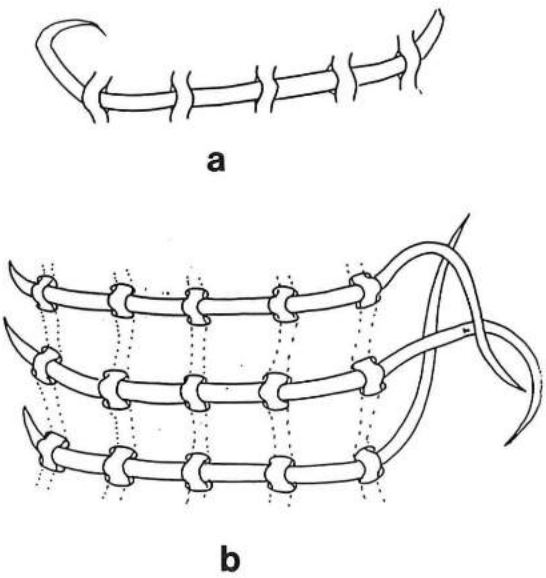


Fig. 5 Methods of fastening a shoe with thongs
a) the thong passes through slits in the upper
b) the thongs pass through loops formed by vertical strips attached to the upper.

Thong shoes have been divided into two categories, high and low. The terms low and high shoes refer in principle to the height of the upper in relation to the leg or foot of the wearer. With archaeological finds where footwear is most often in a fragmentary state, it can be difficult to see how far up the foot or leg the upper went.

In the report on the shoes from the medieval site at Borgund, Sunnmøre, the distinction between low and high was determined by the ratio between the actual height of the upper and the distance between the thonging and the bottom edge of the upper (Larsen, A J, 1970, 11). It was found that the distance between the thonging and the top edge was not dependent on the height of the upper. The thonging seems to have been placed consistently at the level of the ankle. On the basis of the measurements, shoes where the thonging came just below the top edge of the upper were defined as *low thong shoes* (fig 6), and those where the upper extended

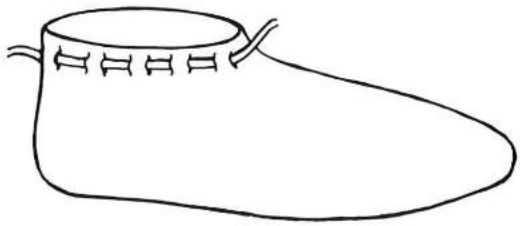


Fig. 6 Low thong shoe.

above the thonging were defined as *high thong shoes* (fig 7).

Fig. 7 High thong shoe.

This extension of the upper can be compared with the leg of a boot or stocking, so that a high thong shoe may also be classified as a thong shoe with a *high leg*.

On the basis of the height at which the thonging occurs, thong shoes can thus be divided into *low ankle*, *high ankle* and *leg thong shoes*.

There is some foundation for the hypothesis that various types of "ankle shoes" existed: in Håkon Håkonsson's Saga there is a reference to an event in Oslo in the 1240s where Guttorm appears in *okulskuaðr*, a term which has been translated as "ankle shoes" (Fms XX, 512; Norges kongesagaer 1914, 208).

1.2.1 Low ankle thong shoes (figs 8–12)

On the basis of the different way in which the instep is cut and the position of the thong holes, the low ankle thong shoes from Borgund have been divided into 5 sub groups, Variants I–V (Larsen, A J, 1970). Of these five variants, I, II, III, and V have been identified among the Gullskoen finds.

Variant I (fig 8)
The instep is cut in a curve towards the toe. The thong holes follow the curve from either side to the middle of the instep, leaving a c 2cm wide gap in the centre. There is evidence that the ends of the thong were tied together at this point.

Variant II (fig 9)
The instep is cut in a curve towards the toe. The thong holes follow the curve in an unbroken line. There is no indication among the finds to show where the ends of the thong were tied together on shoes of this type.

Variant III (fig 10)
Shoes belonging to Variant III have a cut-out in the instep going towards the toe. The thong holes are made in the vamp, running from both sides towards the cut-out.

Variant V (fig 11)
There is a curved cut-out in the instep running towards the toe, into which a c 2cm wide piece, called an *instep insert*, has been sewn. The thong holes are either close together or wide apart. The two ends of the thong were tied together in the middle of the instep.

In a few finds the insert is still attached to the upper by the remains of the thong. Otherwise, the seam along the instep part of the main piece is a clear indication that the upper had an instep insert.

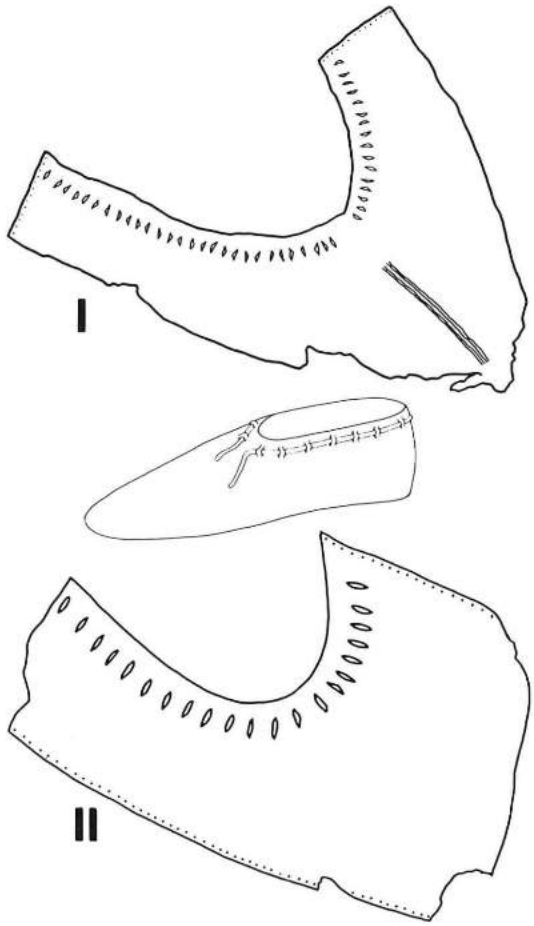


Fig. 8 Low ankle thong shoe, variant I.
Fig. 9 Low ankle thong shoe, variant II.

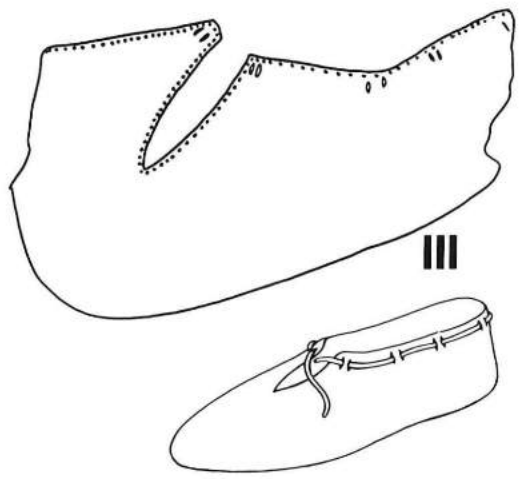


Fig. 10 Low ankle thong shoe, variant III.

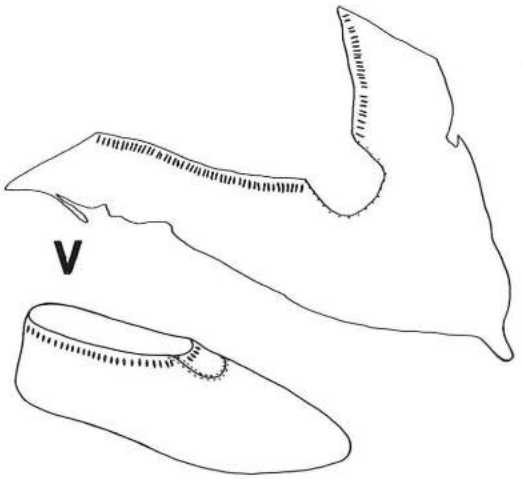


Fig. 11 Low ankle thong shoe, variant V.

Of the 189 low ankle thong shoes, 33 could be classified as a variant, distributed as follows: Variant I, 15; Variant II, 10; Variant III, 1; and Variant V, 7.

One back part belonging to a low ankle thong shoe has a pointed cut-out to receive the point of a rear pointed sole (fig 12).

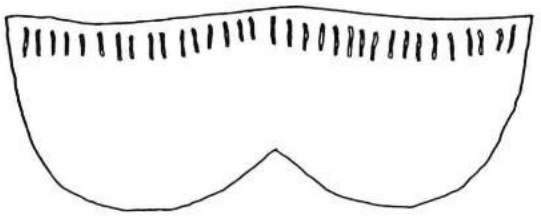


Fig. 12 Low ankle thong shoe with a notch cut in the back part for a back-pointed sole.

1.2.2 High ankle thong shoes (fig 13)

Five variants were identified among the Borgund finds of high ankle thong shoes. Those from the Gullskoen site can best be compared with Variant D from Borgund (Larsen, A J, 1970, plate VII, no.2). The upper is cut in one piece, forming the front, one side, the back and the lower part of the other side. A separate leg piece is sewn to the lower side. When made up, the shoe was fastened across the instep, but was otherwise open in front (fig 13). The thong holes go round the upper in either a continuous or an interrupted row.

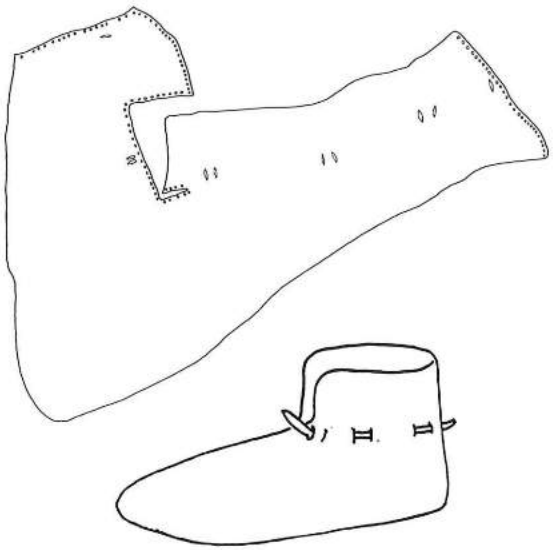


Fig. 13 High ankle thong shoe.

1.2.3 Leg thong shoes (fig 14)

A leg thong shoe is fastened by several thongs placed one above the other up the leg of the shoe. The thongs were attached to the leg of the shoe in one of two ways. In the first method they ran through slits cut in the leg piece in the usual way (fig 14a).

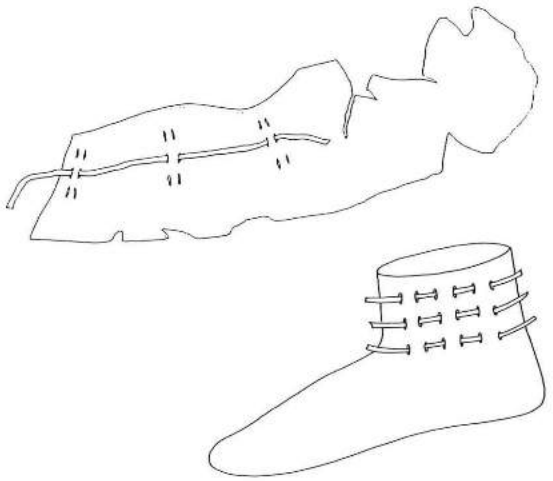
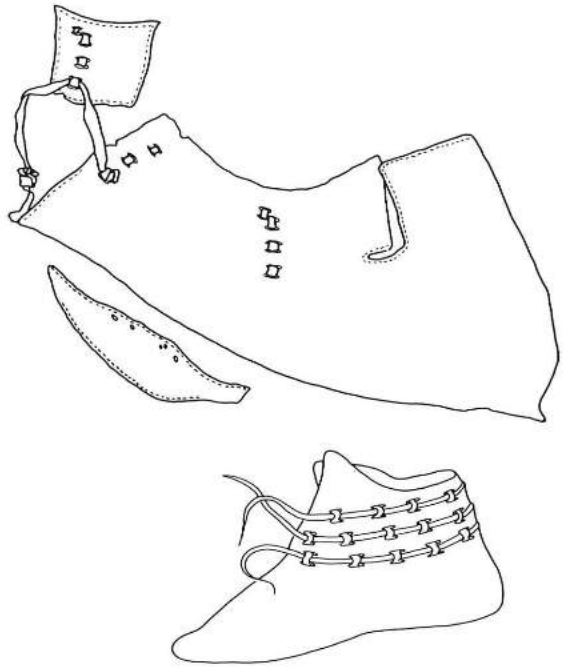


Fig. 14 a) Leg thong shoe with slits for the thongs.

Alternatively, a number of vertical thongs were threaded through a series of horizontal slits at various points around the leg and were fastened on the inside of the shoe at their upper and lower ends. Where they came through to the outside of the shoe, they were pulled out to form a series of loops through which the horizontal thongs passed, which could thus be tightened or loosened (fig 14b).



b) Leg thong shoe with loops for the thongs.

1.3 Laced shoes (fig 15–19)

The laced shoe was basically fastened in the same way as a modern lace-up shoe. Holes were made

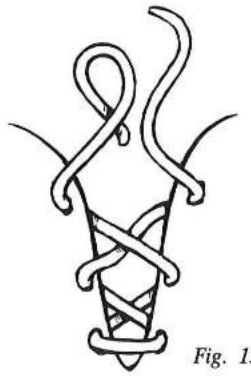


Fig. 15 Methods of lacing.

along the edges of an opening in the instep or at one side, through which a thong was passed from one side of the opening to the other. This could be tightened or loosened (fig 15).

The laced shoes from the Gullskoen site can be divided into low and high laced shoes, with variations depending on the position and manner of the lacing.

1.3.1 Low laced shoes (fig 16–18)

On the low laced shoes two variants for the position of the lacing have been recorded, front and side lacing.

Front lacing (fig 16)
The lace holes are placed on either side of a pointed opening in the centre of the instep.

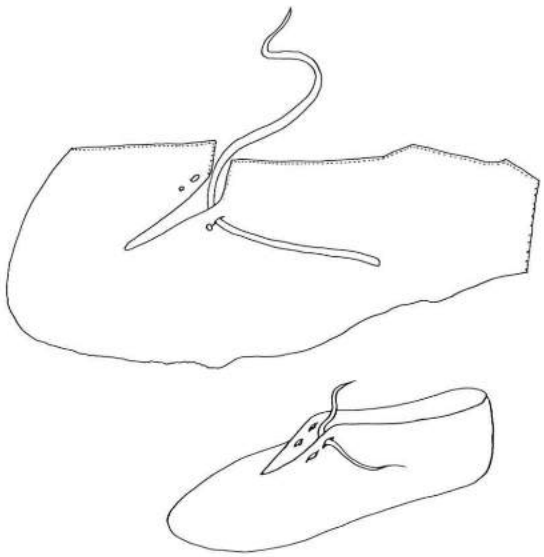


Fig. 16 Low laced shoe with front lacing.

Side lacing (figs 17 & 18)
An opening for side lacing was cut near one of the back edges of the quarters. Two variants have been recorded.

Side lacing, Variant 1 (fig 17)
The lace holes were made along the edges of the opening. A Y-shaped piece of leather with corresponding holes was sewn on the inner face, presumably to re-inforce the lace holes. The lace was threaded from one side of the opening to the other.

Side lacing, Variant 2 (fig 18)
Horizontal slits 1–1.5 cm long were cut down one side of the opening from the top edge to just above the bottom edge of the upper. The edge of the opening was then folded back along the mid-point of the slits and sewn to the inside of the shoe. In this way a series of loops were found. A separate piece of leather which was pierced and folded in the same way was sewn to the opposite side of the opening. A lace was then passed through alternate loops on either side of the opening and the ends fastened together.

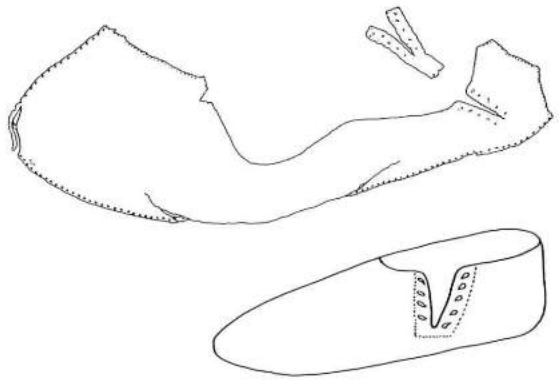


Fig. 17 Low laced shoe with side lacing, variant 1.

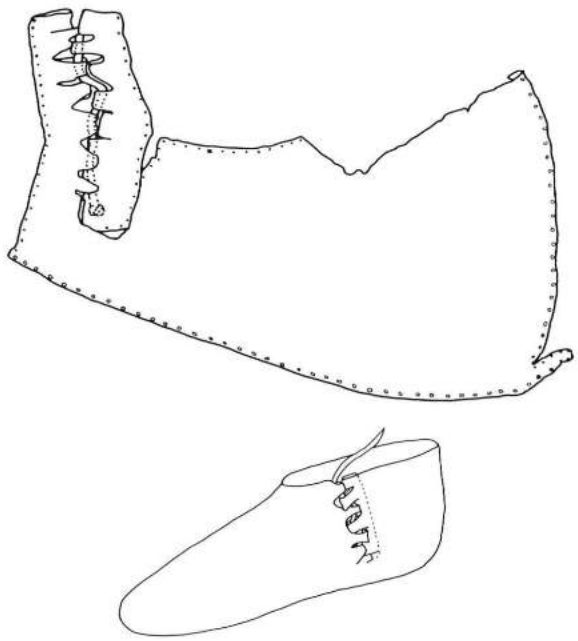


Fig. 18 Low laced shoe with side lacing, variant 2.

1.3.2 High laced shoes (fig 19)

A high laced shoe is defined by the presence of a high leg and the manner of lacing. One row of lace holes was made on the main piece and the opposite row on a separate piece which was sewn on.

All the high laced shoes from the Gullskoen site were laced in front.

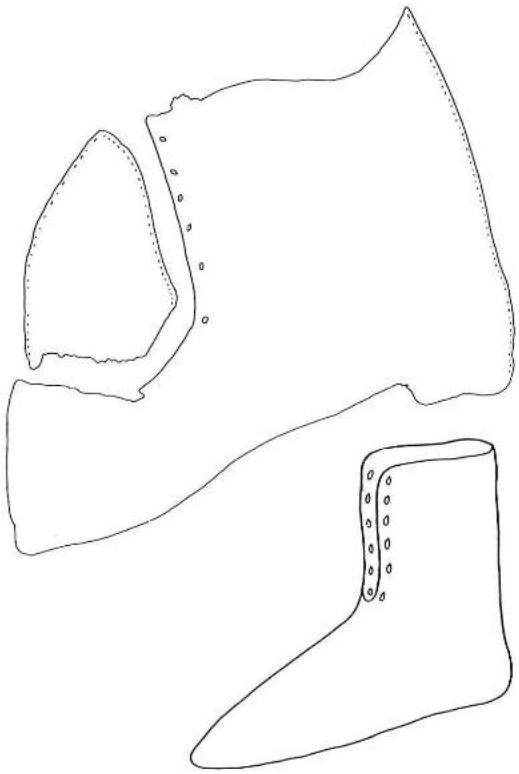


Fig. 19 High laced shoe.

1.4 Strap shoes (figs 20–22)

A strap shoe has two straps, one on either side of the instep, which are fastened together by a thong, knob, etc. In some cases, the two straps are an integral part of the main piece or the vamp. In other instances, one of the straps is a separate piece which has been sewn on. In examples of the first kind, both straps are usually present, but in the second type, only one strap has survived.

Three variants have been recorded for joining the straps across the instep:

Strap shoe, Variant 1 (fig 20)

In Variant 1 the straps were fastened together with a thin lace or thong which passed through a hole at the end of each strap. Examples have been found where the lace was knotted at either end to prevent it slipping out of the holes when the shoe was open.

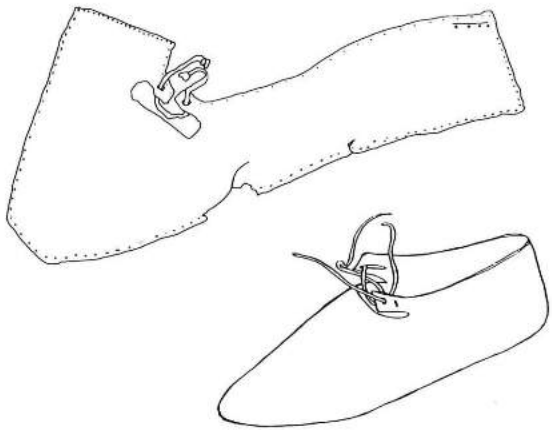
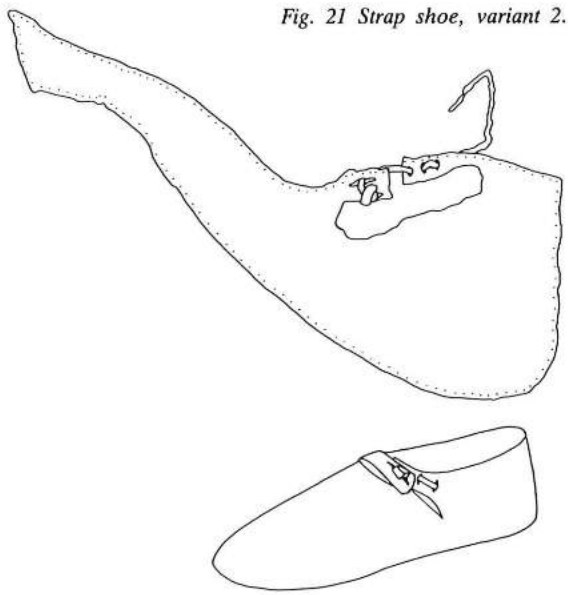


Fig. 20 Strap shoe, variant 1.

Strap shoe, Variant 2 (fig 21)

In Variant 2 a thong was attached to one strap and had a large knot at the other end which functioned as a stop when it was passed through the hole at the end of the opposing strap.

Fig. 21 Strap shoe, variant 2.



Strap shoe, Variant 3 (fig 22a, b)
In Variant 3 the straps were held together by a knotted thong which was fastened to the middle of the instep (fig 22a). In a few examples this thong was attached to a semicircular piece of leather which was sewn to the instep and which functioned as a tongue under the straps when the shoe was fastened (fig 22b).

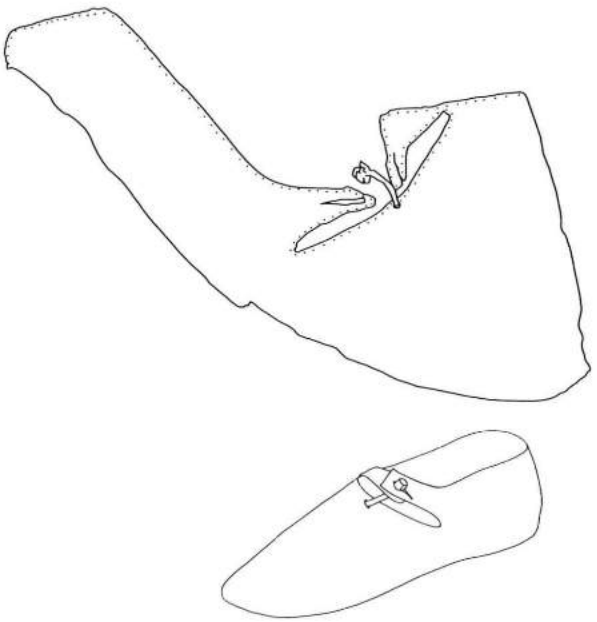
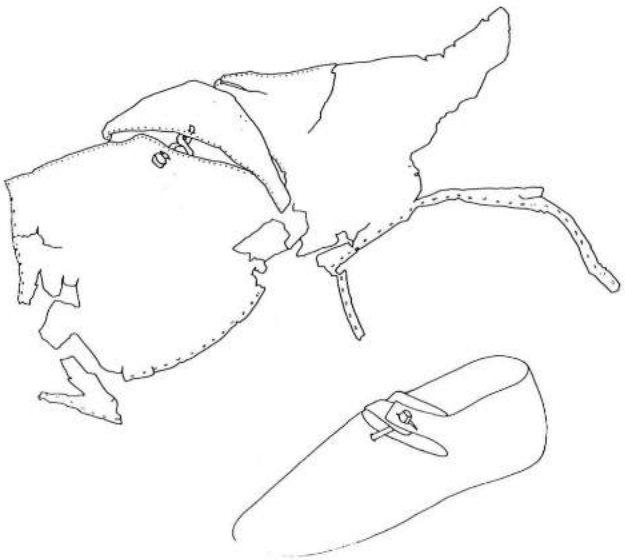


Fig. 22 a) Strap shoe, variant 3, without tongue.
b) Strap shoe, variant 3, with tongue.



The presence or absence of a tongue can depend on the state of preservation of the upper, and it is possible that all strap shoes which were fastened with a knotted instep-thong had a tongue originally.

There were 523 strap shoes in all and the fastening method could be determined in 222 of these with the following distribution: straps laced together, 67; straps joined together with a knobbed side-thong, 119; straps held together with a knotted inset-thong, 36.

Since the fastening method could not be indentified in more than half of the strap shoes and the number of examples of each variant is low in several periods, the strap shoes have been treated as a single group in this report.

1.5 Shoes without fastening

There are a large number of shoe fragments which display no evidence for the way in which the shoe was fastened, mainly on account of the degree of preservation. The majority of these finds no doubt belonged to one category or another, but some must be from shoes which lacked any fastening device. This applies to main pieces and other large parts of uppers where the fastening system would have been present and identified.

It is theoretically possible that the fastening system was placed in the side piece which was sewn to the main piece and which in the vast majority of cases has not survived intact with the main piece. There are, however, no known examples among the present finds nor in the comparative material where the fastening occurred in the side piece.

Shoes without any fastening arrangement can be roughly divided into two categories: those with and those without a leg. The latter includes uppers of low shoes which were clearly open around the whole foot-opening and for which the English term "pump" has been used. The term was also used by Jäfvert (1938, 14) who defined this kind of shoe as "a slipper-like shoe without lacing or fastening".

Shoes with a high leg where there is no form of fastening have been divided into two categories, low and high boots, on the basis of differences in the cutting of the leather and the height of the leg.

1.5.1 Pumps (figs 23 & 24)

On most examples of pumps the instep was cut in an even curve towards the toe (fig 23).

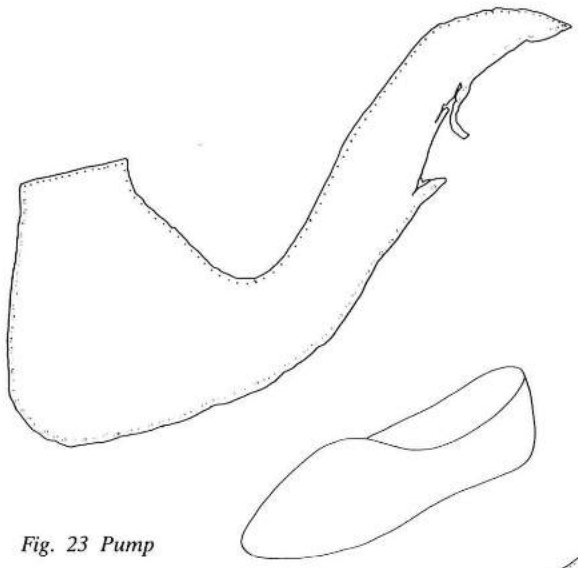


Fig. 23 Pump

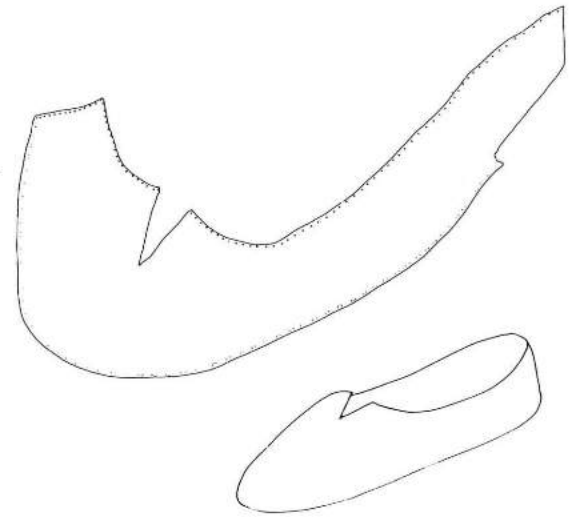


Fig. 24 a) Pump with a pointed cut-out in the vamp.
b) Pump with a tongue in the front of the instep.

Examples also occur, however, where there is a pointed cut-out in the vamp (fig 24a) and where the front of the instep is formed like a pointed triangular tongue (fig 24b).

1.5.2 High boots (fig 25 & 26)

Jäfvert (1938, 23) refers to two different cutting methods for boots. The first method, cutting in one piece, seems to be the earliest. The front, back and approximately two-thirds of the leg are cut in one large piece. The rest of the leg consists of a smaller piece sewn to the front of the main piece. The Gullskoen finds contain a possible boot cut in this way (fig 25), the uncertainty being due to the fact that there is a thong hole on either side right at the bottom of the leg. It is difficult to envisage how a thong or lace was attached and what function it could have had. The only trace of a thong and its position is a pale stripe approximately 5mm wide in the leather, running from the larger of the two holes across the instep and ending in a curve a little way down the vamp. This stripe may be the impression of a thong which was attached to the hole and which lay pressed against the upper before it loosened and came away. On the other side of the leg, there must have been a separate piece of leather sewn in to complete the leg of the boot, and it is possible that there had been a thong hole and thong in this piece, and that the two thongs were tied together across the instep. In this case this should not be defined as a boot. Another possibility is that it was originally a boot which was later provided with a fastening arrangement.

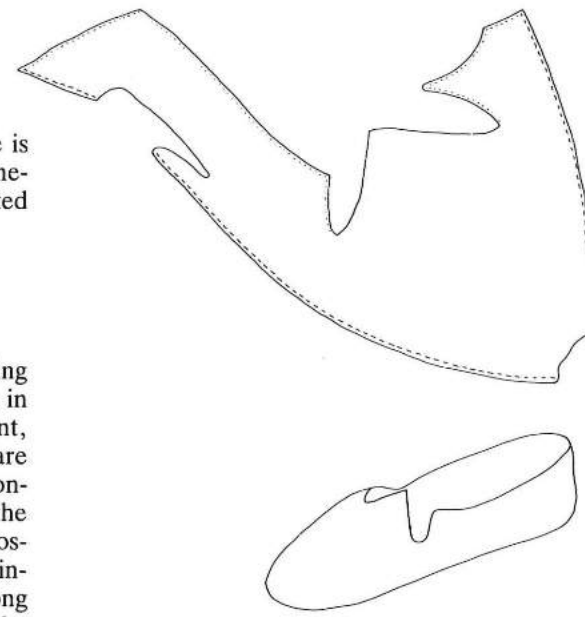
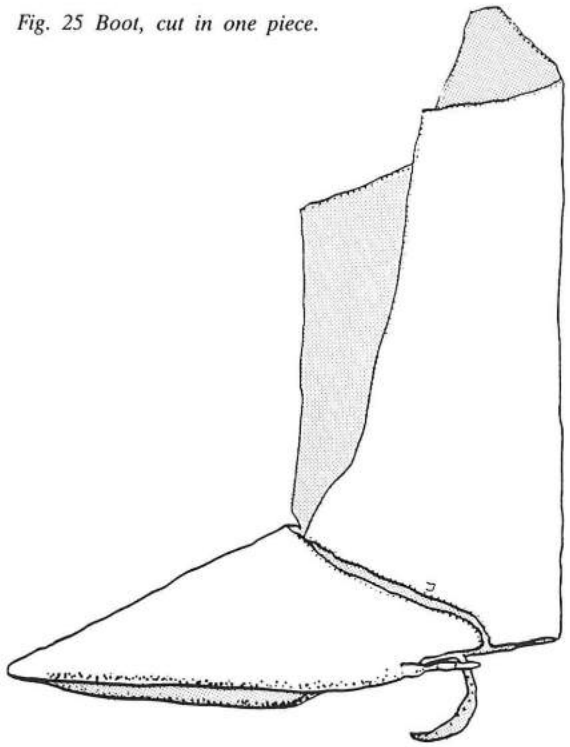


Fig. 25 Boot, cut in one piece.



In the other method of cutting out the boot, the leg and vamp are cut separately. The leg is either made from one large piece of leather or made up of a larger and a smaller piece (fig 26a, b). At the bottom of the leg a rectangular opening is made in front for the insertion of the vamp (fig 26c). It is possibly this piece for which the term *forleist* is used in medieval tax documents.

The leg was cut so that the front of the boot was higher than the back. It is difficult to measure the height of the leg, mainly on account of the varying state of preservation. Of the best preserved examples, 25 were measured from the top of the front of the leg down to the top of the opening for the vamp. The height varies from 21cm to 34cm, with an average height of 26.5cm.

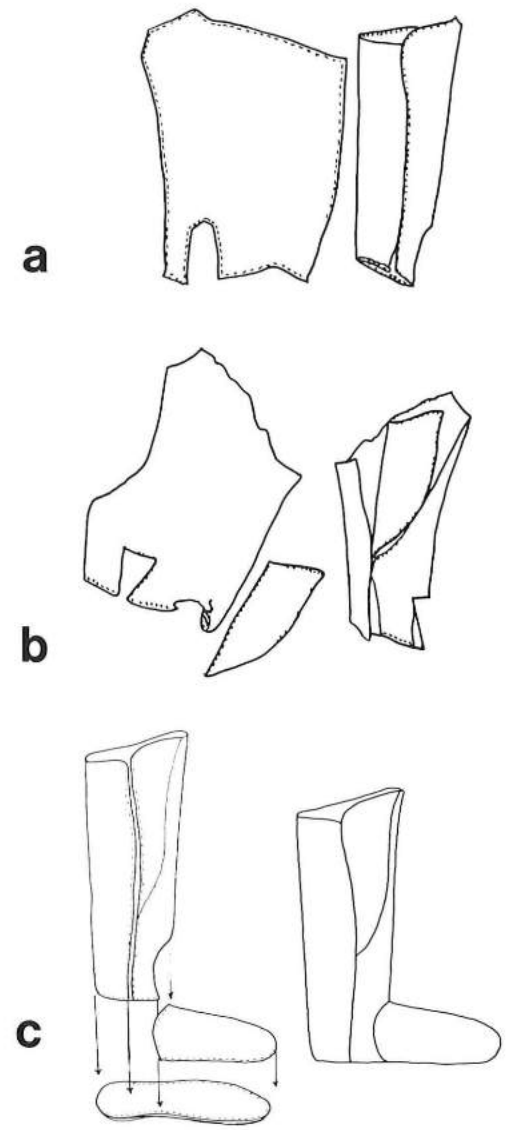


Fig. 26 Boot with separate leg and vamp
a) the leg cut in one piece
b) the leg made up from one large and one small piece
c) the joining of the leg and vamp.

1.5.3 Low boots (fig 27)

It has proved difficult to find a suitable typological term in Norwegian for footwear without any fastening arrangement and with such a short leg that the word boot is not really appropriate. In English, the term low boot is proposed.

The front part of the leg was either cut in one piece (fig 27a) or made up of two separate pieces (fig 27b). The leg was open in front.

1.6 Miscellaneous footwear

This term has been used for whole or fragmentary uppers which cannot be placed in any of the preceding categories, mainly on account of the state of preservation.

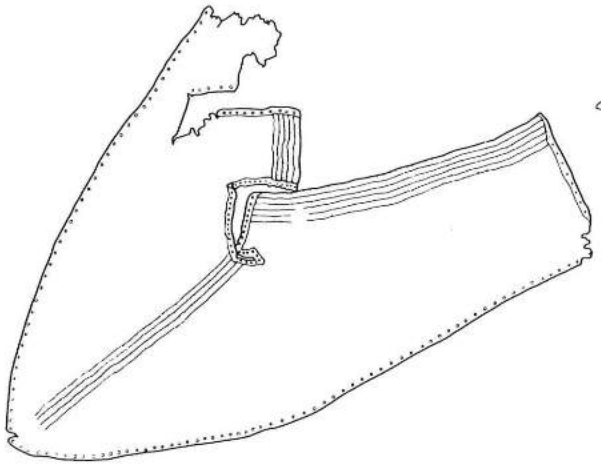
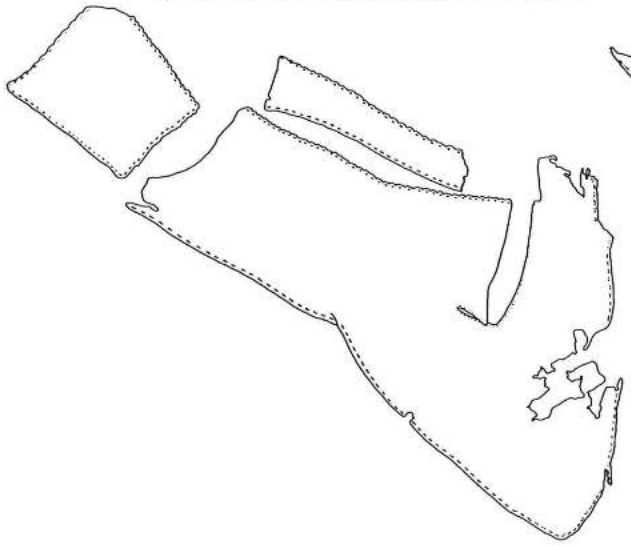


Fig. 27 a) Low boot with leg cut in one piece.
b) Low boot with leg made up from two pieces.



1.7 Edging and heel reinforcers (figs 28 & 29)

On most of the uppers there are traces of stitching which indicate that the edges around the foot opening and round the openings for fastening arrangements and other cut-outs were reinforced with edging strips (fig 28). In many cases the edging was formed in such a way that it formed a decorative element at the same time.

A number of uppers have traces of stitching where a triangular heel reinforcement piece has been sewn into the back of the shoe. The finds from the Gullskoen site also include a small number of loose heel reinforcers (fig 29).

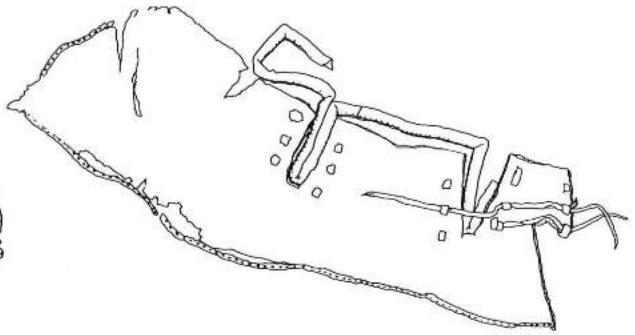


Fig. 28 An upper with edging strips.

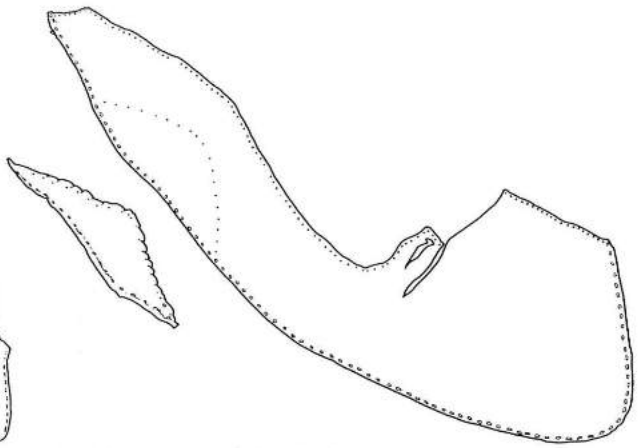


Fig. 29 An upper with a heel reinforcer.

1.8 Soles (figs 30–38)

This group of finds includes complete soles, as well as toe and heel parts, totalling 4,942 finds. After offcuts, soles form the most numerous group of finds in the footwear material, and naturally enough, they are most clearly marked by wear. Of the total, 1,379 were in such a good state of preservation that the length and breadth could be measured, and these are thus defined as complete.

In the assemblage of complete soles it is possible visually to note variations in the form from almost oval to more or less natural reproductions of the outline of the foot.

To establish a chronological and typological distribution of the soles, they have been divided into four types and four atypical variants on the basis of variations in the shape. The classification system is based on the following measurements and calculations: from a straight line, x, drawn

at a tangent to the front of the toe, A, and lying at right angles to the line of maximum length, 6 perpendicular lines were drawn at a tangent to the outer and inner curves in the front, middle and back parts of the sole. The points of contact are marked C, D, E, F, G and H on figure 30.

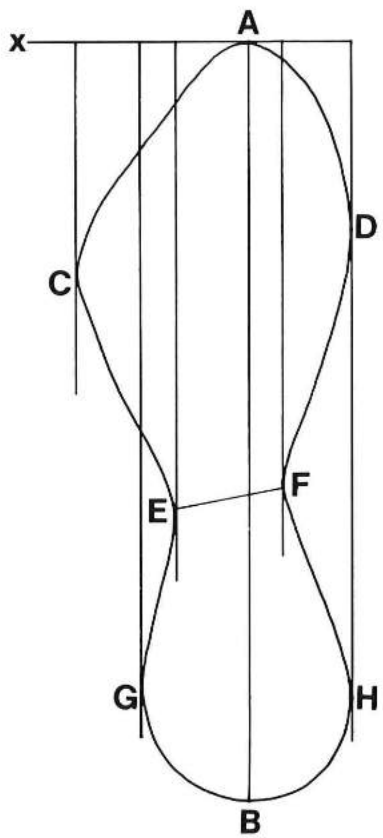


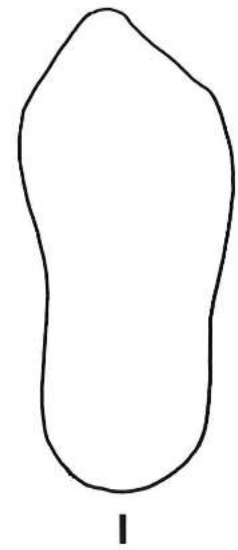
Fig. 30 The system used for measuring the soles.

The distance between the points of contact represent the maximum width of the sole in the front and back parts and the minumum width in the middle. The width, however, varies according to the length, and in order to gain an impression of the variations in the shape of the sole independent of length, the ratio between the maximum length AB and the different widths was calculated. By discriminant analysis it was found that only the ratio between the maximum length AB and the minumum width EF in the middle of the sole gave any basis for a meaningful grouping of the finds. The calculated values ranged from 2.5 to 10.1 and formed the basis for the division into groups.

Type I The small difference between the minimum width in the middle of the sole and the maximum width at the front and back gives the Type I sole an almost oval shape. The type is defined by the ratio AB/EF lying between 2.5 and 3.9 (fig 31).

Type II The width in the middle of the sole is narrower than at the back and front, and the difference is greatest with regard to the latter. The differences in width give Type II soles a shape more like the human foot than Type I. Type II is defined by AB/EF lying between 4.0 and 5.6 (fig 32).

Fig. 31 Sole, type I.



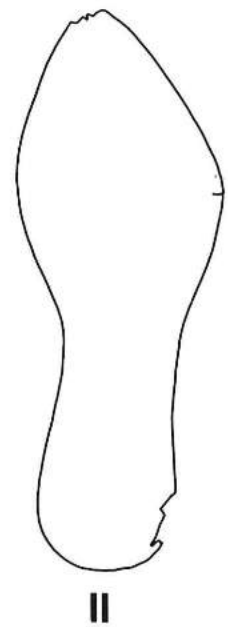


Fig. 32 Sole, type II.

Type III The width in the middle is markedly narrower than at the front and back, and this gives Type III soles a greater S-shaped outline than Type II soles. Type III is defined by AB/EF having values between 5.7 and 7.9 (fig 33).

Type IV The width in the middle is extremely narrow compared with the front and back and the general impression of Type IV soles is that they are unnaturally narrow compared with a human foot. Type IV is defined by AB/EF having values between 8.0 and 10.1 (fig 34).

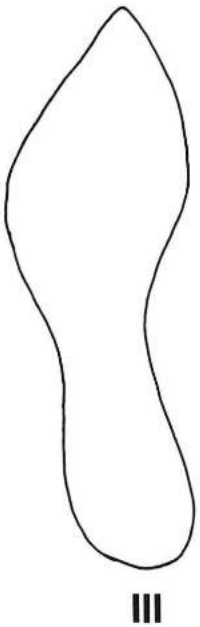


Fig. 33 Sole, type III.

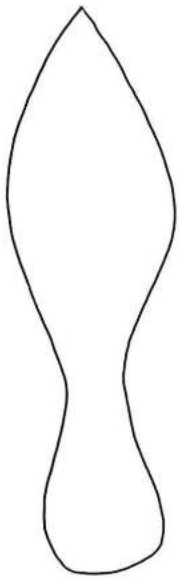


Fig. 34 Sole, type IV.

Atypical soles

Slightly under 10% of the complete soles have a shape which causes the perpendicular lines to intersect the edge of the sole in the middle of one or both sides instead of being tangential to a curve. Consequently, these soles lack points E and/or F and cannot therefore be classified according to the AB/EF ratio.

On the atypical soles, however, it is not only points E and/or F which are lacking, but also one or more of the other contact points. From the variations in shape which can be produced by the presence or absence of various tangent points the atypical soles have been divided into four variants, A1–A4.

Variant A1 In Variant A1 the outer edge of the sole curves inwards to such a small extent at the middle that the perpendicular line from the base line does not make a tangential point of contact at E (for left soles) or F (for right soles). Type A1 soles are defined from the points C, D, F, G and H for left soles, and C, D, E, G and H for right soles (fig 35).

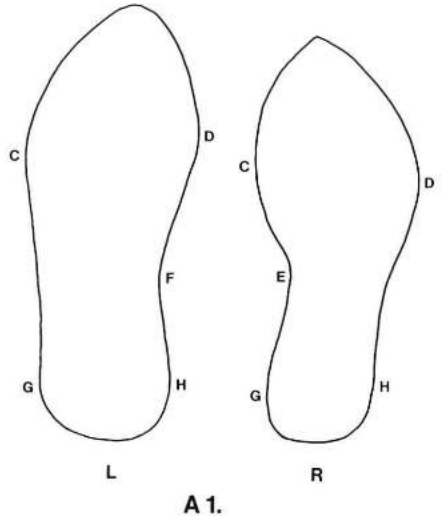


Fig. 35 Sole, atypical variant A1.

Variant A2 The outer edge of the sole in Variant A2 curves in such a way that neither the centre nor the back of the sole meets the perpendicular line at a tangent. Both points E and G are missing on left soles, which are therefore defined from points B, C, F and H. On right soles points F and H are missing and these soles are defined from points C, D, E and G (fig 36).

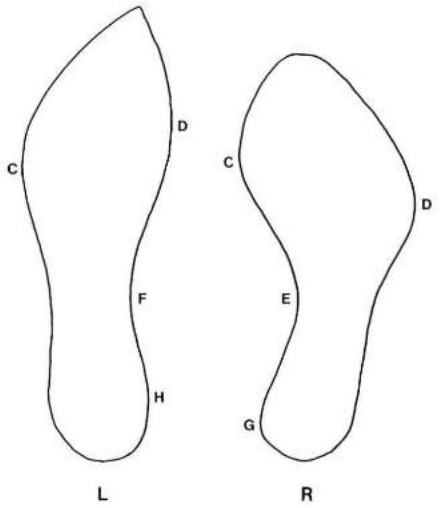


Fig. 36 Sole, atypical variant A2.

Variant A3 The middle and back parts of the sole in Variant A3 are shaped in such a way that points E, G and H on left soles and points F, G and H on right soles cannot be determined. This variant is defined from points C, D and F for left soles, and C, D and E for right soles (fig 37).

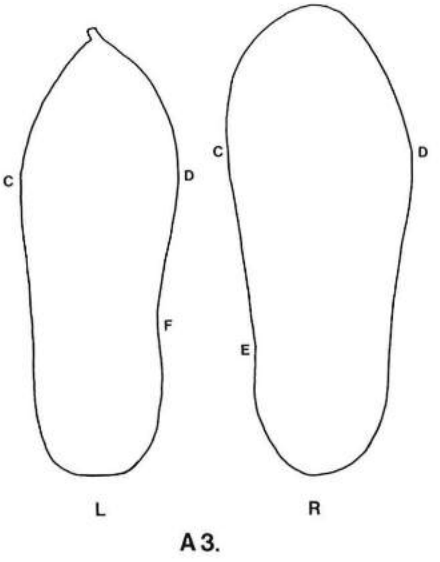


Fig. 37 Sole, atypical variant A3.

Variant A4 On Variant A4 the soles are so oval in form that the perpendicular lines do not meet any of the middle and back part at a tangent. Both right and left soles in this variant can only be defined by points C and D on (fig 38).

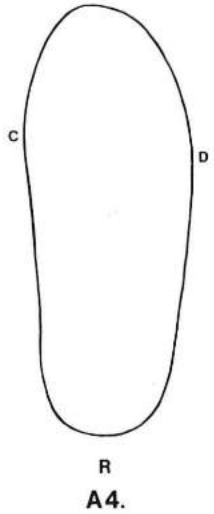


Fig. 38 Sole, atypical variant A4.

The length of the soles varies from 10cm to 32.5cm. In order to classify the shoes into groups based on age and sex, the soles have been divided into three categories based on the lengths used in the modern shoe industry for children's, women's and men's shoes: 1, <23.0cm; 2, 23.0–25.9cm; 3, >26.0cm.

1.9 The shape of the toe and heel (figs 39 & 40)

On the basis of the soles and vamps three toe shapes have been identified: rounded toe, in which the front of the shoe forms an even curve following the shape of the foot (fig 39a); pointed toe, where the front narrows on both sides to end in a point (fig 39b); and skew toe, where the toe of the shoe projects at an angle beyond the front curve of the foot. In the skew-toed shoes from the Gullskoen site the point always turns inwards, ie to the left for the right shoe and to the right for left shoes (figs 39c, d). The angle and length of the skewed point varies, but the variations cannot be recorded metrically, mainly because the natural flexibility of the leather al-

lows the sole or upper to be stretched or pulled when being measured.

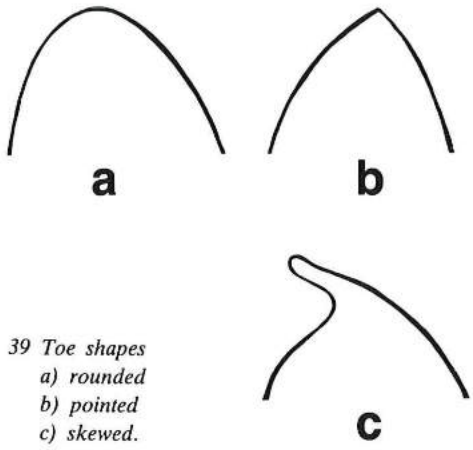


Fig. 39 Toe shapes
a) rounded
b) pointed
c) skewed.

The skew toe has unfortunately been referred to in some Norwegian reports as a *snabelsko* (piked shoe) (eg Schia 1975, 130), but this term really applies to the extremely pointed shoes which were in use from the latter part of the fourteenth century to the end of the fifteenth century and which are known from contemporary literature and illustrations.

The soles on shoes from pre-medieval and early medieval times may be either pointed or rounded at the back (fig 40a, b). The back-pointed soles belong to uppers with a deep pointed notch at the bottom of the back part into which the rear point of the sole fits (fig 12). The Gullskoen finds include both uppers and soles cut in this way.

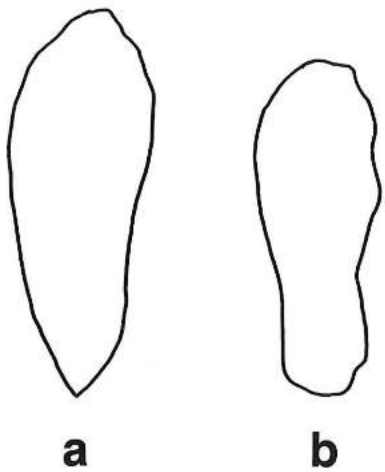


Fig. 40 Heel shapes
a) back-pointed sole
b) sole with rounded heel

1.10 Decoration

On 426 uppers representing 11% of the total, traces of decoration were recorded. This is divided into the following types: embroidery, perforation, and impressed.

1.10.1 Embroidery (pl 1)

In this report the term embroidery is used to cover both decoration in which the thread has survived and prepared surfaces in the form of scoring or needle-holes.

Evidence for or the remains of embroidery has been noted on 413 finds, consisting of uppers, fragments of uppers and edging. On 37 uppers and on 4 pieces of edging the actual embroidery had survived to a varying degree, while on the remaining 375 items the evidence for embroidering consisted of holes pierced through the leather or of scoring in the surface of the leather. No terminology exists in Norwegian archaeology for classifying embroidery on shoes, nor is there any suitable terminology or classification system in the available literature dealing with embroidered textiles which can be applied to the embroidered finds from the Gullskoen site.

The terminology and classification system suggested in this report are based on variations in the form, execution and position of the stitching and other preparatory work on the leather.

The purpose of this classification is partly to give a survey of the variations in the embroidery, and partly to provide a reference system for use during the discussion of the decoration on the different types of shoes.

In the description and classification of the finds the most important terms are:

Motif	Figures forming a pattern. These may be lines, triangles, ellipses, arcs, rectangles, wavy lines, circles, plaits and runic symbols
Pattern	The combination of motifs and their position on the shoe
Band	A motif which may appear as one or more straight or curved lines, or as a frieze made up of geometric figures, various symbols, or perforations

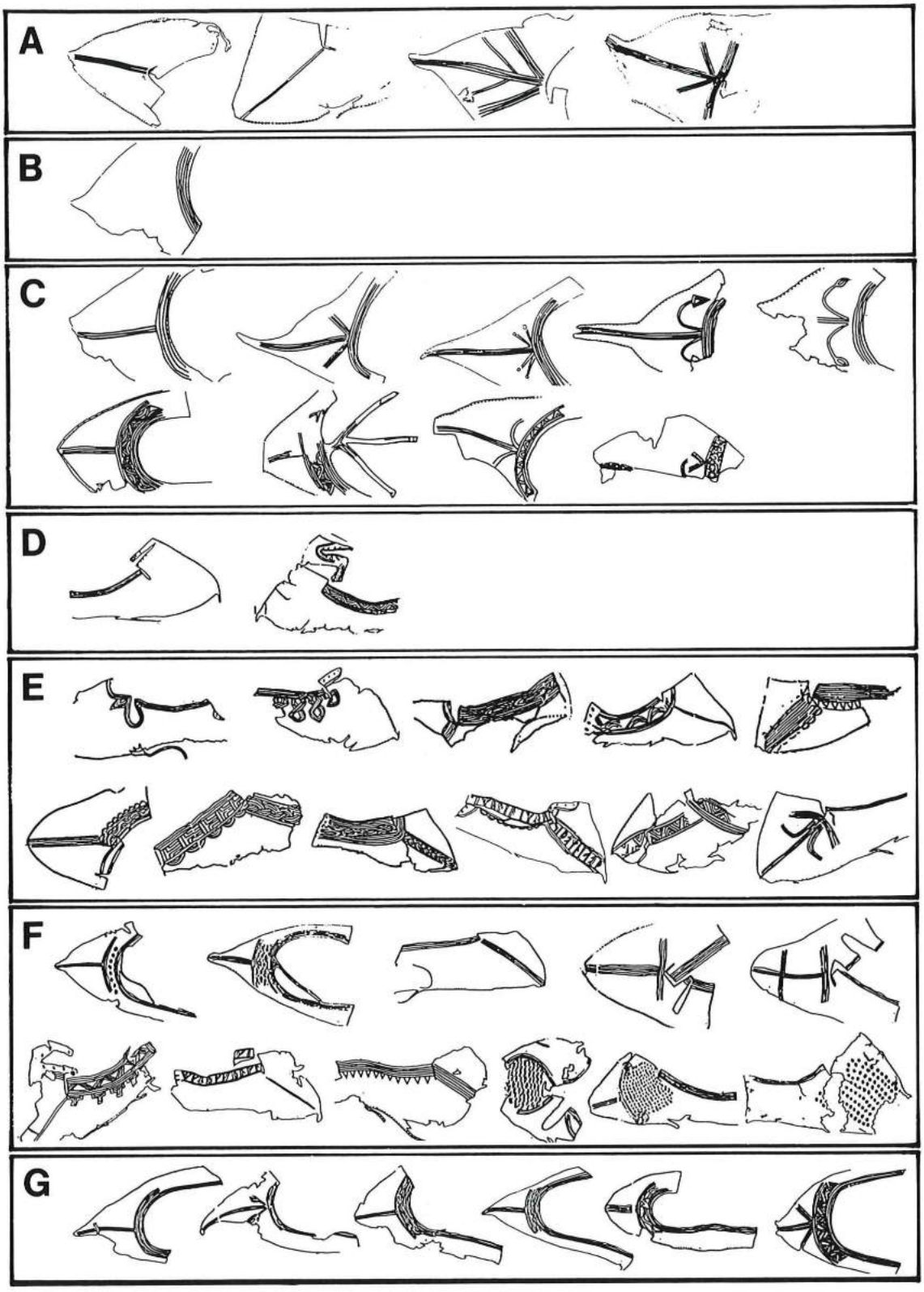


Plate 1 The embroidery patterns A–G.

Toe-to-instep band
: A band of decoration running up the middle of the front piece from the toe to the instep

Instep band
: A band of decoration running around the instep

Border
: A band of decoration running around the edge of the upper and any side opening(s)

The classification system for embroidered decoration is built up partly on simple or composite patterns, and partly on its position on the upper. On account of the differences in motifs and in the position, seven pattern types have been distinguished, A–G (pl 1):

Pattern A
: The motifs consist mainly of lines running along and across the upper, with diagonal lines on the vamp

Pattern B
: The motifs consist of lines over the instep

Pattern C
: The motifs consist of lines, triangles, circles, arcs and wavy lines, and are located on the vamp and over the instep

Pattern D
: The motifs consist of lines and triangles along the top edge, the edges of any side openings, and on the sides

Pattern E
: The motifs consist of lines and figures-of-eight along the top edge and on the instep

Pattern F
: The motifs consist of lines, triangles, arcs, rectangles, runic symbols, and perforations on the vamp, over the instep, and along the top edge

Pattern G
: The motifs consist of lines, arcs, wavy lines and triangles on the vamp and the instep and along the top edge

1.10.2 Perforations (fig 41a–e)

There are 6 definite and 5 less definite examples of designs which have been cut or stamped out. There is no evidence that the uppers or any of the other pieces with perforated designs were lined, but it is likely that the decorative effect was dependent on the presence of a highly coloured lining behind the perforations. The six uppers have the following forms of decoration:

1 On two vamps almost the whole surface has been cut or stamped out in small rectangles in groups separated from each other by strips of triangular perforations forming zigzags or by plain strips (fig 41a)
2 A pattern consisting of small holes placed close together in groups and separated by rows of larger holes was recorded on the remains of a vamp (fig 41b)
3 A pattern of long slits cut transversely across a vamp running symmetrically from a central line of cut-out diamonds (fig 41c)
4 A rosette-like pattern of holes in the middle of the instep (fig 41d)
5 A pattern formed by two rows of small diamonds with a similar pair of lines at right angles on a side piece (fig 41e)

1.10.3 Thong decoration (figs 42 & 43)

On five uppers a thong had been threaded into thong-holes in such a way that it could not be moved. As it is not possible to suggest any practical function for the thonging, it has been interpreted as a decorative feature.

Two variations of thong decoration have been noted. One is a simple thong passing through a row of thong-holes along the top edge of the upper and fastened at both ends (fig 42). The other consists of parallel thongs threaded through a few widely-spaced spaced holes in vertical rows and fastened at the ends (fig 43).

1.10.4 Stamped decoration (fig 44)

Slight traces were recorded of impressions which have been stamped or pressed into the leather on the vamp and along the top edge. This was the only example. The clearest parts of the pattern consisted of an area of double rows of circles between straight lines. This was noted in three places: down the middle from the instep to the toe, and on either side of the instep. In addition there are traces of a line along the top edge and apparently irregularly placed circles and arcs (fig 44).

1.11 Pattens (figs 45 & 46)

Two of the three wooden pattens which were recorded on the Gullskoen site were carved in one piece. Traces of the thong which held them to the shoe have survived in both cases (fig 45).

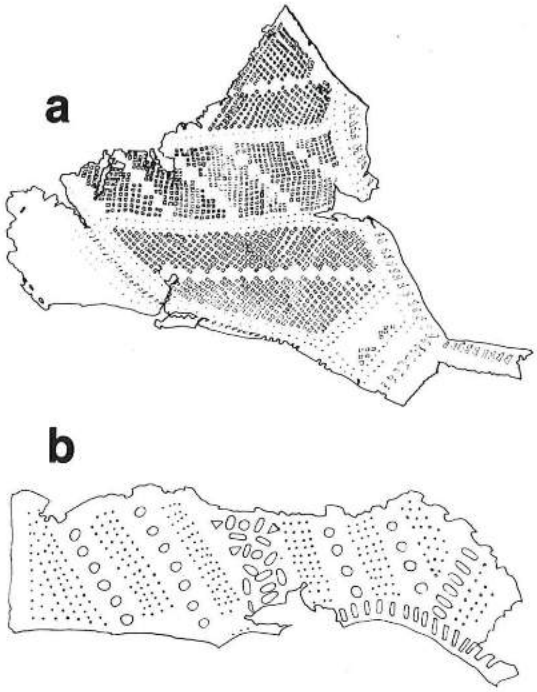


Fig. 41 Perforated decoration.

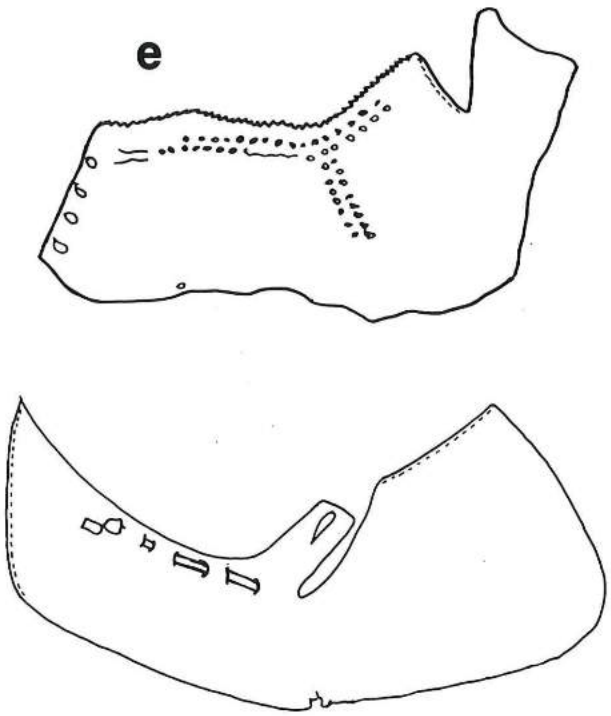


Fig. 42 Example of thong decoration.

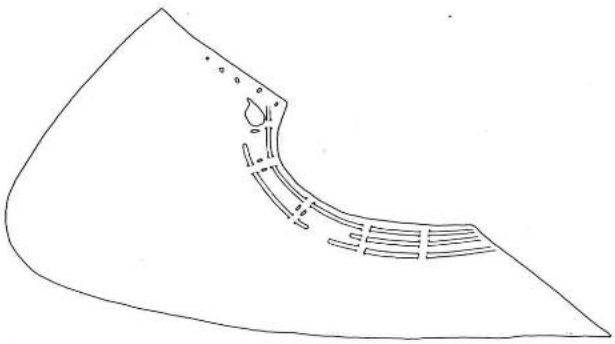


Fig. 43 Example of thong decoration.

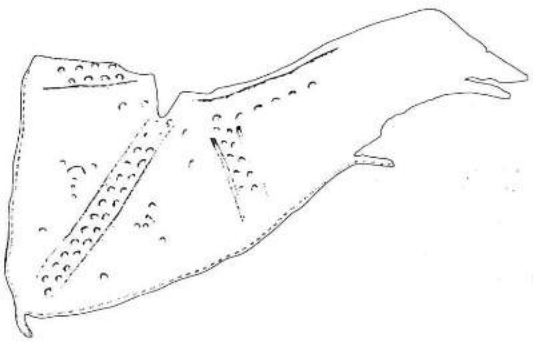


Fig. 44 Stamped decoration.

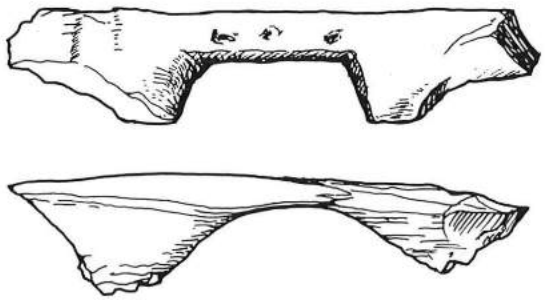


Fig. 45 Patten made in one piece.

The third patten had been made in two pieces. The surviving part had a rebate at the front with nails holes where the toe section had been attached (fig 46).

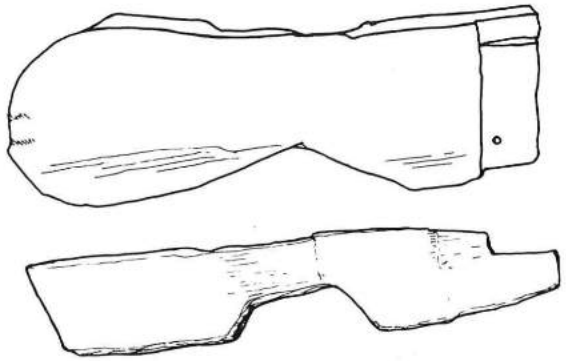


Fig. 46 Patten made from two pieces.

Sigurd Grieg (1933, 218) and Ernfrid Jäfvert (1938, 24) used the Scandinavian word *trekalosje* (literally: "wooden galoshes") to describe a patten, which is basically a wooden sole raised on one or two blocks which was fastened under the shoe. Jäfvert also used the term *patina* (1937, 52; 1938, 24), presumably derived from the French *patin* in the sense of a skate or the runner on a sled, but this term is inappropriate because of its association with ageing metal.

1.12 Shoemaker's lasts (fig 47)

A shoemaker's last is a life-size model of a foot which is used when stitching the parts of the upper together or the sole to the upper. Right up to our own times lasts have been made exclusively of wood. Among the vast amount of wooden objects from the excavations at Bryggen, four lasts have been noted, two of which were found on the Gullskoen site.

A classification of lasts does not exist and it is not possible to establish a typology based on the few examples found here.

The two from Gullskoen were cut from a solid piece of wood but the stand was missing. One is 26.5 cm long and was for right shoes (fig 47), the other is 23.2 cm long and was made for left shoes.

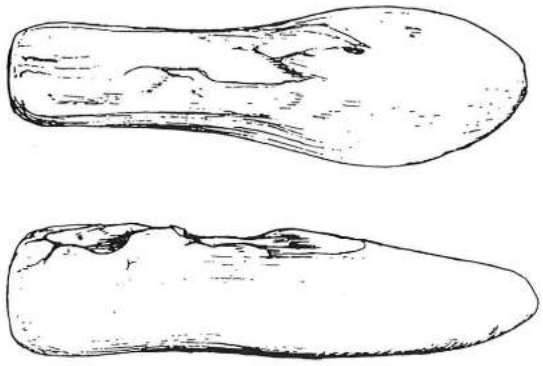


Fig. 47 Shoemaker's last.

1.13 Waste leather (figs 48 & 49)

In addition to the identifiable remains of shoes, the finds included a considerable amount of leather which had been cut or torn into pieces of various sizes. A large number are without doubt the remains of shoes and the traces of cutting on some pieces can also be associated with shoemaking.

The waste leather has been divided into two categories.

Group 1 contains pieces of various sizes which have at some time been a part of a leather arti-

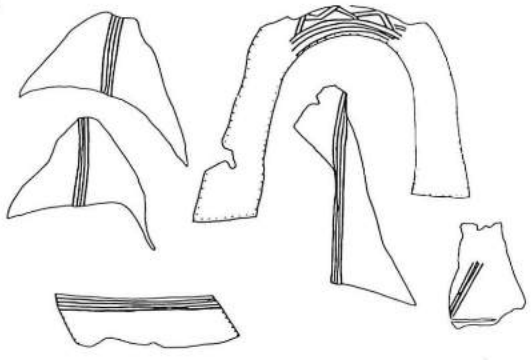


Fig. 48 Waste leather, category 1.

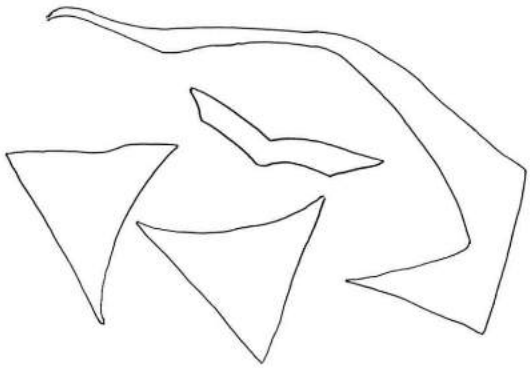


Fig. 49 Waste leather, category 2.

cle and which have been torn or cut off, or else the article has fallen apart. On the basis of observations it is possible to maintain that the majority of pieces in this group have belonged to footwear, although no actual figures can be produced. These are all pieces which lack any criteria for classification or which cannot tell us anything of interest about the shoes of which they once were a part. For example, part of a sole without its toe and heel would be placed in group 1. There are also several fragments of uppers in this group, both decorated and undecorated, as well as parts of soles which have been cut up after they were worn through (fig 48).

Group 2 contains pieces of leather with no traces of stitching which have either been cut from a larger piece or else have had pieces cut from them. The group includes several examples of pieces which from their shape or quality can be associated with the fabrication of articles made of leather (fig 49).

2 FREQUENCY AND DATING

2.1 The soles

The distribution of sole types is as follows:

Type	I	II	III	IV	A1	A2	A3	A4
Sum	247	721	220	28	17	70	9	43

The relationship between toe shapes and sole types is shown in Table 1.

Table 1 Relationship between toe shapes and sole types from the Gullskoen site.

Toe forms	Sole types I	II	III	IV	A1	A2	A3	A4	Sum
Rounded	190	508	105	7	15	48	5	30	908
Pointed	35	156	124	21	3	15	2	10	366
Skew	27	64	–	–	–	8	2	4	105
Sum	252	728	229	28	18	71	9	44	1379

From Table 1 it can be seen that skew toes were not recorded on soles belonging to types III, IV and A1. A comparison between types I and II. offers a probable explanation for the distribution of the skew toe form. The total number of soles in groups I and III is practically the same, but whereas a good 10% of type I soles have a skew toe, this toe form is not recorded at all on type III soles. This distribution can hardly be a coincidence, but suggests that skew toes were more usual on soles of types I and II than on types III, IV and A1.

All the soles which could be classified have rounded heels. Of 1,075 sole-heels only 2 are pointed, and the rounded heel is therefore practically universal on the shoes from the Gullskoen site.

All sole types are represented in each length category. For lengths 1 and 3 there are more type I than type III soles, whereas the situation is reversed for length 2 (fig 50).

The distribution of toe forms according to length is shown in figure 51, from which it can be seen that all toe forms are represented in each length category. The skew toe seems to be more common on the longest and medium soles than on the shortest soles.

With a few exceptions all the sole types and their variants were represented in each Period (fig 52).

Type I dominated in Periods 2 (pre-1170) and 3 (1170–1198), but from Period 4 until Period 8 inclusive (1198–1702) there was a steady decline of this type.

Type II was the second most numerous sole type in Periods 2 and 3 after type I, and moved up to first place between Period 4 and Period 7 inclusive (1198–1476). In Period 8 (1476–1702)

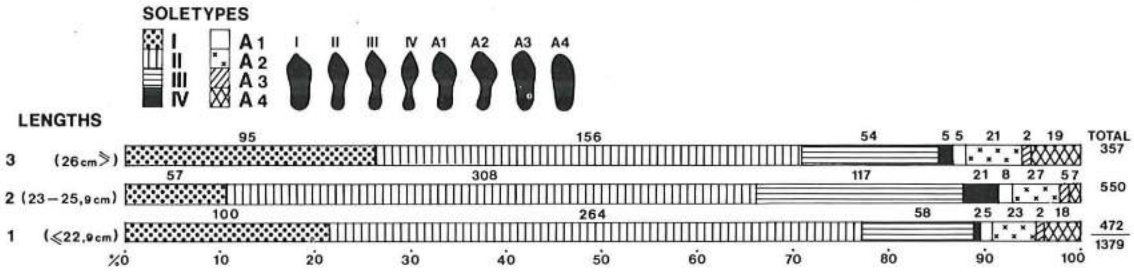


Fig. 50 Distribution of the sole types by length.

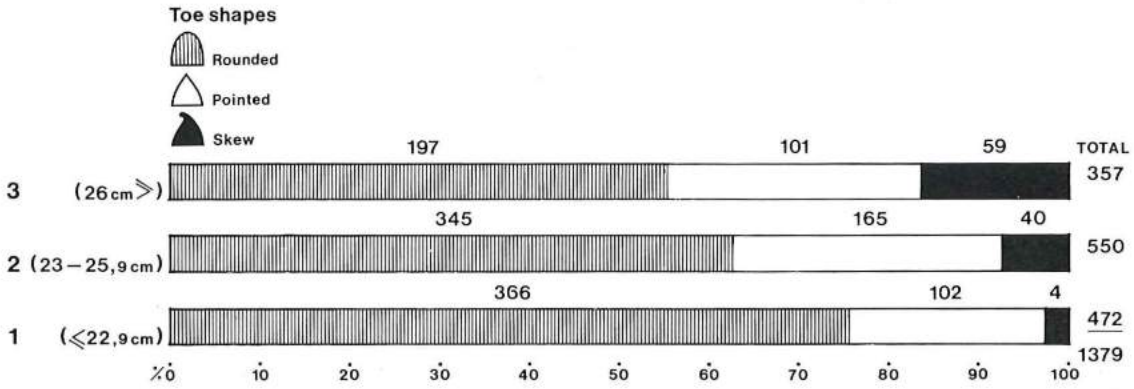


Fig. 51 Distribution of the toe shapes by sole-length.

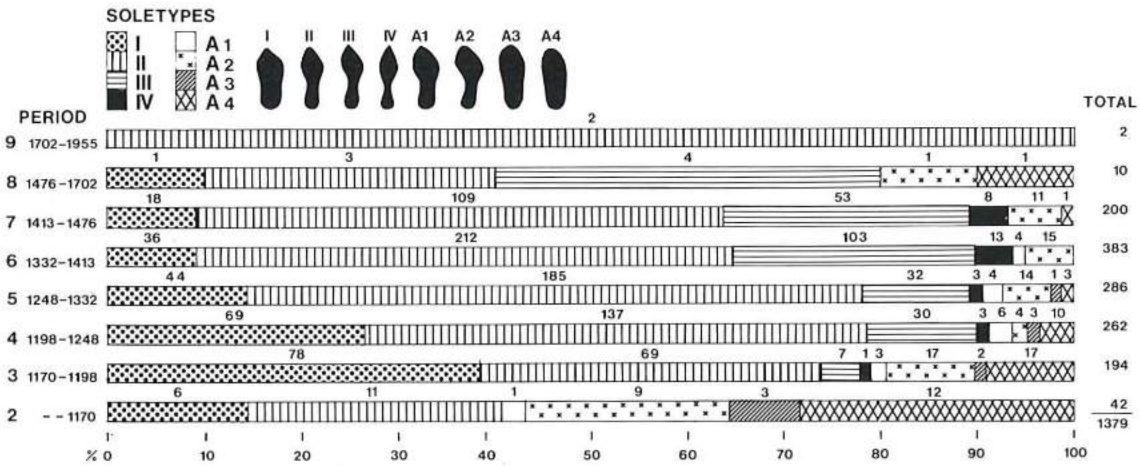


Fig. 52 Chronological distribution of the sole types.

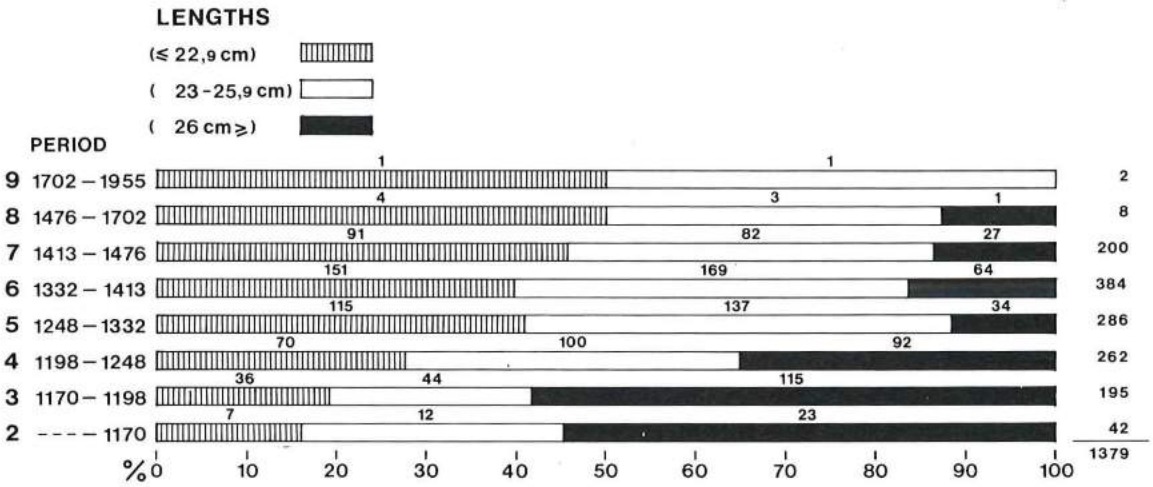


Fig. 53 Chronological distribution of the sole-lengths.

it was slightly more numerous than type III.

Type III soles were not noted before Period 3 (1170–1198), and then in only a small quantity compared with types I and II. Type III increased in number during the following periods and in Period 6 (1332–1413) it was the second most numerous type after type II. In Period 8 (1476–1702) it was represented by almost as many finds as type II.

There were only a few examples of type IV in Period 3 (1170–1198). The type was best represented in Periods 6 and 7 (1332–1476).

With regard to the atypical variants A1–A4, there is a clear decline in numbers over time. The distribution of variants A2 and A4 seems to coincide more or less with that for type I. Variant A1 was not noted before Period 4 (1198–1248) and it was in this and the next period (1248–1332) that this variant was best represented.

The chronological distribution of the different lengths of soles is shown in figure 53, where it can be seen that the number of shorter soles increased in time compared with the longer soles.

2.1.1 Summary

In all, 1,379 complete soles, representing a third of all the soles recovered from the Gullskoen site, have been classified according to four types, I–IV, and four atypical variants, A1–A4.

Soles of type II are the most frequent and type IV is the least frequent. Types I and III are almost equally represented. Of the atypical soles, there are most of variant A2, followed in order by A4, A1 and A3.

The commonest toe forms are rounded and pointed. The skew toe is only found on types I and II and variants A2, A3 and A4.

All the classified soles are rounded at the back.

With a few exceptions all the sole types are present in all periods, but the distribution varies greatly at times.

Type I and the atypical A3 and A4 were among the commonest soles in Periods 2 and 3 (from before 1170 to 1198), but their frequency decreased during the following periods.

Type II occurred with a high frequency in all periods and can be characterized as a standard type throughout the whole time span which the site covered.

Type IV seems to have come into use later than the other types and had its greatest occurrence in Periods 6 and 7 (1332–1476).

The chronological distribution of the different lengths of soles suggests that groups 1 (23.0 cm) and 2 (23.0–25.9 cm) were the normal lengths through all periods with the possible exception of Period 4 (1198–1248), when all three length categories were almost equally represented. However, there was a marked increase in group 1 compared with group 3 from Period 5 (1248–1332) onwards. The relationship between groups 1 and 2 remained almost constant throughout all the periods.

2.2 The shoes

The complete assemblage of shoe uppers from the Gullskoen site comprises 3,682 items with the following distribution according to category and type:

Type	Amount	% of total
Miscellaneous	1 797	48.8
Low laced shoes	589	16.0
Strap shoes	523	14.2
Leg thong shoes	249	6.8
High ankle thong shoes	193	5.2
Low ankle thong shoes	189	5.1
Pumps	77	2.1
High boots	30	0.8
Low boot	22	0.6
High laced shoes	13	0.4
Sum	3 682	100.0

2.2.1 Dating

The distribution of the types of shoes in each period is shown in figure 54.

In Period 2 (pre-1170), low ankle thong shoes formed the dominating type with almsot 53% of the total for the period. The number of high ankle thong shoes was also considerable at over 21% of the total. Leg thong shoes (6.7%), low laced shoes (8.1%) and pumps (7.7%) were relatively evenly represented. Strap shoes and low boots occurred least frequently (2.4% and 1.4% respectively). The three types of thong shoes (low ankle, high ankle and leg) together made up over 80% of the shoes in this period.

In Period 3 (1170–1198), the proportion of low ankle thong shoes was greatly reduced, while the number of low laced shoes showed a significant increase, becoming the most dominant type in this period (39%). Of the other two types of

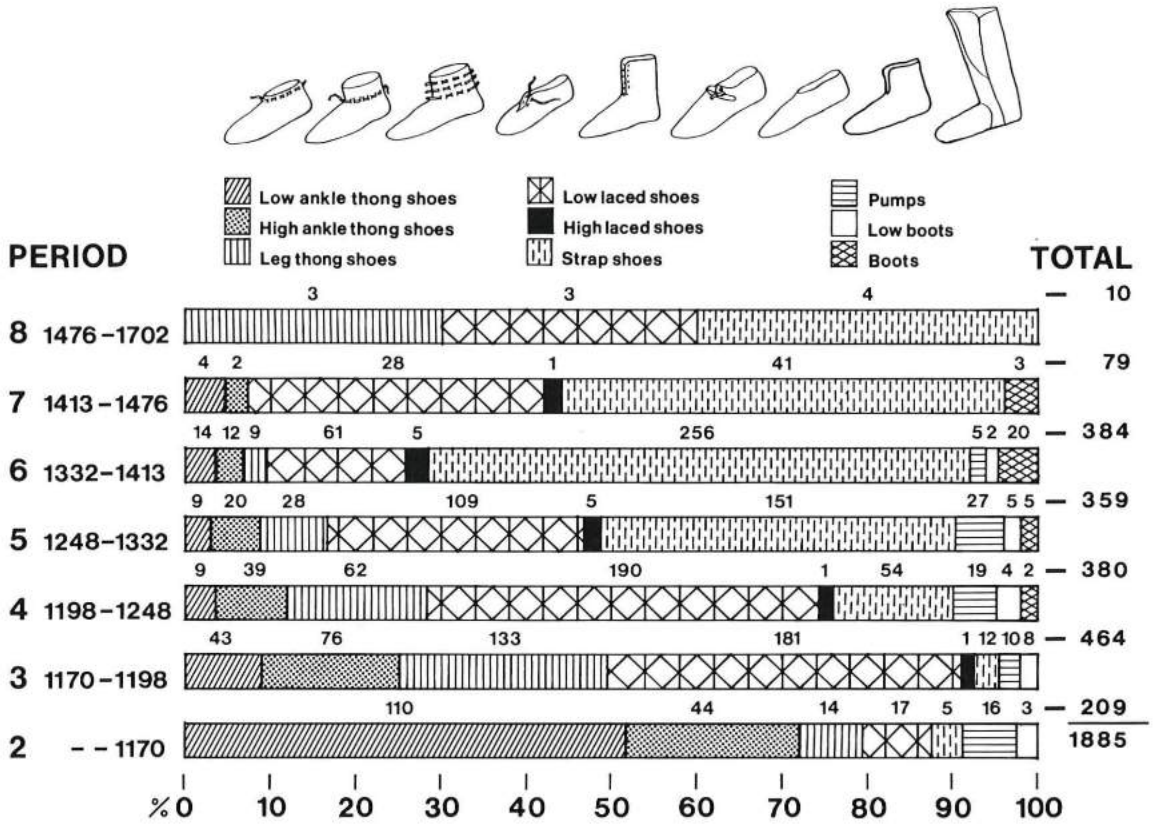


Fig. 54 Chronological distribution of the shoe types.

thong shoes, the number of leg thong shoes was practically doubled compared with the previous period, but the proportion of high ankle thong shoes was somewhat lower. The occurrence of pumps was markedly less (2.2%) than in the previous period. For strap shoes and low boots, the proportion in Period 3 was almost the same as in Period 2, and high laced shoes were just about represented in this period.

In Period 4 (1198–1248), low laced shoes made up 50% of the total. The number of thong shoes was reduced, particularly low ankle thong shoes which only made up 2.4% of the total for this period. The proportion of strap shoes (14.2%) was markedly higher than in the preceding period, while for the other types there was an increase in the frequency of pumps and a decrease for low boots. High laced shoes were now fully represented and high boots occurred for the first time.

As in the preceding period, Period 5 (1248–1332) contained all nine types of shoe, with strap shoes dominating (42%) and low laced shoes being the other leading type (30%). The various thong shoe types occurred less frequently than in Period 4, and there was a slight increase in the proportion of pumps, high laced shoes, and both low and high boots.

In Period 6 (1332–1413), strap shoes alone made up 66% of the total. The frequency of low laced shoes was decidedly lower than in the previous period, but nevertheless they formed the second commonest type in Period 6. The three thong shoe types, together with high laced shoes, pumps and low boots were all equally poorly represented, but high boots were more strongly represented (5.2%) than in any of the preceding periods.

Among the few shoe finds in Period 7, strap shoes and low laced shoes dominated just as they did in the previous period, but were now rather more equally represented. Strap shoes, however, continued to form the largest group. Low and high ankle thong shoes also occurred in Period 7, but only to a limited extent, and the same is true of high laced shoes and boots.

The few shoes from Period 8 were mostly leg thong shoes, but low ankle shoes and strap shoes also occurred in equal numbers.

2.2.2 Summary

On the basis of the variations in the frequencies of thong shoes, low laced shoes and strap shoes, three changes in footwear fashion can at any rate be noted during the period covered by the finds (fig 54).

In the twelfth century, shoe fashions were dominated by low ankle, high ankle and leg thong shoes. Low laced shoes and strap shoes were also worn, but clearly not to the same extent as thong shoe types.

Presumably early in the thirteenth century low laced shoes became the leading type and strap shoes also became more common. High boots were just about coming into use.

From around 1300 and presumably for the rest of the period covered by the finds, strap shoes formed the dominating style.

Roughly speaking, the chronological sequence for the shoe types is as follows: low ankle thong shoes, high ankle thong shoes, leg thong shoes, low laced shoes and strap shoes.

2.2.3 Non-typological features

2.2.3.1 Heel reinforcers

Evidence for heel reinforcing pieces were noted on 162 shoe uppers with the following distribution pattern:

Low ankle thong shoes	2
High ankle thong shoes	6
Leg thong shoes	10
Low laced shoes	47
Strap shoes	27
Pumps	4
Low boots	3
Miscellaneous	63
Sum	162

This table shows that heel reinforcers were found on all types of shoes with the exception of high laced shoes and high boots. The numbers involved, however, are too small to be able to draw any conclusions concerning the significance of the distribution pattern and to say if it is representative for the actual variations in type with regard to the use of heel reinforcers.

The chronological distribution of the examples containing evidence for heel reinforcers together with the loose finds of reinforcement pieces is as follows:

Period	Number
7 (1413–1476)	7
6 (1332–1413)	35
5 (1248–1332)	51
4 (1198–1248)	44
3 (1170–1198)	32
2 (pre–1170)	7
Sum	176

The only conclusion that may be drawn is that heel reinforcers were used throughout the whole of the Middle Ages.

2.2.3.2 Toe shapes

The shape of the toe could be noted with the following frequency in the various groups:

Type of shoe	% of each group with an identifiable toe shape
Miscellaneous shoes	71.6
Low laced shoes	61.0
Strap shoes	52.8
Leg thong shoes	40.6
High ankle thong shoes	55.4
Low ankle thong shoes	33.3
Pumps	88.3
Low boots	90.9
High laced shoes	7.7

The frequency of the different toe shapes within each group and their chronological distribution is given in figure 55. This shows that in all periods a rounded toe, for example, was the dominating toe shape for all types of footwear except low laced shoes and pumps.

Pointed toes are recorded for all groups. They occurred most frequently in the earliest periods – Period 2 (pre-1170) and Period 3 (1170–1198) – except on low laced shoes, where the pointed toe was practically universal in Period 7 (1413–1476) and was the only toe form in Period 8 (1476–1702).

Skew toes are found in all groups. The type on which this toe shape occurred least was the strap shoe.

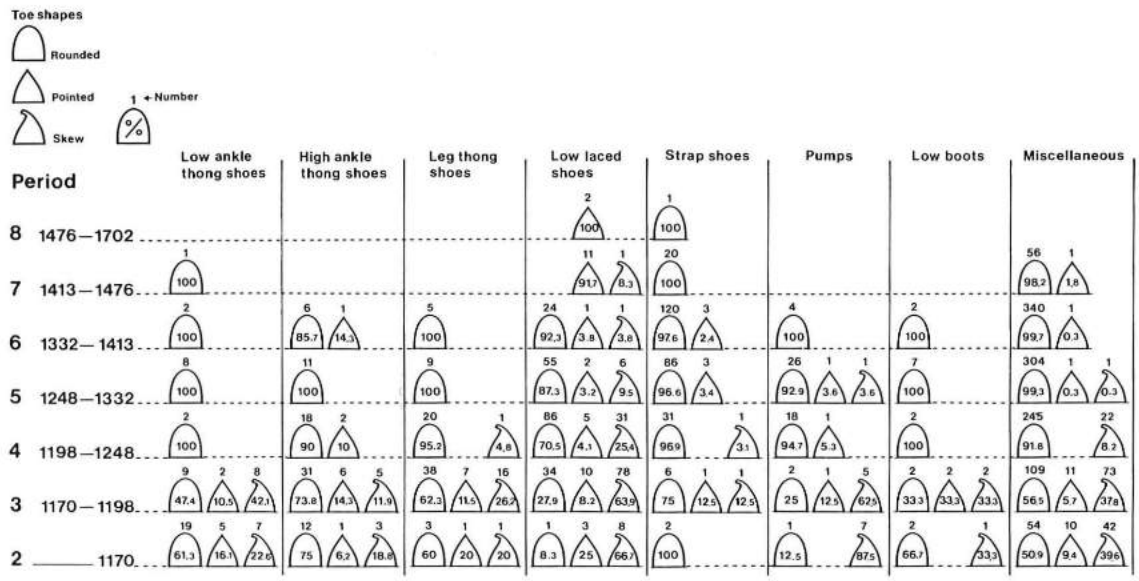


Fig. 55 Chronological distribution of the toe-shapes by shoe-types including unclassified shoes.

Judging from the chronological distribution of the skew toe on low laced shoes, it would seem that it was used from Period 2 to Period 7 inclusive (pre-1170 until 1476), but when all groups are taken into consideration, the skew toe seems to be concentrated to Periods 2 (pre-1170) and 3 (1170–1198).

The relationship between types of shoes with different toe shapes and the chronological distribution of the latter can be summarized thus: rounded, pointed and skew toes occur on all the types of shoes from the Gullskoen site where the shape of the toe could be recorded. The rounded toe appears to be a "timeless" toe shape. Pointed toes came into use fairly early for all types of shoes and continued in use longest on low laced shoes. Skew toes were found in all periods apart from Period 8 (1476–1702), but were without doubt more usual in the earliest periods, Period 2 (pre-1170) and 3 (1170–1198). The chronological limits of the skew toe is most clearly demonstrated by its low frequency on strap shoes, which formed the common or at times even the most dominating type after the skew toe had gone out of fashion. The skew toe is limited in time to a great extent and as a consequence it can help to date all the shoe types.

2.2.3.3 Heel shapes

The only occurrence of a pointed notch cut in the back of a shoe to receive a back-pointed sole was noted on the back piece of a low ankle thong shoe from Period 2 (pre-1170). This special form will be returned to under the discussion of the comparative material.

2.2.3.4 Decoration

Decoration was noted on 438 shoe uppers and has been classified into four categories: embroidery, perforations, thonging and impressed decoration. Seven patterns of embroidery were indentified (A–G) and their frequency on the different types of shoes is shown in Table 2, together with the occurrences of the other types of decoration. From this it can be seen that decoration of some kind or another has been recorded on all types of shoes with the exception of high laced shoes and high boots.

Embroidery is by far the commonest form of decoration, with patterns F and A occurring most frequently, followed by C and D. The remaining patterns, B, E and G, are relatively infrequent. With regard to the distribution of the different types of pattern according to shoe types, it can be seen from Table 2 that pattern A was recorded on all types except strap shoes and pumps. One of the two examples of pattern B was noted on a pump, which was the shoe type with most examples of pattern C. Pattern D was recorded only on leg thong shoes, where it was practically the only type of decoration to occur, and on low laced shoes. The three exam-

Table 2 Frequency of decoration recorded on the different types of shoes from the Gullskoen site.

Type of shoe	Type of embroidery A	B	C	D	E	F	G	Perf	Thong	Impr
Low ankle thong shoes	10	–	2	–	–	–	–	–	–	–
High ankle thong shoes	5	–	3	–	–	–	–	–	–	–
Leg thong shoes	1	–	–	23	–	1	–	–	2	–
Low laced shoes	16	–	1	14	1	55	–	2	–	–
Strap shoes	–	–	3	–	1	–	–	–	3	–
Pumps	–	1	14	–	1	–	5	1	–	1
Low boots	1	–	1	–	–	10	–	–	–	–
Miscellaneous	65	1	49	9	1	37	8	3	–	–
Sum	98	2	73	46	4	103	13	6	5	1

ples of pattern E on identifiable shoe uppers occurred on a low laced shoe, a strap shoe and a pump. Most occurrences of pattern F were noted on low laced shoes and low boots, with a single example on a leg thong shoe, and pattern G was only recorded on pumps and unclassified shoes.

Perforated decoration was found on two low laced shoes and a pump, decorative thonging was noted on two leg thong shoes and three strap shoes, and the only example of impressed decoration was recorded on a pump.

The chronological distribution pattern of the various types of decoration are shown in Table 3, from which it can be seen that embroidered shoes were commonest before 1200, but continued until around 1250, after which they seldom occurred. With regard to the other types of decoration, the recorded examples are so few that it is not possible to draw any conclusions concerning their distribution in time. The reason why embroidery practically disappeared after c 1250 is probably due to the fact that it occurred so rarely on strap shoes, and this was the type which dominated after c 1250.

Table 3 Chronological distribution of the various types of decoration on shoes from the Gullskoen site.

Period	Embroidery	Perf	Thonging	Impr
8 (1476–1702)	1	–	–	–
7 (1413–1476)	–	–	–	–
6 (1332–1413)	–	3	2	–
5 (1248–1332)	2	1	1	–
4 (1198–1248)	37	1	1	–
3 (1170–1198)	172	–	1	1
2 (pre-1170)	129	1	–	–

2.2.4 Relationship between soles and shoe types

The only basis on which the relationship between types of soles and types of shoes can be considered is provided by the 224 complete shoes whose distribution was as follows:

Miscellaneous shoes	54
Low laced shoes	57
Leg thong shoes	28
Strap shoes	24
Pumps	24
High ankle thong shoes	19
Low boots	10
Low ankle thong shoes	8

Sole type I and variant A4 seem to have been more usual on high ankle thong shoes and leg thong shoes than on strap shoes. Sole type III and variants A1 and A2 occur on low laced shoes and strap shoes, but they are not found on any of the thong shoe types.

A cautious conclusion which can be drawn from Table 4 is that sole types I and II and variant A4 belong to the thong shoe types, which were the commonest types of shoe in the earliest periods, Period 2 (pre-1170) and Period 3 (1170–1198). Sole type III and variant A2 on the other hand seem to belong to low laced shoes and strap shoes, the latter being the commonest type in the later periods (cf fig 54).

Complete shoes also provide the safest basis on which to draw any inferences about the type of shoe and the different categories of length. From Table 5 it can be seen that apart from low ankle thong shoes all the types represented by

Table 4 Relationship between sole types and shoe types on the basis of complete shoes from the Gullskoen site.

Shoe types	Sole types								
	I	II	III	IV	A1	A2	A3	A4	Sum
Low ankle thong shoes	-	3	-	-	-	1	-	4	8
High ankle thong shoes	10	2	—	—	—	1	—	6	19
Leg thong shoes	15	13	—	—	—	—	—	—	28
Low laced shoes	12	34	5	—	1	3	—	2	57
Strap shoes	7	10	3	—	1	2	—	1	24
Pumps	1	19	1	—	1	2	—	—	24
Low boots	3	5	—	—	—	1	—	1	10
Miscellaneous	14	32	—	—	—	5	—	3	54
Sum	62	118	9	—	3	15	—	17	224

Table 5 Distribution of shoe lengths according to type.

Shoe types	Length in cm			
	1 <23.0)	2 (23.0–25.9)	3 (>26.0)	Sum
Low ankle thong shoes	–	1	7	8
High ankle thong shoes	12	3	4	19
Leg thong shoes	3	1	24	28
Strap shoes	14	7	3	24
Low laced shoes	9	32	16	57
Pumps	7	14	3	24
Low boots	5	4	1	10
Miscellaneous	18	19	17	54
Sum	68	81	75	224

the complete shoes from the Gullskoen site occur in all three length categories.

2.2.5 Summary of the analysis of the finds

The shoe finds from the Gullskoen site consist of two major groups, uppers and soles. On the basis of variations in the way the shoe was fastened, which could be recorded on 51% of the uppers, together with variations in the height of the upper, the shoes have been divided into the following types: low laced shoes, strap shoes, leg thong shoes, high ankle thong shoes, low ankle thong shoes, pumps, high boots, low boots and high laced shoes. The remaining shoe uppers, c 49% of the finds which could not be classified, have been placed in a miscellaneous category.

With few exceptions, all the shoe types were represented throughout the almost 500-year-long time span which the finds cover (fig 54).

The changes in fashion which have been noted are associated in particular with thong shoes, low laced shoes and strap shoes. Thong shoe types dominated the fashion scene until well into the second half of the twelfth century, but from c 1170 until c 1250, the use of laced shoes increased at the expense of the thong shoe types. After the middle of the thirteenth century it was the strap shoe which increased most, and from the first half of the fourteenth century until the end of the period covered by the finds it was this shoe type which dominated.

For the other types of shoes, the numbers are so limited that it is difficult to draw any reliable conclusions about their chronological distribution. It should be noted, however, that high boots did not occur before about 1200 and were not recorded in any quantity until after c 1300.

Several types of decoration were noted on the footwear, but embroidery is the commonest, being represented in the majority of cases only

in the form of the prepared surface of the leather (scoring, needle holes). It has been classified into seven groups on the basis of the pattern. Embroidered decoration occurs on all types of shoes with the exception of high laced shoes and high boots. Embroidered shoes occurred mainly before about 1200, but continued to be found until around the middle of the thirteenth centry. In the later periods it would appear that perforated and stamped patterns and decorated bands were the most commonly used decoration.

Loose soles make up the larger part of the shoe finds, representing over 55%. In addition, there were some 400 finds where the sole was either still joined to the upper or was found in close association with it.

Of the total number of soles, 27% were so well preserved that they could be measured and classified, providing four main types, I–IV, and four atypical variants, A1–A4.

Practically all the sole types were found in every period with varying frequency, but the numbers are too small to allow any reliable conclusions to be drawn or for early or late types to be recognized. From the chronological distribution it would appear that type II was a standard form which continued in use throughout all periods, and that the more or less oval form, type I, and the foot-shaped sole, type IV, represent an earlier and a later type respectively.

On the basis of a large number of soles and shoe uppers, three different toe shapes can be distinguished: rounded, pointed and skew. Rounded toes occurred in all periods, whereas pointed toes had an early and a late phase. The skew toe was commonest before about 1200.

The occurrence of back-pointed soles was limited to two back-pointed sole fragments and the back piece of a low ankle thong shoe. One of the sole fragments and the fragment of shoe upper belonged to Period 2 (pre-1170). The second sole fragment was from Period 5 (1248–1332).

The majority of shoe types were represented in all three size categories which have been defined.

2.3 Waste leather

In addition to the identifiable remains of shoes, the finds included a considerable quantity of leather which had been either cut or torn into pieces of various sizes. Many of the pieces are without doubt fragments of shoes and the traces of cutting on some pieces can also be clearly associated with shoemaking.

In all, 11,634 accession numbers are described as waste leather, covering a total of approximately 27,000 individual pieces weighing some 200 kg.

The waste leather has been divided into two groups. Group 1 comprises pieces of various sizes which have been torn or cut from leather articles or which have fallen off through wear (fig 48). The majority of pieces in group 1 have originally belonged to footwear. Group 2 comprises pieces of leather without any traces of stitching which have either been cut from a larger article or have had pieces cut from them (fig 49). There are several pieces in group 2 which can be associated with leather articles on the basis of the shape or the quality of the leather.

3 THE COMPARATIVE MATERIAL

Archaeological finds of shoes which have provided the typological foundation for the Gullskoen finds and which can be used as comparative material are known from several prehistoric and medieval sites in both western and eastern Europe.

Shoes from archaeological excavations are often divided into two groups, one-piece shoes and soled shoes. The one-piece shoe is made from a single piece of leather with holes along the sides. A thong is threaded through the holes so that the two sides can be pulled together on top of the foot. The soled shoe consists of an upper made from one or more pieces and a separate sole which is stitched to the upper.

In the following presentation of the comparative material and the discussion concerning shoe types, the method of fastening the shoe is a primary element with the division into one-piece or soled shoes as a secondary element.

The comparative analysis has been made on the basis of descriptions and illustrations in the specialist literature and general surveys. Since the publications vary greatly with regard to the level of documentation and the terminology used, the identification of types corresponding to ours must be regarded in many cases as an assumption rather than an assertion.

The earliest dated shoes in Scandinavia are one-piece shoes from an Early Bronze Age burial (1800–1000 BC) in an oak coffin in Denmark (Hald 1972, 11). A few one-piece shoes have also been found in bogs in Denmark and northern Germany, some of which have been dated to the Early Scandinavian Iron Age (500 BC–AD 600).

A one-piece shoe from Sømna in the north Norwegian county of Nordland has been radiocarbon dated to the Pre-Roman Iron Age (365 ±298 BC ref no. T 19979). The Sømna shoe is the earliest from Norway and one of the earliest in Scandinavia (Schia 1986, 59).

Two one-piece shoes from Leksvik in Trøndelag in mid-Norway were originally also dated to the Pre-Roman Iron Age on the basis of pollen analysis (ref no. T 17400), but from more recent pollen analytical research these shoes must be placed in the Migration Period (AD 400–600) or later (*ibid*, 60).

The excavations at Elisenhof at the mouth of the Eider in N Schleswig have produced a collection of shoes, of which the dominating type corresponds to our thong shoes (pers comm Grenander Nyberg, 1978). The settlement at Elisenhof has been dated to the mid-8th century on the basis of pottery.

In an archaeological layer at Ribe in Jutland dated by coins to AD 720–825 some 400 pieces of leather were found, which included the remains of both one-piece and soled shoes (Nielsen *et al* 1979, 134).

At Staraja Ladoga, c 110 km east of Leningrad, there have been continual excavations since the beginning of the twentieth century, including a 200 sq m area with occupation deposits up to 3 m thick (Davidan 1970, 79). The deposits have been divided into two main chronological periods and in the earlier level, dated to the 7th-10th centuries AD, seventy-five complete or fragmentary shoes were found (Ojateva 1965). Ojateva divides the finds into 8 variants or types of "soft" shoes (op cit, 46), among which are both one-piece shoes and soled shoes.

Of the total leather finds from Haithabu in Schleswig, which include some 2,000 items, the remains of 210 shoe uppers have been classified into 10 types on the basis of shape, method of fastening, and style. They include both one-piece and soled shoes (Groenman-van Waateringe 1984, 27). The finds from Haithabu have been dated by dendrochronology to the period AD 811–1020 (Schietzel 1981, 86).

The remarkable Viking ship burial at Oseberg in S E Norway contained four more or less well-preserved shoes, a double sole, and the remains of another sole. The Oseberg burial is dated to c AD 900.

The excavations at Novgorod in 1951–1962 were concentrated on the Nerev quarter, where trial trenches had shown that the organic material was particularly well preserved. Large quantities of leather were recovered and the majority of the leather objects were shoes. These have been classified into four types: one-piece shoes, soft shoes, half-boots and boots. The chronology at Novgorod is based on certain finds, such as glass bangles, and on dendrochronology, and the shoes have been dated to the period AD 953–1462 (Artsikhovsky & Kolchin 1965, 6).

Another important medieval site in Russia is Pskov, SW of Novgorod. The shoe finds from here have been divided into three categories:

one-piece shoes, soft shoes, and boots, and the majority are from layers which have been dated to the 11th-14th centuries.

Archaeological excavations in several medieval towns in Poland including Wolin, Szczecin (Stettin), Gniezno and Gdansk (Danzig) have yielded various types of shoes. From the available published material, it is difficult to gain an overall view of the quantity of shoe finds from Polish excavations and the typology, partly on account of inadequate translations and partly due to different classification systems and terminology. The Polish finds are generally divided into two groups, one-piece and soled shoes, with further classification being based essentially on differences in the height of the upper or leg. Shoes from Polish sites cover the period from the eighth to the fourteenth centuries, and are usually dated stratigraphically or on the pottery evidence.

Several archaeological sites in London have produced finds of footwear dated to the period from the tenth to the middle of the fifteenth century. The shoes are classified into two major categories, shoes and boots (Pritchard 1987; idem, in manuscript; Grew & de Neergaard 1988).

The Swedish town of Lund is the classic site with regard to the study of shoes from archaeological excavations in Europe. The finds from a number of sites in the medieval city have long been – and still are – the key material for research into shoes with regard to classification and dating. The earliest shoes here are from the eleventh century and the latest are from the fifteenth, and the finds include parallels to most of the types which have been defined among the Gullskoen material. The apparent differences between the classification of the finds from Gullskoen and those from Lund are in many cases linguistic differences for the terms chosen.

The shoes from the medieval market settlement of Borgund in Sunnmøre include a relatively large number of thong shoes and a limited number of laced shoes and strap shoes.

The excavation of the Library site in Trondheim produced shoes which basically cover the same types as the finds from Gullskoen (pers comm Oddlaug Marstein, 1983).

The shoes from the excavation of the Mindets tomt and Søndre felt sites in Oslo are classified according to the same principles and in many cases with the same terminology as the finds from Gullskoen. The Oslo material is dated to the period from the eleventh to the fourteenth century.

Between 1978 and 1980 extensive excavations were carried out on the island of Helgeandsholmen in the heart of Stockholm. The great quantity of finds included a considerable number of shoes, which have been dated to the period from the late thirteenth to the early seventeenth centuries. The classification is based on the system originally devised by Jäfvert and later developed for the shoes from Borgund, Oslo and the Gullskoen site.

3.1 The geographical and chronological distribution of the different types of shoes

3.1.1 Thong shoes

The Bronze Age shoes from Denmark have been made from a single piece of leather which was wrapped round the foot and held in place by a thong threaded through holes along the edges which formed the foot opening. On the basis of this method of fastening, the Bronze Age shoes can be characterized as thong shoes, or forerunners of this type.

The shoe from Sømna, the earliest shoe from Norway, was fastened with thongs which were threaded through holes in the part covering the instep, went around the leg of the shoe and passed under the sole (Schia 1986, 61). The Sømna shoe has therefore many features in common with the Danish Bronze Age shoes and can also be characterized as an early thong shoe. According to Schia, the Sømna shoe has many other features which point to later shoes, such as those from the Oseberg ship burial (ibid, 63).

The shoes from Leksvik were made in the same manner as the Bronze Age shoes from Denmark. The thong passed through holes in the piece covering the front of the foot, went around the foot opening and was then threaded from the instep through a hole on each side of the ankle (Marstrander 1954, 84, fig 3). The one-piece shoes from Leksvik can be described as high ankle thong shoes and are the earliest known examples of this type so far in Norway.

According to Gjertrud Grenander Nyberg who has studied the finds from Elisenhof, the thong shoe is practically the only type of shoe among the finds there (pers comm, 1978). A special feature on some of the thong shoes is a pointed cut-out in the heel of the upper to take a back-

pointed sole. The back-pointed soles from Elisenhof are the earliest dated examples so far (Hald 1972, 98). According to Hald (ibid, 99), there were traces of stitching running down the middle of the vamp on four of the shoe uppers from Elisenhof. The stitching had no function in the way the shoe was made up and is therefore described as a "false seam" or "ornamental stitching". Compared with the classification of the embroidered shoes from Gullskoen described previously, the decorative stitching on the shoes from Elisenhof can be characterized as a "toe-to-instep band", Pattern A.

The dating of Elisenhof is based on the pottery finds and can be summarized in Hald's own words (1972, 99): "The beginning of the settlement at Elisenhof goes back to the middle of the 8th century AD at least. It can now be stated that the main part of the organic material belongs to the 9th century, but the oldest articles, including some of the shoes, are as early as the second half of the 8th century." On the basis of the finds from Elisenhof, therefore, the ankle thong shoe with a back-pointed sole and embroidery on the upper can be dated to the second half of the eighth century in the northern part of western Europe.

The shoes from the 7th-9th centuries at Staraja Ladoga consist of a type of soft shoe which is divided into 8 variants (Ojateva 1965, fig 1). From the descriptions and the illustrations it seems that variants 1–6 are soled shoes, while variants 7 and 8 are one-piece shoes. Variants 1, 2, and 4–8 are described as being fastened to the foot with the help of a thong running around the upper at ankle height. On the basis of the decriptions and drawings, variants 1, 2, and 4–8 can be classified as high ankle thong shoes. Variants 1 and 6 have back-pointed soles, whereas the soles of variants 2 and 5, and presumably also those of 7 and 8, were rounded at the back.

Decorative toe-to-instep bands, Pattern A, occur on variants 1 and 2, while variant 2 has three parallel rows of decorative stitching running horizontally on the back piece in addition to the toe-to-instep band on the front. According to the description of variant 4, a line of stitching down the middle of the vamp was both constructional and decorative. A similar line of stitching on variants 5–8 clearly served some practical purpose.

Using the Gullskoen classification, the 7th–9th century shoes from Staraja Ladoga have the following characteristics. Seven of the eight variants are high ankle thong shoes. Soles both pointed and rounded at the back occur. Both functional and decorative stitching are found running down the middle of the vamp.

Hald (1972, 105) points out that decorative stitching down the middle of the vamp is found on shoes from the excavation of the monastic site at Middelburg in Walcheren. The dating of the shoes from this site is uncertain, but Hald suggests that they resemble the shoes from the Oseberg ship burial and could be contemporary.

The two best-preserved shoes from the Oseberg ship burial, which were found in the bow of the ship, are recorded as accession no. 304; the other two, which were found in the robber trench at the front of the ship, are recorded as accession no. 172. Charlotte Blindheim (1959, 72) states that the shoes "must have belonged originally to the equipment in the burial chamber".

All the Oseberg shoes are soled shoes and they are collectively described as follows: "The legs of the shoes are of medium height and are open in front. They are fastened with long leather thongs" (*ibid*, 72). With regard to the fastening or lacings, Blindheim compares the Oseberg shoes with shoes from Lund and continues: "Common to them all is the fact that the lacing thongs are threaded through holes in the upper. As we see, those on the Oseberg shoes are only loosely fastened to the upper" (*ibid*, 75).

According to the drawings all the shoes had holes to fasten the lacings (*ibid*, figs 4 & 5). Reference is made at another point in the text to the fastening for the lacings on the two shoes labelled no. 304 (*ibid*, 77). Judging from the illustrations, the shoes were held to the foot and fastened by means of a thong which was passed through holes in the upper, pulled tight and then twisted round the leg of the shoe. From the drawings, descriptions and reconstructions, the Oseberg shoes can be described as high ankle thong shoes.

The most recent analysis has showed significant differences between find no. 304 and find no. 172, as well as between the individual shoes. The two shoes labelled 304 have back-pointed soles (*ibid*, fig 4). The upper was sewn together "over the instep" or along the middle of the vamp (*ibid*, 76). Blindheim draws attention to differences in the details of these two shoes which could contradict the possibility that they make up a pair. However, from the find spot – the shoes were "found together in a bast receptacle in the bow of the ship" – and from "small details", Blindheim comes to the conclusion that

this find consists of a right and a left shoe and consequently makes up a pair (*ibid*, 77).

On the state of preservation of the two shoes labelled 172, Blindheim writes: "One was in such a good condition that it was possible to restore it together with the shoes labelled 304. On the other one, most of the front was damaged, but the sole and the rest of the upper were fairly well preserved" (*ibid*, 72). Both the text and the drawings show essential differences in the shape of the soles on the two shoes (*ibid*, 73, fig 5). The left one, which was the better preserved of the two, was rounded at the back, while the right one has a back-pointed sole with a corresponding cut-out in the upper. Blindheim writes that the most important discovery during the recent analysis was "that the line of stitching on the vamp of the shoes labelled 172 is only a false seam for decoration" (*ibid*, 73). From the drawings it can be seen that the line of decorative stitching has survived on the left upper, and it has also been indicated on the reconstructed front part of the right shoe.

Blindheim notes that it has been revealed "that early and later features are combined on the shoes from Oseberg" (*ibid*, 76). The early features are the back-pointed soles on both the shoes from 304 and on the right shoe from 172, and the functional stitching down the middle of the vamp of the 304 shoes. Among the later features must be reckoned the sole on the left shoe from 172 which was rounded at the back and the non-functional decorative stitching down the middle of the vamp of this shoe.

In spite of the differences in the shape of the right and left soles of the shoes labelled 172, Blindheim comes to the conclusion that they also make up a pair (*ibid*, 78), partly on account of the features of the shoes and partly on the osteological analysis of the skeletons. The skeletal analysis showed that the older of the two females buried in the ship was crippled with arthritis and had a stiff back. This elderly woman suffered from chronic arthritis which affected particularly the right leg, and concerning this last point Blindheim comments: "This apparently does not match the evidence of the shoes, which give the immediate impression that it was the left foot which was the worse and which needed a special shoe" (*ibid*, 79).

With some support from anatomists who have looked at the skeletal material, Blindheim suggets that the explanation for the differences between the pairs 304 and 172 was that the wearer placed more and more weight on the left foot as the right leg grew steadily worse" (*ibid*, 82), and her conclusion is that "it is highly probable that both pairs of shoes belonged to the older crippled woman. They may actually have been made especially for her" (*ibid*).

Blindheim's use of the skeletal material and her conclusions based on this in interpreting the shoes from 172 as a pair is fascinating, but in my opinion the shoes themselves contradict her interpretation. Back-pointed soles and soles rounded at the back represent technical and fashionable shoe shapes which certainly existed at the same time, but it is inconceivable that they would be combined in a pair. The shoes from 172 must represent two separate pairs. That the shoes were lying together when they were found must either be due to chance or it was an unconventional combination, perhaps due to economic reasons.

A later and less resplendent burial than the Oseberg ship which contained shoes was uncovered in Hammarby, c 20 km north of Stockholm. The dead person had been buried in a wooden coffin wearing shoes (Gezelius 1959, 205). The right shoe was the better preserved of the two and from the description and the illustration it can be identified as a leg thong shoe with a back-pointed sole. The dating of the Hammarby mound is difficult. The excavator suggested that the burial demonstrated both Christian and pagan characteristics. The grave had been covered by a mound in the pagan manner, but the use of a coffin and the positioning of the head to the west are Christian features. Gezelius suggests that this mixture of pagan and Christian customs could date the grave to the eleventh or early twelfth century.

The shoes from the excavations at Haithabu are divided into ten types. Types 2, 3, 7 and 9 would seem to be identifiable as thong shoes, most likely leg thong shoes. The types have been defined as follows (Groenman-van Waateringe 1984, fig 12):

2. "Halbschuh, ohne Naht auf dem Vorderfuss, mit Verschnürung."
3. "Halbschuh, mit Naht auf dem Vorderfuss, mit oder ohne Verschnürung." (Type 3 includes only examples "mit Verschnürung" and these can be identified as thong shoes.)
7. "Halbhoher oder hoher Schuh ohne Naht auf dem Vorderfuss, mit Verschnürungstyp 2."
9. "Halbhoher oder hoher Schuh mit Naht auf dem Vorderfuss, ohne Klappenverschluss."

Groenman-van Vaateringe does not state explicitly, but on the basis of various statements concerning the stitching technique, it can be deduced that she regards the stitching along the vamp of types 3 and 9 as decorative (*ibid*, 22, 23, 25), and it can be defined as our Pattern A.

The author continues (*ibid*, 25): "An Schmuckformen kommen neben Ziernahten auch reliefierte Motive, die mit Hilfe von Stempeln oder Modeln in das feuchte Leder gedruckt wurden (Abb 9.1), Kerblinien und Stickereien vor (op cit 9.4)." The pieces with "Kerblinien und Stickereien" belong to a group of unidentifiable pieces (*ibid*, 40). They show, however, that more complex embroidery patterns than toe-to-instep bands were used on the leather articles at Haithabu.

The soles from Haithabu are divided into three types (*ibid*, 31, 32, fig 16). These are defined as follows (*ibid*, 31):

1. "Sohlen, bei denen das Oberleder an beiden Seiten angeschnitten ist (Abb 16.1)."
2. "Sohlen, bei denen das Oberleder an einer Seite angeschnitten ist und an der Spitze, der Ferse und an der anderen Sohlenseite angenaht ist (Abb 16.2–3)."
3. "Sohlen mit umlaufender Naht (Abb 16.4–5)."

From the definitions and the illustrations, both types 1 and 2 can be characterized as the under part of a one-piece shoe, while type 3 consists of a separate sole stitched to the upper.

The distribution of the types of sole among the shoe types 2, 3, 7 and 9 is as follows: most of the shoes in types 2 and 7 have soles of type 3, ie a separate sole which has been sewn on, and they can thus be defined as soled shoes. Shoe type 3 has sole type 1 and is consequently a one-piece shoe. Concerning shoe type 9, the author writes "Heterogen zusammengesetzt (vgl Typ 7), teilweise mit Sohlentyp 1" (*ibid*, 28, 29).

The shoes which were excavated at Ribe are classified into two types, pumps and soled shoes. The finds include at any rate a complete pump which is described as follows: "An der Fussoffnung befindet sich an beiden Seiten je eine Reihe von schräg gezogenen Löchern, durch die ein Ledersenkel gezogen wurde, um den Schuh fest an den Fuss zu binden" (Nielsen *et al* 1979, 135, fig 17). Like the Danish and Norwegian pumps described above, the shoe from Ribe can be regarded as a forerunner of the low ankle thong shoe.

Of the soled shoes found at Ribe, two complete uppers were recorded, one from a boot, the other from a shoe (*ibid*, 135). Neither the description nor the illustration allows the shoe to be identified with absolute certainty as corresponding to a thong shoe, but both pieces of the upper contain features which are typical of the earliest thong shoes, such as the decorative stitching down the centre of the vamp (toe-to-instep band, pattern A) and the possible back-pointed sole (*ibid*, 136). Both forerunners of thong shoes and fully developed examples would therefore seem to be among the finds at Ribe.

The shoes excavated at Novgorod are divided into four types: pumps, soft shoes, ankle boots and boots. Most of the soft shoes had a thong which was threaded through vertical slits around the ankle and the ends tied together over the instep (Thompson 1967, 84; Izjumova 1959, fig 3 nos. 2, 3, 5 and 6a). The description of the soft shoes is practically identical with our definition of the thong shoe and the illustrations show that they correspond to high ankle thong shoes (Izjumova 1959). The shoes have had both back-pointed and rounded heels (op cit). Thong shoes were the commonest footwear in Novgorod in the tenth, eleventh and twelfth centuries and were still common in the thirteenth century, but they are more or less absent in the fourteenth and fifteenth centuries (Thompson 1967, 84).

In Pskov low shoes described as *tufli* and identifiable as thong shoes were in use from the eleventh to the fourteenth century. In the course of this period there are no obvious differences in the way the *tufli* were cut and sewn together, but there are differences in the decoration. Most of the *tufli* from the eleventh to the thirteenth century were decorated with embroidery, but no examples are shown from the fourteenth century (Ojateva 1962, 83, fig 3). From both the text and the illustrations it is clear that the *tufli* in Pskov had both back-pointed and rounded heels (*ibid*, fig 8). The author does not state explicitly when the use of back-pointed soles ceased, but reference is made to a change in the shape of soles at the end of the eleventh/beginning of the twelfth century. On the basis of the description, this change can be interpreted as a transition from back-pointed to rounded heels at this time.

As mentioned previously, the shoes from a number of urban excavations in Poland have been divided into two main groups, pumps and soled shoes, with the latter group further subdivided on the basis of the height of the leg. For most of the sites mentioned (p 46) the published

illustrations, as well as the descriptions in many cases, show that the types correspond to low and high ankle thong shoes. This applies for example to the excavations at Gniezno, where the few finds were divided into two types, type 2 being described as ladies' shoes (*czereviken*) with "rows of holes through which thongs were drawn" (around the foot opening) (Rajewski 1939). A suggested reconstruction shows that it was a kind of thong shoe (idem, fig 8). The shoe finds from Gniezno are dated to the 8th–11th centuries (Ojateva 1970).

In a survey of the shoes dated to the 10th–13th century from the excavations in Gdansk, several parallels to low and high ankle thong shoes can be found (Wiklak 1960). A low ankle thong shoe with a back-pointed sole is illustrated, which can be dated stratigraphically to 1020–1045 (idem, 46, fig 23). High ankle thong shoes both with and without decorative stitching are also illustrated (idem, figs 39, 48 and 60) and these are dated to the period 1090–1205 (idem, fig 8).

Shoes from site 2 in Gdansk, which are dated to the 13th–14th century, include a type which can be identified as a high ankle thong shoe with a rounded heel (Wiklak 1967, fig 8). It was found in a layer belonging to the period 1230–1255. A shoe of the same type but with a skew toe was found in a layer from the period 1295–1320 (idem, fig 17). From the occupation level 5 corresponding to the period 1230–1253 is a leg thong shoe with a skew toe (idem, fig 4).

From a survey of the dating of the Polish shoe types comparable to our thong shoes, it appears that the types were common in Poland from the end of the tenth to the early fourteenth century.

The shoes found in a number of excavations in London have been divided into two main groups, shoes and ankle boots (Pritchard 1987). With regard to the shoes, neither the text nor the illustrations indicate whether they were fastened in any way. In the late eleventh century ankle boots were a common form of footwear in London and according to Pritchard most of those found "appear to have opened at the side and been fastened with a drawstring..." (idem, 12, nos. 283, 288, 292, 294 & 299). From the descriptions and the illustrations most of the ankle boots among the London finds can be characterized as high thong shoes, and several of the illustrated examples appear to be identical to the high thong shoes from the Borgund excavations, eg the ankle boot no. 283 from London and the high thong shoe, Variant B, from Borgund (Larsen, A J, 1970, 26, pl V 1, 2).

One of the features which the thong shoes from Borgund and the ankle boots from London have in common is the back-pointed sole. According to Pritchard, it went out of use in London in the middle of the twelfth century, and she is of the opinion that attention from then on was directed to the shape of the toe, with toes "curled like scorpions' tails and rams' horns" becoming common (Pritchard 1987, 17). The "new" toe shape is described in contemporary sources and Pritchard shows three ankle boots with "exaggerated toes" which were found in layers dating to the late twelfth century (op cit, fig 4, nos. 333–335). This toe shape is rare in layers from after 1150 (Grew & de Neergaard 1988, 11). Both from the descriptions and the illustrations the toe shape on the shoes recorded from London can be definitely identified as our skew toe.

One of the ankle boots is described as follows: "Round the edge of the opening for the foot is a row of slots for a drawstring..." and this, together with the illustration, allows this type of ankle boot to be identified as our low ankle thong shoe (Pritchard 1987, 20, no. 317).

In a survey of shoes from the period 1100–1450 from a number of sites in London, it is said that "early 12th-century shoes seem either to have been worn as 'slip-ons' or to have been fastened with a leather thong – 'drawstring' – supported in slots cut in the upper and wound once or twice around the quarters. Ankle-shoes, varying in height between those cut straight on the line of the ankle (eg fig 6) and those rising 1 or 2 inches (25–50mm) above it (eg figs 5 & 8), were by far the most popular style" (Grew & de Neergaard 1988, 10). The description of the shoes with drawstrings is in most respects identical with our definition of low and high ankle thong shoes.

Three sites in London have produced a few fragments of shoes which can be identified from the descriptions and drawings as leg thong shoes. They were found in layers dating from the end of the twelfth to the thirteenth century. During most of the twelfth century thonging was the commonest method of fastening shoes in London (idem, 2, 13, figs 13–16).

In the early and mid-thirteenth century low and high thong shoes were the commonest types among the shoes found in London (idem, 17). The types were also common at the end of the thirteenth and the beginning of the fourteenth century, but by the mid-fourteenth century thong shoes seem to have gone entirely out of use in London (idem, 25).

The most usual kind of decoration on the twelfth-century ankle boots/thong shoes from London was a decorative band down the middle of the vamp, a toe-to-instep band, pattern A. It can be detected from the presence of the preparatory work on the leather (Pritchard 1987, 21; cf Pedersen, appendix). Other forms of decoration such as geometric patterns of perforations are less common than the toe-to-instep band (idem, 19).

In Lund the dominant shoe type in the earliest layers of several sites is the thong shoe with or without decoration and with either a back-pointed sole or a rounded heel. The major sites are the Apotekaren-kvartal, the Glambeck-kvartal and the Thule site. It is uncertain how long the back-pointed sole continued in use in Lund after the eleventh century (Blomqvist & Mårtensson 1961, 189).

On several thong shoes with back-pointed soles traces of decorative stitching were recorded down the middle of the vamp, and the same was also found on high thong shoes with rounded heels.

The majority of the shoes which have been analyzed from the PK-bank site in Lund correspond to our low and high ankle thong shoes and leg thong shoes (Cinthio 1976, 307). The thong shoes from the second half of the eleventh century include both back-pointed and rounded heels. According to Cinthio, the back-pointed sole was not found in layers dated later than 1150 (idem, 315).

In the published reports from Lund the shoe type corresponding to our leg thong shoe is described variously as *högskaftad remkänga* – "thong shoe with a high leg" (Blomqvist 1938, 207, figs 36 & 37) and *remstövel* – "thong boot" (Cinthio 1976, 309, fig 281 no. 5). Blomqvist dated the leg thong shoe to thirteenth century, while Cinthio's "thong boot" was represented in all the phases of the PK-bank site (op cit). Introducing the finds Cinthio says that they covered the period from the eleventh to the thirteenth century (idem, 307) and since the leg thong shoes, or "thong boots", were present in all phases, they must have been in use throughout the whole period.

Of the shoes from Borgund in Sunnmøre, low and high ankle thong shoes made up over 96% of the footwear which could be classified. The low thong shoes were divided into five variants 1–5 on the basis of the position of the thong slits and variations in the way the instep was cut, while the high thong shoes were divided into five variants A–E on the basis of the cut and the method of fastening (Larsen, A J, 1970, 18, 24). Common to them all with just one exception was the back-pointed sole, which was the determining factor with regard to the dating. As mentioned before, the dating was based essentially on parallel finds, first and foremost from Lund. As in Lund, there were several examples at Borgund with a back-pointed sole and decorated with a toe-to-instep band of pattern A.

The low thong shoes from the excavations in Oslo have been classified according to the same criteria as the Borgund material. Low thong shoes occurred with both back-pointed and rounded heels (Schia 1977, 136; 1987, 344). Both on the Mindets tomt site and the Søndre felt site the majority of the low thong shoes were found below Fire 13, which according to a chronological survey corresponds to the first half of the eleventh century (Schia 1987, 53 and 345). With regard to the upper time limit Schia concludes that it is "reasonable to assume that low thong shoes must have continued as the commonest type of shoe in Oslo right up until around 1200" (*ibid*, 345). The excavations of the Nordre felt site, however, produced low thong shoes "with an assumed tentative fourteenth-century date" (*ibid*). Any chronological difference between low thong shoes with a back-pointed sole and those with a rounded heel is not explicitly mentioned in Schia's account. But in the description of the back-pointed sole itself and the consideration of its date, Schia concludes that (1) it must have been a very common feature in the eleventh century, (2) it was in decline at the end of that century, and (3) it had apparently disappeared completely in the first quarter of the twelfth century, perhaps with the fire in 1137 as a possible terminus. The assumption is that the material from the Søndre felt site is representative, and this "appears to be the case" (*ibid*, 396).

From the finds from the Mindets tomt and Søndre felt sites, Schia distinguishes shoes with a piked toe, which he subdivides into four variants, I–IV (Schia 1977, 185; 1987, fig 44). The toe shape referred to by Schia is the same as the shape which it is suggested here should be described as a skew toe to avoid confusion with the real piked shoes of the 14th–15th centuries. Schia says that among the piked shoes from the Mindets tomt site were low thong shoes (*ibid*, 185). However, he does not discuss the toe form when dealing with the different types of shoes, but simply refers in general to "shoes with a piked toe" and "piked shoes". For this reason the distribution and dating of the skew toe in the Oslo

finds is dealt with in a different context later.

High thong shoes from Oslo are divided into four sub-types (Schia 1977, 138; 1987, 346), and for at least three of these – sub-types 1, 2 and 3 – back-pointed soles were recorded (Schia 1977, 138; 1987, 349). According to the dating for back-pointed soles given above, high thong shoes with this type of sole should date to the first half of the twelfth century.

The latest dated occurrence of high thong shoes was represented by sub-type 3 in Fire-interval 8 (Schia 1987, 349), which according to the chronology of the Søndre felt site corresponds to the first half of the thirteenth century (*ibid*, 53, fig 8).

Leg thong shoes appear to be represented among the Oslo finds under Schia's classification of type 3 boots (Schia 1977, 168, fig 94). On the basis of the local chronology and a comparison with both Norwegian and foreign parallels, Schia suggests that type 3 boots (ie leg thong shoes) were in use in the twelfth and thirteenth centuries, possibly first coming into use in the eleventh century (*ibid*, 168).

Low thong shoes found on the Helgeandsholmen site in Stockholm are divided into two main types, 4a and 4b. Type 4a was found in layers from the late thirteenth to the fifteenth century, whereas type 4b was only found in fourteenth-century layers. The same stratigraphical circumstances and chronology apply to a thong shoe which did not fit the main types (Zerpe & Fredriksson 1982, 223).

From the Netherlands shoes which resemble leg thong shoes are dated to the fourteenth century (Groenman-van Waateringe 1974, 118).

3.1.1.1 Summary

The method of fastening the shoe with a thong goes back to the one-piece shoes from the Early Bronze Age (1800–1000 BC). Simple one-piece shoes, which were apparently the only type of footwear in the Germanic area until around the eighth century AD, were the forerunners of the Post-Roman Iron Age and medieval thong shoes.

The earliest thong shoes are from Elisenhof in Schleswig and are dated to the middle of the eighth century. They had back-pointed soles, a V-shaped notch being cut into the back of the upper to receive the point of the sole. The back-pointed sole was a characteristic feature of thong shoes throughout the whole of the Post-Roman Iron Age and early Middle Ages, and thong shoes with back-pointed soles were at any rate in use from the late eleventh century. For a short period of time, back-pointed and rounded heels were both in use at the same time. It is uncertain how long thong shoes continued to be made with back-pointed soles, the latest to be found so far are from Lund and London and are dated to around 1150.

Among the finds from the Gullskoen site at Bryggen, the existence of back-pointed soles was recorded on three objects, two sole fragments and the heel section of an upper. Two are dated to Period 2 (pre-1170) and the third to Period 5 (1248–1332), this being the latest datable evidence for a shoe with a back-pointed sole.

This minimal number of back-pointed soles on thong shoes from the Gullskoen site suggests that the earliest examples of this type should be dated to around the middle of the twelfth century.

On the Gullskoen site and on most of the sites with comparative material there was a marked decline in the frequency of thong shoes after the middle of the thirteenth century, but from the dates of our finds the type was in use through the fifteenth century.

The skew toe is recorded as a new toe shape on thong shoes in London in the late twelfth century. Thong shoes with skew toes from Polish sites are dated to the second half of the thirteenth century and the first half of the fourteenth. Skew toes have also been recorded on thong shoes from the Mindets tomt site in Oslo.

In the comparative material, skew toes occur on thong shoes later than the Gullskoen finds, where the latest occurrence is dated to around the middle of the thirteenth century.

Embroidery in the form of a simple band down the middle of the vamp, the toe-to-instep band, is the only known form of decoration on thong shoes. It is probably a reminiscence of a functional seam which first occurred on one-piece shoes. On the pre-medieval thong shoes the embroidered decoration is often found in combination with a back-pointed sole.

3.1.2 Laced shoes

Low laced shoes were recorded in all periods on the Gullskoen site, but the greatest number were found in Periods 3 (1170–1198), 4 (1198–1248) and 5 (1248–1332). Parallels have been noted among the finds from many of the major sites which have produced shoes.

At Lund side-laced shoes with reinforcement

at the lacing (variant 1) were found in layers from 1100 in the excavations of Apotekaren 5 (Blomqvist 1938, 201, fig 19). The PK-bank site produced two fragments of low side-laced shoes with lacing reinforcement (variant 1) from "Building period 5" (Cinthio 1976, 311). This presumably corresponds to the Phase 5 which is dated to the thirteenth century in the chronological table (op cit, 20). Front-laced shoes were found on the Apotekaren 5 site in fourteenth-century layers (Blomqvist 1938, 209, fig 46).

The shoes from excavations in London which can be identified as low side-laced shoes were not found much before the early and mid-fourteenth century (Grew & de Neergaard 1988, 18, figs 25–28). At the beginning of the sixteenth century low and high side-laced shoes were the commonest footwear in London (op cit, 43, figs 69 & 70). Front-laced shoes were also relatively well represented among the finds from the Baynard Castle site, which is dated to the mid-fourteenth century, and they appear to have continued at least until the first half of the fifteenth century (op cit, 41).

At Borgund, very few laced shoes were recorded. The only basis for dating from the site itself is the fact that one of the uppers lay in the filling of a well with some fourteenth-century pottery (Larsen, A J, 1970, 45).

The shoes from Oslo included both side and front laced types (Schia 1977; idem 1987). The side-laced shoes are divided into two types, type 1 with an internal "lacing reinforcement, type I", and type 2, where the side lacing makes use of a "lacing reinforcement, type II" (Schia 1977, 153). They correspond therefore to Variants 1 and 2 of the side-laced shoes from Gullskoen. Taking the Mindets tomt and Søndre felt sites together, side-laced shoes type 1 (equivalent to our Variant 1) occurred in layers dating from the thirteenth to the beginning of the fourteenth century (Schia 1987, 360), while side-laced shoes type 2 (our Variant 2) were dated from their location to the "beginning of the twelfth century to a little into the thirteenth" (op cit, 362). There are very few front-laced shoes among the finds from the excavations in Oslo. Those from the Mindets tomt site were found in the layers above fire 8, above fire 6, and below fire 5 (Schia 1977, 157, fig 68), which according to a table showing "the basis for dating the various building phases and fires" corresponds to the period *circa* 1250–1350 (Lidén 1977, 17). On the basis of the datable parallels to the shoes from the Mindets tomt excavation Schia concludes that the "front-laced shoe type 1 could have had its greatest period of use in the fourteenth century" (Schia 1977, 158).

The shoes from the Helgeandsholmen excavation in Stockholm included two variations of a front-laced shoe, a and b, which have been dated to the first half of the fourteenth century and to the end of the fourteenth/beginning of the fifteenth century respectively (Zerpe & Fredriksson 1982, 221, figs 174 & 175). Side-laced shoes of Variant 1 have been dated at Helgeandsholmen to the late thirteenth/fourteenth century.

One shoe from the Helgeandsholmen site, which was identified as a piked shoe on account of the shape of its toe, is dated to the second half of the fourteenth century (op cit 225, fig 184). From its description and the drawing, it can be identified as a skew-toed front-laced shoe.

One of the most important and best preserved finds of medieval clothing in Scandinavia came from a bog on the farm of Bocksten in Halland, Sweden. It was found on the remains of a male person probably aged between 25 and 35 at the time of death (Nockert 1985, 23). The dress included a pair of shoes, which can be classified as front-laced shoes (op cit, 106, fig 104). From the style of the clothing, the Bocksten find has been dated to the fourteenth century, but scholars differ about which part of the century the various items of clothing should be dated to (op cit 88).

Shoes from Site 2 in Gdansk can be identified from the illustrations as low and high laced shoes. They include a low and a high front-laced shoe from the period 1275–1295 and a high front-laced shoe with a skew toe from 1320–1395 (Wiklak 1969, 152, 153, 157, figs 14, 16 & 19).

The shoes from an excavation in Amsterdam were divided into six types (Groenman-van Waateringe 1969, 250). Type 1 can be identified from the drawing as a front-laced shoe (idem, fig 13, no. 108) and according to Groenman-van Waateringe shoes of this type were found in layers which "can be safely dated to before 1389" (idem, 257). Also on the basis of the illustrations type 3 can be identified as a side-laced shoe. Shoes of this type may be contemporary with type 1 or at least no later than the fifteenth century (op cit).

There are various other types of laced shoes from other excavations in Amsterdam, and at least one of them can be identified as a side-laced shoe (idem 1966, 57, fig 35, no. 126). From the finds context the shoes could be dated to the fourteenth century (op cit 60).

From the published material available, the only examples of laced shoes with decorative stitching are from the excavations of the Mindets tomt site in Oslo, where two side-laced shoes of type 2, corresponding to our Variant A, were recorded (Schia 1977, 155, figs 62 & 63). The drawings show that the decoration on both of them corresponds to our pattern F.

In the shoes found in the excavation of the Library site in Trondheim, side-laced shoes of Schia's types 1 and 2, corresponding to our Variants 1 and 2, were among the types of shoes which indicated the introduction of new features in footwear in the 12th–13th centuries. From c 1300 to c 1500 the side-laced type 1 shoe (our Variant 1) was the dominant shoe type, while front-laced shoes appeared as one of the new types which came in during this period. Decorative stitching or embroidery was recorded on a small number of side-laced type 2 shoes (our Variant 2) and has been classified as type V in Schia's system, corresponding to Pattern C in the Gullskoen classification system. According to Oddlaug Marstein, who provided all the information on the shoes from Trondheim, embroidery was the dominant type of decoration in the twelfth and thirteenth century.

3.1.2.1 Summary

On many of the major sites which have produced shoes laced shoes are among the earliest datable footwear, dating to the twelfth century. The earliest are from Lund, Oslo and Trondheim. Taken all together, the dating indicates a concentration of the occurrence of laced shoes to the thirteenth and fourteenth centuries. The finds from Gullskoen show the same chronological concentration.

According to the comparative material, laced shoes were in use throughout the fifteenth century and on into the sixteenth and this agrees well with the dating of the Gullskoen finds.

Skew toes were recorded on laced shoes from Oslo, Gdansk and Stockholm and are dated to the second half of the fourteenth century in Gdansk and Stockholm. On the Gullskoen site laced shoes with skew toes are from the fifteenth century, but the majority of shoes with this type of toe are from before 1200.

Of the comparative material laced shoes with embroidered decoration are only mentioned for Mindets tomt in Oslo and Trondheim. The embroidered shoes from Oslo are dated to the period from the second half of the eleventh to the mid-thirteenth century. Those from Trondheim have patterns which were common in the twelfth and thirteenth centuries.

Like the other shoes from the Gullskoen site with embroidered decoration, the embroidered laced shoes are concentrated to the earliest periods up to the mid-thirteenth century. There is thus good agreement between the dating in Oslo, Trondheim and Bergen.

3.1.3 Strap shoes

On the Gullskoen site finds of strap shoes are insignificant in Periods 2 (pre-1170) and 3 (1170–1198), but increase in number in Period 4 (1198–1248). From Periods 5 to 7 inclusive (1248–1476) strap shoes form the dominant type of footwear.

In the excavation of the Apotekaren site in Lund strap shoes (in Swedish, *slejfsko*) were recorded in the twelfth and thirteenth-century layers. On the shoes from the twelfth century the straps were cut in one piece with the upper (Blomqvist 1938, 202, fig 20). From the thirteenth century layers, there were three more or less well-preserved strap shoes. On one of these only one strap had survived, and since this "had a large button-hole in the end, from which it can be assumed that the other strap had a large knot which served as a button" (Blomqvist 1938, 205, fig 25), it would appear to be identical with our strap shoe, Variant 2, concerning the way the straps were fastened together.

The finds from the PK-bank excavations, also in Lund, included part of a strap shoe, consisting of the remains of the quarters with a strap with a "button-hole". It was dated to the end of the twelfth century (Cinthio 1976, 313, fig 284.4).

The strap shoes from the excavations in Oslo of the Mindets tomt site, Oslogate 3 and 7, Revierstredet 5–7 and the Søndre felt site have been divided into four types (Schia 1987, 363). Types 1 and 2 had a knobbed strap and either one or two "button-holes" (Schia 1977, 162). Type 3 was further sub-divided into two variants: Variant I had "two narrow straps fastened across the instep to a tongue with holes", whereas the upper of Variant II had a "wide strap and several fastening holes" (Schia 1981, 221–222, figs 6–10). The strap shoe type 4 is defined by two straps passing over a tongue and fastened together with a knotted knob (Schia 1987, 365), a type which according to Schia was first recorded by Oddlaug Marstein among the finds from Trondheim (*ibid*,

363). Of these four types, only the first two were recorded on the Gullskoen site.

The heaviest period of use for strap shoes types 1 and 2 on the Oslo sites was between Fire 8 and Fire 5, where 91% of the finds were made (Schia 1977, 166). From a chronological table for the Mindets tomt site, the relative dating of "between Fire 8 and Fire 5" corresponds to the period c 1250–c 1350 (Lidén 1977, 17). Strap shoes were "particularly dominant" in the layers between Fires 7 and 8, which according to the table corresponds to the period c 1250–c 1275 (Schia 1977, 166; Lidén 1977, 17).

The excavation of a wreck at Sørenga in Oslo produced strap shoes types 1 and 2 in association with fifteenth-century pottery (Schia 1977, 167).

For strap shoes type 3, Schia suggests a seventeenth-century date for Variant I and a late eighteenth-century date for Variant II (Schia 1981, 222), and he gives a provisional thirteenth-century date to strap shoes type 4 (idem 1987, 365).

Footwear from excavations in Gdansk is divided into four types. Shoes which can be identified from the drawings as strap shoes belong to the type labelled *trzewik* and these were found in occupation layers 5, 4 and 2 (Wiklak 1967, 149, 151 and 156, figs 7, 12 and 18). According to a table showing the chronological distribution of the shoes, strap shoes belong to the periods 1230–1275 and 1295–1320 (op cit, 145).

Shoes from excavations in London which, judging from the descriptions and drawings, were strap shoes were common in the second half of the thirteenth century. The type is thought to have been introduced at the beginning of the century (Grew & de Neergaard 1988, 21, figs 29–34). In the late thirteenth and early fourteenth centuries strap shoes formed the dominant type of footwear in London (ibid). They are divided into three types, of which type 1 is identical with our Variant 3 with its knotted thong attached to the centre of the instep to which the two straps were fastened (op cit, 25). In the finds from Baynard Castle, nearly all the strap shoes were "of the type with a single toggle at the instep" (op cit, 26).

Dutch finds which can be identified as strap shoes come from Alkmaar and Drenthe. The finds from Alkmaar lay in occupation layers which were dated to the twelfth century, while those from Drenthe are dated to the 13th–14th centuries (Groenman-van Waateringe 1972, 105, fig 59, no. 2c & fig 60, no. 3b; 1970, 84, fig 5).

The strap shoes from Helgeandsholmen in Stockholm are divided into three groups, thong strap, button strap and buckle strap shoes (Zerpe & Fredriksson 1982, 223). The first type is defined as having two straps with thong holes so that the two straps could be tied together; the second type has one strap with a knob and one with a "button-hole"; and the third has a single strap which is fastened to a metal buckle on the other side of the shoe (op cit, figs 179–181). The finds from Gullskoen include definite parallels to the first two types, but the buckle strap shoe was not recorded. At Helgeandsholmen, the first two types were found only in layers dated to the fourteenth century, while buckle strap shoes were dated to the late fourteenth and the fifteenth centuries (op cit, 223).

At Borgund in Sunnmøre, a few strap shoes were recorded in the filling of wells, and a few were found in a pit together with fourteenth-century pottery (Larsen, A J, 1970, 45).

3.1.3.1 Summary

The strap shoes in the comparative material are limited in time to the period from the end of the twelfth century to the fifteenth. This chronological limitation also applies to the strap shoes from the Gullskoen site, but compared with the other sites the finds at Gullskoen were concentrated more to the fourteenth and fifteenth centuries.

3.1.4 Pumps

Pumps are relatively sparsely represented among the finds from the Gullskoen site. The greatest number were found in Periods 2 (pre-1170) and 5 (1248–1332), but the type also occurred in Period 6 (1332–1413).

In the published material of comparative finds it is only Oslo where shoes with no fastening device are described which can be compared with the pumps from the Gullskoen site (Norw *"sko uten lukkeanordning"* abbreviated to "SUL").

The Oslo slip-on shoes were divided into 5 types on the basis of the cut (Schia 1977, 148, figs 51–55; 1987, 353, figs 22–26). Of these, only types 1, 2 and 3 can be identified as pumps according to our definition. Schia (1987, 353) dates type 1 as "belonging to the twelfth century", while types 2 and 3 were found in contexts which can be dated by fire-layers to the periods c 1200–1250 and c 1300–1350 (Schia 1977, 148; Lidén 1977, 17).

From the illustrations it can be seen that type 1 was decorated with embroidery in patterns of which some at least can be identified in particu-

lar with variations of Pattern C on the Gullskoen finds (Schia 1977, fig 52; Schia 1987, fig 22 A, B) and Pattern G (op cit, fig 22C).

In Trondheim pumps are recorded as a new feature in the twelfth and thirteenth-century footwear (Marstein, pers comm 1985).

3.1.4.1 Summary

The comparative material on pumps is minimal and can therefore contribute little to the conclusions about their distribution and date. On the basis of the finds from the Mindets tomt site in Oslo, from the excavations in Trondheim and from the Gullskoen site, it would appear that pumps had their greatest period of use in the period c 1100–c 1350.

3.1.5 Low boots

The few examples of low boots among the finds from the Gullskoen site are distributed relatively evenly in time from Period 2 (pre-1170) to Period 5 (1248–1332).

With regard to the comparative material from Scandinavia, the terminology differs but the type can at least be identified in a couple of cases. One is the type 2 boot from the Mindets tomt site in Oslo, which Schia defines as characterized by an upper with no fastening device, made in two pieces consisting of a main piece for the leg and a smaller rectangular piece inserted at the instep (Schia 1977, 168, fig 93). A single example of this type was also found on the Søndre felt site in Oslo (Schia 1987, 367, fig 36). From the dating of the Mindets tomt and Søndre felt sites, Schia suggests that the type was in use in the thirteenth and fourteenth centuries (op cit, 373).

The excavation of Apotekaren 5 in Lund produced an ankle boot with a high leg "apparently lacking the thong" (Blomqvist 1938, 212, fig 48). From the description and the drawing it can be characterized as a low boot. It was found in a layer which with reservation is dated to the fifteenth century.

3.1.5.1 Summary

The low boots from Gullskoen are relatively evenly distributed over the period c 1170–c 1332. The upper limit at least fits well with the corresponding limit for the comparative material from Lund and Oslo.

3.1.6 High boots

The high boot was the latest of the types of footwear on the Gullskoen to be introduced. The earliest occurrence was in Period 4 (1198–1248), but it was not until Period 7 (1413–1476) that high boots became relatively common.

The closest parallel to the high boot from Gullskoen which was possibly cut in one piece is from the PK-bank site in Lund, where it is stated that boots cut in one piece were only found in layers from the late eleventh-century "onwards" (Cinthio 1976, 312, fig 283.1).

The type 1 boot from the Mindets tomt site in Oslo is defined as having "a high narrow leg without any fastening device, made from two pieces, a front piece and a side piece" (Schia 1977, 168, fig 88). From this definition and from the drawings the type 1 boot can be regarded as identical with the boots from the Gullskoen site where the leg was cut separately and sewn on to the vamp. A few examples of this type were also recorded on the Søndre felt site. From the dates of the finds from the Mindets tomt and Søndre felt sites, Schia concludes that the most likely period of use for footwear of this type was between c 1250 and 1350 (Schia 1987, 367).

Concerning the finds from the Helgeandsholmen site in Stockholm, boots with the leg cut separately are referred to as high boots and the type was dated to the fourteenth or early fifteenth century (Zerpe & Fredriksson 1982, 227, fig 188). The same type was found on the PK-bank site in Lund, but there is no information about the dating there (Cinthio 1976, fig 283.3).

Several types of boots were found in the excavations at Pskov and Novgorod which appear to have features in common with the boots from Gullskoen, but which cannot be identified as being exactly similar. They are dated to the 11th–14th centuries. At Pskov, fragments of boots were recorded in the period from the fifteenth to the seventeenth centuries (Izjumova 1959; Ojateva 1962).

3.1.6.1 Summary

The earliest occurrence of boots on the Gullskoen site dates from the first half of the thirteenth century, but it is not until the fourteenth century that boots become relatively common among the finds. This is somewhat later than at the other sites which have been examined.

3.2 The shape of the toe

Of the different shapes for the toe – rounded, pointed and skew – it is mainly the skew toe which is interesting from the point of view of dating and fashion. Among the Gullskoen finds the skew toe is found in all periods up to around 1400, but its frequency is greatest before 1200.

Archaeological finds from London and documentary sources from Britain show that the skew toe occurred at the end of the eleventh century, but it is seldom found in London after c 1150 (Grew & de Neergaard 1988, 11).

Footwear from Oslo with skew toes was found on both the Mindets tomt and Søndre felt sites. As mentioned previously, the term used in the Oslo reports for this toe form can also be applied to the later piked shoes. Reviewing both sites as one, the frequency of the skew toe was greatest in fire interval 11 (Schia 1987, 397). Concerning the absolute dating of this fire interval, Schia states that it "should be dated to the second quarter of the twelfth century and probably into the second half of the century" (op cit, 409). According to Schia, the skew toe must also have been a common feature in the first half of the thirteenth century, with fire interval 7 giving a possible termination (op cit, 398). Fire interval 7 is dated to the second half of the thirteenth century (op cit, 407).

Among the footwear from the excavations in Trondheim the skew toe appeared as a new feature in the 12th–13th century (Marstein, pers comm 1985).

Shoes with skew toes from Polish excavations are dated to the second half of the thirteenth and first half of the fourteenth centuries.

The only example of a shoe with a skew toe from the Helgeandsholmen site in Stockholm is dated to the second half of the fourteenth century.

3.2.1 Summary

From the dating above, footwear with skewed toes was in use in both western and eastern Europe from the mid-twelfth century to well into the fourteenth. The dates from Oslo and Bergen suggest, however, that it was in the twelfth and thirteenth century that the skew toe was at its most popular.

3.3 Decoration

The earliest form of decoration on footwear was a line of stitching or a band running up the middle of the vamp from the toe to the instep. The origin of this and forerunner of decorative stitching was presumably the functional seam or thonging which held the one-piece shoe together on top of the foot. Taking the finds from Gullskoen as a starting-point, this line of decorative stitching is defined as embroidery and classified as a toe-to-instep band. It is first recorded on thong shoes with back-pointed soles at Elisenhof, where it is dated to the mid-eighth century. On thong shoes from Haithabu, Ribe, Oseberg and London the toe-to-instep band is the only form of decoration. The same applies to the earliest dated thong shoes from Lund, Trondheim and Borgund. Originally, and at least until well into the eleventh century, the back-pointed sole and the toe-to-instep band seem to have been a permanent feature of thong shoes.

The use of the toe-to-instep band continued, however, after the back-pointed sole had gone out of fashion and ceased to appear. In London it was the most popular decorative element in the first half of the twelfth century (Pritchard 1987, 77).

The simple toe-to-instep band also formed the basic element in most of the embroidered patterns which were universal on thong shoes and other types of footwear before c 1200.

Parallels to several of the embroidered patterns which have been identified and defined on the basis of the finds from the Gullskoen site have been found on the shoes found at Oslo and Trondheim. Erik Schia (1977, 136) has identified six variations (I–VI) on the footwear from the Mindets tomt site in Oslo, with variants I–III and VI corresponding to our embroidery Pattern A, variant IV corresponding to our Pattern F, and variant V corresponding to Pattern A. From the illustrations, our Pattern D is also represented on shoes from Oslo (op cit, fig 95). Schia sums up the dating of the embroidered shoes from the Mindets tomt and Søndre felt sites as follows: "On the basis of figs 66 and 67 we may be allowed to conclude that around half of all the shoes in the twelfth and late eleventh centuries (fire intervals 11, 12 and 13) had decorative stitching on the vamp. Moreover, on the Søndre felt site very few of the uppers found in fire interval 14 had decorative stitching. If this is a representative distribution, it could indicate that the use of decorative stitching in Oslo became very popular at the end of or in the second half of the eleventh century, in which case it was at about the same time as the use of the piked shoe also seems to have become popular.

"In the same way, the finds also seem to point towards the fact that the fashion became more seldom towards the end of the twelfth/early thirteenth century, with decorative stitching in use on about one-third of the shoes in fire intervals 9 and 10. The fashion became even more seldom nearer the middle of the thirteenth century, with only 8% in fire interval 8 on the Mindets tomt site. This strongly indicates that footwear with decorative stitching must have vanished completely among those living within the area which was investigated in the excavations some time around or just before 1250" (Schia 1987, 404).

The embroidery patterns on footwear from the excavations in Trondheim are identical with the patterns recorded on our finds. The most common was Pattern C, but A is also found. The embroidered shoes in Trondheim are dated to the period from the eleventh to the thirteenth century (Marstein, pers comm 1985).

The dates from the Gullskoen site, from Oslo and from Trondheim suggest that the custom of having decorative stitching on footwear existed throughout the thirteenth century, but probably not much longer.

The finds from the Gullskoen site indicate a chronological difference between decorative stitching and the other types of decoration – perforations, thonging and impressed patterns – which seem to replace decorative stitching and which became the most common forms of decoration from the fourteenth century onwards.

Of the shoes found on the Mindets tomt site in Oslo only a few were decorated with perforated patterns (Schia 1977, 191, figs 130–132). According to the suggested absolute dating for the finds from this site, the shoes with perforated decoration belong to the period from the first half of the twelfth century to c 1350 (Lidén 1977, 17; Schia 1977, 199).

Perforated patterns were also recorded on the shoes found at Trondheim, either alone or combined with stitching. With regard to the dating, it has been said that they occurred in the twelfth/thirteenth centuries (Marstein, pers comm 1983).

From the dates given above, it appears that perforated patterns are found earlier among the finds from Oslo and Trondheim than on the footwear from the Gullskoen site. The finds from the three localities are, however, too few in number to allow for definite conclusions to be drawn about the chronological distribution of this form of decoration, but there would seem to be a tendency for perforated patterns to be later than decorative stitching.

Among the finds from the Bryggen excavations which have been studied, decorative stitching has been found on all types of footwear except high laced shoes and high boots. It is most widespread on strap shoes, but the other forms of decoration are also more usual on these than on the other types of footwear. From the available illustrations the distribution of the different kinds of decoration on the various types of footwear seems to be the same in Oslo and Trondheim as on the finds from the Gullskoen site.

3.4 Wooden pattens

Wooden pattens with two blocks under the foot have been found in Stockholm and Cologne (Jäfvert 1938, pl 9). Jäfvert also says that wooden pattens have been found in Lund, Falsterbro and Lübeck (op cit, 27) but gives no dating.

On the Helgeandsholmen site in Stockholm, a wooden patten with two blocks was found, as well as the straps of at least 38 other pattens. The finds were made in layers dated to the late thirteenth, fourteenth and early fifteenth centuries (Zerpe & Fredriksson 1982, 228).

In London, the earliest dated fragment of a patten is a fastening strap dated to the early twelfth century, while the earliest complete patten is from the early thirteenth century (Grew & de Neergaard 1988, 91, fig 126).

The largest group of wooden pattens from excavations in London are dated to the second half of the fourteenth century (op cit, 93). None of the English pattens seems to be quite identical with those which were found on the Gullskoen site and in the other areas of the Bryggen excavations, but the basic principles for the shape seem to be the same.

Wooden pattens are usually regarded as being late medieval (Jäfvert 1938, 24; Groenman-van Waateringe 1975, 116). The published reports contain no references to finds of pattens contemporary with or earlier than those from Bryggen, which are therefore the earliest known so far.

3.5 Shoemaker's lasts

Two wooden shoemaker's lasts were found at Haithabu (Groenman-van Waateringe 1984, 18, fig 5), one of which at least is the same shape as the lasts from Bryggen (see fig 47).

Shoemaker's lasts have been found at excavations in Gdansk, Niestroninie, Opole, Wolin and

Szezecinie, and have been dated from the ninth to the fourteenth centuries (Wiklak 1969, 481). In the available Polish publications only two lasts are illustrated, one of which is from Gdansk and dated to the eleventh century (op cit, 482, fig 5). The Polish examples are taller than the Norwegian ones, but have the same general form. A cobbler's last found at Wolin is fairly similar to the Norwegian finds (Wojtasik 1960, 204, pl X, fig 7). No clear dating is given for this find, but from the text the finds from site 4 in Wolin are dated to the early Middle Ages, c 10th–11th century.

In the old shoemakers' district in Novgorod c 200 lasts of various shapes and sizes have been found (Izjumova 1959, 196). Those which compare best with the Norwegian examples are the ones carved in one piece and described as "block lasts" (op cit, 198, fig 1, nos 3 & 4). According to Izjumova, the simple block lasts were commonest between the eleventh and thirteenth centuries.

The only Norwegian parallels to the cobbler's lasts from the Gullskoen site are from an excavation on Handelstorget in Skien, where three lasts, some knives and leather offcuts were found in association with the remains of a building, providing the basis for interpreting the building as a shoemaker's workshop (Myrvoll 1983, 273). The lasts are the same shape as the two definite lasts from the Gullskoen site. According to Siri Myrvoll, it is difficult to give an exact date to the phase to which the shoemaker's workshop belonged, but the associated finds suggested a late eleventh or early twelfth-century date (op cit, 273).

The finds from Helgeandsholmen in Stockholm also included a shoemaker's last for a child's shoe. It is dated to the fourteenth century (Zerpe & Fredriksson 1982, 230, fig 192).

4 HISTORICAL REVIEV OF FOOTWEAR BASED ON ARCHAEOLOGICAL SOURCES

The footwear from archaeological excavations which has been discussed above ranges in time from the Early Bronze Age (1800–1000 BC) to the fifteenth and sixteenth centuries AD and in space from Central Norway in the north to Amsterdam and Stettin in the south and from Staraja Ladoga and Novgorod in the east to London and the Faeroes in the west.

The finds are too few and the geographical distribution too uneven to allow definite conclusions to be drawn concerning the areas of origin for the various types of footwear or the changes in time and space. Nor can it be assumed that the surviving archaeological material is fully representative for the footwear that was obtainable at the different localities at various times. From those periods where there are other sources of information to complement the archaeological material, it is known that types of footwear existed which are either poorly represented or else completely lacking in the archaeological finds. The best example of this is the piked shoe.

4.1 The Bronze Age

The history of footwear in Scandinavia goes back to the Early Bronze Age (1800–1000 BC) with the one-piece shoes from the Danish oak-coffin burials at Muldbjerg, Jels, Guldhøj, Trindhøj and Borum Erhøj (the young man's grave). Both men and women are represented among the burials where footwear was found, but there is no difference in male and female footwear (Munksgaard 1974, 89).

In Norway there are no finds of footwear from the Bronze Age, but footprint shapes have been recorded on several rock carvings and these have been interpreted as representations of one-piece shoes similar to the Danish examples from the oak-coffin burials. They consist of foot-shaped outlines without any markings to indicate the toes but with one or more transverse lines across the foot which have been interpreted as marking the thongs under the sole of the one-piece shoe (Marstrander 1963, 223).

The interpretation of the footprints with transverse lines as representing a shod foot is interesting and not improbable, but it should be pointed out that there is a group of rock carvings in western Norway where a footprint with transverse lines occurs, but where all the toes are also marked, possibly contradicting the interpretation (Larsen, G M, 1972, 64, pl 40a).

The archaeological finds, burial customs, rock carvings, etc, indicate many features in common between Denmark and Norway, and it is therefore reasonable to assume that the same type of footwear was used in the two areas. That early finds of footwear are lacking in Norway is no doubt due to the poorer preservation conditions rather than to differences in shoe fashion.

4.2 The Late and Post-Roman Iron Age (400BC–AD600)

Late Iron Age shoes, such as they are known from a few archaeological finds, consisted of one-piece shoes shaped and fastened to the foot in the same way as the Bronze Age shoes. However, there is one important difference between the Bronze Age shoes and the one-piece shoes from the Iron Age and that is the fact that the thongs now were not passed under the foot after being wound round the ankle.

The relatively few finds and documentary references suggest that the one-piece shoe was common over the whole of the Germanic area in the Late Iron Age. From the way in which the Classical authors describe the footwear of the Germanic people it can be characterized as a one-piece shoe, shaped and held in place with thongs running through slots in the upper (Marstrander 1954, 94).

Roman shoes known from archaeological finds, from various depictions and from written descriptions were soled shoes. The most characteristic piece of Roman footwear was the sandal in its different forms and varying quality. A price list from AD301 gives 21 different types of footwear including several kinds of sandals (Jäfvert 1937, 10).

There would seem to be agreement among scholars that the transition from the one-piece shoe to the soled shoe in the Germanic area was due to the influence of Roman footwear. Judging from individual finds, the change came about slowly. On one of the shoes from Wedelspang Mose in Schleswig a sole has been cut but not completely detached from the "upper" (Hald

1972, 87, fig 84, 87, 90). The one-piece shoes from Wedelspang with a partly separate sole cannot be dated with certainty, but Hald refers to the similarity in the shape of the sole between the Wedelspang shoes and a pair of one-piece shoes found in Ørbækgaards Mose near Ramten in Djursland, NE Jutland.

With regard to the dating of the shoes, Hald notes: "As far as the Ramten shoe is concerned, it may plausibly be regarded as Celtic, since it comes from Djursland, whose bogs have yielded up important burial finds containing clothing, but unfortunately no footwear" (op cit, 89).

At what time the true sole became common is difficult to ascertain. Of its origin Hald writes "It is certain that it must have come from the south, probably as a fashion, an upper-class novelty, which ultimately prevailed" (op cit, 202). The one-piece shoe did not vanish, however; both archaeological and ethnological material show that it was made and used well into recent times.

4.3 The Migration and Viking Ages (AD600–1030)

The finds of footwear from the seventh to the early eleventh centuries are few in number and come mainly from the settlement sites at Elisenhof, Staraja Ladoga, Ribe, Haithabu and London.

Apart from the Oseberg burial, little organic material has survived in the many Viking Age graves both in the Nordic area and beyond. Of footwear found in graves there are only the shoes from Oseberg and an unclassifiable shoe fragment from Grave XIII in Vendel. This grave is dated to the tenth century and is possibly the latest in the cemetery (Stolpe & Arne 1912, 52, 60).

Contemporary depictions provide at times detailed information about most items of clothing, but footwear is usually only shown schematically.

Graves I, XII and XIV of the Vendel cemetery contained fragments of richly decorated helmets, to which bronze strips and plates were attached. These were decorated with interlaced ornament, horsemen, and warriors on foot. Most of the scenes with warriors, however, give no indication of footwear, but on one of the bronze plates on a helmet in Grave I a man is shown whose footwear appears to be marked by two parallel lines, one running across the ankle, the other just above (*ibid*, pl VI, fig 2). The same marking for footwear, perhaps even more clearly, occurs on a scene showing a row of warriors on a helmet from Grave XIV (*ibid*, pl XLII, fig 1).

The scenes on the Vendel helmets are not detailed enough to enable the footwear to be identified, but the closest interpretation would be high ankle thong shoes. Graves I and XIV in the Vendel cemetery are dated to the late seventh century.

The small repoussé figures which are portrayed on rectangular gold plates from this period provide valuable information about dress in the Migration and Viking Ages, but once again the footwear is only shown schematically.

The fragments of tapestry found in the Oseberg ship burial also make an important contribution to the history of costume, but as far as footwear is concerned, this is usually simply marked by a darker colour. In the Viking Age cemetery at Birka, pieces of textile of various sizes were found in 169 graves (Geijer 1938, 138), but neither in these nor in other graves at Birka were there any remains of footwear. Concerning the difference in costume in the male and female graves Geijer writes: "Eine Regel tritt in frappanter Weise beim Vergleich zwischen weiblicher und männlicher Kleidung zu Tage. Die erstere ist gleichartig und uniform, die einzig dastehenden Zierate und Gold kommen selten in weiblichen Gräbern vor und man kann kaum von überschwenglichem Luxus in solchen Gräbern sprechen. Der männliche Kleiderputz muss dagegen manchmal äusserst prachtvoll und kostbar gewesen sein; Gold kommt oft vor, überdies zeigt er aber eine solche Abwechslung, dass nicht ein Stück den anderen gleich ist: mehrere Erscheinungen der reicheren Männergräber kommen nur ein Mal, höchstens zwei Mal vor. Sowohl Männer wie Frauen hatten prachtvolle Kopfbedeckungen mit Besatzen aus Gold und Silber, aber auch in diesen Fällen ist die grössere Abwechslung bei den Männern auffallend" (op cit, 138).

Presumably the difference between male and female dress, as expressed here by Geijer, also applied to the footwear.

Against this background it may perhaps be asked to what extent the Oseberg shoes are representative for the upper class as a whole in the Viking Age or just for women.

In the epilogue of her book on ancient dress, Elisabeth Munksgaard writes: "That which appears most remarkable in the study of ancient dress is its incredible conservatism" (Munksgaard 1974, 203). This conservatism seems also to ap-

ply to footwear and Munksgaard's statement is absolutely valid with regard to this part of dress. Between the Bronze Age and the Viking Age a number of technical changes took place, such as the transition from one-piece shoes to soled shoes, and the functional seam down the middle of the foot on the one-piece shoe developed into a line of decorative stitching. But the shape of the shoe and the method of closure clearly changed very little throughout this long period of time. Ignoring Roman footwear, the thong shoe was apparently the only type of shoe in use over a large area of northern Europe for many centuries.

4.4 Medieval period AD 1030–1500

The year 1030 marks the beginning of the medieval period in Norway with the onset of a change in religion and the appearance in particular of documentary sources. The change in religion brought with it new burial customs with the result that an important archaeological source of information – grave goods – vanished. As a consequence, medieval archaeological material is derived mainly from settlement sites, primarily from areas of urban occupation or similar localities.

The development of settlements where commerce and crafts were the major occupations had begun in the pre-medieval period. These continued and gained in strength in the Middle Ages.

For practical reasons, medieval archaeology, particularly in Scandinavia, has been concentrated on present and abandoned urban sites, and this bias has led *inter alia* to a distorted distribution of finds of all categories between rural and urban sites. This distortion is greatest when it comes to objects of wood and leather, because the special conditions which are necessary for organic material to survive have been at their best on urban or urban-like sites.

If the change in religious faith led to a change in customs of dress, this is not reflected in the footwear. Nor do the initial phases in the growth and development of urban settlements seem to have led to any change in the fashion of footwear.

To judge from the archaeological material, the thong shoe with a back-pointed sole was still the dominant and apparently only type of shoe in use over large areas of northern Europe.

At about the same time as the use of back-pointed soles began to wane and eventually ceased in the course of the twelfth century, a new fashion was introduced – a short pointed toe with the point turning outward, a form for which the term skew toe is used in the present study.

According to the dating from Bergen, Oslo, Gdansk and Stockholm, shoes with skew toes were in use throughout the whole of the thirteenth and fourteenth centuries. The latest dated occurrence is on a low laced shoe from the Gullskoen site, which has been dated to the fifteenth century.

Throughout the whole of the twelfth century, footwear in the north European area was still dominated by low and high ankle thong shoes and high leg thong shoes, but at least around the middle of the twelfth century new types were introduced, consisting of low laced shoes, strap shoes, pumps and low boots. These appear among the archaeological finds on the Gullskoen site and in Lund, Oslo and Trondheim. More new forms were introduced later in the medieval period, but changing fashions are reflected primarily in the relative numbers of thong shoes, laced shoes and strap shoes.

The first change in fashion which can be recorded took place in the late twelfth and first half of the thirteenth century when the thong shoe, which had dominated for several centuries and at times had been the only type, was gradually replaced with the laced shoe. By the middle of the thirteenth century it was the laced shoe which dominated the shoe fashion scene. At the same time, strap shoes began to increase significantly in number compared with the previous period. They continued to increase throughout the second half of the thirteenth century and in the first half of the fourteenth century the leading fashion had changed from the laced shoe to the strap shoe.

This last change also marked a change in the style of decoration. The simple line of decorative stitching down the middle of the vamp which had been a characteristic feature on thong shoes from the eighth century onwards, and in fact the only decorative element, continued to be used on several types of footwear through the twelfth and thirteenth centuries. In London, for example, the toe-to-instep band was the commonest type of decoration in the mid-twelfth century. As well as being a decorative feature on its own, it also formed the basic element in various embroidered patterns which covered part or most of the upper. It is doubtful, however, whether footwear was decorated with ornamental stitching later than the thirteenth century. The decorative stitching was replaced by perforation in different

patterns, a form of decoration which became usual during the fourteenth century. In the finds from Bryggen which have been studied, decorative stitching was found on all types of shoes except high laced shoes and boots, but it was most widespread on strap shoes, which incidentally also have a higher proportion of perforated patterns.

Around the middle of the fourteenth century the strap shoe had taken the lead in shoe fashion and it continued to dominate until well into the fifteenth century.

For shoes other than the thong, laced and strap shoes it is difficult to point to any marked change in fashion. On those sites where pumps have been recorded, the type was in use from the twelfth century until the first half of the fourteenth in Bergen, Oslo and Trondheim. In other words this type of shoe continued in use while the fashion scene was being dominated first of all by the thong shoe, then by the laced shoe, and finally by the strap shoe.

In the later Middle Ages boots became the height of fashion over much of Europe, but in the Russian area they were already in use in the twelfth century. The earliest evidence for boots in Scandinavia is from around 1200, but it was apparently not until around 1400 that they began to appear to any marked extent here.

Archaeological finds of footwear in northern Europe in the Middle Ages are relatively numerous, but when it comes to types and decoration there is little variation. The footwear which has been excavated in the medieval towns and other settlements does not display any regional differences with regard to styles, but rather a common adherence to fashion almost approaching uniformity.

5 SHOES PORTRAYED IN WORDS AND PICTURES

5.1 Types of shoes

Shoes are described or depicted in varying degrees of detail in a number of medieval texts and illustrations. A systematic inventory and analysis of European manuscripts and illustrations which can provide information on medieval footwear would be a huge undertaking. The sources which are referred to below represent therefore a limited and to some extent random selection of an enormous amount of material.

Several of the documentary sources, such as the Norse sagas, describe events which are supposed to have taken place in some more or less distant past compared with the narrator's own time – or the time of the person responsible for writing them down. There is thus an implicit dating problem with regard to the footwear described in the sagas.

Personally I have difficulty in believing that footwear would have been such an important part of events or people that it would be remembered and passed on by oral tradition through several centuries before being written down. In my opinion therefore, the descriptions of footwear in many of the sagas must be regarded as indirect descriptions of the footwear of the saga-writer's own time or recent past.

The philologist Hjalmar Falk collected references in various Norse sagas and laws to shoes and their use (Falk 1917).

Njål's Saga was probably written down at the end of the thirteenth century, but the events it describes took place 300 years before. One of the heroes in the saga was Njål's oldest son, Skarphedin, who was known to be inordinately fond of fancy clothes, and at one point in the account he is described as wearing a blue tunic, breeches trimmed in blue, and high black shoes (Njåls saga, 175).

Sigurd Syr was king in Ringerike from the end of the tenth century until he was killed shortly before 1030. In St Olaf's Saga, Snorri tells that once when Sigurd was out in the fields and there came a messenger to him, he was wearing a blue tunic and blue hose, high shoes tied around the leg, a grey cloak and a broad grey hat with a brim shading the face (Heimskringla, St Olaf's Saga, chap 33).

The saga-writers of the thirteenth century clearly let people of rank in the tenth and eleventh centuries wear high shoes whether they were dressed in finery or working in the fields.

When we hear of high shoes later in Snorri's Sagas of the Norse Kings, the type is given another status. This is apparent from the description of Erling Skakke, father of King Magnus Erlingsson (1163–1184), who was "peaceful and worthy; he wore old-fashioned clothes – a long overgarment and long-sleeved tunics and shirts, Gallic cloaks and high shoes. He had the king (Magnus) wear clothes like these as long as he was young. But when Magnus could choose for himself, he wore fine clothes" (Heimskringla, Magnus Erlingsson's Saga, chap 38).

We must assume that the high shoes were also regarded as part of the old-fashioned costume which the king's father wore. Since Snorri and other saga-writers are probably expressing what was fashionable in their own time, the above quotations from the sagas would suggest that high shoes were regarded as old-fashioned in the second half of the thirteenth century. This conclusion agrees well with the dating of the archaeological material from the Gullskoen site, where a marked decline in the number of high thong shoes was noted after 1170 and on through the thirteenth century.

Among the archaeological finds no footwear was recorded which is definitely known to be for winter use. But in Norse literature footwear which is described in connection with events in winter could have been made especially for use in the cold and snow. According to Falk (1917, 54), the Old Norse word *hudskor* (literally "hide shoe") meant hairy or shaggy winter shoes. Old Norse scholars have defined *hudsko* as a "shoe without a separate leather sole, made from unprepared leather or skin" (Fritzner, II, 78) and "shoe of hairy skin" (Heggstad 1963, 309). In their explanations of '*hudsko*', both Fritzner (op cit) and Falk (op cit, 53) quote a verse from *Håbardskvadet*. The 'Lay of Håbard' is difficult to date: it may be from the late tenth or early eleventh century. During the verbal exchange in strophe 35 between Thor and Håbard the ferryman (who is really Odin in disguise), Thor says "emkat ek svá hælbítr sem hudskor forn á vár" ('I am not a heel-biter like an old hide-shoe in spring'). As far as I can see there is nothing here to support Falk's argument that "the material used for peasant shoes in saga times would

generally be of untanned leather, ie the skin was worked over with a brake or beater, and salt and fat were rubbed in, but it was not treated with lye made from bark" (Falk 1917, 52). Archaeological finds which have been excavated since Falk wrote his article can document that shoes "in saga times" were nevertheless made from tanned leather. But it is likely that as the tanning was not very good, footwear would have had a tendency to become stiff when it dried out. This was presumably the reason why the wet shoes which some of the men in the Lay of Håbard had left on the rampart had dried stiff in the sunshine (*ibid*, 53).

The basis for interpreting "hide-shoes" as winter shoes may be that this type of shoe is mentioned in connection with events in the wintertime, such as the battle in the 1160s described in Magnus Erlingsson's Saga. When Earl Sigurd and Erling Skakke engaged in battle, Sigurd is described as wearing a brown tunic and a red cloak with the sleeves tied up and had hide-shoes on his feet (Heimskringla, Magnus Erlingsson's Saga, chap 13). It is reasonable to assume that the hide-shoes which were used in winter were "untreated" in the sense that they were made from skin from which the hair had not been removed.

A more certain reference to winter footwear is the "shaggy calfskin shoe" which is mentioned in some Icelandic sagas. The Kjalnes Saga, or the Saga of Bue Andridson, deals with events in Iceland before the year 1000, but it was probably written down at the beginning of the fourteenth century (Kjalnesingesaga, 1981, 12). Kolfinn, who was one of those involved in an incident which happened in winter-time, is described as wearing '*lodnir kalfskinnskuar*' (shaggy calfskin shoes). The person who was with Kolfinn says that he dressed like a fool, but whether the foolishness applied to the shoes is not clear from the text (op cit, 52).

Þorgils saga skarða, fragments of which have survived in the Sturlunga saga, refers mainly to events which took place between 1252 and 1258 (KLNM XX, 356). Gissur, one of the men referred to in the saga, is described as wearing "shaggy calfskin shoes" when he went riding in very cold weather (Sturlunga saga, 211).

These written references to footwear presumably apply to the footwear which was being worn immediately or a short time before the author's or writer's own lifetime. There are, however, some contemporary references to footwear. The most reliable are the official price regulations, of which three have survived in Norway. The earliest of these is included in Bergen's bylaws from 1282 dealing with trade and tariffs. The next is from 1377 when tariffs were drawn up for the German shoemakers in Trondheim, and the latest reference is dated June 1384 and refers to King Olaf Haakonsson's tariff amendments for craftsmen in the towns and workers in the country.

In the town bylaws from 1282, the following four types of footwear are mentioned: '*hosur*', '*botar*', '*skoar*' and '*forleistar*' (NgL III, 13). The first term refers to hose, with or without feet (Fritzner, II, 45; Heggstad 1963, 298), which could be made of either leather or textile. The second term refers to boots "or similar footwear" (Fritzner, I, 174; Heggstad 1963, 69). In the three price regulations, '*botar*' are associated with women and the term has usually been translated as "women's boots". '*Skoar*' is usually translated with the non-specific term "shoes" (Fritzner III, 367; Heggstad 1963, 609). In the 1282 laws a distinction is made between men's and women's shoes, but the 1384 tariffs only mention men's shoes. The tariffs from 1377 include '*upphaffua*' and '*lagha*' (high and low) shoes.

According to Old Norse dictionaries, '*forleistr*' was a "front-piece", in particular on boots (Fritzner I, 456; Heggstad 1963, 171). The 1384 list mentions '*framleistr*' for boots and for women's boots ("*framleistur à stöfuelom ok botom*"), thus providing confirmation that it was not a distinct piece of footwear, but a piece sewn to the leg of the boot.

As well as the four terms already mentioned, the lists from 1377 and 1384 also include '*stöfuelar*', (high) boots.

Taken all together and regardless of the chronological differences, the three lists from 1282, 1377 and 1384 give the following selection of footwear types, variations and elements: leather hose, men's and women's shoes, low and high shoes, women's boots, (high) boots, and the front part of the boot-leg.

A contemporary reference to footwear is found in Håkon Håkonsson's Saga which was written around the middle of the 1260s. In connection with events in Oslo in the 1240s, a man by the name of Guttorm was wearing '*okulskua*' (ankle shoes) (Fms 1835, 512).

Another example of a contemporary reference is in a document from 1335 dealing with a business transaction, where a share of a property was purchased with horse, saddle, boots ('*styuel*') and spurs (DN IV, no. 221).

In the price lists from 1282, 1377 and 1384, the shoes are divided into main categories partly on the basis of the sex of the wearer (women's boots, women's and men's shoes), and partly on the height of the leg (boots, high and low shoes). For most of the types and variants the prices in all the lists were set according to quality (best, simpler, simplest). In the town bylaws from 1282 it is specifically stated that, except in the case of women's boots (*'kuenmans botar'*), the prices applied to *'bezty'*, which has been translated as *'de beste'*, ie the best. For most of the types in the 1377 list the tariffs are based on a scale which in Old Norse is given as *'besta(o)'*, *'lettare'* and, for boots, also *'lettasta'* (NgL III, 112). In my opinion it is not really clear from the way the terms and the types are used what meaning should be attached to *'lettare'* and *'lettasta'*. Bendixen (1912, 164) translates the terms as the modern comparative and superlative forms of *'lett'*, ie light, easy, while Edvardsen (1975, 62) suggests that *'lettere'* refers to a specific type and regards *'beste kvinnestøvler'* and *'lettere kvinnestøvler'* as two types of women's boots. Both these interpretations to my mind are illogical with regard to the term *'de beste'*, both linguistically and from the point of view of shoe terminology. The Old Norse adjective *'lettr'* can also mean "simple", "modest" and "cheap" (Fritzner, II, 491). "Simple" and "modest" are not particularly suitable for an object such as a shoe, but *'lett'* in the sense of "cheap" is actually found in the 1282 document: "selist pui lettare sen pat er krankare" ('the poorer they are, the more cheaply they shall be sold') (Bagge *et al* 1973, 174). On the one hand "cheap" is logical in connection with the scale of prices, but on the other hand it appears meaningless when used comparatively to the term "the best". Despite this, I would maintain that *'lettare'* and *'letast'* in the 1377 document are used in the sense of "cheaper" and "cheapest" and this implies that the grading does not apply to different types, but to differences in quality within the type.

An interesting coincidence between the tariffs and the conclusions drawn from the archaeological material is connected with the occurrence of boots, which are missing in the 1282 list. They are first mentioned in the lists from 1377 and 1384. According to the chronological distribution of the finds from the Gullskoen site, the number of boots from before 1300 was insignificant, but there was a marked increase in the period 1332–1413.

On the basis of the archaeological material and also from the fact that the prices clearly were fixed in connection with the use of raw material og presumably the amount of work involved, it is noteworthy that children's shoes are not explicitly mentioned in the lists. Could it be that these are hidden from us by being included under another term, for example *'letast'*?

Nor do decorated shoes appear in the lists. According to our dating, the lists are from the time when decorative stitching had gone out of use, but there is archaeological, literary and pictorial evidence for perforation as well as other forms of decoration at the time of these lists.

Finally winter-shoes, for which there is written evidence, are also missing from these lists.

5.2 Documentary and pictorial evidence for decorated shoes

In many documents and illustrations from medieval Europe footwear is described or depicted with decoration which can be recognized in the archaeological material. The documentary and illustrative material which is presented here is a more or less random sample from an enormous amount of information.

In Olaf the Gentle's Saga Snorri tells that new dress customs arose during Olaf's reign (1066–93), including *"uppháfir skuar ok allir silkisaumaðir, en sumir gullagðir"* ('high shoes, all stitched with silk and some of them gilded'). The same description of shoes is found in the saga about the sons of Harald Hardråde in volume VI of the Formannasögur series (FmS VI, 440). The text as it appears here is is an edited version which has survived in two medieval Icelandic manuscripts, *Hulda* and *Hrokkinskinna*. These start with King Magnus the Good (c 1035) and end with the Battle of Re in 1177 (Louis-Jensen 1977, 1).

There have been various ideas about the relationship between the *Hulda* and *Hrokkinskinna* manuscripts and other saga texts such as *Morkinskinna* and *Heimskringla*. The conclusion seems to be that Hulda and Hrokkinskinna are not original, but a compilation of texts from Heimskringla, Morkinskinna and other sagas (op cit, 5).

According to Louis-Jensen (op cit, 178) the passage in *Hulda* and *Hrokkinskinna* where shoes are mentioned was originally in *Heimskringla*. Snorri was writing his Sagas of the Norse Kings in the 1220s, building on Scaldic lays, oral tradition and two earlier manuscripts dealing with the Norse kings, *Morkinskinna* and *Fagrskinna*. *Morkinskinna* is from c 1220, but there was prob-

ably an earlier version which has not survived, written in Iceland around 1200. The text begins with Magnus the Good (1035–1047) and probably finished around 1177. *Fagrskinna*, which was also written in the 1220s, follows the Norse kings from Halfdan the Black until 1177. With regard to the new fashions of dress in the reign of Olaf the Gentle, the description is practically the same in all three manuscripts (Morkinskinna, 289; Fagrskinna, 149; Heimskringla, 482) but only Snorri writes about "high silk-stitched shoes". What this means in the context of the history of footwear is not clear. Perhaps Snorri's supplementary information is based on his own observations of shoe fashions when he visited Bergen in 1218. Even though the *Heimskringla* text does not give any details about these shoes with silk stitching, they could be similar to the shoes with decorative stitching which have been recorded at Bryggen.

To what extent can we rely on the descriptions of dress and individual items of clothing which the saga-writers give? Are they describing the fashions of a century before or are they dressing their characters in contemporary costumes? There is no doubt that both situations are found in the various written sources, and the present examples also seem to include both within the same text.

Snorri – and the other saga authors – describe the new dress cutoms in connection with the appearance and development of the market towns in the reign of Olaf the Gentle (1066–93). From two of these places, Borgund in Sunnmøre and Trondheim, footwear has been excavated with simple embroidered decoration. In both places the footwear is dated to the eleventh century. There would therefore seem to be agreement in time and context between the archaeological finds from Borgund and Trondheim and the description of shoes in Olaf the Gentle's Saga.

It could well be that the saga writers are correct when they associate a wider use of embroidered shoes with the new and growing market towns in the second half of the eleventh century. On the basis of the absolute dating of the shoes from the Gullskoen site with decorative stitching, this type of decoration was dominant for more than 150 years after the time of King Olaf the Gentle. The description of shoes in his saga would at any rate strengthen the idea that embroidery was an early form of decoration.

Illustrations in foreign manuscripts include several examples of shoes with decoration which can be interpreted as embroidery. A number of English illuminated manuscripts from the period c 975–1150 and other contemporary illustrations contain examples of men and women wearing shoes with a simple embroidered decoration resembling the toe-to-instep band (Pritchard 1987, 8). In a scene on the Bayeux tapestery from c 1066 William the Conqueror is also wearing shoes with a toe-to-instep band (Gibbs-Smith 1974, fig 16). The tapestery was made between 1066 and 1077. A Scandinavian example of an illustration of embroidered shoes is on a mural in the church at Sindberg in Jutland which shows the punishment of women taken in adultery. Among the mass of feet in the mural at least one pair is wearing embroidered shoes. The mural is dated to the end of the twelfth century (Broby-Johansen 1947, 97).

The great work *Hortus deliciarum* ('The Garden of Delights') by Abbess Herrad von Landsberg includes several illustrations of people wearing decorated shoes which can without doubt be identified as embroidered. Herrad was born in Landsberg Castle probably some time between 1125 and 1130. In 1167 she became abbess of Hohenburg near Strasbourg and wrote the Garden of Delights for the instruction and edification of the nuns in the convent. The book is a collection of short pieces and the abbess says that her main sources were the Bible and philosophical works inspired by God. A number of miniatures illustrate the text. Concerning the costume in the illustrations, Straub and Keller write: "Let us also notice that the figures of the Divinity, of Christ, the angels, the prophets and the apostles wear the traditional costume of ancient Christian art, as in ancient mosaics. All the other figures wear contemporary dress. The Jews are recognizable by the pointed caps which they were obliged to wear during that period in the Christian countries. The warriors of the Old Testament are Knights of the twelfth century, wearing chainmail, their shields are long and triangular, of various colors, without armorial bearings" (Straub & Keeler 1977, 9). In all, the miniatures include some fifty figures who are wearing embroiderd footwear and in many cases the embroidery is shown in such detail that it is possible to find great similarities with some of the patterns on the Gullskoen finds. Of the patterns which can be identified – with reservation – the majority are reminiscent of our Patterns A, C and F (figs 63 & 64). The patterns are so distinctive that the great similarity between Abbess Herrad's drawings and the archaeological finds

cannot be coincidental. There can be little no doubt that Harrad von Landsberg had seen men and women wearing shoes embroidered with patterns like ours.

There is also a drawing by Matthew of Paris, the English Benedictine monk, painter and sculptor (c 1200–1259), which shows two noblemen wearing embroidered shoes (Evans 1966, 199).

The finds of embroidered shoes from the Gullskoen site are commonest in Periods 2, 3 and 4 (ie from before 1170 to 1248). It occurs on all types of footwear except high laced shoes and boots, and it the usual kind of decoration on thong shoes and low laced shoes. On strap shoes it only occurs on the earliest examples.

Judging from the finds from the Gullskoen site and other archaeological examples as well as the non-archaeological comparative material, it would appear that embroidery on shoes was most common in the twelfth and thirteenth centuries. In the limited amount of illustrative mate rial which has been studied, no embroidered shoes later than c 1250 have been noted and this agrees well with the dating of the footwear with embroidered decoration from the Gullskoen site and other excavations. After the mid-thirteenth century other types of decoration take over, in particular perforated patterns.

In Norse literature and in medieval Norwegian documents there appears to be only one reference to shoes with perforated patterns. This is in an inventory from 1340 of King Magnus Eriksson's possessions in Båhus Castle, which includes 30 pairs of '*uthugnæsco*'. According to Fritzner (IV, 403) the Old Norse term '*uthoggin*' can mean "cut out" and when referring to shoes it can be translated as "with pierced or perforated uppers".

Nordic medieval art contains at least two illustrations of shoes with pierced decoration. They are both in *Den islandske tegnebok* which is the only surviving medieval Nordic copy-book (KLNM XII, 187). One picture shows the Adoration of the Magi. The infant Jesus is sitting on Mary's lap, and Mary's shoes, which can be seen sticking out from beneath her dress, are decorated with a perforated pattern (Fett 1910, 2, pl 6). The other illustration is a depiction of a struggle between men and figures resembling humans. One of the latter is wearing shoes with a checked pattern which can be interpreted as perforations (op cit, pl 41). The copy-book is thought to be the work of an Icelandic cleric some time in the fifteenth century (KLNM XII, col 187).

There is a portrait of Robert of Anjou, King of Naples, painted around 1340, in which the king is shown wearing shoes where most of the upper appears to have been pierced in a pattern (Evans 1966, 287).

The few examples where shoes with perforated decoration are described or illustrated compare well in date with the archaeological dating of this form of decoration to the period beginning after 1200 and going on into the fifteenth century.

5.3 Written or pictorial evidence for skew toes

Norwegian medieval documents do not seem to contain any descriptions of the toes of shoes and consequently there are no references to skew toes. According to Pritchard (1987, 20, no. 317) the Norman chronicler Ordericus Vitalis (1075–c 1141) described toes "curled like scorpions' tails and rams' horns", a description which would fit the longest examples of skewed toes.

In the church at Fresvik in Sogn there is a statue of St Olaf from c 1250–60 wearing shoes which are not shown in detail apart from the toes which have markedly skewed points (Schia 1977, 188, fig 122).

Toes which could fit the definition of skew toes are depicted in one, or possibly two, scenes on the early fourteenth-century antependium from the church at Nes in Sogn (fig 58).

In a review of fourteenth-century footwear based on early paintings from the Netherlands, France, Germany and England, Groenman-van Waateringe (1975, 98, fig 3) found examples of the skew toe throughout the whole period.

In the church at Gislinge, Denmark, there is a mural of the Crucifixion in which one of the soldiers is wearing shoes with toes which are strongly reminiscent of skewed toes. The mural is dated to around 1450 (Broby-Johansen 1947, 115).

There is both written and pictorial evidence for skew toes from the beginning of the eleventh century to the second half of the fifteenth. Compared with the dating of the skew toe from archaeological finds, the opening date agrees well, but the pictorial evidence shows that the form continued longer than the archaeological finds suggest. Surviving illustrations are perhaps more reliable, since the archaeological material from the fifteenth century and later is limited and possibly not representative for the period.

5.4 Piked and square-toed shoes

The true piked shoe which is one of the best-known and most frequently illustrated types of medieval shoe, was not recorded among the finds from the Gullskoen site and is moreover seldom found on excavations. The "classic" piked shoes are mainly known from descriptions, illustrations, ordinances, etc.

The piked shoe seems to have started in Poland in the mid- or late-fourteenth century (Enlart 1916, 268), giving rise to the French term 'Poulaine' and the English 'Crakow' to describe this type of shoe.

Piked shoes were only worn by males and they began to have an effect on the other garments which began to be worn shorter so that the points of the shoes could be clearly visible (Wloch 1962, 74). In time, the points became so long that they had to be fastened to the leg below the knee.

In England laws were introduced which fixed the length of the point with regard to the wearer's social status: c 15cm for ordinary citizens, c 30cm for minor aristocracy, and c 60cm for high aristocracy (op cit, 75).

The fashion of piked shoes reached its height around 1460–70 (Enlart 1916, 268). Towards the end of the fifteenth century they had become socially degraded and this probably led to the change in fashion around 1480. The upper classes now began wearing shoes with square toes, which soon became the new high status footwear. This type of shoe was not recorded among the finds from the Gullskoen site, but it was found in other parts of the excavations at Bryggen. The fashion with squared toes reached its height in the period 1530–1545, and was then followed by shoes with more moderately pointed toes (Grieg 1941, 213).

II SHOES IN A SOCIAL HISTORICAL CONTEXT

1 THE CIRCUMSTANCES OF THE FINDS

The shoes from the Gullskoen site have been used; they are most often worn out and had been thrown away. They were found in archaeological layers with a number of other types of objects, household refuse, wood-chippings, etc. and in most cases with no obvious association with houses, workshops, or other structures.

On account of the situation in which they were found, it is difficult to find answers to questions concerning the area from which they had come and what social or occupational environment they represent. Like other objects, the footwear could have reached its final resting place as rubbish from a nearby or a distant part of the town. The theory that rubbish was gathered together and used for backfilling the harbour area is based primarily on stratigraphical observations from the whole of the Bryggen excavations.

Over large areas of the site deposits a metre or more thick were recorded in association with the rebuilding after major fires and in the periodic expansion out into the original harbour basin. The layers were so thick and rich in finds that it has been assumed that they not only refer to settlement and activities in the immediate area but to an extensive collection and transport of material from the "whole town".

On the Gullskoen site, the building up of deposits could be followed from the point when it started on the beach in the eastern part of the site. In Period 2 (pre-1170) these deposits stretched across the natural beach area out to the quays erected on posts which had burnt in Fire 7 (1170) (Herteig 1985, 28, fig 14). In Period 3 they overlay the remains of Fire 7 and lay in between the wharfs burnt in Fires 7 (1170) and 6 (1198).

Periods 2 (pre-1170) and 3 (1170–1198) correspond to Phases 2, 3.1 and 3.2 in Herteig's division of the expansion out into the original harbour basin (the sub-phases a and b are not relevant to the Gullskoen site). Herteig describes the phases thus (op cit, 28):

> «Phase 2 The so-called beach-phase is the expansion in front of this shorezone and is associated with structures reaching to the front of the actual beach and with wharveś raised on piles in front of them. This phase is also terminated by a fire.
>
> Phase 3.1 is represented by an unburnt building phase in which there is an extensive "land-reclamation" and the waterfront is moved a further 12–18m out into the deeper waters of the harbour-basin. The buildings are fronted with wharves on piles.
>
> Phase 3.2 After further "land-reclamation" the waterfront is pushed forward a further 2.8–13m, in some places with separate wharves, in other places without them.»

From the stratigraphy and the structures related to the phases, Herteig draws the following conclusions (op cit, 28): "Even though Phase 2 takes in the greater part of the 25–30m wide shorezone, thus providing an enormous area of beach-won land, no special technical demands are made in the construction of the foundations of the buildings and the wharves. Only in the subsequent phases were special requirements imposed for the stability of the new type of foundations which were from then on combined with an extensive and intentional dumping of refuse in the immediate harbour-basin.

«The great expansion in phase 2, the so-called beach phase, must not be over-estimated. It is true that it represents an enormous gain in land-area, but it was essentially on dry land and presented no technical problems with foundations for the buildings or quays. As previously mentioned it was not until the following phase that special demands were necessary to ensure the

stability of the new types of foundations which had to be employed as the structures progressed into deeper and deeper water.»

In the light of the conditions described here and the conclusions drawn from them, it is difficult to see any great need of deposits to back-fill the harbour basin at any rate in Period 2 (pre-1170) and also to some extent in Period 3 (1170–1198). In my opinion there are no archaeological data which would disprove the fact that the deposits grew up around the structures erected on posts, as a result of the tidal zone and beach area being used as a dumping ground by a population who lived just up from the beach.

Regardless of whether the deposits are regarded as a purposeful back-filling or the result of dumping, the question arises as to how near or far from the place where they were found had the objects been used and originally discarded. Neither the archaeological nor the documentary sources can give any simple or final answer to the question.

In all the problems about the shoes found on the Gullskoen site and the conclusions drawn from them, it is probably correct to assume that they were associated partly with the people who lived inland of the area, and partly with others living at various distances away.

2 DISTRIBUTION OF SHOES BY AGE AND SEX

As mentioned previously, distinction was made in various medieval documents, such as price-lists, between men's and women's shoes. Children's shoes are not mentioned. However, it is not possible to see any distinction in the archaeological finds, either from their shape or from the circumstances in which they were found, which could show the age or sex of the wearer. The only feature which might provide a basis for considering distribution by age are the variations in size.

On the basis of skeletal studies it has been shown that the average height in Norway in the Middle Ages was significantly less than today: the average height is estimated to have been between 160cm and 170cm for men and about 10cm less for women (Holck 1970, 74). According to the Central Bureau of Statistics in Norway (pers comm) the average height of military service recruits in 1988 was 179.8cm. No official figure is available for the average height of women today, but as in the medieval period they are shorter than men. The average height has therefore increased significantly from the Middle Ages to the present day, and as the proportions of the human body have not changed, the foot has also increased in length.

Transferred to the subject of our thesis these anatomical data imply that, on the average, adult men and women in Norway in the Middle Ages used smaller shoe sizes than their counterparts today. We cannot therefore expect to find today's commonest and largest shoe sizes among the archaeological finds.

Transferring shoe sizes as determined by age and sex today to the medieval finds would not be acceptable, but with a number of reservations it is possible to consider – and at least to suggest – a distribution pattern according to age based on the measurable variations in size among the finds.

Distinct differences in size can be shown among the uppers, but on account of the varying degree of preservation such differences are difficult to document metrically.

The finds include 1,379 complete soles which provide an appropriate basis for an analysis of the size differences. The lengths vary from 10cm to 32.6cm, but as both the circumstances of the find and the conservation process have doubtless affected the lengths, our measurements are hardly identical with the original ones. However, post-excavation changes should not have affected the relative distribution in the size of the soles.

In order to present the variations in size in the easiest possible way and at the same time make it easier to compare them with modern shoe sizes, the sole lengths have been converted to modern continental shoe sizes by multiplying the length by 1.5 (Groenman-van Waateringe 1978, 185). The complete soles from the Gullskoen site range from size no. 15 to no. 49 (fig 56). A small number of uppers of most of the shoe types and also among the miscellaneous finds were found with measurable soles and table 6 shows that with the exception of low ankle thong shoes all types of shoes as well as the miscellaneous shoes are represented with both large and small shoes sizes.

In the modern footwear industry the dividing lines between adult and children's sizes and between men's and women's sizes are apparently neither distinct nor standardised. The continental shoe numbering system runs from nos. 12 to 48, and there is no definite dividing point between children's and adult sizes. A German manufacturer of sporting footwear places the division between children's and adult sizes at between sizes 35 and 36. According to a footwear wholesaler in Bergen adult models smaller than size 36 seldom occur, while according to another wholesaler typical children's shoes seldom occur in sizes as large as no. 35.

From the partly divergent data it can tentatively be concluded that within the continental shoe sizes the division between children's and adult sizes lies between sizes 34 and 35 (cf table 6).

By using a method based on statistical data from a Dutch shoe manufacture, Groenman-van Waateringe has made a quantitative distribution

Sizes	15	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	Total
Number	1	3	1	3	10	10	11	15	15	27	18	30	21	35	43	49	70	81	91	117	106	103	117	117	67	75	43	31	38	20	2	4	4	1	1379

Fig. 56 Distribution of complete soles according to modern continental shoe sizes.

Shoe types	Continental shoe sizes																														
	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	Sum
Low ankle thong shoe																								1	3	1							5
High ankle thong shoe						2	2	1	3	3	1									1	1	1	1	1	1			1					19
Leg thong shoe						1												2				1	5	2	7	2	2	6	1		1		30
Low laced shoe									1			1		2	1	3		3	2	8	9	10	5	3	3	2	2	1	1			1	58
Strap shoe	1					2	1		2	1	2				2	1	1	1	2	1	1	3	1		2								24
Pumps																1	6		3	6	1	2	2		1	1							23
Low boot			1				1		1								1	1		1	2		1										9
Miscellaneous footwear				2	1	2	1		1		2	2	2		2	2	2	5	2	5	4	5	2	3	4	2	2	2	2			1	58
Sum	1		1	2	1	7	5	1	8	4	5	3	2	2	5	7	10	12	9	22	18	22	17	10	21	8	6	10	4		1	2	226

Table 6 Distribution of shoe types according to continental shoe sizes.

by age and sex of footwear from five sites: Haithabu, Oslo, Borgund, Lübeck and Amsterdam, and has drawn conclusions about the distribution of population on the basis of the variations in size (Groenman-van Waateringe 1984, 55). Partly on account of the at times arbitrary age distribution based on modern shoe sizes and the lack of Norwegian statistical data, and partly due to some unclear points in Groenman-van Waateringe's method, a percentage distribution of men, women and children on the basis of shoe sizes will not be attempted here. The variations in size, however, do provide some basis for an analysis of the population and for drawing some conclusions about trends in its distribution.

From figure 56 it can be seen that after the lengths in centimetres have been converted to modern shoe sizes, practically all continental shoe sizes are represented among the finds from the Gullskoen site. The frequencies are naturally lowest for the three sizes at the lower end of the scale (15, 17 and 18) and the four at the upper end (46–49). The greatest numbers occur between sizes 35 and 39 inclusive, making up more than 40% of the total. Sizes less than 35 are represented with almost twice as many finds as sizes larger than 39. Figure 56 shows a marked bias towards the smaller sizes: we note, for example, that the commonest men's sizes today, nos. 42–44, are represented with relatively few examples. On the basis of modern sizes, most soles in figure 56 would belong to shoes for children, adolescents and adult women, but on account of the differences in the foot lengths between modern and medieval men and women, we must make adjustments to our conception of the distribution of the wearers. It is thus probable that no. 39 soles represent the commonest size for medieval adult men, in contrast to today. Our "normal" sizes of 42–44 would have been used by a minority of unusually tall men.

As previously mentioned, it is difficult to give an exact shoe size marking the division between children's and adult shoes, and when it comes to our finds this is quite impossible. From a general assumption about the proportional distribution of shoe sizes and the age of the wearer we can use the finds which have been converted to modern shoe sizes as the basis for observations about the population distribution. In the course of the approximately 500 years covered by the soles in figure 56, great variations in the frequency of the different sizes are seen to occur. The frequency variations can scarcely be explained as chance conditions in the field but most likely reflect changes in the age distribution of the population.

In order to compare the chronological variations in size of the finds and the interpretation of the population in Bergen in the Middle Ages derived from documentary sources, the variations in size have been divided into the following three

periods: 1) pre-1170–c 1250, 2) c 1250–c 1400, and 3) c 1400–c 1700 (fig 57).

In the earliest period, pre-1170–c 1250, practically all the recorded shoe sizes are represented. The predominant sizes of 41, 39 and 37 are also prominent and from the soles it would seem that shoes from children's to adult sizes are present. The majority of adult sizes belong to the relatively large sizes which were perhaps commonest for men. The number of medium sizes, however, which perhaps mainly belonged to women and the very young is also considerable.

In the next period, c 1250–c 1400, size 35 is clearly in the majority. Of the sizes larger than 35, there is a considerable increase in the numbers of sizes 36 and 37 and a small increase in size 38. For size 39 and over there is a clear reduction in numbers compared with the previous period. With regard to sizes smaller than 35 there is almost a doubling of sizes 34 and 33 compared with the previous period. The general impression of the distribution of sizes in this period is that the centre of gravity has moved towards the smaller adult sizes. In the context of the population the distribution in size can indicate a bias towards women and/or young men.

Most of the smaller sizes are also present in the latest period, from c 1400 to c 1700. The bias in this period generally speaking is towards the "smaller" adult sizes, with the large sizes 38 and 39 showing a clear reduction in numbers compared with the previous period. To judge from the distribution of shoe sizes there does not seem to have been great changes in the population since the previous period.

From the chronological distribution of shoe sizes shown in figure 57 it is possible with several reservations to draw the following conclusion. In the period prior to the mid-thirteenth century the population was characterized by adults, most of whom were apparently male, but adult women, youths and children are also present. After the the middle of the thirteenth century it seems that there was an increase in the numbers of women and youths relative to male adults, and there also appears to be a significant number of children after the mid-thirteenth century. The latest period, after c 1400, is also characterized by female adults and youths of both sexes, and children are also present in this period.

The documentary evidence for Bergen's earliest period provides no direct information about the population in the Gullskoen area or elsewhere in Bryggen. The documents relate mostly to men, with little about women and with scarcely no mention of children (Helle 1982, 180). However, archaeological finds such as toys and spindle whorls provide direct evidence that the

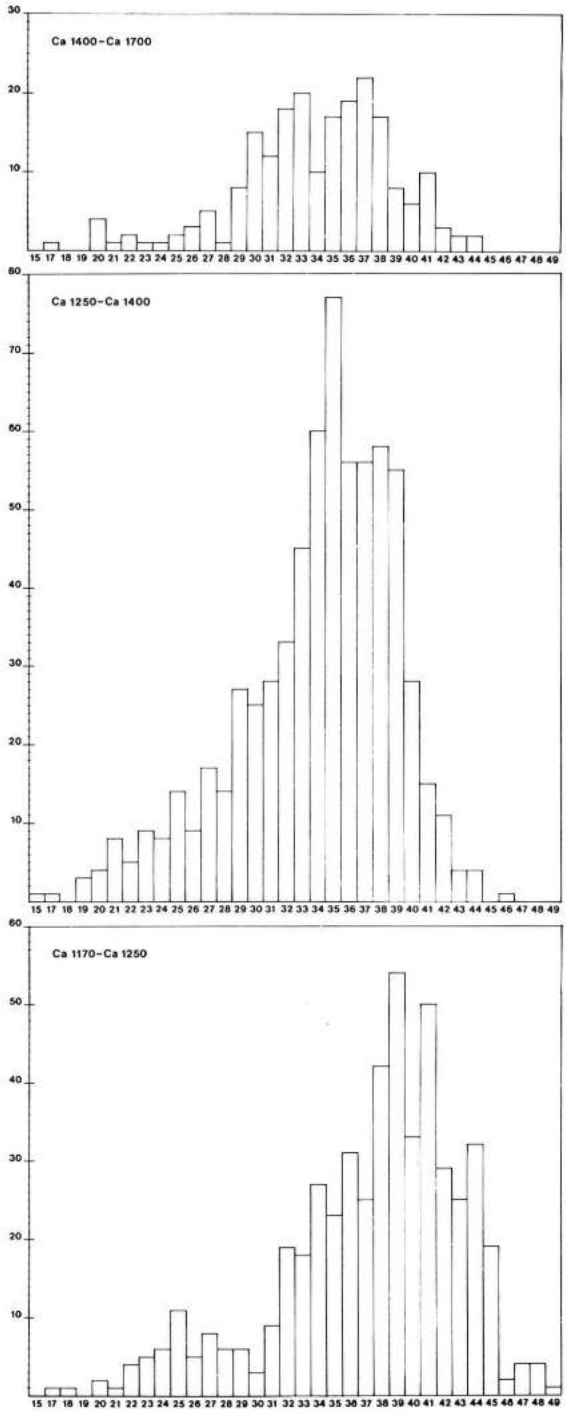


Fig. 57 Chronological distribution of the shoe sizes.

original inhabitants of the dwelling houses along the east bank of Vågen consisted of men, women and children, and this is also shown indirectly by the documentary sources. It may be these inhabitants whose traces we have found in the distribution pattern of shoe sizes in the first period prior to the mid-thirteenth century.

From the documentary evidence, however, we know that the population here changed in the second half of the thirteenth and fourteenth century. The changes were linked to the fact that foreigners played an increasingly larger role in Bergen's foreign trade and this affected the pattern of habitation.

The majority of foreigners towards the end of the twelfth century were Englishmen and Germans (Helle 1982, 376). It was the Germans, however, who strengthened their position and in due course dominated foreign trade. From the 1250s German merchants began to rent premises from Norwegian property owners in Bryggen and stayed on during the winter, but there were still Norwegians in most of the Bryggen properties in the first half of the fourteenth century and it can be safely assumed that native citizens clearly dominated in numbers (op cit, 722).

After 1350 the written evidence is too sparse to give by itself a comprehensive picture of the habitation pattern at Bryggen. Helle (*ibid*), however, is of the opinion that it must be more than a coincidence that we only occasionally encounter Norwegians in the properties in this area.

In 1411 there were clearly Norwegians still living in Dreggen on the north side of the St Mary's Church thoroughfare, since a Norwegian testimonial was drawn up in this property in that year. This is the last time, according to Helle (*ibid*), that we have more or less definite evidence for Norwegians were living in Bryggen.

It is not impossible that there were Norwegians living in Bryggen for longer than the few surviving documents suggest, but the fact that there are so few documents is a possible indication that the number of Norwegians living there had greatly diminished after the mid-fourteenth century and was more or less reduced to nothing realtively early in the fifteenth century (op cit, 723). In the first half of the 1370s Germans owned buildings in several of the Bryggen properties, and in the course of the fifteenth century more buildings in several more properties were taken over by Germans (*ibid*). During the fifteenth century at the latest it was common for Germans to own the buildings in Bryggen, and German ownership in this context clearly also meant that Germans resided there (op cit, 726).

The Black Death in 1349–50 and the establishment of the Hanse Office soon after led to the great swing from Norwegians to Germans in Bryggen. After this there was a serious reduction in the number of Norwegian residents and a breakthrough for German ownership and an increase in the number of German residents (*ibid*). In the course of the late Middle Ages the Germans in the Hanse Office had taken complete occupation of all the Bryggen properties (op cit, 722).

According to the documentary evidence, the German residents who gradually took over Bryggen after 1350 were exclusively men and, moreover, they were forbidden to marry (op cit, 761). The archaeological finds partly strengthen the evidence provided by the written sources and partly supplement it. It has previously been shown that there was a large number of small adult and children's sizes among the soles from the period 1250–1400. The distribution by size can be interpreted as a confirmation that there was a bias towards Norwegian inhabitants in the area throughout the fourteenth century. Also in the period from c 1400 to c 1700 a considerable number of the soles belong to small sizes right down to children's (cf fig 57). The archaeological finds thus indicate that the population after 1400 may have been more varied than the documentary sources imply. The number of small shoe sizes in the period after 1400 may also be saying something about the situation within the German society which had become established in Bryggen. The youths, or *jungens*, were an important part of the working force in Bryggen both indoors and outdoors (op cit, 741), who could be as young as 14–16 years old (Koren-Wiberg 1932, 48). It is therefore not inconceivable that a large amount of the footwear which can be classified as women's and children's in reality was worn by young boys and youths. This cannot apply to all the small soles, however, as some of them are so small that they must have come from shoes belonging to individuals who from both a biological and a social point of view were infants. Perhaps the "children's soles" and a number of the other sizes can help to provide a more varied picture of Bryggen than that of a totally male German society in the late Middle Ages.

3. SHOES AS EVIDENCE FOR THE WEARER'S SOCIAL CIRCUMSTANCES AND STATUS IN MEDIEVAL BERGEN

Were there any people in medieval Bergen who were so poor that they could not afford footwear, but went barefooted all year round. Neither the archaeological finds nor any other sources can give an unambiguous answer to this question, but from the climatic conditions alone it is difficult to believe that anyone could manage without footwear all through the year.

In her thesis on the German shoemakers in Bergen, Ruth Edvardsen has tried to calculate the cost of shoes in Bergen around the year 1300, taking as her starting-point the price of a pair of men's shoes given in the tariffs in the town by-laws of 1282 and comparing it with the price of corn (Edvardsen 1975, 14). She has found that a pair of men's shoes could have cost as much as was needed to feed a person for about 12 days. In a comment to Edvardsen's calculations, Knut Helle (1982, 428) writes: "What the 1282 by-laws confirm is that the best men's shoes should cost 1/2 *øre* (= 1.5 *ørtug*) and the best women's shoes 1 *ørtug*. An average smith (working in wood or metal) would earn 6 weighed *øre* per month. In other words, a pair of the best men's shoes would cost him 1/12 of his monthly earnings, and a pair of the best women's shoes would cost 1/18." Helle concludes that shoes were expensive, but that a pair of shoes would nevertheless not be unattainable for a skilled craftsman.

Edvardsen (op cit) thinks that clogs would have been worn daily and that leather shoes were only worn on special occasions. Among the wooden objects found on the Gullskoen site and elsewhere in the Bryggen excavations there are no remains of clogs. This does not necessarily mean that they were not used, but the sagas suggest that leather footwear was most common both for daily use and on special occasions. In Egil's Saga, which according to Leiv Heggstad was probably written between 1150 and 1240 (Egilssoga, 7), there is a passage referring to Trond the thrall. While he was out one day guarding the sheep, he unloosed his shoes, and a little later on he "sits down and fastens his shoes" (op cit, 175, 176). The words which have been chosen (*løyst* and *batt*) imply a method of fastening the shoe which would be compatible with different kinds of leather shoes, but could hardly apply to clogs.

In the Orkney Saga, which according to Anne Holtsmark may have been written between 1214 and 1231 (Orknøyingenes saga, 7) there is an account of Svein Asleivsson taking Jon Veng by surprise: "Jon sat inside in his shirt and underpants, and when he heard the noise which Svein was making, he laced up his shoes and fled at once from the fire and away from the farm" (ibid, 186). Here again a word has been chosen (*bandt*) which indicates that the shoes which Jon Veng hastily put on were leather shoes that could be fastened.

That shoes were worn for various kinds of daily work can be seen in medieval pictures. The

Fig. 58 Shepherds wearing shoes with skewed toes (from the medieval altar frontal from Nes Church, Sogn).

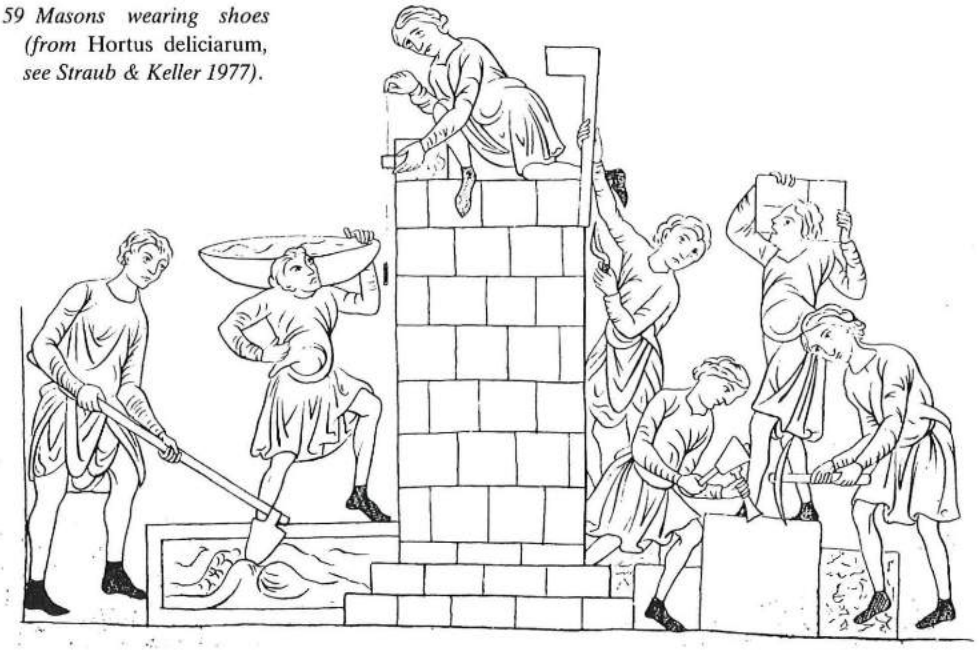


Fig. 59 Masons wearing shoes (from Hortus deliciarum, *see Straub & Keller 1977).*

Fig. 60 Woodmen and harvesters wearing shoes (from Hasund 1934).

altar frontal from Nes Church, Sogn, from c 1300 includes a scene of the angel announcing Christ's Nativity to the shepherds, both of whom are wearing high skew-toe shoes (Hasund 1934, 129) (fig 58). The same scene is painted on the altar frontal from Tresfjord Church, Sunnmøre, from the end of the thirteenth century, but here one of the shepherds is barefooted. Whether the lack of footwear is an expression of the social status of this shepherd, or whether it is just an artistic effect, is impossible to determine.

The wearing of shoes among working people both in the town and in the country seems, however, to be quite normal. Masons are depicted wearing shoes in the twelfth-century *Hortus deliciarum* (Straub & Keller, 1977, pl X) (fig 59) and

on a drawing from the mid-fourteenth century (Evans 1966, 114). Fifteenth-century Icelandic drawings show woodmen and harvesters wearing shoes (Hasund 1934, 147 & 206) (fig 60).

Medieval illustrations often depict the poor and sick barefooted. Abbess Herrad von Landsberg shows Lazarus with bare feet as he sits among the dogs of the rich man (Straub & Keller 1977, pl XXXII) (fig 61) and a woman and two men possessed by evil spirits and a leper are also shown barefooted (*ibid*, pl XXX) (fig 62).

We also have written references in the early Middle Ages and later to poor people needing to get footwear from others. The Norwegian dream-vision of Draumkvedet, which was probably written in the thirteenth century, contains the following verse: "Sæl æ dei i föesheimen / den fattike gjæve skor / han tar no inkje bærfötte gange / på kvasse heklemoe" (Blom 1971, 258). ("Blest is he who in this life / gave shoes to the needy poor: / he will not have to walk bare-foot on the sharp and thorny moor /. Tongue shall speak and truth / reply on Judgement Day".) (Liestøl 1946, 15.)

From the end of the fourteenth and from the fifteenth century several wills have survived, drawn up by Lübeck merchants who had lived

Fig. 62 A leper with bare feet (from Hortus deliciarum, *see Straub & Keller 1977).*

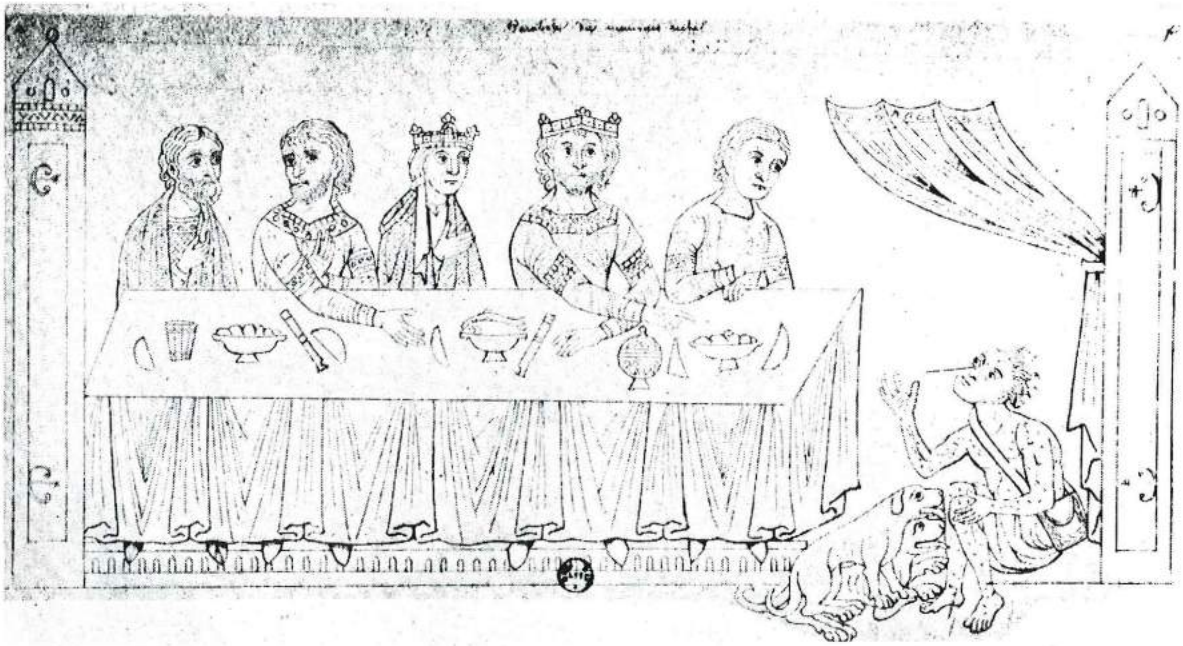


Fig. 61 Lazarus with bare feet among the rich men's dogs (from Hortus deliciarum, *see Straub & Keller 1977).*

in Bergen and who wished to leave shoes to the poor there. For example, in 1396 Kersten Nyestad left 100 pairs of shoes to "*den arm luden*" in Bergen and in 1406 Mathias Burden gave instructions in his testament for "*200 par mansko unde vrowenscho*" ('200 pairs of men's and women's shoes') to be made for "*die arm luden*" in Bergen (Bruns 1953, 40, 42).

Since it has been shown that shoes were worn daily by all levels of society, it can be asked whether the finds from the excavations show any social differences among wearers.

The various forms of decoration are the only features which probably testify to differences in the economic and social status of the wearers. The possibility cannot be excluded, however, that the decorated and undecorated shoes represent various forms of use, for work or for special occasions.

The circumstances of the finds provide no information about the social context to which the decorated shoes belonged. We must attempt to ascertain this from other sources.

The Bayeux tapestry from 1066–77 provides one such source: here only William the Conqueror is shown wearing embroidered shoes. In *Hortus deliciarum* (Straub & Keller 1977) the following secular and spiritual figures of high status are shown wearing shoes decorated with embroidered patterns which in many cases can be recognized as the same as those recorded on the archaeological finds: a queen (pl XI), Moses (pl XIV), King Solomon (pl LIV), a woman with a crown and a king (pl LV), a guest at a royal wedding (pl XXXIV) (fig 63), and young noblemen (pl LXVI) (fig 64). The Abbess Herrad's drawings demonstrate that decorated footwear was part of the finery for wealthy people of both sexes with spritual or worldly power in the late twelfth century.

From the Danish frescoes from the late twelfth century mentioned earlier (p 67) it can be deduced from the dress that it is persons of high status who are wearing embroidered shoes (Broby-Johansen 1947, 97) (fig 65).

Of the embroidered patterns, the most impressive and the most interesting are perhaps those which are partly or entirely made up of runic characters. Among the finds from Bryggen five uppers have so far been noted with runic patterns and three of these were found on the Gullskoen site. According to runologists only one gives any linguistic meaning. This is on a left low side-laced shoe and the pattern of runic signs runs continuously from the rear edge of the lace opening, around the foot opening and down the middle of the vamp. This is also the direction in which the letters are to be read (fig 66).
Helge Dyvik was the first to interpret the text (pers comm 1980). The first six runes are *imulil*, which neither Dyvik nor other runologists have been able to translate. On the basis of a drawing which later proved to be incomplete, Dyvik interpreted the rest of the inscription as a variation of the Virgilian sentence "Omnia vincit amor" – 'Love conquers all' (pers comm 1979).

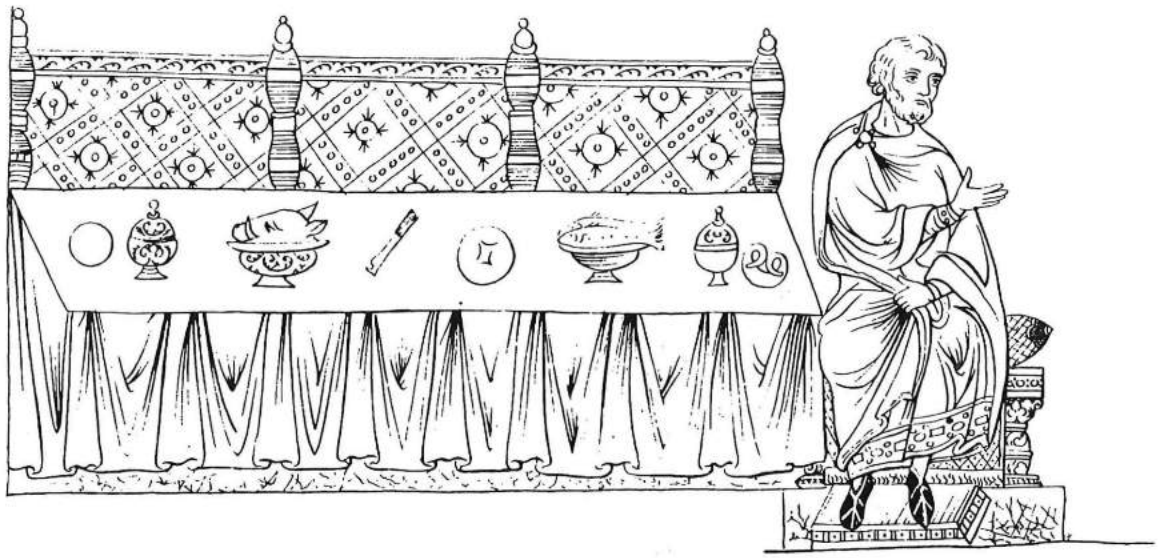


Fig. 63 A guest at a royal wedding wearing embroidered shoes (from Hortus deliciarum, *see Straub & Keller 1977).*

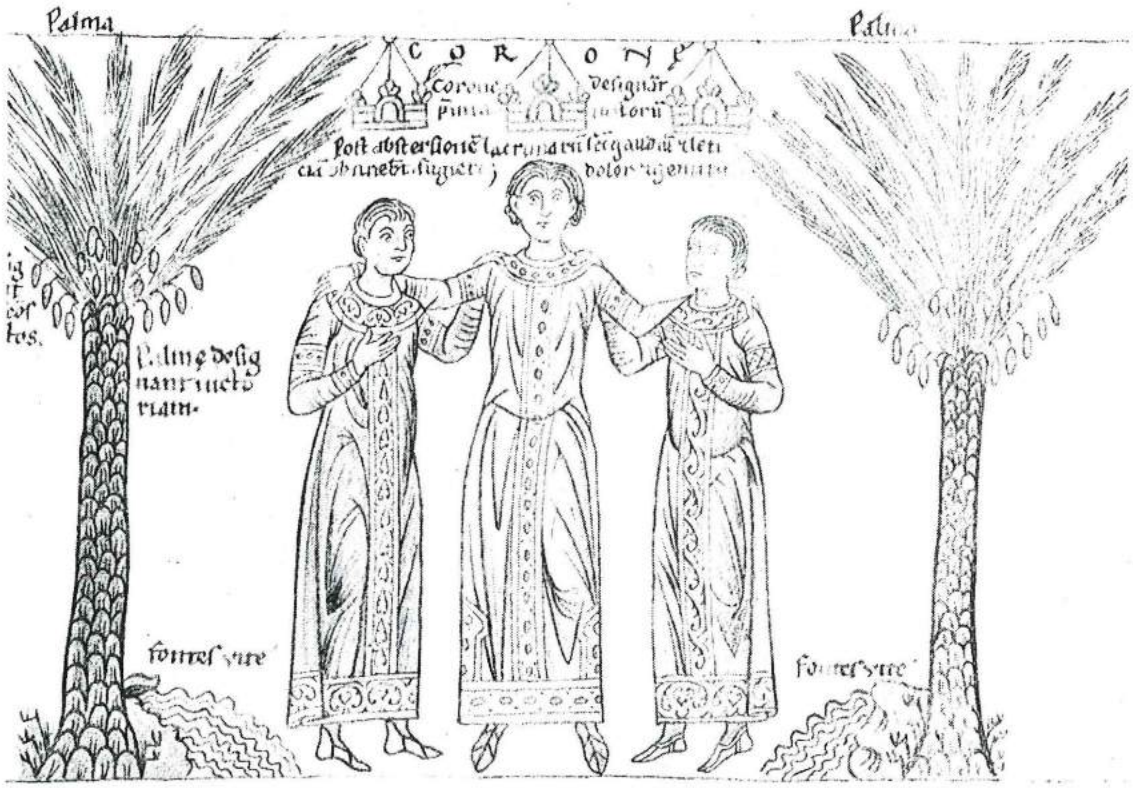


Fig. 64 Young men wearing embroidered shoes (from Hortus deliciarum, *see Straub & Keller 1977).*

A subsequent study of the original find has shown that the word which Dyvik from the drawing had read as *imar* but had suggested should be interpreted as "amor" was in fact *amor*, thus confirming his first interpretation.

In his analysis of the inscription, the runologist James Knirk draws attention to the two signs following *omnia* which form the word *op*. By comparing the Bryggen text with a longer quotation from Virgil, Knirk concludes that *op* should be read as *et* (pers comm 1986) and on this basis suggests that the remainder of the quotation ("nos cedamus amori" – '...and let us yield to love') was on the right shoe belonging to the pair.

We can assume that both shoes in the pair were decorated with embroidery and that there was a relationship in the form and content between the patterns. It would thus seem reasonable to believe that Knirk is correct when he suggests that the well-known Virgilian quotation was divided between the two shoes of the pair, of which only the left unfortunately has survived.

Virgil's verse was known and used in many contexts in the Middle Ages. Of the very few written examples from Scandinavia, two are from Bryggen – two wooden sticks inscribed with runes (Liestøl 1980, 11). In his comments concerning one of these, Liestøl wrote that it testified to a certain amount of book learning and showed that the writer had presumably attended school and learnt at least enough Latin to be able to appreciate the quotation (op cit, 12). Whether the same can be said of the shoemaker or other person responsible for the embroidered runic pattern on the shoe is perhaps doubtful. However, it can be assumed that the person who had ordered the shoes, for themselves or for someone else, and who had provided the shoemaker with a copy of the text, knew what it meant and understood the exhortation. Liestøl felt that the runic inscriptions with Virgil's praise of love suggested a "certain degree of liberality" in those who cut the runes or could read them (*ibid*).

Fig. 65 The High Priest and others stoning the woman taken in adultery. Several of the stone-throwers are wearing embroidered shoes (from Broby-Johansen 1947).

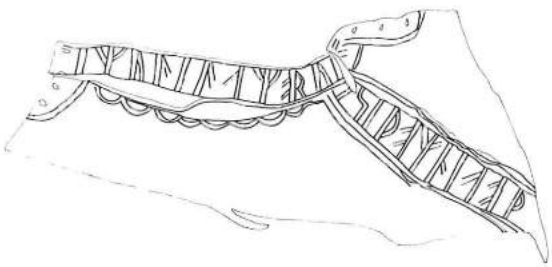


Fig. 66 An upper from Bryggen with a quotation from Virgil embroidered in runes.

At the time the shoes with the Virgil quotation were made and worn – in the late twelfth century – there were very few people in Bergen who could read and write Latin – or any other language. Literary activities in the city in the Middle Ages were associated with two main groups, the royal court and the ecclesiastical institutions (Helle 1982, 637). The text on the shoes would point to a secular rather than a theological environment, and it must be one of the earliest literary examples in Bergen. The shoes without doubt belonged a person in the upper levels of society in the town, but whether this person lived

Fig. 67 A hunting party. Several of the men are wearing pattens (from Evans 1966).

in Bryggen or whether it was just a worn-out shoe which ended up among the rubbish there is impossible to know. The size of the shoe and the text it carried suggest that it was a woman's shoe, perhaps a pair of wedding shoes which finally ended up in the rubbish on the Gullskoen site.

In the price list from 1282, embroidered shoes are not mentioned and the explanation may be that either they were no longer fashionable at the time the list was drawn up, or that they were so exclusive that they had be ordered especially and therefore no standard prices could be given.

The decorated shoes among our finds which have such an elaborate pattern cut in the upper that it can hardly stay together must be characterized as luxury articles, intended for persons whose wealth or power placed them far above most of society. It is therefore no surprise to find 30 pairs of "*uthoggnir skor*" – shoes with perforated patterns – on the list of King Magnus Erikson's possessions at Båhus Castle in 1340. Incidentally, at about the same time, King Robert of Anjou was painted wearing perforated shoes.

Judging from illustrations, wooden pattens were worn by people of different levels of society, both urban and rural. A French illustration from the mid-fifteenth century shows a hunting party with two elegant gentlemen wearing pattens (Evans 1966, 319) (fig 67). A mid-sixteenth century Dutch engraving shows a dancer who has kicked off her wooden pattens, while one of the spectators is shown wearing a pair (Salmen 1961, 55, fig 13) (fig 68). On a drawing by Pieter Bruegel (c 1525/30–1569) the Prince of Carneval is shown wearing pattens (Roberts 1982) (fig 69). It is difficult to draw definite conclusions about possible social differences in the use of wooden pattens on the basis of a few illustrations, but from a practical point of view, pattens could hardly have been usual for workers who had to move quickly or walk about a great deal.

What conclusions can be drawn about social conditions on the basis of the footwear from Bryggen when compared with partly contemporary written evidence and illustrations. The archaeological finds alone demonstrate that shoes were made for even the smallest infants and that children's shoes did not differ from adult's in quality or style. The richly decorated shoes and the crude repairs which could not have lasted very long probably represent opposite ends of the

Fig. 68 A rural dancing-scene. The dancer has kicked off her pattens (from Salmen 1961).

Fig. 69 The Prince of Carneval wearing pattens (from Claessen & Rousseau 1975, see Roberts 1982).

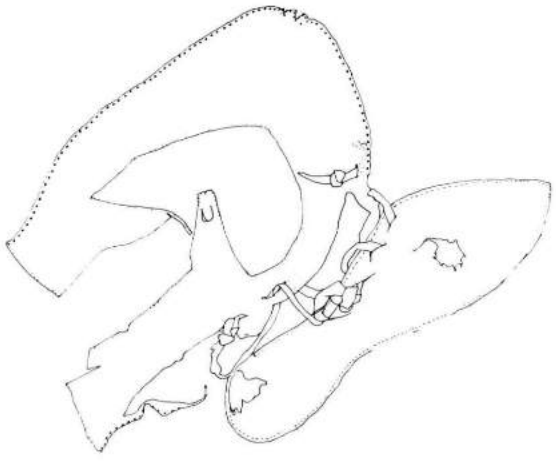


Fig. 70 An example of poor shoe repairing.

social scale in the society to which the shoes belonged. Among the embroidered shoes from before c 1250 we find examples which, when compared with contemporary written or pictorial sources, could conceivably have belonged to a Norwegian aristocracy. To judge from the shoes decorated with runes, including the one with the quotation from Virgil, this aristocracy included individuals with literary or linguistic interests and knowledge.

The shoes which lie between the two extremities represented by the elaborately decorated footwear and the coarsely repaired examples are characterized by a homogeneity of quality and form and probably represent the middle levels of society which made up the vast majority of the population. There is also evidence to show that wages could be paid partly in shoes, for example in the accounts for Bergenhus Castle for 1567 (Norske lensrekneskapsbøker V, 49, 51), and it is reasonable to assume that shoes formed part of people's wages earlier than this both in the towns and in the country.

The almost pathetic, poorly repaired shoes, where partly worn-out soles were crudely stitched to uppers (fig 70), were presumably worn by the poor such as the author of *Draumkvedet* and the merchants writing their wills in Lübeck had in mind.

4 SHOEMAKING AND SHOEMAKERS IN THE BRYGGEN AREA?

The shoemaker's lasts from the Gullskoen site, which are both dated to before 1200, form the earliest evidence for shoemaking in Bergen. Contemporary with these lasts and also from later periods are the considerable amounts of leather of various shapes and sizes without any traces of stitching, which have been cut from larger articles or from which pieces have been cut. The best interpretation is that they are off-cuts which have been left after leather articles have been cut out.

Among all the bits of leather without any stitching there are a relatively small number still with the animal hair. These have presumably been cut from hide which has not been properly tanned.

The leather finds from the Gullskoen site include a number of articles such as balls, sheaths, pouches, etc., but it is difficult to identify such objects on the basis of the off-cuts. However, a significant number of off-cuts can be interpreted as the results of shoemaking on account of their shape, first and foremost those from which pointed or semi-circular pieces have been cut (fig 49). When similar pieces from the Borgund excavations were shown to modern shoemakers and specialists in the leather trade, all agreed that these were off-cuts from shoemaking (Larsen, A J, 1970, 47, pl XI) and it would therefore seem reasonable to regard at least some of the pieces without stitching from the Gullskoen site in the same way.

The rise of professional or non-domestic crafts in Norway is often viewed in conjunction with the foundation and development of towns in the twelfth century. With regard to shoemaking there was for a long time an idea among archaeologists and historians that it was German shoemakers coming to Bergen probably in the second half of the thirteenth century who introduced a high-grade craft of quality (Helle 1982, 429). Grieg (1936, 258) and Schreiner (1963, 51) were of the opinion that "the old peasant shoemaking" was superseded.

The archaeological finds which have come to light since Grieg's and Schreiner's work have shown that they were wrong in their evaluation of the standard of shoemaking in Norway before the Germans totally or partly took over the craft. Both scholars had maintained, for example, that it was the Germans who had introduced the art of tanning, but the large number of leather articles from the eleventh, twelfth and thirteenth centuries provide evidence for tanning in Norway long before the arrival of the Germans, and there can be no doubt that, with regard to quality, high-grade shoemaking was carried on in Norway well before the German shoemakers came to Bergen. The archaeological finds, however, cannot tell us whether the shoemakers could live by their craft alone, nor whether all the pre-German shoemakers were Norwegian.

The finds of shoemaker's lasts and of off-cuts from shoemaking are usually associated with the making of shoes in the immediate vicinity. Thus on the basis of a last and off-cuts, Zerpe deduced that there must have been some form of shoe-making on Helgeandsholmen in Stockholm, even though there is no mention of this in the written sources, and she also points to finds of bark, which could be associated with tanning (Zerpe & Fredriksson 1982, 230).

Let us return to the lasts and the off-cuts from the Gullskoen site and ask ourselves whether they can represent a high-grade professional shoemaking industry prior to 1200. The answer must be that the finds from the earliest layers can be interpreted as evidence for shoemaking on the Gullskoen site or nearby, but the nature of this craft in this northern area of medieval Bergen is unclear for several reasons.

In the Middle Ages – and at any rate in Bergen until after 1600 – the shoemakers were also tanners. Tanning is an elaborate and lengthy process which requires a lot of room. It needs a good and regular supply of water, lime, tanning agents and several different vessels for the various stages in the process.

The hide is first soaked, either in large vats or in running water, to remove the remains of flesh and to enable it to absorb the tanning agents. The next stage is the removal of the hair. The commonest method in the Middle Ages was to let the hide lie in a solution of slaked lime for 3–6 days (Stambolov 1969, 7). Any remaining flesh and hair was removed by laying the hide over a block of wood and scraping it with a specially shaped blunt knife (Reed 1972, 53). Spatular tools of bone or metal, which have been found on excavations in Scandinavia, have been inter-

preted as defleshing knives for scraping hides (Grieg 1933, 340). After the mechanical cleaning, the hide must be washed to remove or neutralize the lime (Stambolov 1969, 8). An old method was to let it lie in a solution of water and bird or animal manure (Reed 1972, 55).

The final stage in the process is the actual tanning. The commonest method in the Middle Ages, at any rate in Scandinavia, was to use vegetable agents, such as bark, seeds, fruit, pulses, roots or even wood. Bark from oak, pine, willow and birch could be used for tanning (Stambolov 1969, 16); in medieval England oak bark was used. According to Jäfvert (1960, 209) the use of bark as a tanning agent was also the commonest method in Scandinavia, with oak bark being used most in the southern and central districts. When using bark as a tanning agent, the hide had to be steeped in the tanning liquid for at least a year (Stambolov 1969, 22). The method was fully developed by the twelfth century and remained unchanged right up to the nineteenth century.

Archaeologically, the presence of a tannery can be demonstrated by large amounts of bark and by wooden or stone vessels containing the remains of various ingredients in the tanning process.

In Norway, the best preserved, most extensive and best documented remains of a tannery are from excavations in Oslo (Fischer 1929). In the area north of St Hallvard's Cathedral the remains of several buildings were uncovered grouped around a central enclosure. Three vats were excavated containing traces of lime, chicken manure and bark, which could thus be interpreted as tanning vats. Fischer regarded the buildings and tannery as part of the property of Myklagard, which is known to have been a shoemaker's property at any rate in the fourteenth century (op cit, 53).

Another tannery has been excavated near the Cistercian abbey of Lysekloster, outside Bergen. The traces included the remains of a building with a wooden channel and much leather waste, birch bark and pieces of hide. Outside the building was a vat measuring 4m x 1m x 0.80m deep, in which were layers of birch bark and lime. The tannery presumably belonged to the abbey and was probably in use up to the first half of the sixteenth century (Grieg 1936, 292).

In Bergen, vats and other remains from tanneries have been recorded through more or less systematic excavation and boreholes in the Vågsbotn district (Bendixen 1912, 49; Fett 1948; Næss 1963, 53). Tanneries in this area of the town are also mentioned in medieval and later documents.

During excavations in 1987 at Domkirkegaten 6 in the Vågsbotn district, tanning vats were uncovered, in one of which a two-handled defleshing knife was found (pers comm, Central Office of Historic Monuments and Sites, Bergen Excavation Office).

Returning to the Gullskoen site we must admit that neither there nor in other parts of the Bryggen excavations have traces of tanning been recorded. If shoemaking and tanning were carried on in adjacent buildings by the same people, the presence of only shoe-lasts and leather offcuts is insufficient evidence for professional shoemaking in the Gullskoen area. In spite of the many excavations of varying extent within the medieval area of the city, it is only in the Vågsbotn district that evidence for tanning has been found. Moreover, this is the only area which is indicated as a shoemaker's district in the documentary sources.

There are a number of documents which refer directly or indirectly to the location of the shoemakers in Bergen in the Middle Ages and later. The Town Law of 1276 decreed that the shoemakers were to be located in Vågsbotn which lay at the southern end of the town and outside the most densely populated area. This decree probably referred back to a regulation from 1248 or perhaps even earlier. The location may be connected with the need for a plentiful and regular supply of water, which was provided by the little stream of Hugaå. The shoemakers were also located outside the built-up area on account of the foul smell and the problem of waste material for which tanneries were notorious.

Both the archaeological finds and the documentary evidence indicate that the district of Vågsbotn was the original and, until well into modern times, the established quarter for shoemakers in Bergen.

The first shoemakers who settled in this area were presumably Norwegian. The historical sources tell little or nothing about where they came from or their social background. The social status of shoemakers in Viking and early medieval times has been studied on the basis of farmnames containing the place-name element *-rud*, meaning cleared land. Farmland was cleared in the period 1000–1350 (Andersen 1977, 210). Farm-names in *-rud* testify to a great expansion in settlement and they are found on partly inhospitable farmland on the perimeter of rural habitation. Their location suggests that the land

was cleared by members from the lower levels of society. A number of *-rud* names contain elements denoting a craft, such as Sutarerud from *sutare*, shoemaker, and concerning these names Grieg writes: "It must be assumed that the craftsmen which are indicated here must have come from the same social background as the men who cleared the land. They are small rural craftsmen and the *-rud* farm-names demonstrate how the lower class in south-east Norway managed to become landowners" (Grieg 1936, 70). Maybe it was rural shoemakers or shoemakers' sons who settled in Bergen and began to produce shoes for a small but growing urban population. The first shoemakers were at any rate founders of one of the largest and most important crafts in Bergen throughout the Middle Ages and well into modern times.

From c 1300 shoemaking in Bergen was taken over by German shoemakers, but they had probably already attained a strong position in the town by the end of the previous century. The by-laws of 1282 criticize the shoemakers' high prices, and Helle suggests that the criticism was directed against the Germans (Helle 1982, 428). There could also have been German shoemakers who were active in the journeymen's guilds which were banned by the king in a law amendment in 1293/94 (op cit, 429). In a document from 1307 German shoemakers appear for the first time as a distinct group in Bergen (Edvardsen 1975, 1).

That German shoemakers became dominant in Bergen was due to circumstances concerning political and economic power and not to the superiority of their work. In 1330 the German shoemakers received from the king the lease of Vågsbotn. The lease included several conditions concerning the Germans' rights and duties in Bergen, the most interesting of which was the following: "ok so heben wy vullenkommen vorbadenn, dat nein schomaker schal wonnen in der bye nergen (Bergen), men i vonsen gordhenn Wogesbotnen, sunder olt bøtters" ('And so we have utterly forbidden any shoemaker to dwell in the town of Bergen, except in our property of Vågsbotn, saving the cobblers(?)') (NgL, 2 ser, I, no. 134B). Friedrich Techen (1913, 564) has translated 'olt bøtters' as *Altflicker*, a cobbler, ie a crude shoemaker or shoe-repairer. The condition in this lease from 1330 thus distinguishes between two categories, shoemakers and cobblers: it is only shoemakers who were to live in Vågsbotn; the cobblers were allowed to live in the town.

The distinction between shoemakers and cobblers is indicated indirectly in a law amendment from 1372, which re-enforced the ban on making new shoes "in town". From the amendment it is clear that the German shoemakers (in Vågsbotn) had complained that "shoemaking which was reserved for them was carried on in town" (NgL 3, 191 no. 102). The law amendment also allowed the bishop to have his own shoemakers in the bishop's palace (Helle 1982, 754).

There are further documents from the fifteenth century showing that German and possibly also Norwegian shoemakers were working outside the Vågsbotn area (ibid). A document from 1531 refers to a shoemaker in Bergenhus Castle (DN XIII, no. 581). The continual exhortation that shoemaking should not be carried on outside Vågsbotn testifies to both cobbling and illicit shoemaking elsewhere in the town.

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APPENDIX: TECHNICAL ANALYSIS OF THE EMBROIDERY

INGER RAKNES PEDERSEN

In the analysis of the embroidery on the shoes from Gullskoen the following aspects were investigated:

- Needle holes and preparation work
- Types of stitches in the bands of decoration
- Needlework techniques
- Analysis of the thread
- Components of the embroidery

NEEDLE HOLES AND PREPARATION WORK

The embroidery was either executed directly on the shoes or was applied after a certain amount of preparatory work.

In one of the examples where the embroidery was applied without any preparatory work, the leather had been folded lengthwise down the middle of the vamp and very short running stitches had been taken through the crease to form a central ridge. Although the thread had not survived, the needle holes showed that the stitching had a density of 10 stitches per 2cm (fig 1).

There had been no preparatory work in seven other cases, including uppers where the top edge was decorated with a single line of stitching. The needle had been passed through the cut edge of the leather and out through the outer surface of the shoe (fig 2).

With regard to the preparatory work two variations have been identified among the finds. In the first the leather was probably folded down the centre of the vamp and small holes were made with an awl through the crease at right angles to the line of the shoe. The distance from the edge of the crease to the hole was about the same as the thickness of the leather, so that the awl holes are partly visible on the inside of the vamp. The holes were made with a density of 3 per cm. and were approximately 2mm long. On the finds they are visible as low bumps in the leather, and the depressions between them mark the position of some kind of thread which was probably passed through the holes in both directions in a continuous S-curve (figs 3 & 4). This form of preparation is identical with Variation 2 of the decorative stitching on the shoes from Borgund in Sunnmøre (Larsen 1970, 20).

The other variation of preparatory work consisted of scoring the outline of the pattern in the outer surface of the leather, using an implement with a sharp edge. The pattern thus appeared as ribs between the straight or curved cuts, usually 2–2.5mm wide, but in one case the rib was 4mm wide (figs 5 & 6).

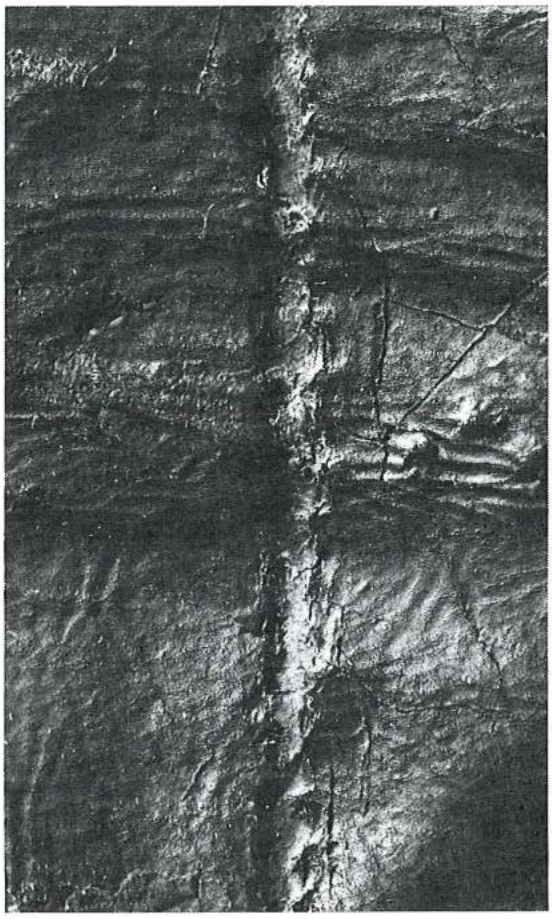


Fig.1 Example of dexcoration with no preparatory work. Decorative stitching/embroidery down the middle of the vamp (acession no. 64200/019).

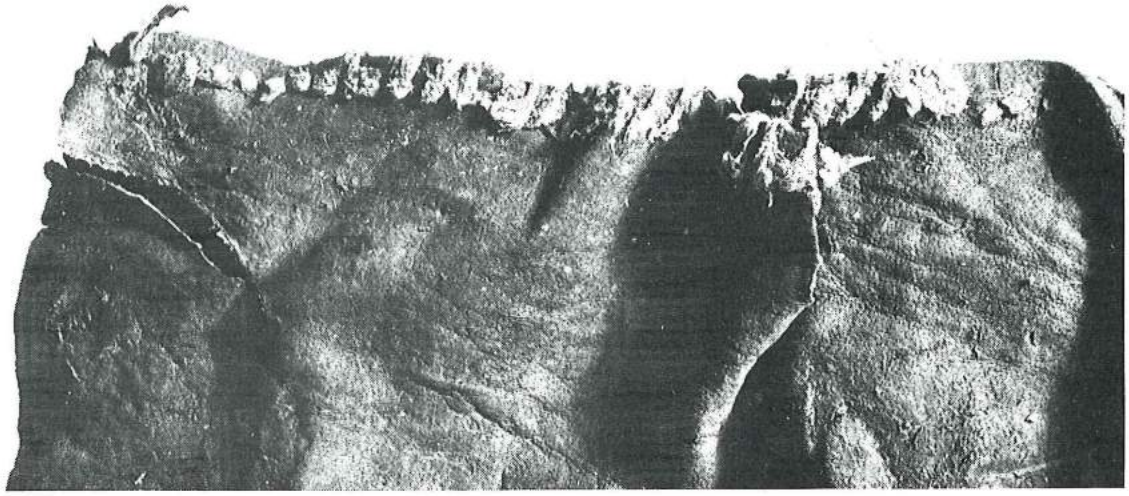


Fig.2 Example of decoration with no preparatory work. An upper with the top edge decorated with a single line of stitching (accession no. 44494/01).

Fig. 3 Example of preparatory work involving awl-holes. Small holes have been made with an awl through a crease at right angles to the line of the shoe (accession no. 52752/07).

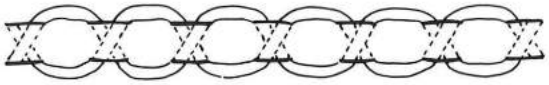
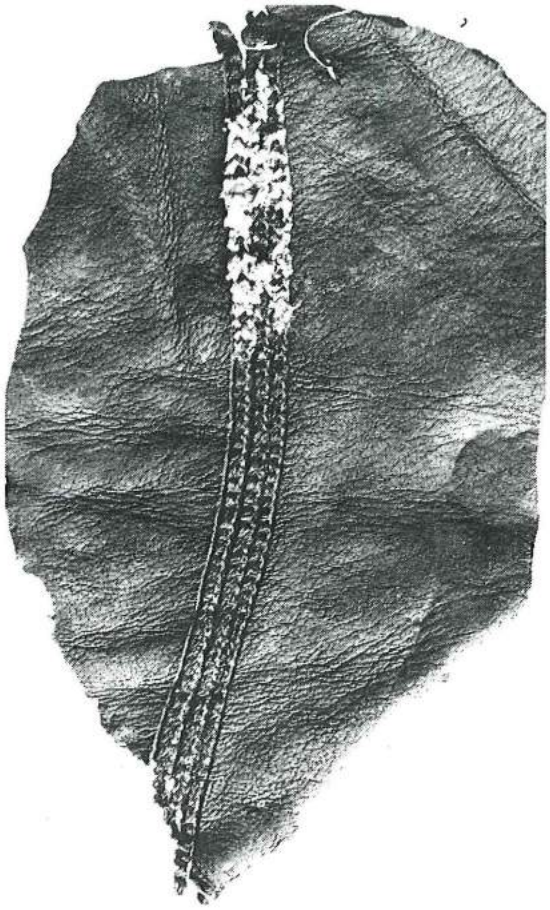


Fig. 4 Decorative stitching using holes made beforehand with an awl.

The uppers were embroidered before the sole was stitched in. This can be seen from the toe–to–instep band, which is often crossed by the turned seam between the upper and the sole or goes right out to the edge of the leather. This would have been impossible once the shoe was made up.

There are probably several reasons why the pattern was made beforehand. When applying embroidery involving linear stitching to woven material one is often governed by the mesh or position of the threads in the material. These limit the sizes of the stitches. The scored straight lines may have had the same function, so that one would automatically get a very precise pattern. If the stitching cannot be governed by the position of the threads in the material, a drawn pattern or template can be used. The curved scored lines could have served the same purpose as a drawing or template. One function of the scoring must therefore have been to give the embroidery a precise appearance. It also aided the needlework, since it would not have been necessary to push the needle right through the leather with every stitch. For example, by bending the leather over the fingers, the two cuts would open up and the needle could be pushed



from one to the other. The scoring must therefore have rationalized the embroidery work.

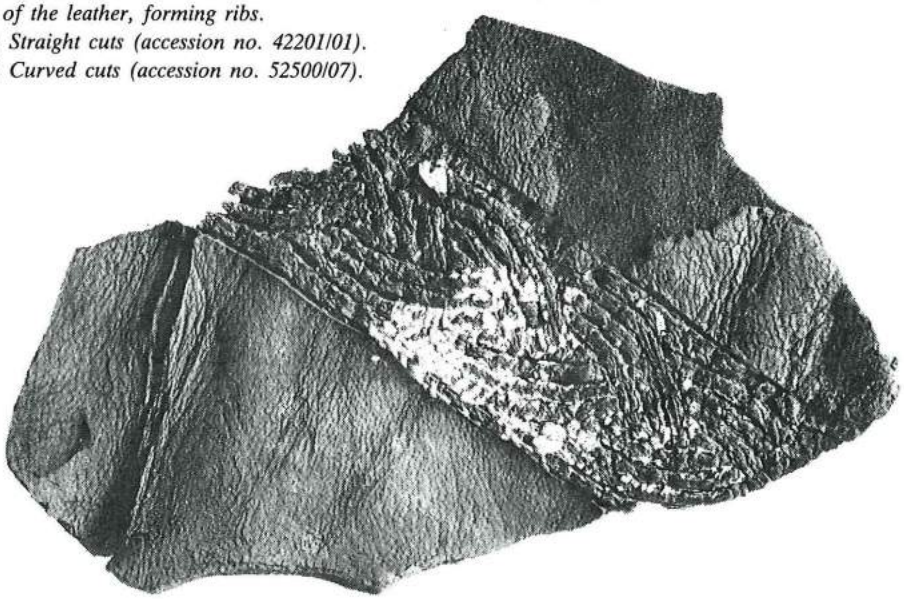
By sewing from one cut to the next the thread would be lying within the grain of the leather and would not have been subject to wear and tear through contact with the foot as it would have been if it had gone right through to the inside of the shoe (figs 7 & 8).

TYPES OF STITCHES IN THE BANDS OF DECORATION

In the case of uppers which were embroidered without any preparatory work, thread has only survived in examples with a single line of decorative stitching along the top edge. Where the preparatory work consisted of holes visible as low bumps in the leather, the thread has not survived in any of the uppers.

Thread has survived mostly in uppers where the preparatory work was done with scoring. There are 38 uppers which still have remains of embroidery thread and these provide the basis for identifying the types of stitching and needlework. The stitches lie very close together over the ribs and the bands of decoration therefore appear compact. There is a limit to what type of stitches can be used in this kind of needlework. Those which have been used in the embroidery are all linear and include satin stitch (fig 9), a raised fishbone stitch (fig 10) and cross

Figs 5 & 6 Examples of preparatory work involving scoring. The outline of the pattern has been scored in the outer surface of the leather, forming ribs.
(above) Straight cuts (accession no. 42201/01).
(below) Curved cuts (accession no. 52500/07).



Figs 7 & 8 When sewing from one cut to the next, the thread lies within he grain of the leather (accession no. 44434/03).

Fig. 9 Satin stitch.

Fig. 10 Raised fishbone stitch.

Fig. 11 Cross stitch.

stitch (fig 11). These definitions are open to debate, since there is very little difference between some of the stitches.

Satin stitch (fig 9) is recognizable from the fact that the stitches lie close together. In woven material it is quite independent of the mesh and the stitch can be of any length (Astrup *et al* 1973, 69). In the form in which it occurs on the finds from Gullskoen it can often be described as a vertical tapestry or gobelin stitch, and it consists of vertical stitches of equal length. This type of stitching was in use in the thirteenth and fourteenth century (Schuette & MÜller–Christensen 1963, 10). In other cases the compact vertical stitching can just as easily be described as a whip stitch. The term satin stitch has been chosen because it is applicable in most cases, regardless of whether the stitches are of equal length (tapestry stitch), are aligned at the top (whip stitch), or are of different lengths depend-

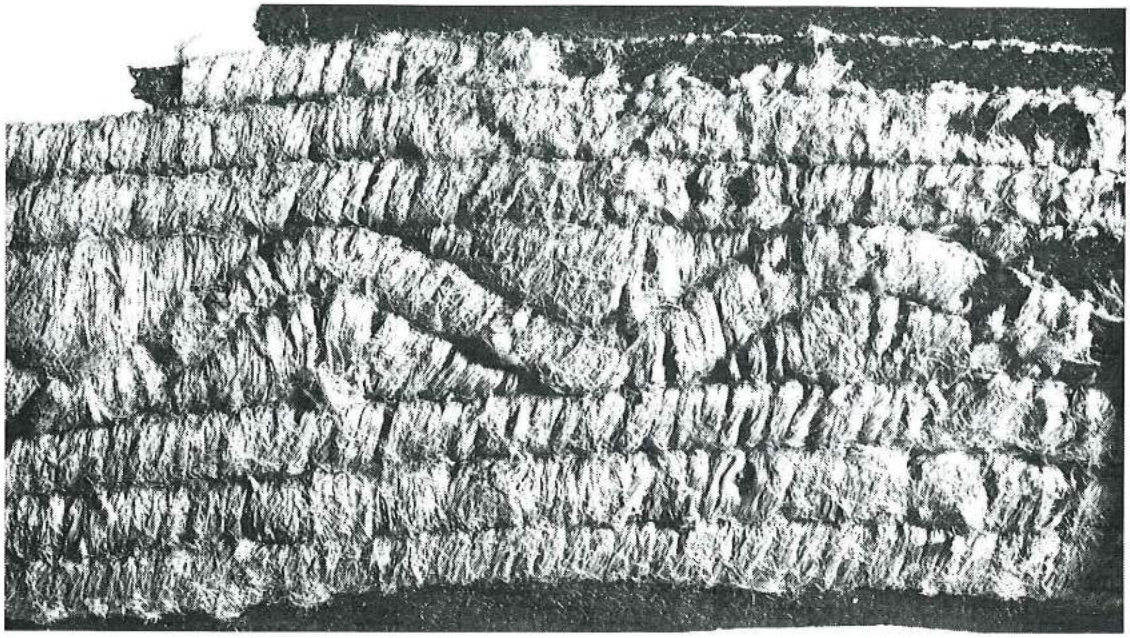
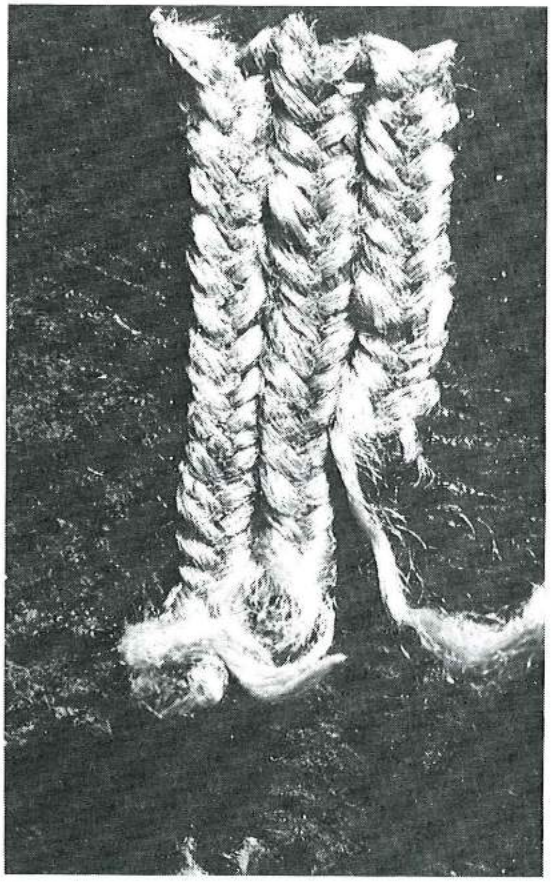


Fig. 12 Satin stitch. The stitches are of different lengths, depending on the area to be covered (accession no. 45012/02).



ing on the area to be covered. These variations are all found among the embroidered shoes from Gullskoen (fig 12).

The term 'raised fishbone stitch' (fig 10) is used for cross stitches which densely overlap, making up a kind of herring–bone structure (Astrup *et al* 1973, 30). The density of the stitching varies somewhat (fig 13). The same type of stitching, though somewhat sparser, can be seen on a pillow from Mammen in Denmark, dated to the Viking period (Hald 1950, 288) where it covers a functional seam. This is of interest because the decorative toe–to–instep band on the Gullskoen shoes is most likely the remnant of a functional seam.

Cross stitch (fig 11) is used where two stitches of equal length cross each other in the middle (Astrup *et al* 1973, 57). According to the published material cross stitch did not come into general use in Scandinavia until the sixteenth century (Franzén 1972, 16), and was used very rarely in medieval embroidery (Schuette & MÜller–Christensen 1963, 10). Could this supposition be due to the lack of surviving examples? The embroidered finds from the Middle Ages referred to in the published material are luxury items

Fig. 13 Raised fishbone stitch on an upper (accession no. 35830/01).

with stitching which on the whole is different from that on the shoes. The basic stitches on which European embroidery is built had firm foundations in the past, as is shown by the surviving embroidered articles from the Mediterranean region (Sjøvold 1976, 8). The simple cross stitch is also represented in the early material (Swift 1984, 57). On the basis of this and the fact that cross stitch is used on the Gullksoen shoes, it is tempting to assume that it was used to a greater extent than the published material implies. Of the embroidered shoes there are only two uppers and a top edging band which have been decorated with pure cross stitch. The pieces probably represent the earliest known and oldest surviving examples of cross stitch embroidery in Norway (fig 14).

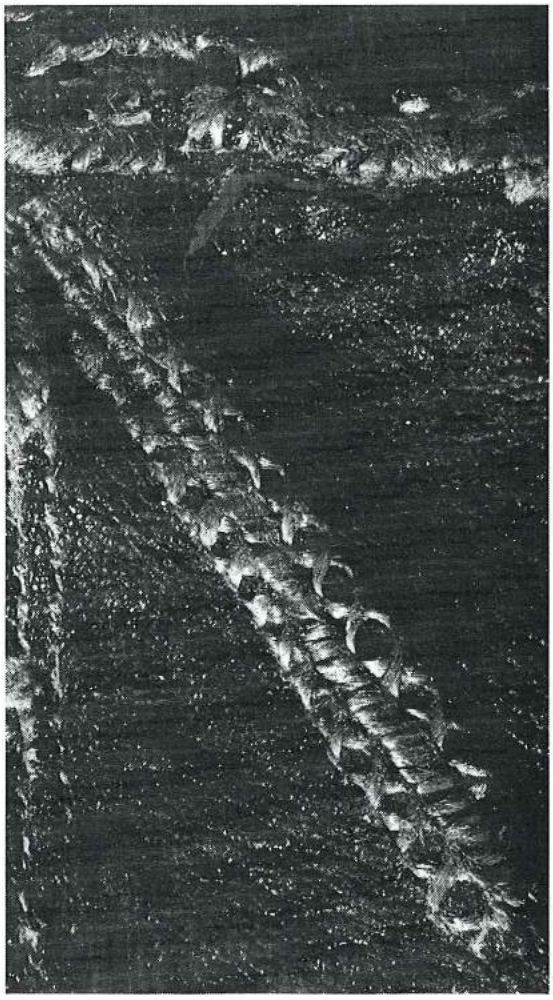


Fig. 14 Cross stitch on an upper (accession no. 45908/02).

The raised fishbone stitch, which is described above, is a development of cross stitch and is often found on the shoes from Gullskoen.

Table 1 shows that the raised fishbone stitch only occurs in the toe–to–instep band. Cross stitch is only represented in two uppers, where it occurs on the instep – the instep band itself and on the two diagonal bands running out on either side. Satin stitch on the other hand is found in various kinds of decorative bands, but occurs most frequently on edge and instep bands. The reason why it occurs most frequently is probably because it is simple and quick to sew, while at the same time the thread is used to the full extent. Moreover, it is not so much the stitch itself which provides the effect, but the sheen given by the thread.

With regard to the raised fishbone stitch, there are 17 examples where it is formed like the awns on an ear of barley and 2 examples where it has the form of a Christmas tree when viewed from the toe.

NEEDLEWORK TECHNIQUES

On the uppers where the shape of the pattern was scored with a sharp instrument, the embroidery is not normally visible on the inside. It is, however, visible on the inside in ten cases, pro-

Table 1. Distribution frequency of types of stitch in the decorative bands

Decoration	Types of stitch			Sum
	Satin stitch	Raised fishbone stitch	Cross stitch	
Toe–to–instep band	5	22	–	27
Edge band	18	–	–	18
Instep band	11	–	2	13
Diagonal bands running the instep band	–	–	2	2

bably due to the fact that the cut went rather deep. The needle could easily penetrate the thickness of the leather in some places in these deep cuts. The embroidery is also mostly visible on the back of the leather in further eleven uppers. This may be due to deep scoring and the fact that the needle instead of going into the side of the cut went through the bottom. In one of these the embroidery is very coarse and the strip of leather covered by the thread is wider than normal, measuring up to 4mm in places.

ANALYSIS OF THE THREAD

The thread used for embroidering appears to be the same on all the finds. Chemical engineer Kirsti Hauge Riisøen has identified it as silk. It consists of a number of silk fibre threads which have not apparently been spun, although in some cases they lie with a slight z-spin.

The average thickness of the thread has been measured in five cases and the result varies from 0.72mm to 1.37mm, the large variation probably being due to the degree of preservation.

In colour, the thread today is either gold or a reddish hue. All the uppers are embroidered with golden thread, while the reddish colour has also been recorded on fifteen uppers.

With such an extensive use of the simple satin stitch, the properties of the material are displayed to their full. The best preserved embroidery shows a very bright and glossy thread.

COMPONENTS OF THE TOTAL EMBROIDERY

In order to create a pattern on the leather the scoring is of major significance, for example in an interlaced pattern (fig 6). However, this is not the only significant factor. On some uppers two shades of colour have survived in the thread. By allowing the two colours to follow a particular system, a repeat pattern can be created over the straight cuts, and in this case it is the varying colour of the thread which makes up the pattern (fig 15). There are also patterns made by a combination of scoring and different coloured thread. In another variation small squares have been embroidered, probably using another kind of thread. The squares today are empty, but they originally formed an important part of the total design (fig 16 & 17). The different types of stitches also produce their own particular effect and this has been used to create patterns.

Some of the embroidery work has a marked ribbon effect and the dense, compact stitching stands out in relief on the uppers (fig 12).

EDGE BANDS

The four embroidered edge bands which have survived are not entirely alike with regard to the embroidery. Scoring has been used in all cases and the thread is only visible on one side: in other words, the needle has not penetrated the full thickness of the leather. Furthermore, it is the scoring which forms the basis for the pattern on all four pieces, and the thread is golden in colour on all of them.

On one edge band, however, only one cut has been made and on the other side the needle has

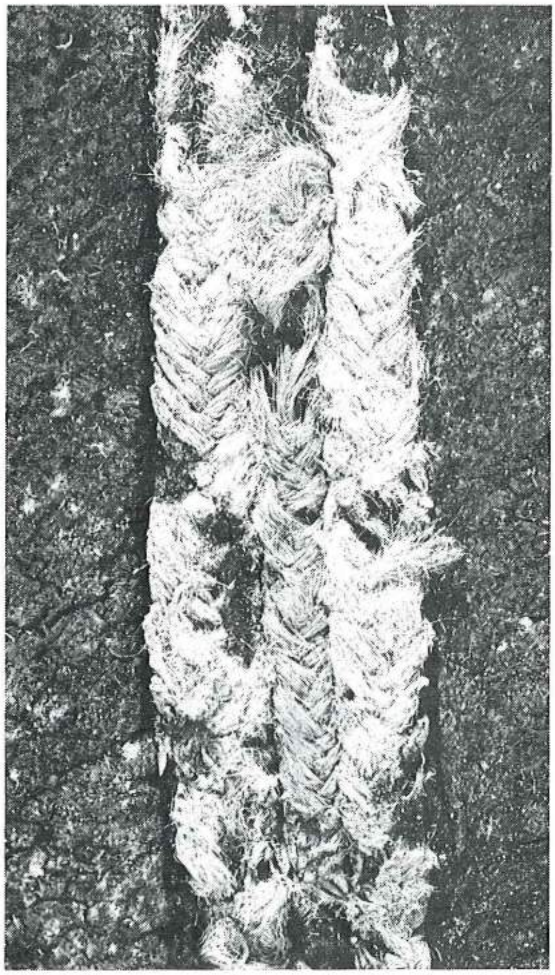


Fig. 15 Patterns made by a combination of scoring and using thread of different colours (accession no. 44434/03).

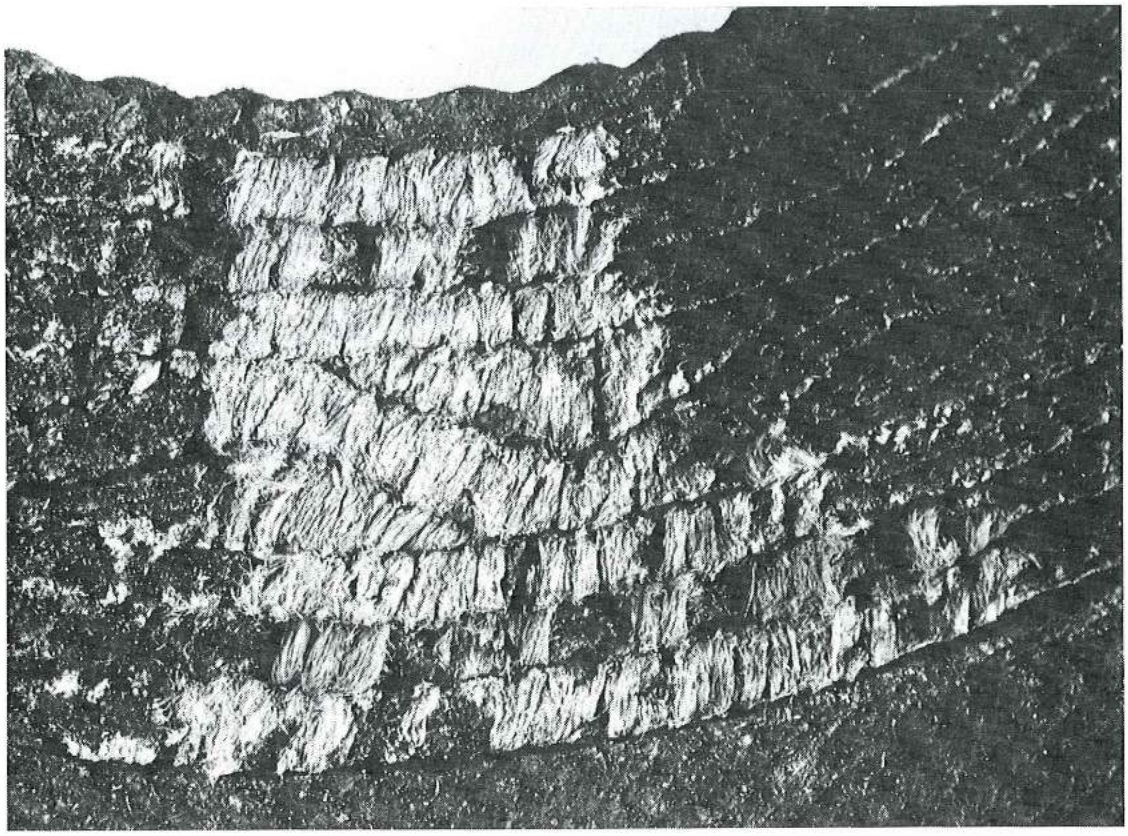
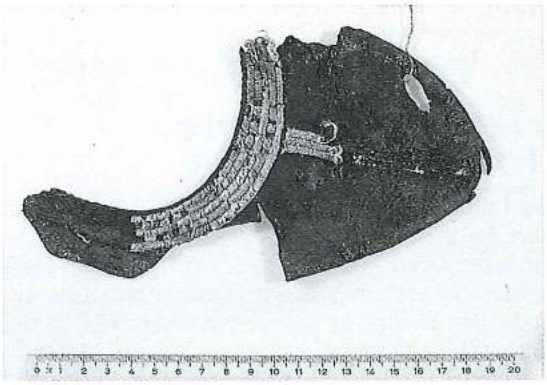


Fig. 16 & 17 Squares which are now empty were important for the appearance of the total design.



come out through the surface of the leather. Moreover, three pieces are scored lengthwise, while the fourth has several short transverse cuts.

With regard to the type of stitch, satin stitch has been used in two cases and cross stitch in the other two.

PARALLELS TO THE EMBROIDERED SHOES FROM A TECHNICAL POINT OF VIEW

In order to compare from a technical point of view the embroidered uppers from Gullskoen with similar finds where the thread has survived, the following aspects have been taken as a starting point: the use of the material, the preparatory work, and the types of stitches.

The embroidered shoes from 'Søndre Felt' in medieval Oslo show clear parallels to the Gullskoen finds. As at Gullskoen, most of the uppers have been embroidered after they had been prepared by scoring, and the embroidery on the whole is not visible on the inside. Also with regard to the stitches, the two groups of finds are similar. Once again satin stitch, raised fishbone stitch and cross stitch have been used. Not only the types of stitches but also their position on the uppers are the same: for example, raised fishbone stitch has only been used on the toe-to-instep bands. The elements making up the pattern also correspond with regard to the form of the cuts, the variation of colour, combinations

of these, and the use of rectangles embroidered with a different material. In both groups golden and reddish silk thread has been used.

In the embroidered shoes from London silk thread has also been used. Only three uppers with silk embroidery have survived and on only two of them is the stitching preserved (Pritchard 1988, 77). Here the toe-to-instep band is described as covered with plait stitch. I assume that plait stitch and raised fishbone stitch on the uppers are similar and that only the term used is different. The difference between the two types of stitching lies in the density of the crossing stitches, with raised fishbone stitch being more dense (Astrup *et al* 1973, 30–31; Snook 1963, 24, 74). In the uppers from London where the thread has survived there are no scored lines – the stitches have been sewn directly into the leather. This technique has not been found at Bryggen. The reason why this stitch occurs without any preparatory scoring may be due to a technological development, since scoring the leather must have rationalized the needlework. From the illustrations it would appear that the toe-to-instep band is the only one that occurs and it is therefore most interesting that a stitch corresponding to our raised fishbone stitch is found, because it is this stitch which is only found on the toe-to-instep bands on the Gullskoen finds.

Among the shoes from Opole in Poland (Gulkowa 1964) embroidery has been carried out using golden and reddish silk thread. No form of preparatory work is mentioned, apart from slits cut in the leather. With regard to the stitching all three of our types occur: satin stitch (in the form of whip stitch around openings); "overlapping cross stitch", probably like our raised fishbone stitch; and cross stitch itself. But other types of stitch have also been used to a great extent, including one type which has been described as "needlework painting" or "shading stitch". Although the three types of stitches which have survived on the Gullskoen finds also occur among the finds from Opole, the way in which they have been used is not the same. Satin stitch is used on our finds to fill in areas of the pattern, whereas on the Polish finds other stitches are used for this function. The great difference between the Opole finds and those from Bergen lies in the way the embroidery has been executed in principle. The stitching on the Polish finds goes right through the leather and neither the embroidery design nor the types of stitches give a definite stitch length as in the Gullskoen finds. The embroidered uppers from Gullskoen give the impression that the needlework itself was simplified and efficiently executed, as opposed to the Polish finds where the embroidery is typical for textiles, not leather. No consideration is made for the particular properties which leather possesses, such as not letting the stitching show on the inside. To do this the needle must pass within the grain of the leather. The thread is not visible on the back in only one example from Opole, but here it is a case of whip stitch around an opening.

From Opole there is also an upper embroidered with dyed linen thread in a design consisting of rhombs, spirals and tendrils (Henken 1965, 213).

In the embroidered uppers from Pskov in Russia, the leather has not been scored beforehand. The stitches which have been used include those used in Bergen, but other types have also been used to some extent, such as shading stitch, stem stitch and back stitch. The designs are similar to those from Gdansk and Opole (Gulkowa 1964).

These embroidered uppers from eastern Europe show that the same fashions prevailed as in western Europe, with silk embroidery on uppers in the first part of the Middle Ages. But the technique differed between east and west, in that the leather was not scored beforehand and by the occurrence of other types of stitches. Also the designs differ, with a preference for soft lines in the east and straight ones in the west. The straight central line running from the toe to the top of the instep which is so common in the west is not found on the finds from the east, being replaced for example with rhomboid figures.

Geijer divides embroidery into two types, in one of which the pattern is based on counting the threads or following a learnt design. The pattern is geometric and the work usually belongs to the category of folk art (Geijer 1958). As the embroidery on the shoes is executed not on woven material but on leather, the types of stitches must be taken into consideration. On shoes the types of stitches are extremely suitable for needlework by counting. The types of stitches and the geometric form of the embroidery can indicate that this is really folk art as mentioned by Geijer.

If one goes further, however, and looks not only at the types of stitches but also at the type of thread used, in other words silk, it points to a professional environment. Silk was an expensive raw material and therefore not common. The combination of folk-art embroidery and silk

thread is difficult to combine but maybe the embroidery was done at the shoemakers. The uppers were first cut out and then the design scored in the surface. The embroidery was executed before the upper and the sole were sewn together.

The embroidery on the shoes is among the earliest in the country. The earliest surviving embroidery in Norway is from the Oseberg ship burial dated to around AD 900 and consists of silk embroidery with stem stitches. There is also an frieze-like fragment from Høylandet Church in North Trøndelag from the first half of the twelfth century and another frieze-like fragment from an embroidered picture from Røn Church in Vestre Slidre, dated to around 1200. Wool yarn has also been used on this fragment, using a double couching stitch.

The examples above show that there are great variations between surviving enbroidery done on textile and the embroidered leather from the Gullskoen site, with regard to the types of stitch, the thread, and the patterns used.

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THE BRYGGEN PAPERS is a series of publications giving a scholarly presentation of the archaeological finds from the excavations at Bryggen – The German Wharf – in Bergen, which took place between 1955 and 1968.

Bryggen was the economic centre of the old Norwegian capital. Later – in Hanseatic times – Bergen became one of the largest and most important seaports and commercial centres in Northern Europe. The excavations at Bryggen have revealed extensive material which provides valuable information about the development of the city as well as of European cultural history in general.

The work on the shoe finds presented in this volume of The Bryggen Papers has concentrated on the finds from the northern part of the excavations, the site of the modern tenement of Gullskoen.

Against the background of a voluminous amount of material the author has felt the need to offer a more consistent typological classification than the somewhat divergent definitions which have hitherto characterized archaeological studies of footwear from North European sites.

In addition to the finds, the author has made use of documentary and iconographic sources with the aim of discussing footwear in a social context. He also has taken up the question of whether shoemaking was carried on in the Gullskoen area of Bryggen, even though the legislation designated another location for the shoemakers in the medieval town.

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