

The VIKINGS N.F.P.S. - EQUIPMENT GUIDE

No.1 - BASIC COSTUME - 1st. Impression April 1992

Compiled by Russell Scott for the VIKINGS N.F.P.S.

Ex Libris: Grendle

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The purpose of this guide is twofold. Firstly, it is to provide the newcomer to the Viking society with the basic minimum kit, enabling him to participate in even the most stringently authentic show. Secondly, it is to provide for the Viking society the definition of "minimum authenticity", that is the minimum authenticity standard that is required of an individual before they can participate in a show organised by the Vikings - N.F.P.S.

With the seemingly frightening definitions out of the way, there is no need to be daunted. Authenticity is necessary for a number of important reasons; for example, show organisers are increasingly expecting higher standards of authenticity, particularly for large shows which include museum and film work. With a good authenticity grounding we can attract larger and more important shows over other societies, which means more esteem, larger pay outs and more fun for ourselves.

This guide, then, will help you put together a basic kit or confirm that your existing kit reaches the basic standard for a Viking of the period circa 950 A.D. Finally, because of the basic nature of this guide, and of the similarities between Viking, Norman and Anglo-Saxon clothing, this guide will, in the most part, serve for basic Norman and Anglo-Saxon kit as well. However, reference must be made to the various Anglo-Saxon and Norman Clothing Guides before embarking on any kit making endeavour. To illustrate, colours will be common to all three, but the Anglo-Saxons had distinctive Kyrrtle sleeves.

This guide, conforming to the minimum standard of authenticity, takes into consideration cost and practicality. For example, cost, although pure wool is 100% authentic, it is very expensive. A wool / viscose mix is cheaper yet indistinguishable from the real thing. Similarly, linen is authentic but cotton is permitted because it is cheaper and looks the same. Practicality, there were no sewing machines in the Viking age. Machine sewn seams are permitted however, especially if seams are turned inside out and seam ends are hidden.

Wherever possible, concessions have been made in this guide, some points however are less flexible than those outlined above. These include colours and wool weaves and are included in separate annexes at the end. Although machine sewing is passable on larger garment seams, such as kyrrtle pleats, hand sewing is still necessary for some of the more awkward seams such as trouser gussets or attaching sleeves. Consequently, different types of stitch are included in annex three.

GENERAL AUTHENTICITY POINTS.

WOOL WEAVE (see also annex 1). Modern machine woven cloth tends to be "fluffy" on one side, concealing the weave. The other side is usually satisfactory and can be used in preference. Some "fluffing up" was done by the Vikings however, but mainly on cloaks. A shaggy appearance was obtained by combing the cloak with a Teasel, thereby making the cloak warmer to

wear. The Vikings were not the barbarians that our Victorian forefathers imagined, so extremely coarsely woven cloth, such as sack cloth, is not required for clothing. 10 threads per centimetre was average, whilst 60 threads per centimetre was not uncommon for extremely fine material.

Checkered patterns in the weave were probably known to the Anglo-Danes. To preserve a degree of cultural identity however, it is thought best to leave checkered material to the Celts of our society. This will enable them to be more readily recognisable in shows. The same weave and colour rules apply to checks with the addition that two colour checks were the most common, a rich man or leader wore three or four.

COLOURS (see also annex 2). Two types of dye are known, permanent and non-permanent. The latter tended to fade quickly and so were never really very bright, but plentiful and cheap. All earthy shades of yellow, brown, brick red, grey and some greens were well known, whilst pink and pale blue were also fairly common.

Permanent dyes tended to be quite expensive and give fairly bright colours. For this guide though, avoid all bright blues, greens, reds, bleached white and "shiny" black.

Undyed white wool was used for socks, whilst a mixture of undyed white and dark brown wool was used for cloaks. Only the poorest classes (Thralls and Fri-Hals) used undyed wool for kyrtyles and trousers, they simply could not afford the dye. Linen is difficult to dye and undyed garments have been found. Linen was probably used in the main for under-garments.

STITCHING (see also annex 3). Hand-sewn stitches need to be kept small and neat. Some surviving needle work is so perfect that modern machine stitches are put to shame. Poly-cottons can be used, but pure cotton is probably better, hand sewn if possible. Avoid bright colours and seam ends that are obviously machined.

Equally unauthentic are clothing seams roughly hacked off with no re-enforcement, leaving the edges prone to fraying. No self-respecting "Dreng" would go about thus poorly attired. All edges would be properly hemmed and seamed, using a contrasting coloured thread if required.

TABLET WOVEN BRAID, (see also annex 4). Do not use machined braid, no braid at all is more authentic than imitation braid. Braid is easy to make or cheap to buy, although it is not essential. Braid was favoured by the wealthy and the status-conscious, although the Saxons were renowned for their embroidery. Necks and cuffs were most often decorated in this way, displayed where it could be seen. Sometimes, to achieve the same effect as the embroidery used by the rich, a band of contrasting material was sewn around collars and cuffs as decoration. For a basic guide however, no braid at all is probably the best.

Do not use metal eyelets, the Vikings did not have them. Reinforce any holes (for draw strings, etc.) with button hole stitching. Buttons however, were rare. Neck slits were fastened with brooches or draw strings. Cuffs were tight

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fitting or else fastened with so called "garter" or clothing hooks as in figure 1. Clothing hooks can be bought, contact the society trading officer. Otherwise, clothing hooks can be made quite easily, (see annex 5).

Avoid using leather and fur with this guide for basic clothing. Leather was of course used for shoes, belts, pouches and scabbards. But it was far too valuable to use for trousers or kyrtyles. Fur has been found as a cloak trimming, but as you would expect, the grave where it was found was of a well-to-do warrior, above the scope of this guide. Polar bear skin breeches have been found in Greenland, but again there are special circumstances. Wool and linen were scarce and expensive in Greenland whereas skins were plentiful. Fur may be used to line helmets however, as these were often issued by the Jarl. Rawhide may be used to rim shields for both safety and practicality. For more on leather, see annex 9.

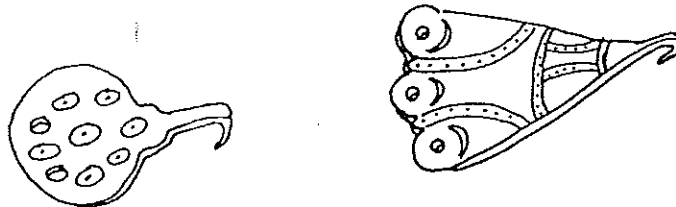


Figure 1

CLOTHING MANUFACTURE

The basic item of clothing worn by male, female and child alike, was the Kyrtyle. In this guide, the top half of the kyrtyle will be referred to as the "shirt", the lower half, the "skirt". In many ways the kyrtyle was like a modern dress, although it was secured on the outside with a belt.

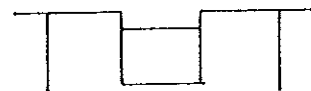
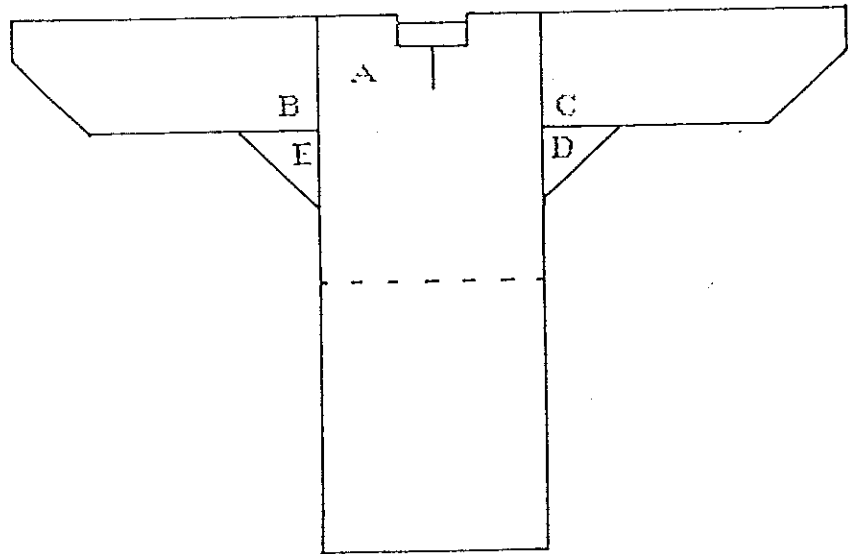
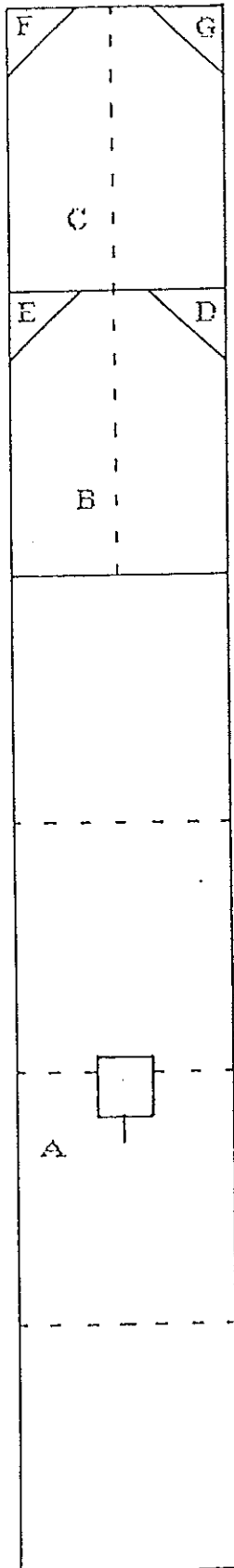
Two types will be considered for this guide, the side split kyrtyle and the more common gusseted kyrtyle. The shirt of both kyrtyle types was fairly close fitting for warmth, whilst the skirt was flared or split for ease of movement. The skirt length varied, but around knee length was the most popular. In the summer the kyrtyle could be pouched over the belt, whilst in winter the kyrtyle was lowered for extra warmth. As a rough guide, the richer you were, the longer your kyrtyle. Under - kyrtyles though, were longer than over kyrtyles, the hems of the under garment being visible at both the cuffs and hem. Under kyrtyles were usually made of linen and were possibly of the side split variety.

SIDE SPLIT KYRTLE

The simplest type of kyrtyle had splits in the sides of the skirt from hem to waist. They would appear to be much rarer than the gusseted variety, it is possible that they were worn as the main garment only in the short summer months, doubling as an under - kyrtyle in the winter.

Figure 2

Basic C1000. Side-split Kyrtle



*Paul Kett
October '91*

The enclosed pattern, figure 2, is a simplified form of the undyed linen kyrrtle found in Viborg in Denmark. Variants of the simplified pattern are permissible, indeed essential, if we are to avoid cloning. Material may be used of any of the permissible colours, also any of the illustrated neck cut outs may be adapted for use.

MANUFACTURE OF THE SIDE SPLIT KYRRTLE

Cut a rectangle of cloth (A) to form a basic tabard, shoulder width and knee length front and rear. Fold the strip in half and mark out the waist and neck line. Next, cut out the sleeves (B & C) and underarm gussets (D & G) and (E & F). The sleeves need to be as long as your arm, cuff to shoulder. The sleeve must be wide enough to put your arm in easily, a good tip is to make the sleeve width as wide as the tabard, see figure 2. Taper the sleeve at the cuff, leaving enough room to get your hand through. The off - cut triangles (E & F) and (D & G) should make a square when sewn together. Cut out the neck aperture and sew in the sleeves and gussets. Hem the skirt edges front and rear. The Kyrrtle is now basically complete. Remember to add about 1/2" or 1cm. on all lengths for hems and seams. Remember also to choose colours and weaves that comply with the relevant guides, (see annexes).

GUSSETED KYRRTLES

By far the most popular type of kyrrtle had a gusseted skirt. They were warmer than the side split variety, yet required only a little more work to manufacture. The enclosed pattern, figure 3, is a simplified version of the kyrrtle found in Mammen, in Denmark. The original was made of wool and dyed brick red. Dyed colour variants are permissible, as are a choice of necklines, (figure 3).

MANUFACTURE OF THE GUSSETED KYRRTLE

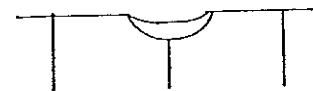
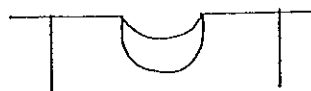
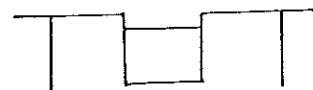
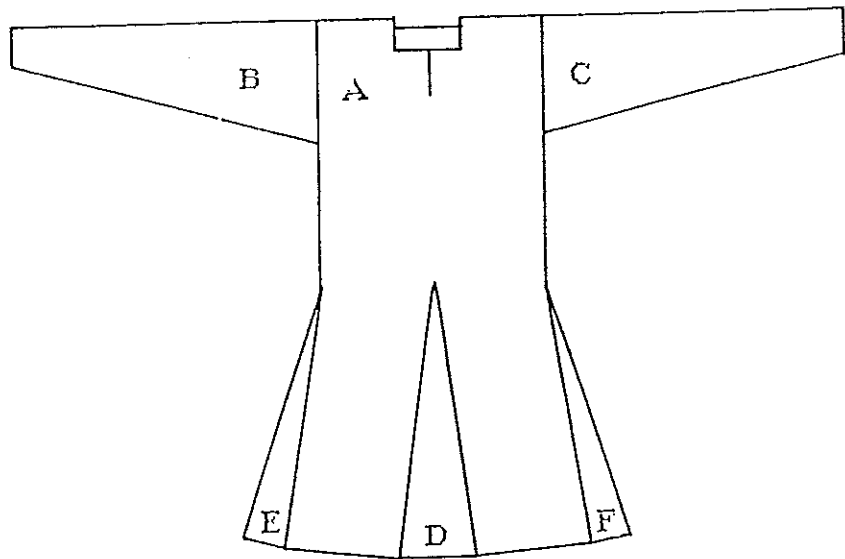
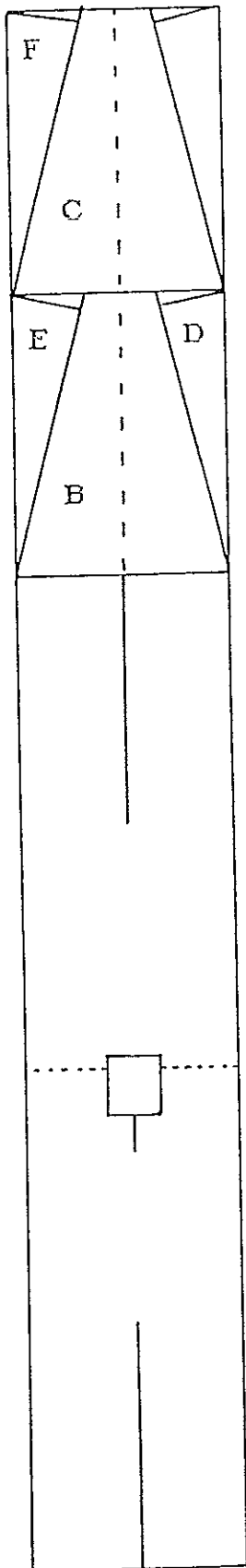
Cut a rectangle of cloth (A) to form a basic tabard; shoulder width and knee length, front and rear. Fold the strip in half and mark out the neck line. Next, cut out the sleeves (B & C) and skirt gussets (D & E & F & G). The sleeves need to be as long as your arm, cuff to shoulder. The sleeve must be wide enough to put your arm in easily, a good tip is to make the sleeve width as wide as the tabard, see figure 3. Cut out the neck aperture and sew in the skirt gussets. The sleeve off cuts form the gussets and are sewn in, one to the front, rear and to each side. The kyrrtle is now basically complete. Remember to add about 1/2" or 1cm. on all lengths for hems and seams. Remember also to choose colours and weaves that comply with the relevant guides, see annexes.

TROUSERS

No complete pair of Viking trousers has ever been found, a gap in the clothing record so large that when the Danish national Museum decided in 1991 to outfit a Viking warrior for display, a pair of woollen trousers were used that were based on a pair about 1000 years too early! For our own purposes, this means that we have a large scope for substitution trousers, although it does seem likely that Viking trousers were also made of wool. As an interim measure to making your

Figure 3

Basic C1000. Gusseted Kyrtle



Russell Scott
October '91

Figure 4a

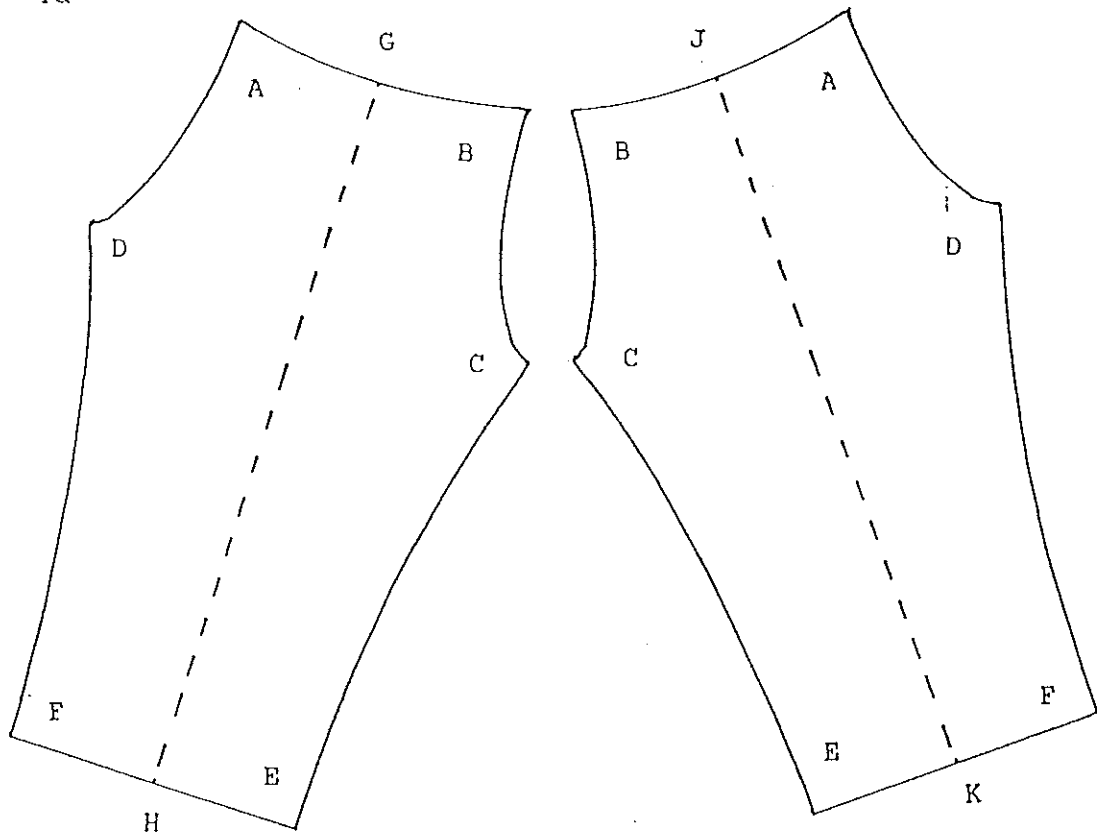
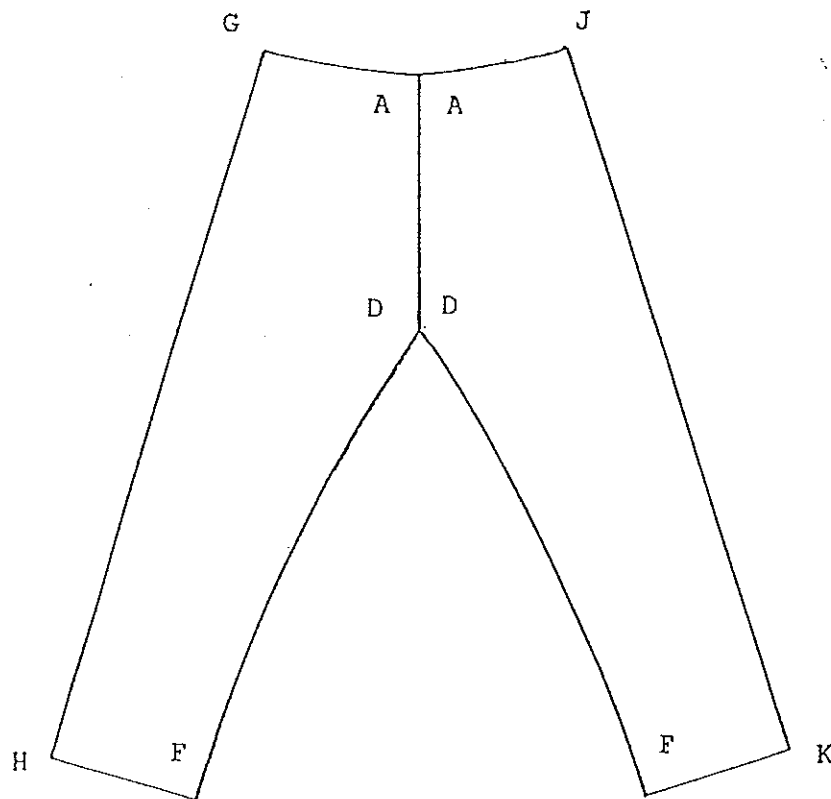


Figure 4b



own trousers, a pair of modern woollen trousers may be used. Remember, one pair of pants looks very much like another, and as we have no actual find to refer to we can modify a modern pair providing that weave and colour restrictions are met, and by bearing in mind that most of the trousers are hidden underneath the kyrtle. Trousers can be bought cheaply in charity shops. They can be modified by sewing up pockets and removing modern fastenings and zips. You will not however, be able to substitute jeans or cords, no matter what you do to them, they will always look like jeans or cords. Suitable modern trousers are not always available nor are substitution trousers always comfortable. Consequently, you will soon need to make yourself a pair of suitable Viking style trousers.

MANUFACTURE OF TROUSERS

Trousers are best made from a pattern, and the best way to make a pattern is to use an old pair of trousers that still fit you. Cut the trousers into two halves round the crutch, then cut the two legs up the inside and lay out flat. You should now have two large panels similar to those in figure 4a. If you have no cast-offs then modify figure 4a to fit your own measurements. (A) to (B) is half your waist measurement, (G) to (H) is your outside leg (waist to heel), (B) to (C) is half your crutch measurement and (C) to (E) is your inside leg dimension. Add about 1/2" or 1cm. all round for seams and hems. Sew the two panels together, the two edges (B - C) for the back of the crutch, and (A - D) to complete the crutch. Otherwise this seam can be left open or a flap inserted. Sew up the insides of the legs, seams (C-E) to (D-F). The trousers are now nearly complete, see figure 4b. Belt loops can be added, or else a cord passed through the hem at the waist. Remember to choose colours and weaves that comply with the relevant guides, (see annexes).

MANUFACTURE OF THE THORSBERG TROUSERS

For the sake of completeness, a simplified pattern of the migration period Thorsberg trousers has been included. These trousers are of very strong construction, and tend not to split up the crutch in battle.

The simplest way to obtain a pattern for these trousers is again to use an old pair of trousers that still fit you. Mark on them the panels shown in figure 5a. Cut out the panels and transfer them to material of approved weave and colour, remembering to add about 1\2" or 1cm. all round for seams and hems. Start by laying out the panels as in figure 5a. Sew the trouser hems to the bottom of each trouser leg, and sew each leg to the waist band, sandwiching the back panel between the two. Next, sew up the front of the crutch, by adding the two small triangular panels, and finally sewing the two legs together. The finished trousers should look like those illustrated in figure 5b. Belt loops or a draw cord can be added. The fly can be sewn up or left open. Alternatively, a flap can be inserted, and fastened by thonging or clothing hooks as illustrated in figure 1.

Figure 5a

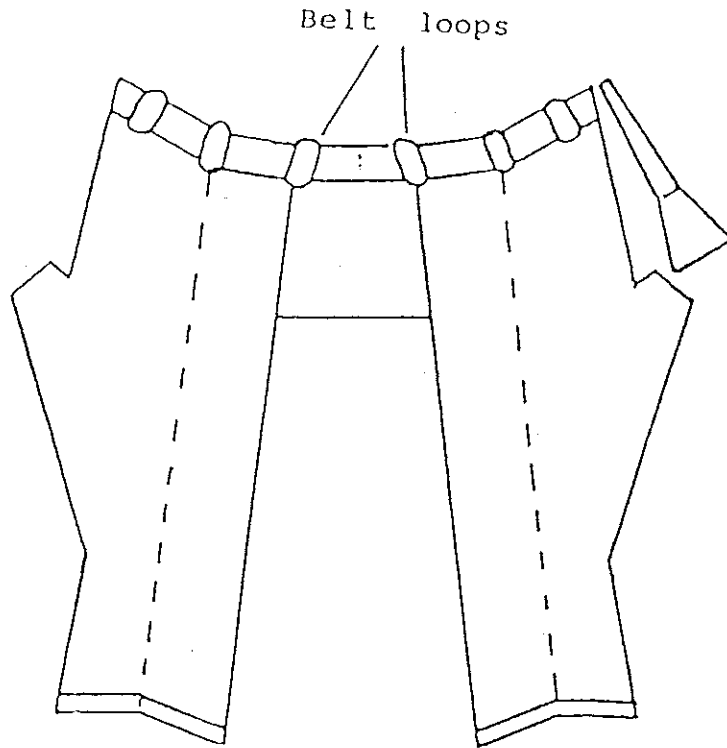
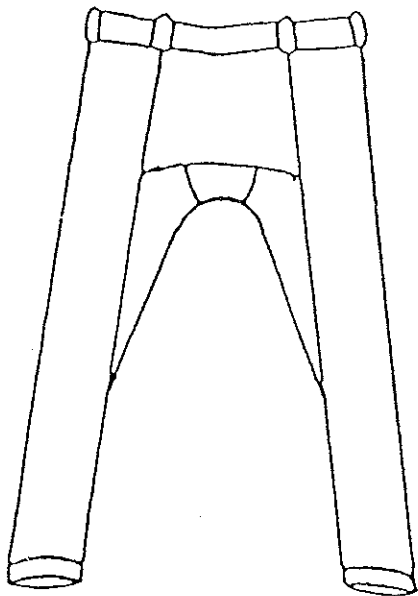
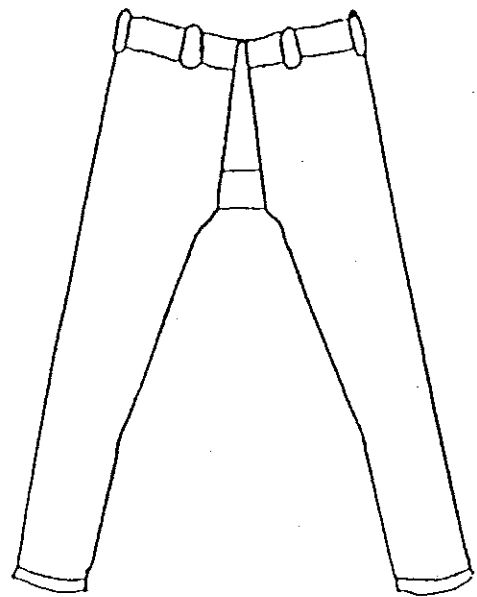


Figure 5b



Back



Front

BREECHES

Breeches are like modern shorts but longer, reaching down to just above the knee. They were probably made of wool, although one pair from Greenland was made of Polar bear skin. Clothing in Britain was generally made from wool and linen, so stick to those materials for this guide. Two patterns are included below. The first pattern is based on a Medieval Saxon pair of breeches (although in our period their use was restricted to wear only by the VIKINGS), whilst the second pattern is based on the Greenlandic pair, though use wool for both.

MANUFACTURE OF THE MEDIEVAL ANGLO-SAXON BREECHES

From a suitable piece of wool (see annexes for colours and weaves) cut out the waist band. This strip of material needs to be as long as your waist measurement and about 3" - 7.5cm. across. This includes 1\2" - 1cm. on each edge for seams, do not forget to add this to all other edges. If you can use an old pair of trousers as a pattern, so much the better. Use the same technique as is described under the section "Trousers". If you have no cast offs then modify figure 6a to fit your own measurements. (A) to (B) is half your waist measurement, (G) to (H) is your outside leg (waist to knee), (C) to (E) is your inside leg dimension. Sew the two panels together, the two edges (B - C) for the back of the crutch, and (A - D) to complete the crutch. Otherwise this seam can be left open or a flap inserted. Sew up the insides of the legs, seams (C-E) to (D-F). The trousers are now nearly complete. Sew the ends of the waist band together, (AA) to (BB) and attach the band to the top of the breeches so that the seam is at point (J). Cut two small holes in the band, one either side of the seam. Reinforce the holes with button hole stitches, and introduce a draw cord. A similar arrangement will have to be applied to each leg hem. The breeches are now complete, (see figure 6b).

MANUFACTURE OF THE GREENLAND BREECHES

The simplest way to obtain a pattern for these is again to use an old pair of trousers that fit. Mark on them the panel shown in figure 7a. Cut out the panel and transfer it to material of approved weave and colour, remembering to add about 1\2" or 1cm. all round for seams and hems. Start by laying out the panel as in figure 7a. Sew up the seams (C-E) to (C-EE) and (D-F) to (DD-FF). Next sew up the front of the crutch, seams (A-D) to (AA-DD). The finished breeches should look like those illustrated in figure 7b. Belt loops or a draw cord can be added. The fly can be sewn up or left open. Alternatively, a flap can be inserted, and fastened by thonging or clothing hooks as illustrated in figure 1.

LONGJOHNS

The Thorsberg trousers were in fact longjohns, they were like trousers that ended in stockings. This type of garment probably continued into the Viking age and is a good substitute for stockings. See figure 8 for the additional foot pattern to the Thorsberg trousers. To facilitate dressing, small slits were left in the longjohns at the back.

Figure 6a

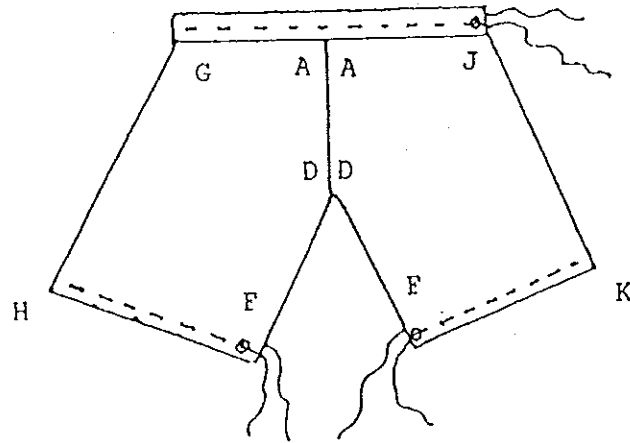
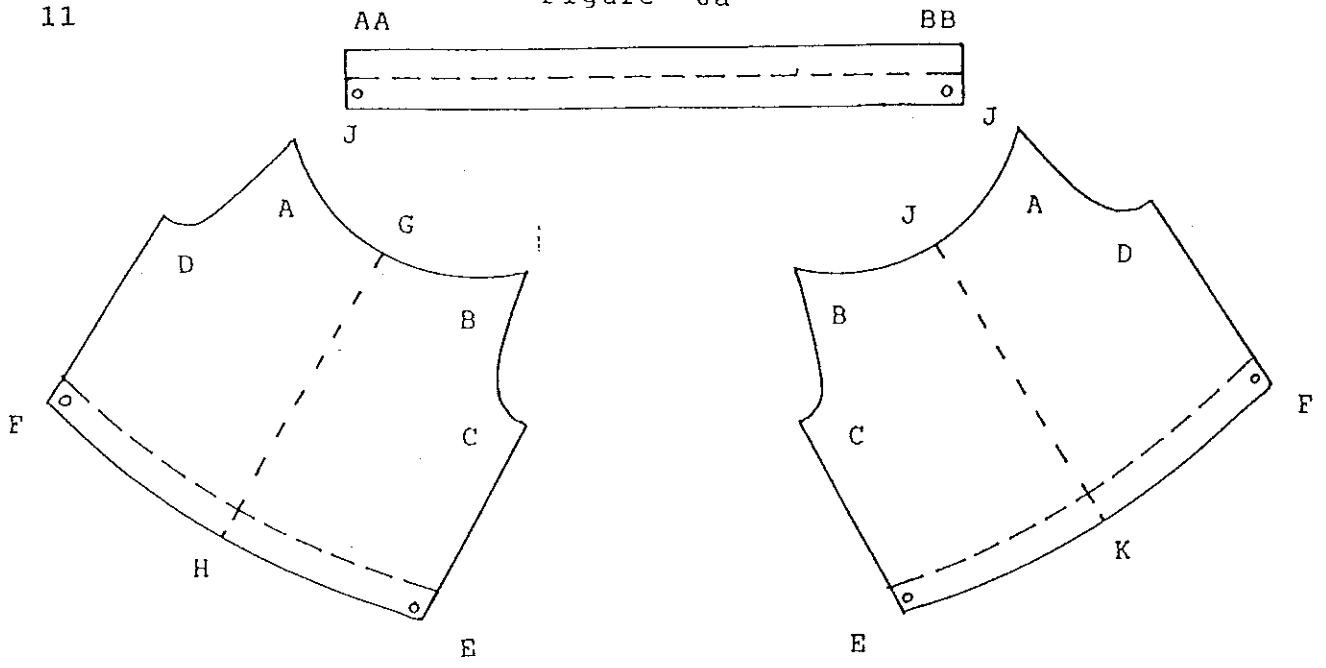


Figure 6b

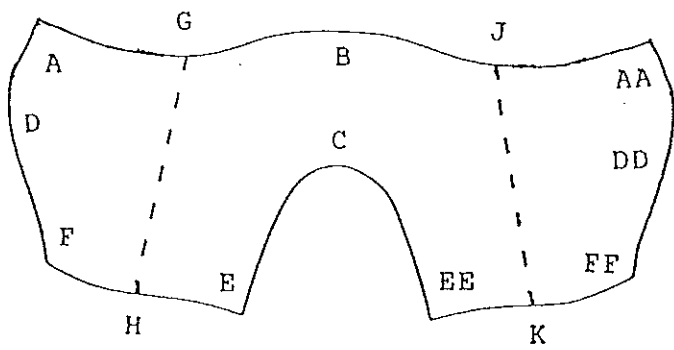


Figure 7a

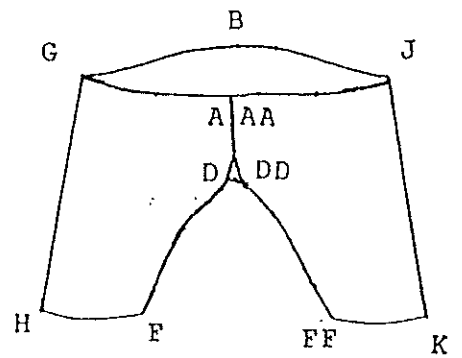


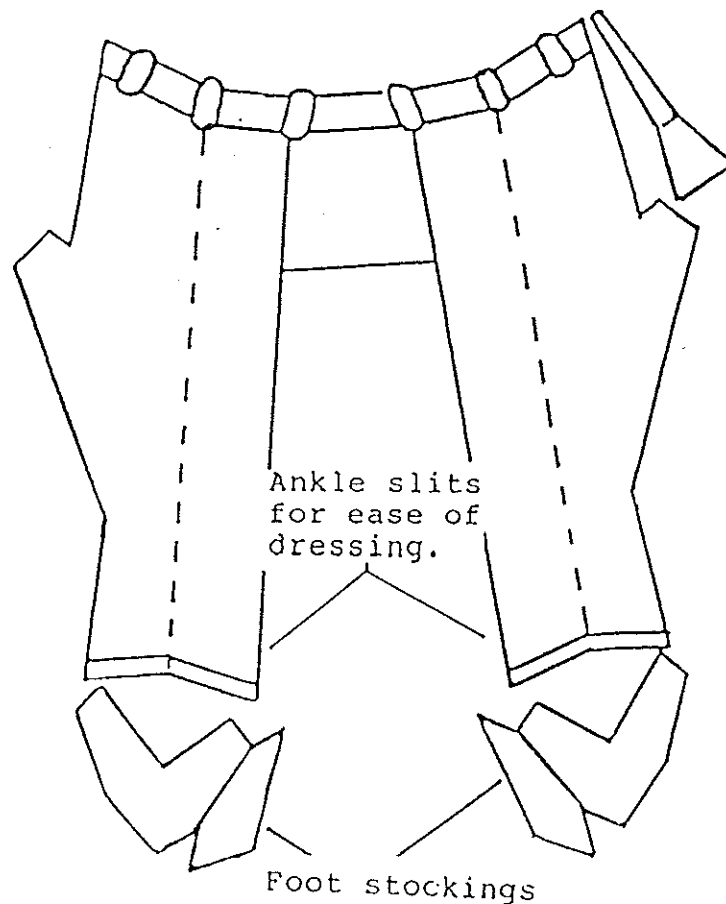
Figure 7b

*Revised
Nov 1991*

MANUFACTURE OF THE THORSBERG LONGJOHNS

The bootee pattern will have to be adapted to fit your own foot. A pattern is easily constructed by cellotaping off - cuts of paper or cloth around your foot and carefully cutting off this "sock" so that when laid flat it resembles the pattern in figure 8. Next, make the trousers, (see under the section headed "Trousers") and simply sew on the foot bootee.

Figure 8



HOSES

Hoses have been found in pre-Viking Thorsberg as well as in Medieval Sweden and Greenland. Recently they have been found in Viking age Heddeby. Basically hoses are two trouser legs that are independently suspended of each other. They can be tied around the waist or onto a waist belt. For choice, a pattern of both types are included, varying also in the foot terminations. These can be plain leg ends, ending in a foot stocking or else a foot loop, rather like those on a ski - suit. Hoses should be knee or thigh length and, like trousers, were made of wool.

MANUFACTURE OF HOSES

A basic hose pattern is illustrated in figure 9a. Obviously the shape will have to be adjusted to fit your own leg. "A" to "B" is your waist measurement, the extra material forms securing ties. "A" to "C" and "B" to "D" is your crutch measurement, front and back. "C" to "E" is your inside leg measurement whilst "G" to "H" is your outside leg, waist to ankle. "C" to "D" is your thigh measurement at your crutch and "E" to "H" is the bottom of the trouser leg, wide enough to get your foot through. Remember to add about 1\2" or 1cm. all round for seams and hems. Sew seam "E-C" to "F-D" and your hose is complete, figure 9b. Remember also to check colours, weave and stitching with the appropriate guides in the annexes.

MANUFACTURE OF THE BOCKSTEN HOSE

The basic pattern in figure 10a, is based on a Medieval find from Bocksten in Sweden. Note how most of the panels in the pattern derive from a single piece of cloth; a concept encountered previously with the kyrtle patterns. To enable the pattern to fit your own leg, a fair amount of juggling is required. A paper template would probably help here. "A" to "B" is your upper thigh measurement, whilst "G" to "H" is your outside leg, waist to ankle. "C" to "D" is the width of the leg end of the hose, wide enough to pass over your ankle. "C" to "D" and "E" to "F" form the foot loop. Note that line "C" to "D" is not a complete cut, the loop is left attached to the hose in the middle. To complete the loop, sew "C-E" to "D-F" as in figure 10d. Sew up the hose, seam "A-C" to "B-D", and it is nearly complete. Add three loops to the top of the hose as in figure 10c. This hose can be suspended from a belt and would be a Right hose. Remember to add about 1\2" or 1cm. all round for hems and seams.

Fragments of a hose from Viking Heddeby suggest that some hoses could be knee as well as thigh length. To make a pair of those shorter hoses, simply shorten the length "G-H" to knee length and ensure that "A-B" is your calf rather than your thigh measurement. Finally, you will have to add longer suspension loops that reach from the top of the hose to a waist belt. Remember to follow the colour, weave and stitching guides in the annexes.

UNDERCLOTHING

There is no requirement to wear authentic under clothing providing that any unauthentic underwear is not visible. Nothing looks worse than a pair of knicker frills or "T" shirt exposed under the edge of a kyrtle. That goes for the ladies too! No underwear has survived, it is likely, then, to have been made from linen. A medieval manuscript depicts a man wearing under drawers that look for all the world like a glorified nappy. Wear if you dare.

PUTTEES

These are long strips of woollen or linen material, about 8' - 2.5m. long and 2" - 5cm. wide. They were wrapped around either the bare legs or trouser legs for extra warmth and protection. Cross gartering is illustrated in Frankish manuscripts and mentioned in the Sagas as clothing for the

Figure 9a

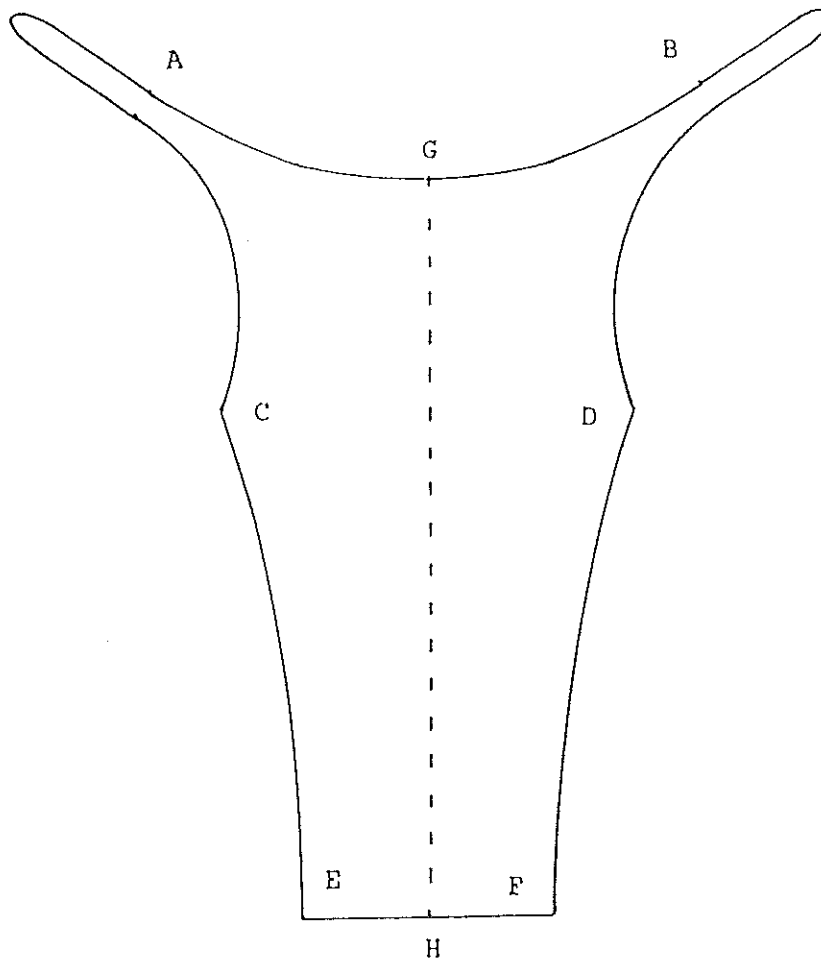


Figure 9b

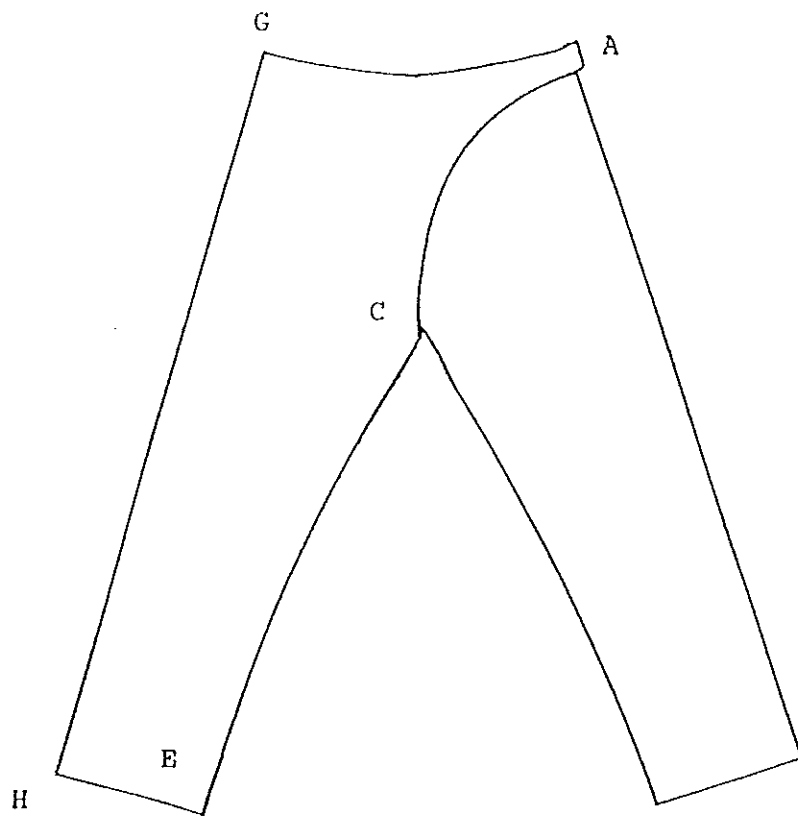


Figure 10a

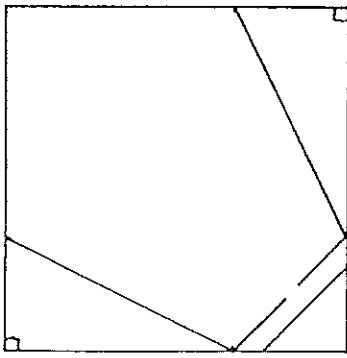


Figure 10b

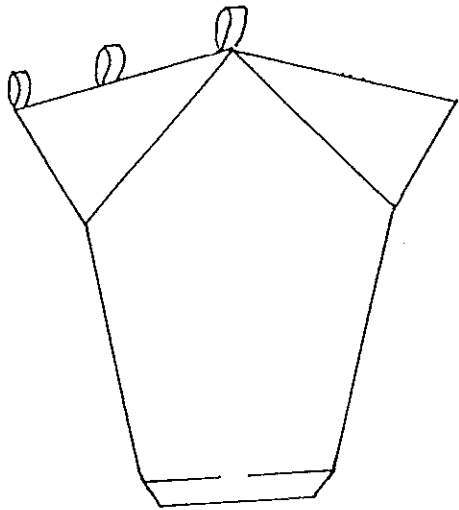
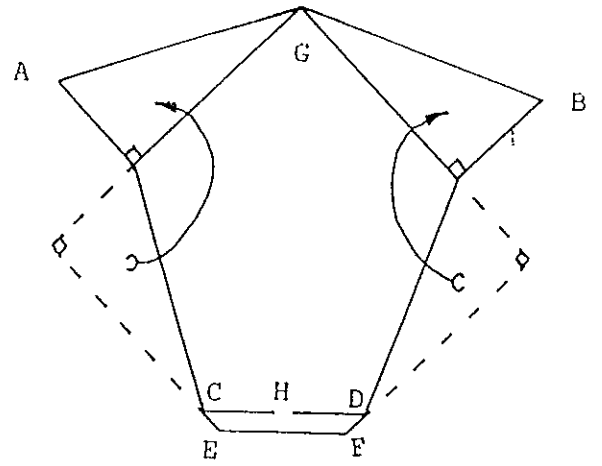


Figure 10c

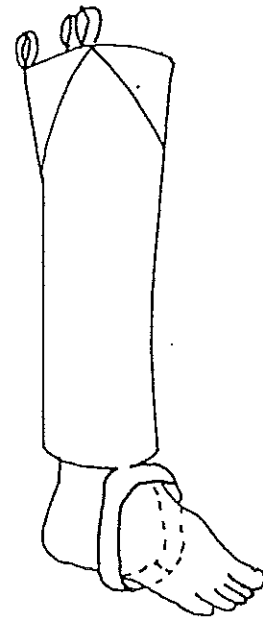


Figure 10d

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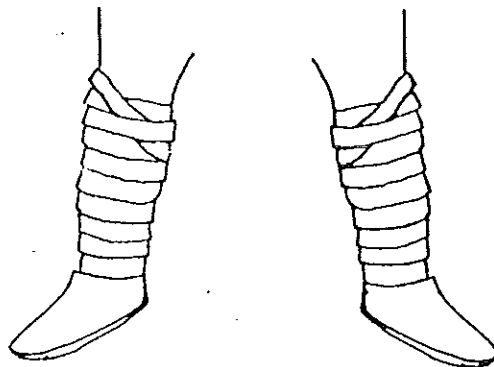
well-to-do. Either way , cross gartering is beyond the scope of this guide.

By far the most illustrated method of fastening the puttees is to wind them up from the ankle and to tie them at the top under the knee. The loose end appears to be tucked in, (see figure 11), but the exact method is not known. Experience has shown that linen puttees usually unwind themselves at the most critical part of the battle, so wool is probably the best. Alternatives to tucking in the loose end are to use clothing hooks, (see figure 1); to split the last 12" - 30cms. of the end into two strips and tie them together.

MANUFACTURE OF PUTTEES

After choosing material in accordance with the various guides, (see annexes), cut into long thin strips. You will probably need more than one piece to each puttee so keep adding pieces on until the required length is reached. The edges will have to be hemmed to stop fraying, so remember to add on about 1\2" - 1cm. for seams and hems. A useful stitching guide can be found in annex 3.

Figure 11



SOCKS.

Socks were commonly worn as they are today, by both sexes. The technique used to make the sock was called naalbinding, vaguely similar to crochet, (see figure 12d). Each naalbinding stitch was a knot so that holes did not run and repairs could be kept to a minimum. The technique pre - dates the Viking period and examples have been found in Scotland from as late as the 18th. century!

The naalbinding technique, as with many Viking crafts, is both skilful and time consuming. It is not therefore an essential part of your re enactment dress. Modern woollen socks may be used, loosely knitted fishermans socks are about the best approximation. The colour too is similar to that of period socks, the York sock was made mostly of undyed wool.

Modern socks may be worn under hoses, trousers and puttees but not breeches. A plain off - white colour is to be preferred but colours that conform with those in the basic colour guide will be permitted.

Ankle length socks have been found in York and medieval Sweden, whilst a long sock has survived from medieval Switzerland, (figure 12; a, b & c). If a sock of this type was much longer it would have to be suspended from the belt, in the same way as the similarly styled hose, (see figure 10). A small section of naalbinding is illustrated in figure 12 d, although a step by step guide to naalbinding is included in annex 6.

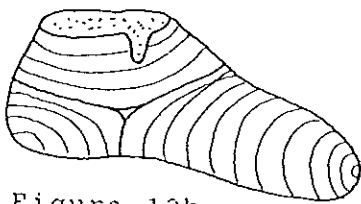


Figure 12b

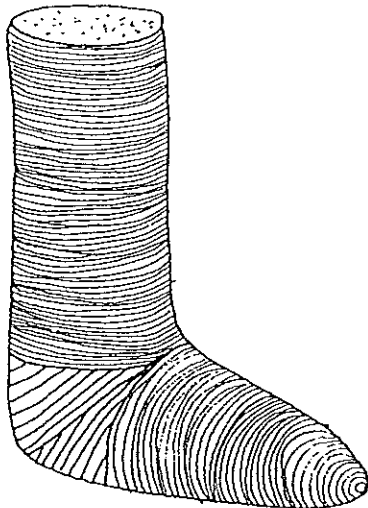


Figure 12c

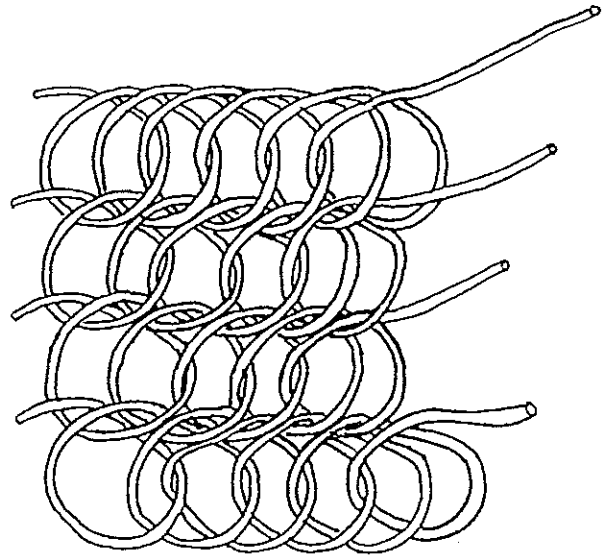


Figure 12d

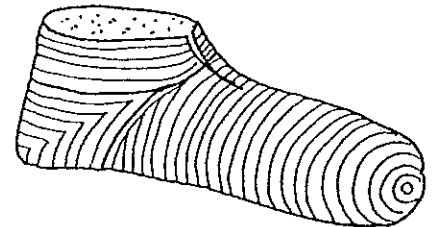


Figure 12a

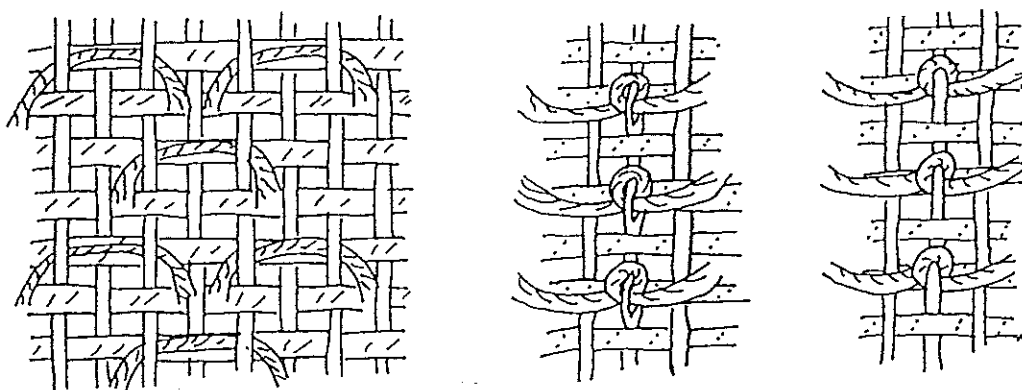
LEG AND FOOT WEAR COMBINATIONS

The wealth of clothing finds, as well as a Rune stone illustrations suggest that leg and foot wear could be worn in a variety of combinations. Probably the climate affected wear more than status or fashion. Trousers could be worn on their own, with socks, or over longjohns or even breeches. Breeches in turn could be worn over underwear or not, but would have been accompanied by long stockings or knee length hoses. Hoses in turn would almost certainly have been accompanied by underwear and probably socks. As a general rule, wear what is practical, comfortable and warm!

CLOAKS

According to the Sagas the most popular colour for cloaks was grey, or else a mixture of black (actually very dark brown) and white sheep wool. The Mammen and York cloak fragments, however, were brick red in colour as was the Bocksten man's cloak. Any basic colours for cloaks are permitted, however, see the relevant annex. Very often cloaks were "shaggy" for extra warmth, either "fluffed up" with a teasel or else by weaving into the cloth extra strands of wool, (see figure 13). There is no evidence for leather or hide cloaks, popular in the migration period.

Figure 13



A fragment from York suggests that cloaks may have been lined as another means of keeping warm. As this is practical, it is to be encouraged especially for the cold weather. Contrasting colours for the cloak and its lining is a good idea, keeping cloaks individualised and avoiding cloning.

Cloaks were fastened either by a brooch, either a penannular, a pin or similar, or else by ties. The Bayeux tapestry even depicts one cloak with both brooch and ties. These ties were probably sewn to the upper edge of the cloak, equally spaced from the centre so that when worn the ties could be fastened around the neck. Wahlstrom & Widstrand in "The Viking" (Nordbook) have suggested that the cloak can be fastened at the throat or on the right thigh. Practical experience of wearing a cloak pinned at the throat suggests that the right - hand side be thrown over the right shoulder, to leave the sword arm free, whilst the left - hand side hangs down the front for warmth and to conceal one's weapons. Some manuscripts, however, suggest that the cloak was removed before pitched battles and manual labour.

Very few cloaks have survived intact to give us a clue to their shape. The Bocksten and Mammen cloaks were probably both semicircular. Other shapes have also been suggested by scholars, square and rectangular. However, because no firm evidence exists either way for the shape of cloaks, any "sensible" shape is permitted and in this guide four shapes are suggested below, (see figure 14). These shapes are semicircular, square, rectangular and curve-linear. The cloak was

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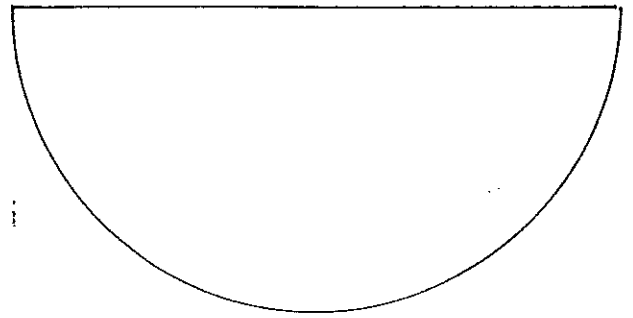
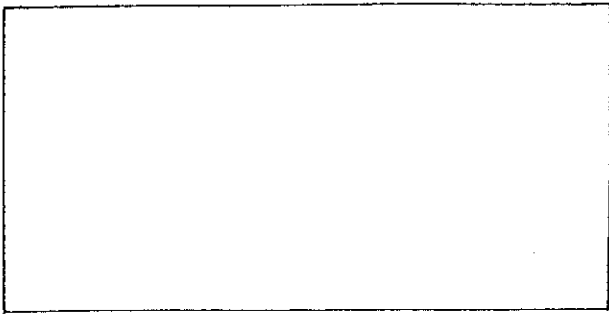


Figure 14

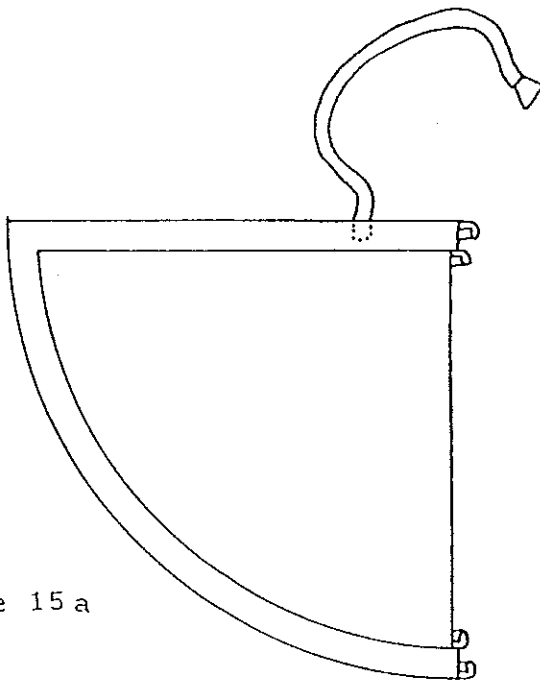
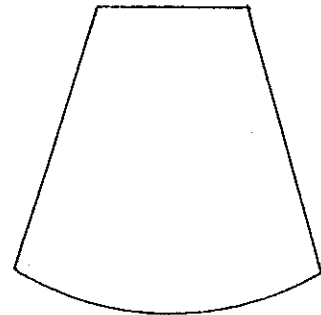
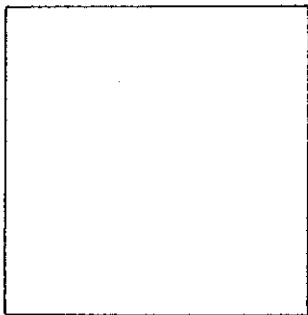


Figure 15a

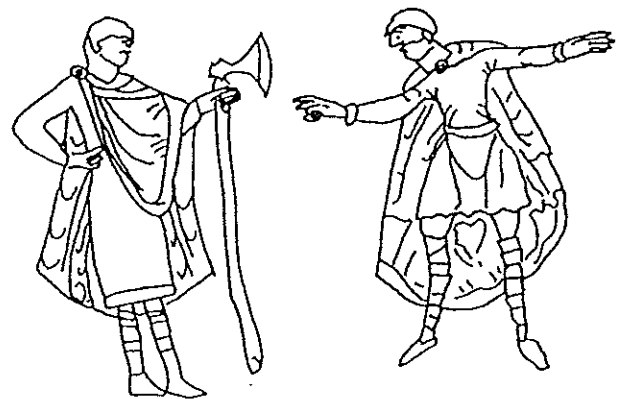


Figure 16

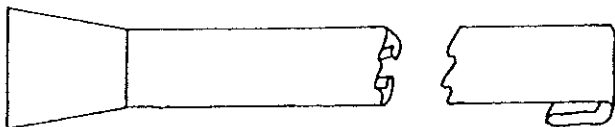


Figure 15b

worn longer than waist length, but never so long that they trailed on the floor. As with kyrrtle lengths, the richer you were, the longer the cloak, and also the richer the trimmings, fur or silk. For this guide however, keep to a simple pattern and weave and refer to the colour guide, annex 2.

MANUFACTURE OF CLOAKS

To make the cloak, first choose material and weaves that comply with the various guides. Decide on a shape from figure 14. Make the cloak length about your neck to knee in height, and twice as wide. Remember to add about 1\2" or 1cm. all round for a hem and sew the hem up. Wool sewing is difficult on some sewing machines and hand sewing is to be encouraged, even more so because of all your kit, the cloak is the most visible to the audience. Use the stitching guide in annex 3. To line the cloak, choose another piece of wool for the lining, and cut out the same shape though about 2" - 5cms. larger all round. Hem the lining then sew the two pieces together, back to back.

The word lining is here used in the modern sense, our period cloaks would have had the smaller piece to the outside, whilst the larger piece was worn to the body. The larger cloak piece would thus appear to "trim" the cloak from the outside, showing off its double layer (see figure 15a).

A picture of a cloak tie is included in figure 15b, whilst two ways of wearing the cloak from the Bayeux tapestry are depicted in figure 16. A guide to making a pin and also a penannular brooch is included in annex 7.

THE BELT

Kyrttles were secured tightly around the waist, or loosely around the hip by a leather belt. Manuscripts show belts in a variety of colours, but shades of the natural leather were possibly the most popular. Strap ends and buckles are rarely depicted but they had them! Apart from the obvious need for a fastening mechanism, numerous examples of both have been found.

Belt fittings have been found in both yellow and orange bronze, as well as pewter and silver. Consequently fittings made from all these metals are permissible as well as brass and steel. There were perhaps many more belt fittings made from organic material such as bone, antler and horn. Few have survived in any great numbers, but they should be encouraged. Organic belt fittings are easier and cheaper to make than those cast or forged. The fittings were probably paired from the same materials either both metal or both organic.

Buckles were generally made of three pieces, ring, plate and pin and although double pins are rare, buckles with no pin at all are equally well known, (see figure 17a & b). Organic buckles, on the other hand, had the ring and plate cut out in one piece. The pin was separate and pivoted around a small metal insert, (see figure 17c).

Buckle plates and strap ends were fitted to the belt by rivets after either splitting them laterally and inserting the belt, or else by cutting a step on the top or bottom of the plate and strap end and riveting them in place, (see figure 18).

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Figure 17a

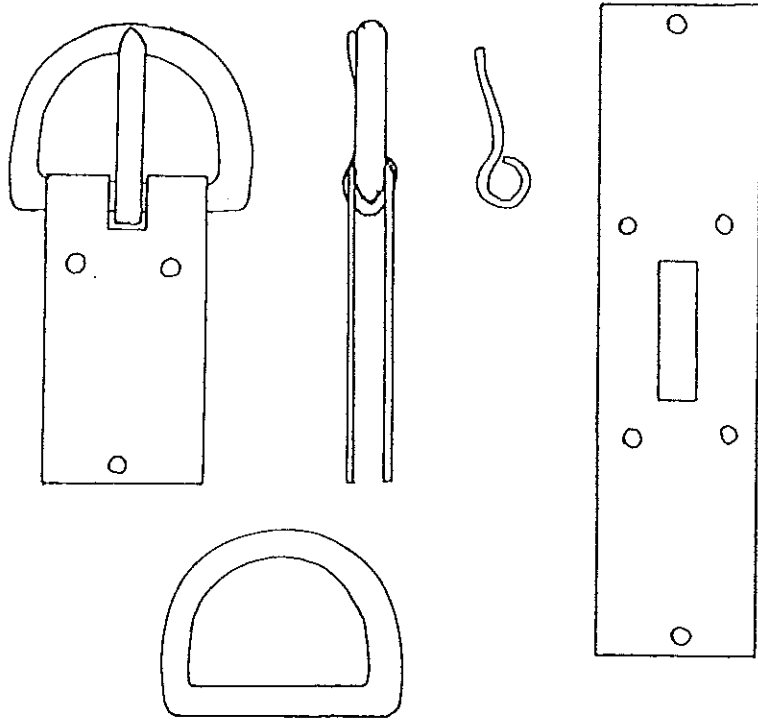


Figure 17b

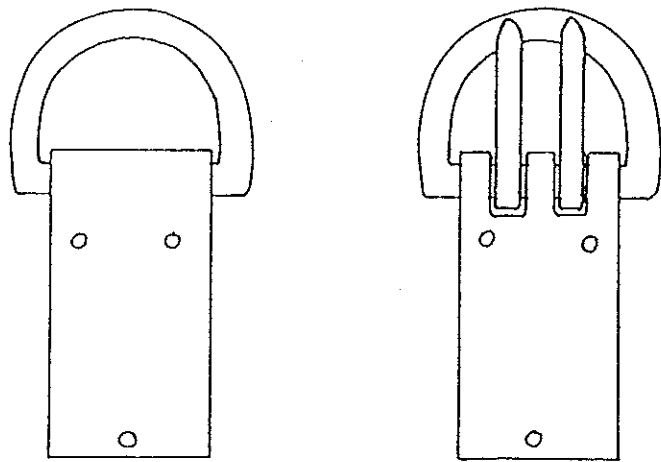


Figure 17c

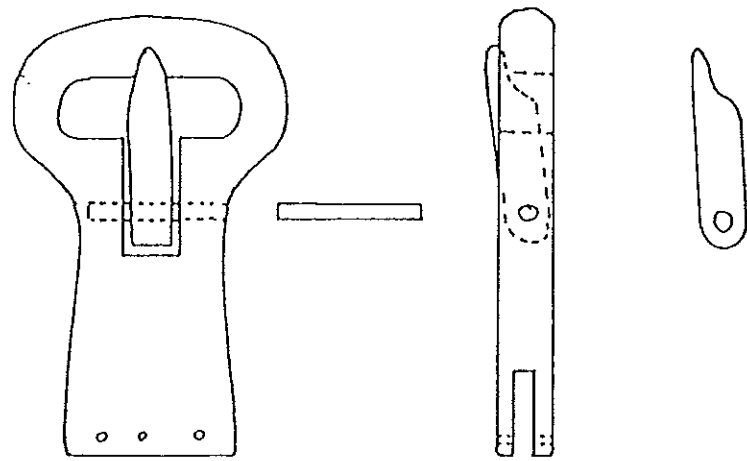
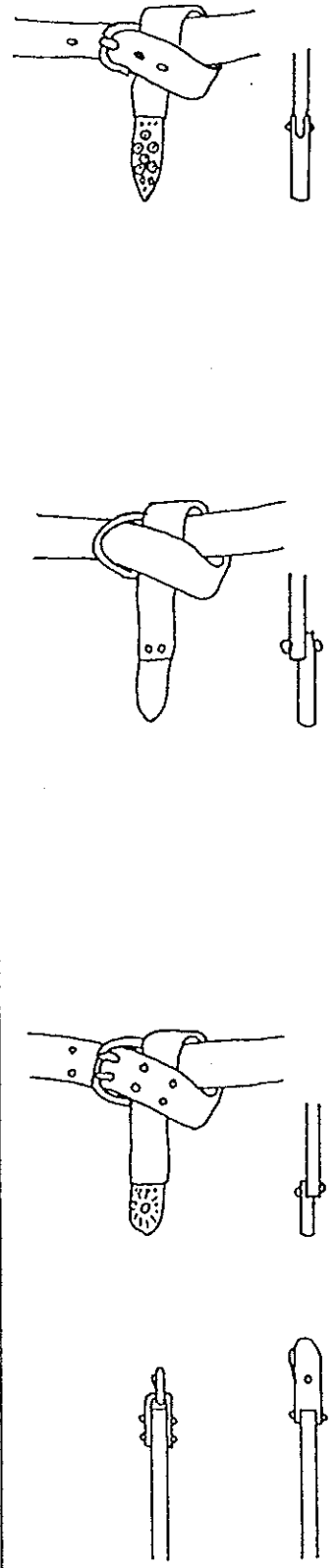
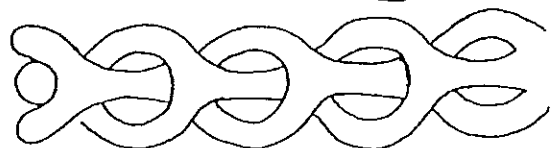
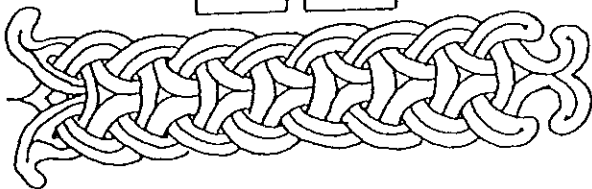
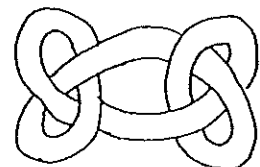
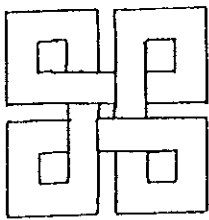
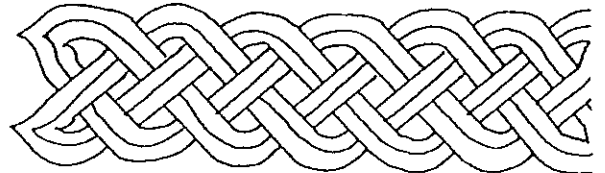
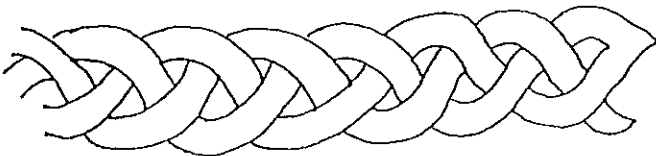
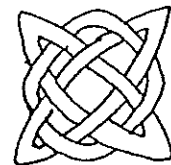
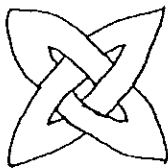
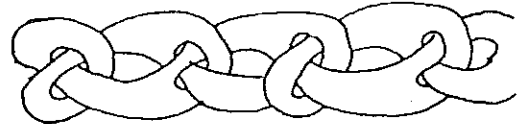
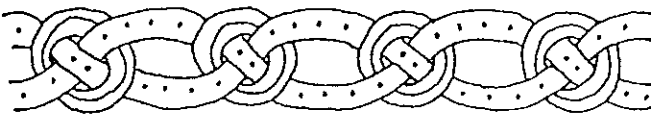
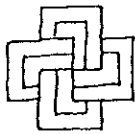
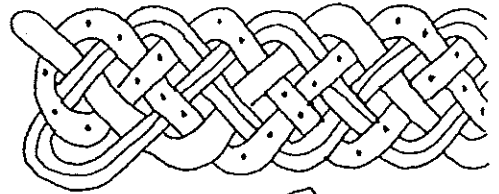
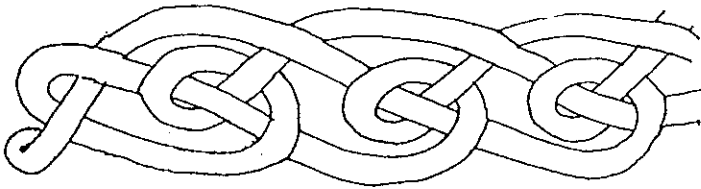
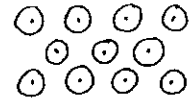
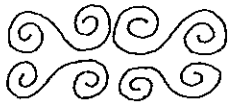
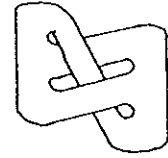
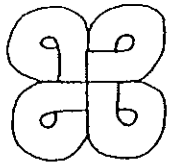
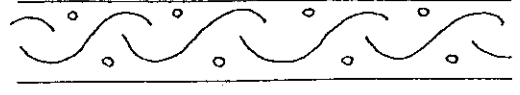


Figure 18





Either buy or cut a strip of leather about $5\frac{1}{32}$ " - 4mm. thick and long enough to go around your waist plus 8" - 20cms. The belt must be no more than 1.5" - 3.8 cms wide, whilst 1" - 2.5 cms. is a good average. The belt can be plain, but if you wish to decorate it you will need to use tooling leather (see annex 9) and must use art in a contemporary style and preferably of the racial group you are trying to emulate, whether Viking or Saxon etc. Some typical knotwork is depicted in figure 19.

Once the design for your belt has been chosen, sketch it along the belt. If this is too difficult, then trace the artwork onto normal tracing paper and clip onto a piece of carbon paper and then fix onto the belt. Draw over your tracing, and the design will be transferred to the belt. You may have to repeat this procedure as the pattern is carried along the length of the belt.

Embossing or tooling the belt can be done with a hard, blunt implement, such as an antler tine or else the process can be speeded up by using an electric engraving tool. The leather needs to be moistened, never soaked before embossing and once dry, the leather retains the contoured effect of the tooling. The belt can now be coloured using one of the many leather dyes available from any leather retailers, saddle shop or cobblers (See annexes 9 and 12).

Belt fittings can be bought, (see the society trading officer for addresses), or made (see annex 8). Once the leather dye is dry, the buckle and strap end can be fitted as per figure 18. Rivets are ideally made of the same material as the fittings, but none ferrous metals do not stain the leather. Anneal the rivets and hammer them over. On organic fittings, drill small holes and sew on the fittings with linen thread!

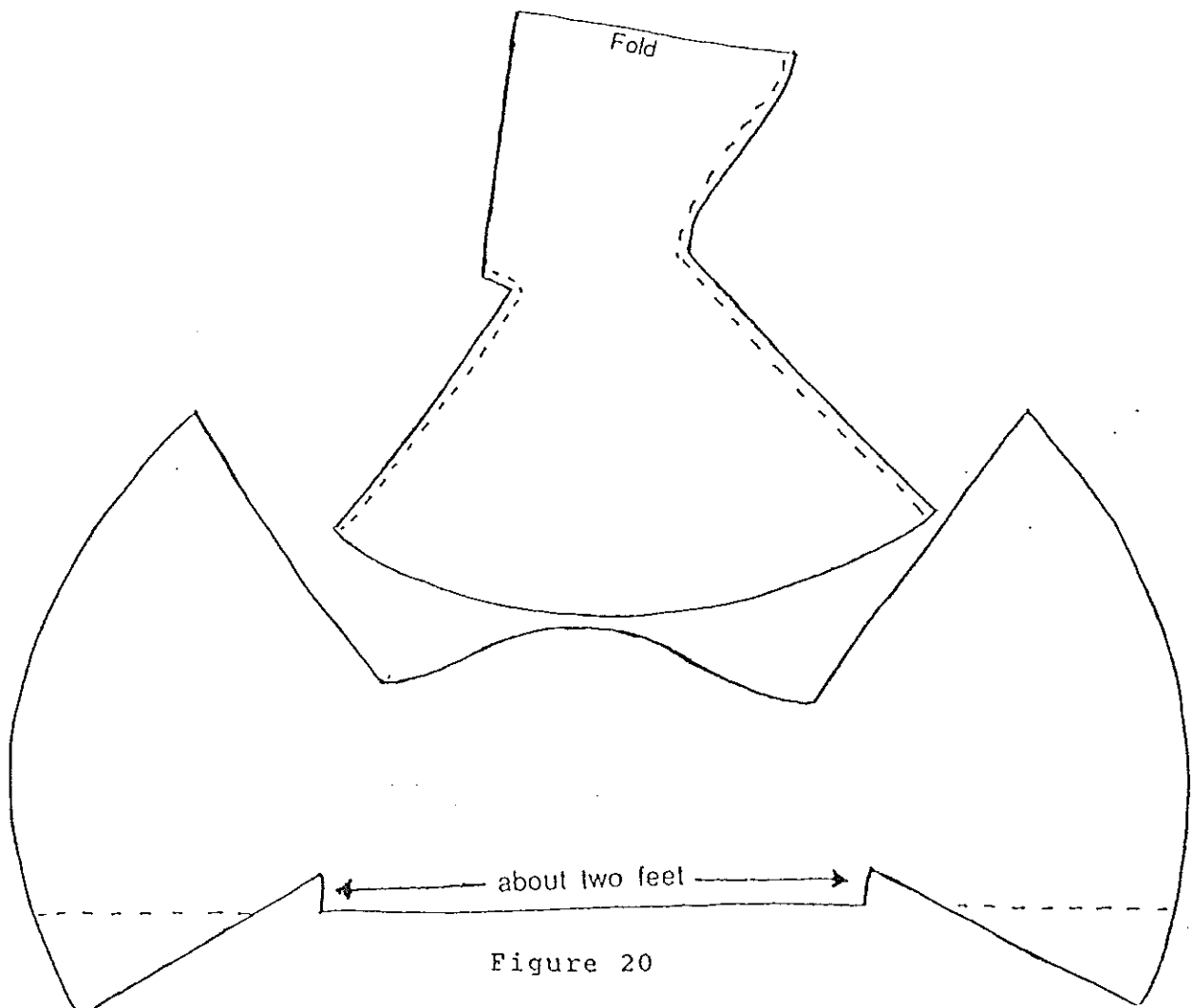


Figure 20

Hoods

Hoods are illustrated on the C8. Gotland picture stones whilst finds exist from Viking age Heddeby and medieval Bocksten. Hoods are composed of a head covering which extended downwards to cover the shoulders. They may have been worn in conjunction with cloaks. A later modification was to add a long tail to the point of the hood called a "liril pipe". However, these are medieval and therefore unauthentic for our period.

The first enclosed pattern is based on the find from Bocksten in Sweden, without the liril pipe! (figure 20), the second pattern is based on the find from Heddeby in North Germany, (see figure 21).

MANUFACTURE OF THE BOCKSTEN HOOD

Of all the enclosed patterns in this guide, this hood pattern allow a lot of room for manoeuvre. Consequently, if you transfer it to news paper you will be able to adjust the various dimensions in order to obtain a good fit, before transferring to wool. Cloak wool is probably the best for hoods, (see under cloaks). Cut out the pieces of wool and sew up in the normal way, remembering to allow for seams, colour and weaving styles. Other relevant information may be found under "General authenticity points".

MANUFACTURE OF THE HEDDEBY HOOD

The second hood pattern in figure 21, is based on a Viking find from Heddeby. Note how most of the panels in the pattern derive from a single piece of cloth, a concept encountered twice previously with the kyrtille and hose patterns. To enable the pattern to fit your own head, a little bit of juggling is required. Make the height of the hood, that is, point (A) to point (B) on figure 21a, the distance from the top of your head to your shoulders or how ever long you require the hood. Make the width of the hood, that is, point (A) to point (C) on figure 21a, the width of your head, nose to the back of the head. Transfer these dimensions to a piece of newspaper, the other panels will automatically fall into place. However, make up the paper hood and check it is a good fit before transferring to wool, (see figure 21b). Assemble the hood as per the instructions in hood manufacture, above.

BALACLAVAS

No balaclavas have ever been found, but they must have had them. Both Saxons and Normans on the Bayeux tapestry are wearing chain mail coifs and as any one who has worn a replica will know, coifs are unbearable without a balaclava. The links pull your hair, and the oil gets everywhere. The solution is a close fitting balaclava. The enclosed pattern has no predecessor on which it is based, but it works very well never-the-less, (see figure 22).

Balaclavas are included in this section for obvious reasons. However, although owning a balaclava implies owning a chain mail coif, it should be realised that for this guide balaclavas and coifs are not part of your basic kit. Balaclavas are included here because of their similarity with hoods.

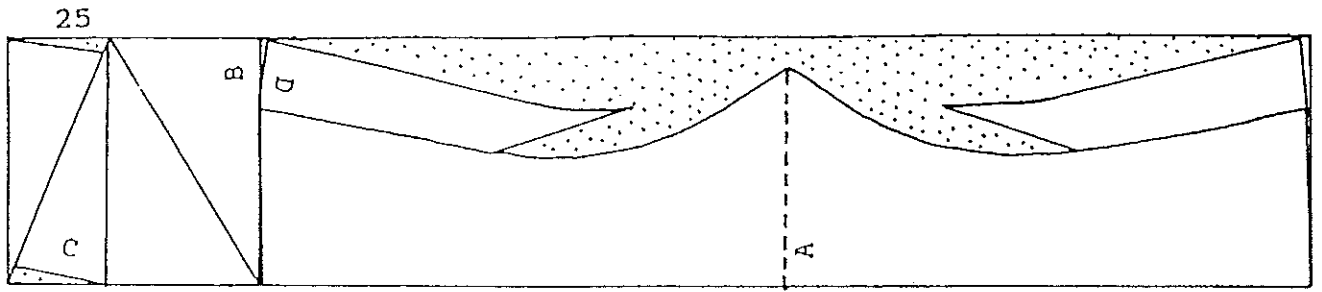


Figure 21

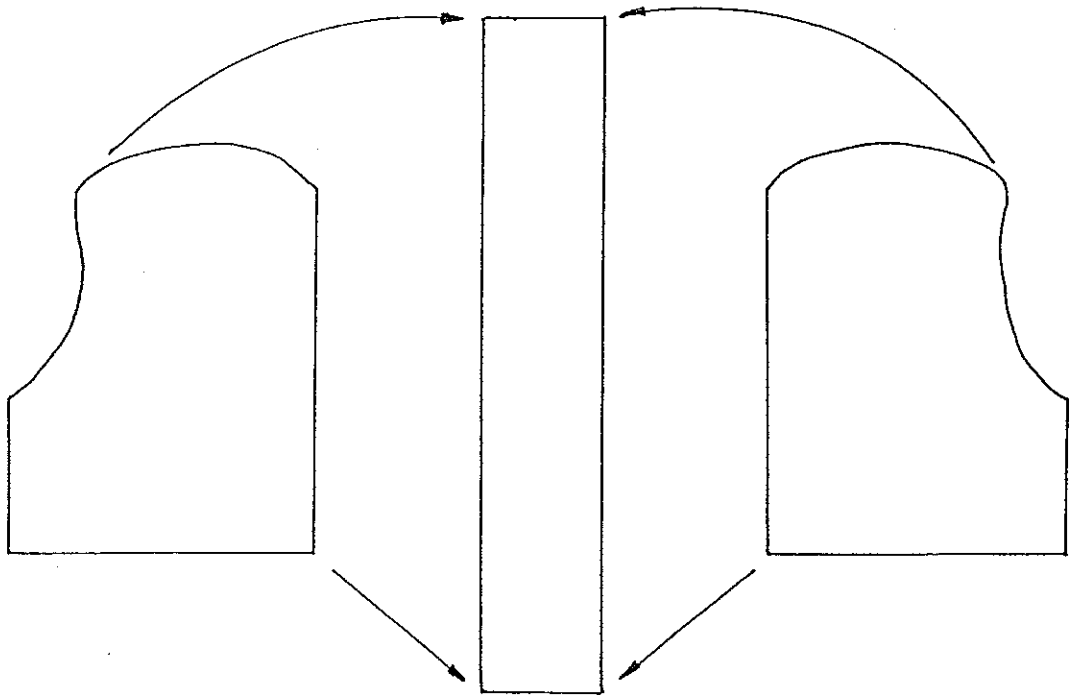
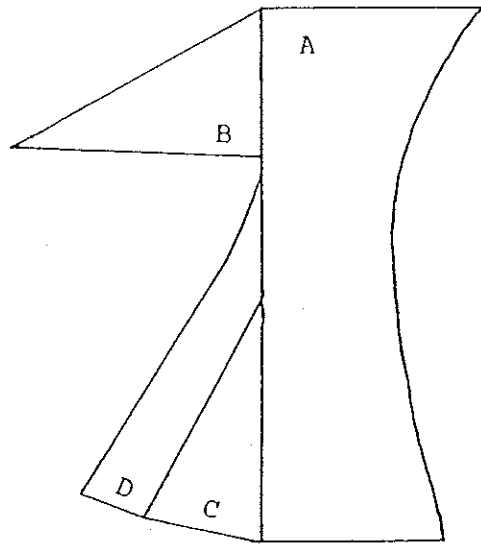


Figure 22

MANUFACTURING BALACLAVAS

Enlarge the enclosed pattern until the central strip is about 4" - 10 cms. wide and about 22" - 56 cms. long. The length of the strip is the distance from your forehead, over the top of your head to your shoulders at the back. The two side pieces can be enlarged accordingly, typical dimensions are, base, 10" - 25.5cm. Height at the back, 12" - 30.5cm; Height in the middle, 13" - 33cm. Width at top, 8" - 20cm. Cut out the face piece by trial and error, every one has a different sized and shaped head!

Once you have arrived at a pattern on paper that fits you, transfer to material, remembering to add extra material for seams. Linen is fine, but may not have enough give in it, wool is better but needs to be finely woven or it will become too bulky and uncomfortable under a coif and helm. Motorcycle balaclavas are not to be worn, although you could copy the pattern of one that fits. Colour is not too important, it will get covered in oil and rust anyway. Sew up in the usual way, and for greatest comfort wear with the seams on the outside!

POUCHES

Pouches like belts, were made of leather and possibly linen but tend not to survive except under anaerobic conditions. Recently, many pouches and pouch fragments were found in the water logged layers of Viking Heddeby. Neck pouches are illustrated in contemporary manuscripts whilst a silk reliquary pouch was found in York. Both of these bags are really outside the scope of this particular guide; all the Heddeby finds were of leather and so we shall stick with them.

The Heddeby pouches were based on either a circle or semi-circle and made from slightly poorer quality leather, (see annex 9). For our purposes, any piece of thin non-chromed leather will do for pouch material, providing it is fairly thin and supple and of a fairly dowdy colour (see annex 2).

MANUFACTURE OF THE HEDDEBY CIRCULAR POUCH

Cut a circle out of the leather, about 9.5" - 24cm. in diameter, coincidentally the diameter of the average dinner plate. Add on two small semi-circular "ears" to use as opening tabs, about 1" - 2.5cm. across, as in figure 23. Cut out the pouch with sharp scissors or a Stanley knife. The basic pouch is now complete. All that is left to do is to punch the holes. You can have as many as you like, but in order for the draw string mechanism to work the number must be divisible by 4. 16 is a good number but, if you need a larger pouch use a larger diameter circle of 20 or even 24 holes. To complete the pouch, two thong drawstrings are required about 24" - 61cms. long. Thong up the pouch as in figure 24. Your pouch is now complete. Pull the thongs apart to close the pouch, pull the ears apart to open. Simple !

Leather thongs are usually 1/8" - 3mm. square, so use a 1/4" - 6mm. hole punch to make the pouch holes. The two loose thong ends can be knotted together to make a complete loop, see figure 24.

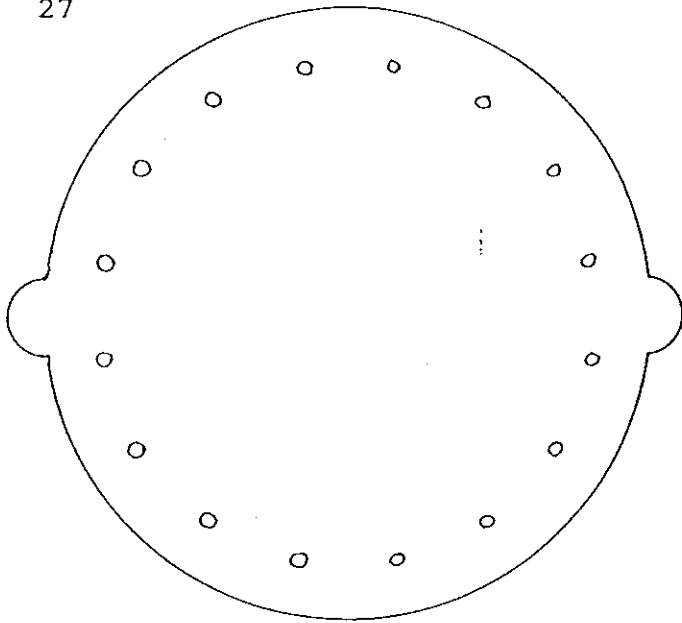


Figure 23

Figure 24

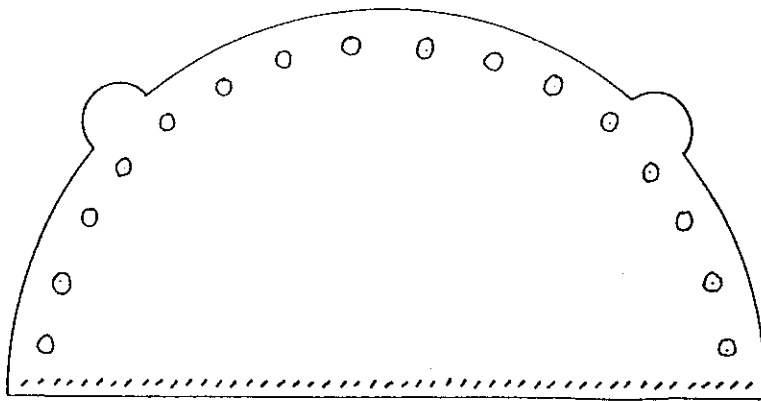
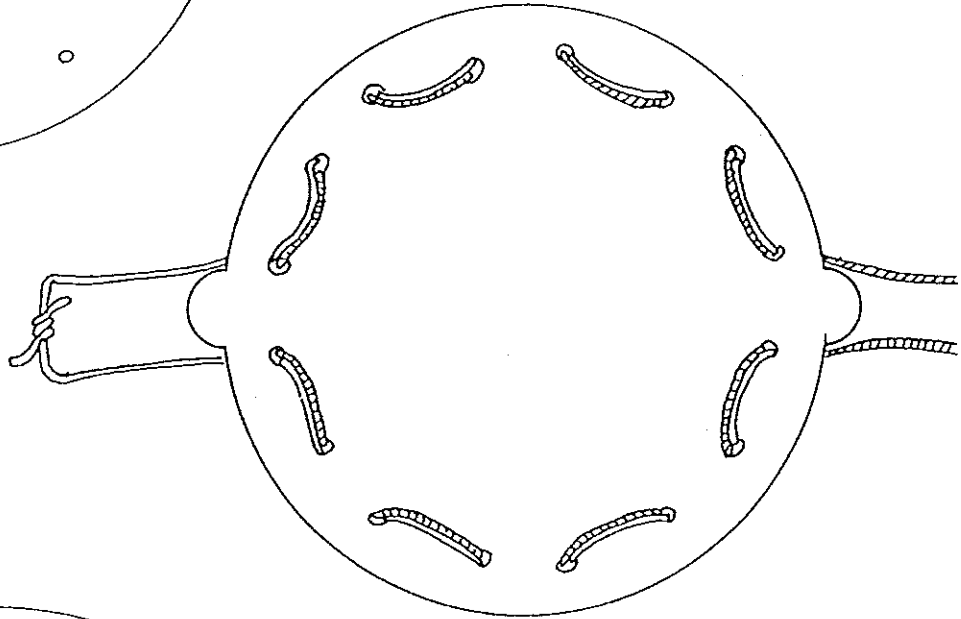
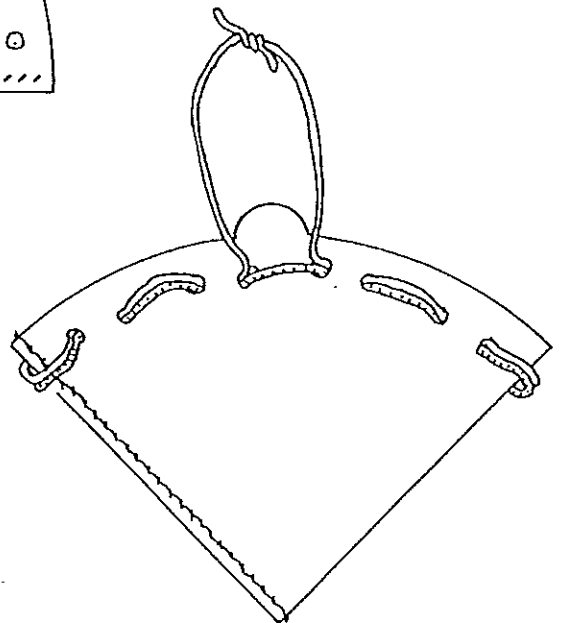


Figure 25



A second type of simple pouch was also popular at Heddeby. This design featured a half circle of leather, about 20" - 51cm. along the straight edge. Draw out your pattern, (see figure 25), on leather of a type described above. Add "ears" if required and again, cut out with a sharp pair of scissors or stanley knife. Fold the leather in half along the straight edge and sew up using normal saddle stitching (described in annex 10). Finally, punch your holes around the rim and thong up as described above for the circular pouch.

SHOES

Many shoes have been found from our period, in water logged areas in Dublin, Heddeby and York. The wealth of find material means that we have a pretty good idea of what shoes and boots the Vikings and Saxons wore. Consequently, there is no acceptable modern substitution for C10. foot wear. Your choices are limited to buying or making. There are quite a few people currently making shoes, so supply is no problem. Cost is also reasonable, especially when compared with buying a pair of hand made shoes, (see the society trading officer for details).

Making yourself a pair of shoes or boots is not too much of a problem providing you have basic craft skills and a small selection of essential tools. The wealth of shoe finds can be categorised in many different ways, but for the purposes of reconstruction we need only two. These can be referred to as the "Front Seamed" and "Side Seamed". The latter is a little more economical to make but an exact pattern is required and is therefore a little trickier to make. The former is easier to make but perhaps a little more wasteful of the leather. No pattern as such is needed for the front seam type so we shall consider the making of this one first.

MANUFACTURE OF FRONT SEAMED SHOES

To ensure your shoe making project is to be successful, you need to have a pretty good pattern of your feet, so start off by drawing around your foot on a piece of cardboard. Cut this out and turn it over, then check that it will do for your other foot. Label each side of the sole "L" & "R". This is not as daft as it sounds, shoes are sometimes made inside out then turned around, hence "turn shoes" and it is easy to get confused and end up sewing a right sole to a left upper!

For the front seamed shoe, no pattern as such is needed for the upper. All you need is a piece of leather that is long enough to wrap around your foot, and tall enough for the type of footwear you require, (see figure 26). Make the length and width of the upper longer than you actually need, then trim off the excess when you have finished.

From the illustration you will see that a front seamed boot is simply a front seamed shoe that comes further up the leg. You will need to select some leather for shoe making. This does not have to be high quality (and expensive) tooling leather, but cheap centre spit hide is equally undesirable as it will not last very long, (see annex 9).

For the sole a thicker piece of leather may be used, stitching the upper to the sole through the side of the

29

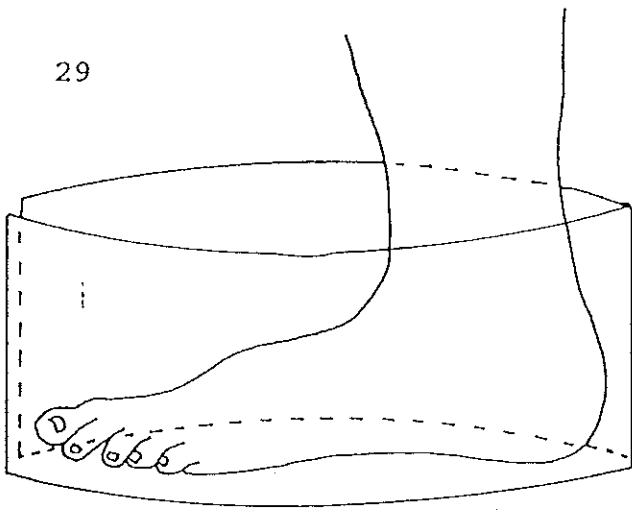


Figure 26

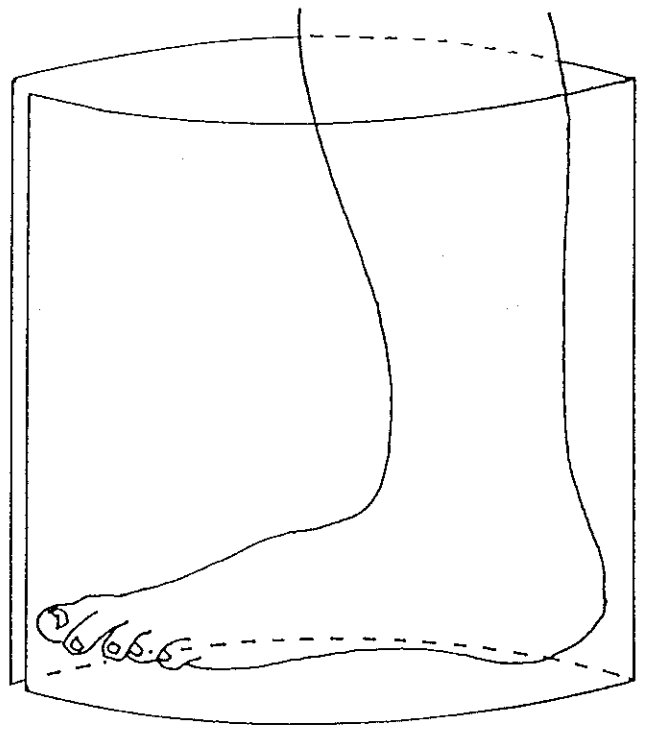


Figure 27

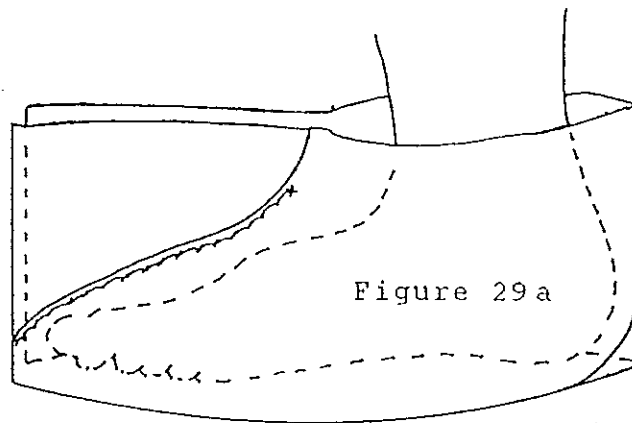


Figure 29a

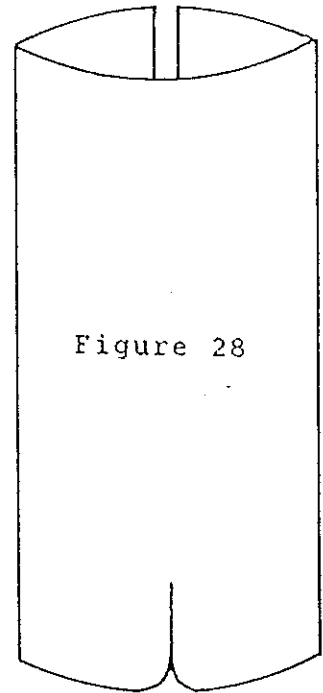


Figure 28

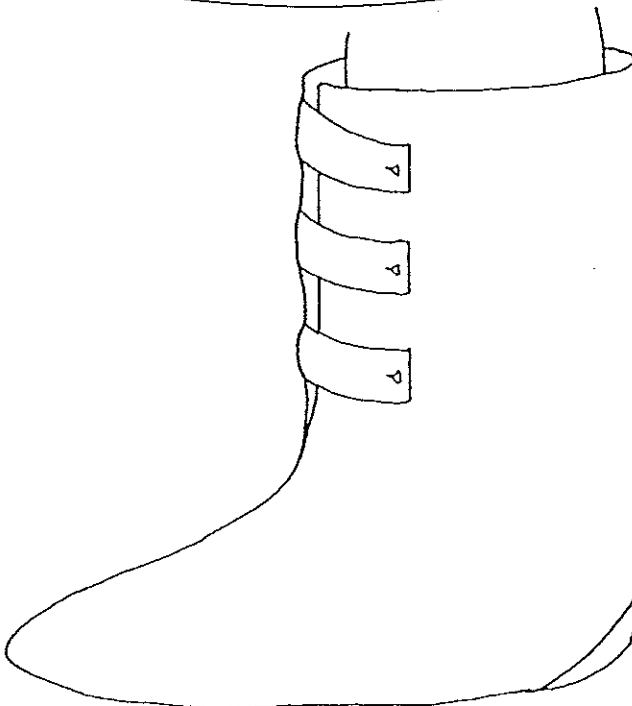
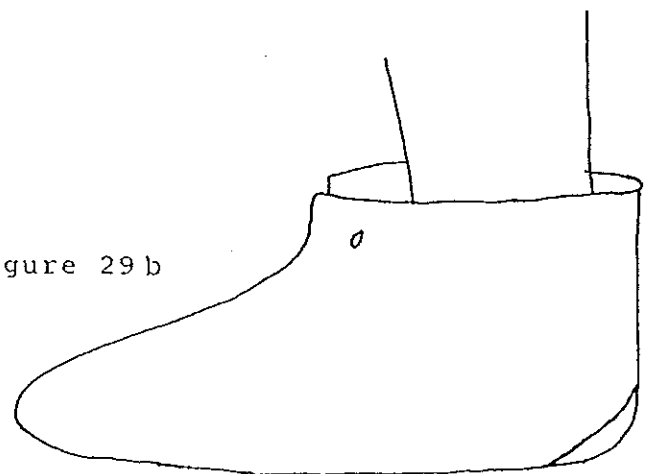


Figure 29b



sole (annex 10), or else sewn through a thinner piece of sole leather and another piece of leather glued to the sole. Any stitches that protrude through the sole will eventually wear away, then your upper falls off! Side stitching or gluing another sole to the bottom will prolong the life of your creation. Another factor is modern roads. The Vikings did not have them, but we have to contend with walking on tarmac and gravel, so any number of soles that give the feet protection are desirable. Remember to assemble your footwear with the 'shiny' of the leather downwards.

When cutting out your leather soles from your cardboard pattern, add about $1\frac{1}{4}$ " - 6.5mm. all round the foot for seams. Also add a heel triangle, about 1.5" x 2.5" - 4cm. x 6.5cm. (see figure 27). The triangle prolongs the shoes life by having the heel seam out of the way of heel scuffing. Our ancestors must have been prone to scuffing their heels as this is a very common foot wear feature!

Now that you have leather for your sole and upper, cut a slit in the middle of the long edge of the upper, slightly "V"ed at the edge, (see figure 28). When pulled apart, this slit becomes the heel triangle, so it needs to be 2.5" - 6.5cm. long. This allows the upper to cling to the back of the foot and stops it becoming baggy.

Starting at the heel triangle, sew the upper to the sole, round one side then around the other, finishing at the big toe. (figure 29a). You should now have a foot shaped tube, open at the front. Put your a stockinged foot inside your tube, and pinch the leather together up the middle of your foot, till you reach the leg. Mark this line and sew up, (annex 10). You can leave your foot inside when you sew up, but this is not advisable as you invariably end up sewing the shoe to your foot. Wooden lasts were found at York, probably for this very job. However, if your marking is accurate enough, you should not have any problems. Remember to leave a big enough gap between the top seam and your ankle / leg to get your foot in and out.

Finally trim the leather off the top of the foot, and shape the remainder either as a boot or shoe, (figure 29b). Complete the foot wear with fastening toggles and loops, (annex 11) edge whipping, (annex 10), dye if required and add leather preservative, (annex 12).

MANUFACTURE OF SIDE SEAMED SHOES

The second type of shoes to consider making can loosely be classified as " Side seamed shoes ". These are a little trickier to make than the front seamed variety as they have to be a fairly good fit when they are cut out and assembled. (The front seamed shoes, as you may remember, were loosely cut out and trimmed after assembly).

A good pattern of your foot is required if this type of footwear is to be successfully manufactured. Reproducing original shoe patterns of Viking footwear or even modern adapted patterns of successful shoes simply does not work. Not only do people have feet of different lengths (generally longer than viking feet) but even people who have the same length of foot have varying widths of feet, proportionally much wider than Viking feet! The best compromise is to obtain a pattern of your own foot and adapt it to conform to one of the many pattern variants, (see

figure 30 below).

Obtain a pattern of your sole, (see above - " Making a pair of shoes I "). Obtain a pattern of the upper of your foot by either cutting up an old pair of shoes, such as plimsolls that are still a good fit, or by making a paper pattern of your foot by cellotaping pieces of paper together over the top of your foot, until a sort of paper sock is achieved. Next, cut the old plimsoll or paper sock off your foot in such a way that it resembles one of the basic shoe patterns when laid out flat, (figure 30 below). Check that this pattern will do for both feet and label "L" and "R" accordingly. Usually a single cut is required from the outside of the foot, cut diagonally to the front of the top of the foot. When this cut is inserted, a pattern similar to the York-1 pattern is obtained.

With your pattern laid out flat, add about 1\4" - 6.5mm. all round for seams. From a suitable piece of leather, mark out two soles and two uppers, (see annex 9 below). Add about 1\2"-13mm. to the length of the short edge (figure 31) in case of upper or sole mismatch which sometimes occurs when you sew a straight - edged piece of leather around a curved one. Remember to put a slit up the back of the heel, 2.5" - 6.5cm. long, and round off the corners.

This kind of shoe can also be sewn onto a thick piece of leather, as detailed in the previous section. Otherwise a thinner sole can be sewn onto the shoe, inside out, hence the term "turn shoe". A turn shoe is a shoe, like this one, that is assembled inside out and then turned the right way round.

MANUFACTURE OF TURN SHOES

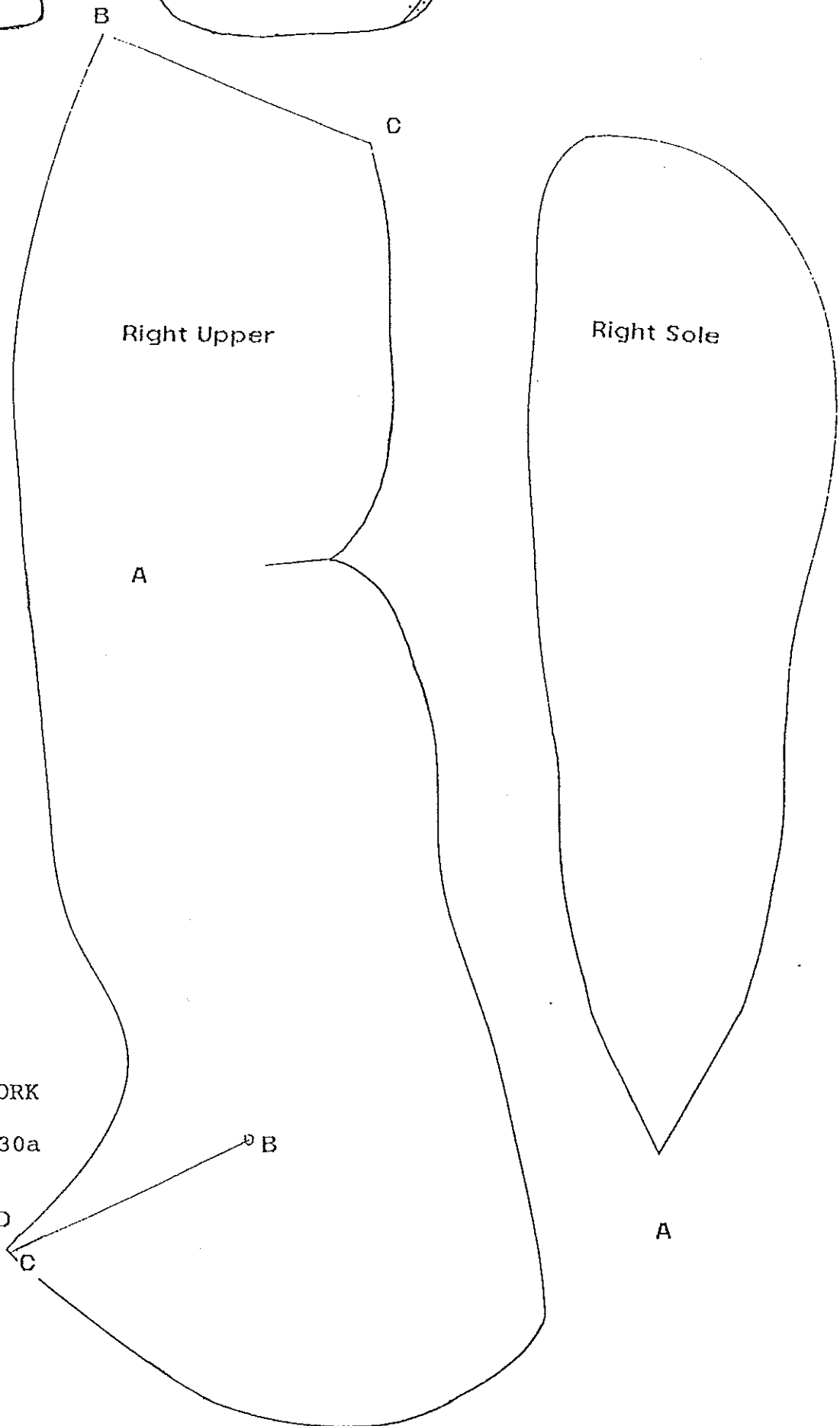
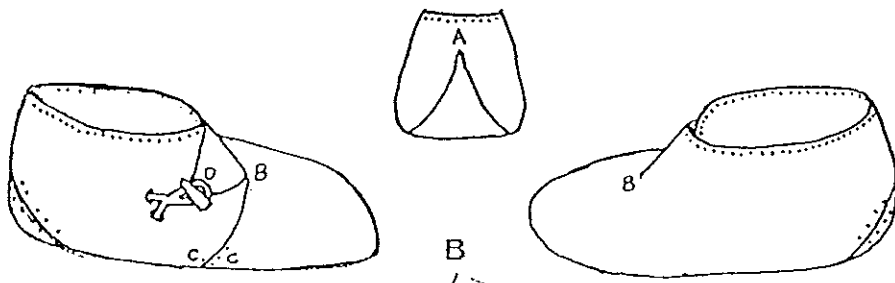
With your sole and upper patterns, check that they will do for both feet. Mark out one for each foot from a suitable piece of leather, (annex 9), and cut out the various pieces. Pair the uppers and soles together, remembering to put the "shiny" side of the leather outwards and downwards. If chromed leather is being used, hide the chromed side inwards and downwards!

Start the sewing at the heel triangle, and use saddle stitching, (see annex 10). Sew up the short side first, then sew round the long edge. You may have to pull the leather tight to ensure that they meet together at the side of the foot. A little extra material on these edges will ensure a good seam.

When the sewing is completed and any excess leather is trimmed off, the shoe can be turned the right way round. Stiff seams can be rubbed with bees wax and hammered flat to prevent chafing. Toggles and laces can be added, but remember that they did not lace up boots and shoes as we do today. We tend to lace up a vertical arrangement of holes, whilst they thonged up a horizontal arrangement of holes or slits, (see annex 11).

To complete the shoe, the top edge of the seams can be "whipped", (see annex 10). The leather can be dyed and waterproofed with preservative, (annex 12). Extra soles can be sewn or glued to the bottom to help with the roughness of modern roads.

Finally, inner soles can, and probably were, used against cold wintry ground! Authentic inner soles probably consisted of stuffing the shoe with straw. Cheap foreign soles of raffia or hessian can be used, they can be bought from bargain shoe shops. Alternatively pseudo inner soles can be cut from a piece fleece.

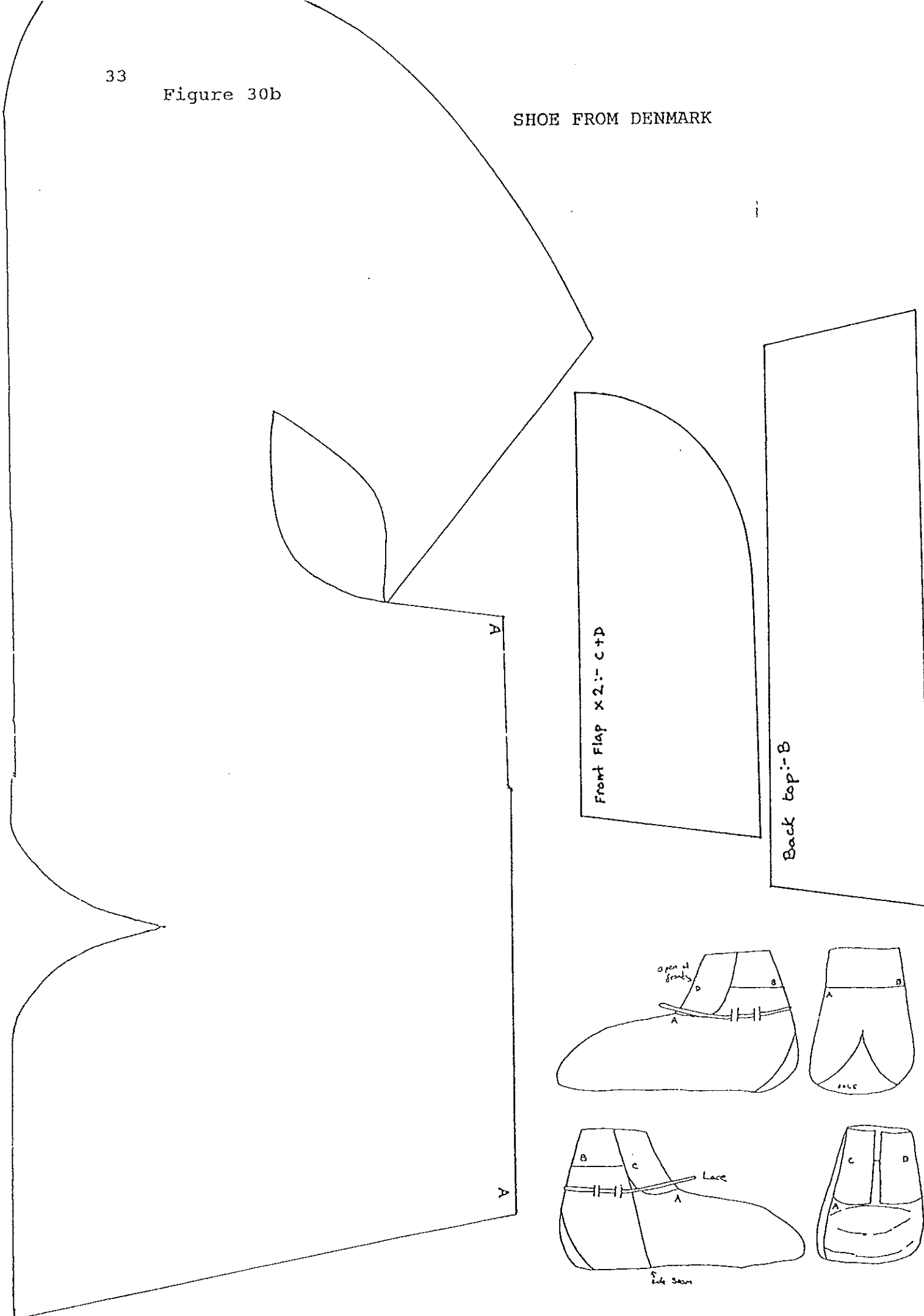


SHOE FROM YORK

Figure 30a

Figure 30b

SHOE FROM DENMARK



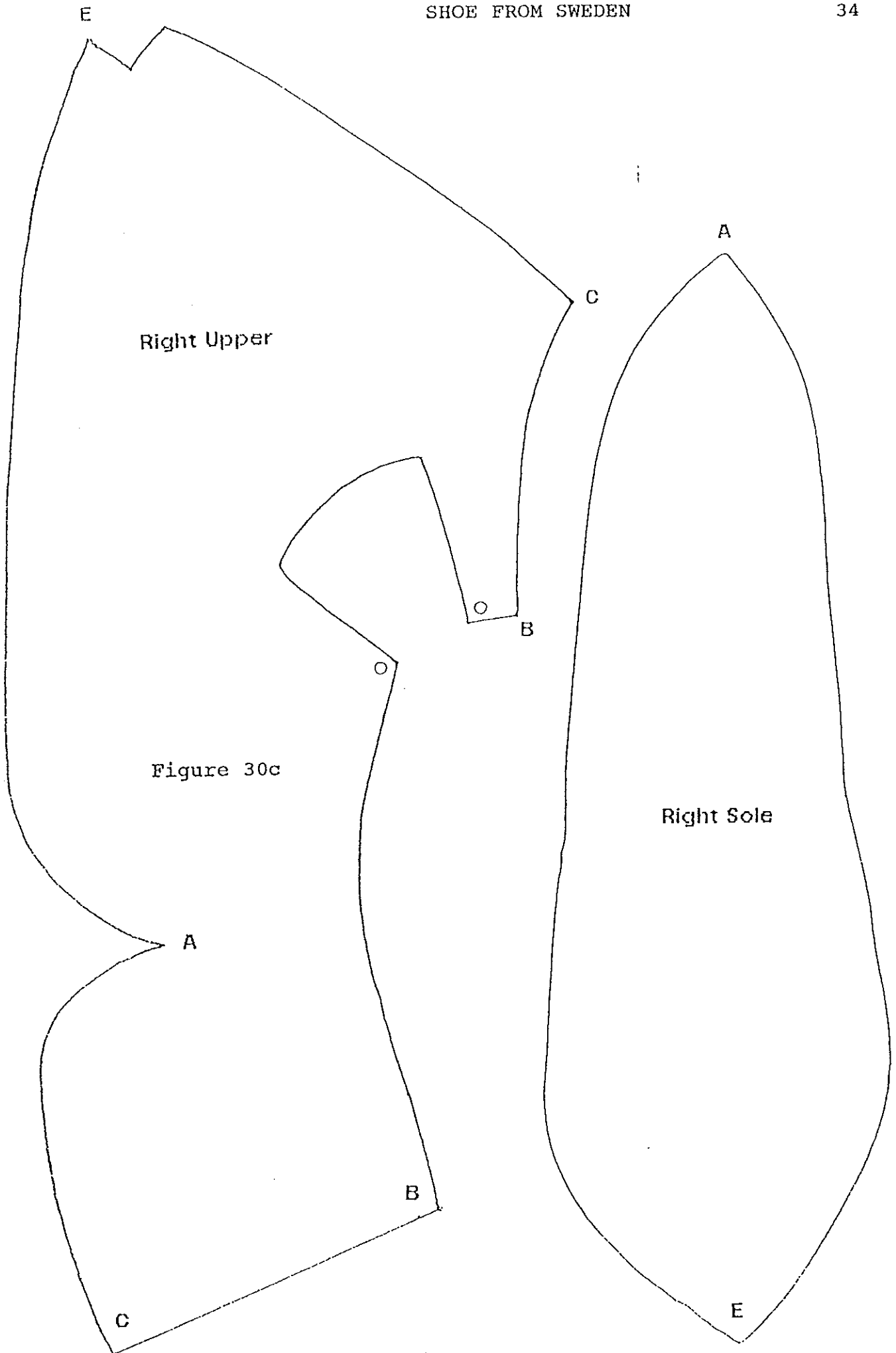


Figure 30d

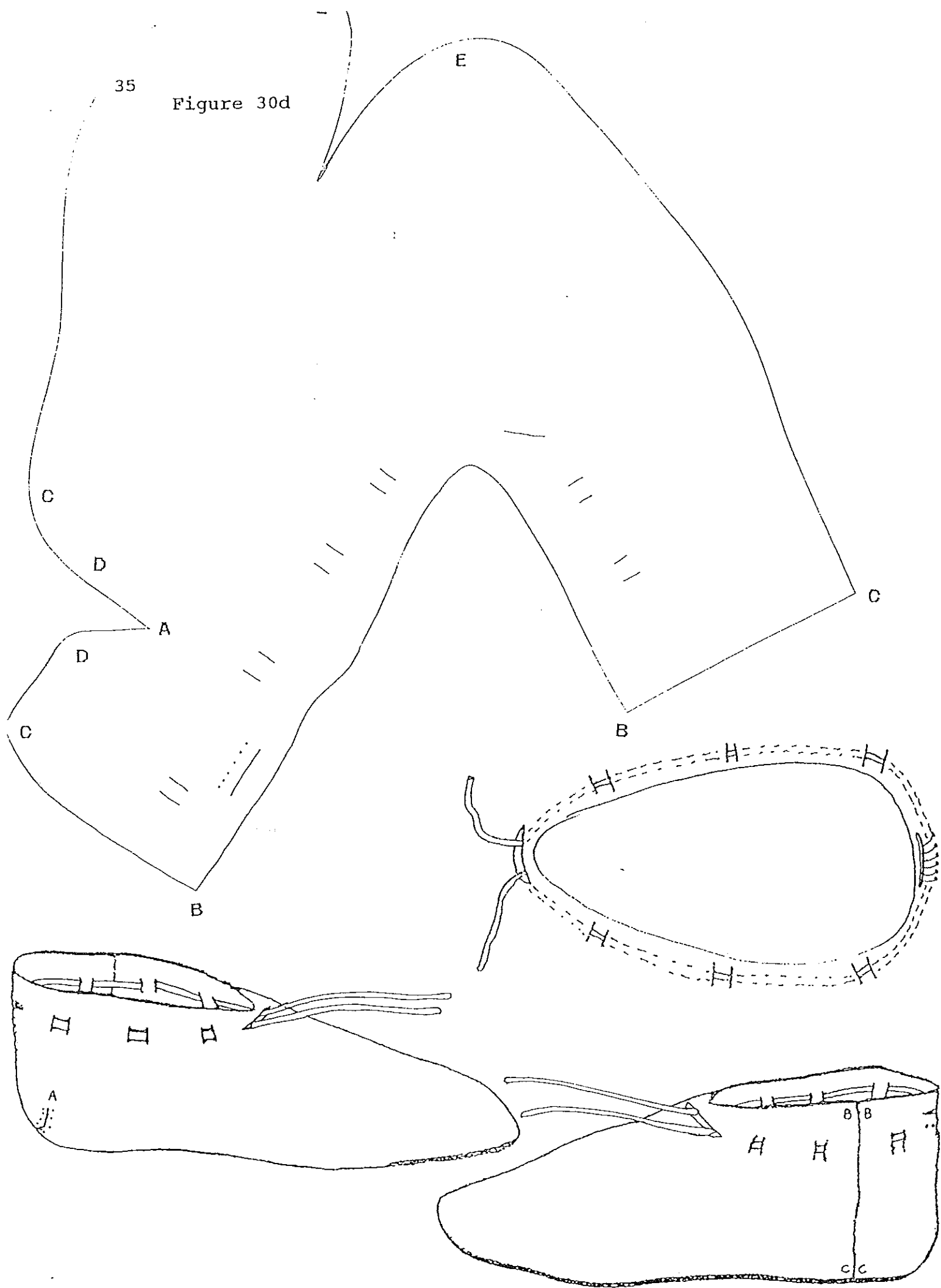


Figure 30e BOOT FROM HEDDEBY type 6

Short boot made out of two pieces (uppers and sole) with cuts for a lace.

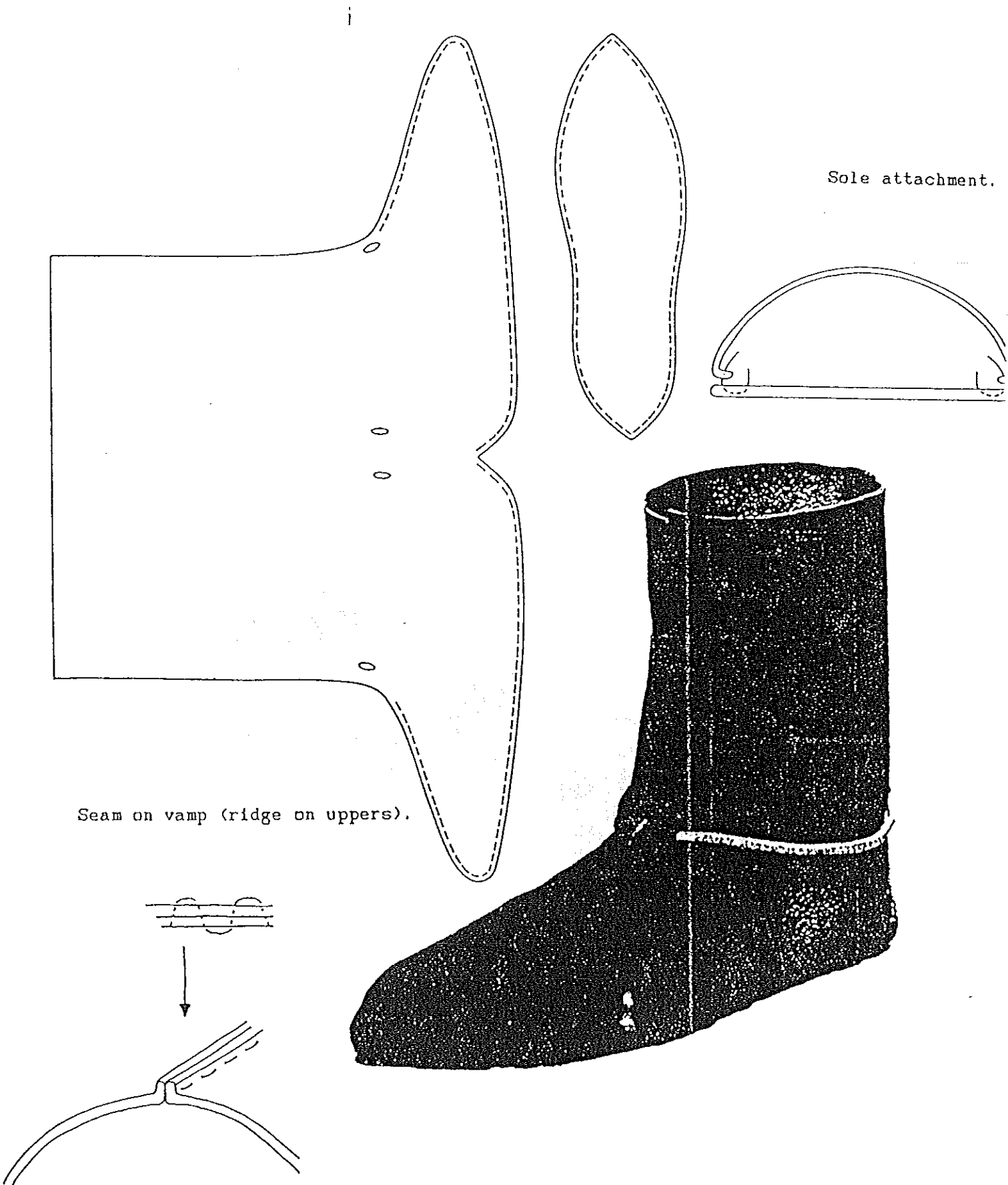


Figure 30f SHOE FROM HEDDEBY type 3

Shoe made out of one piece with cuts for a lace.

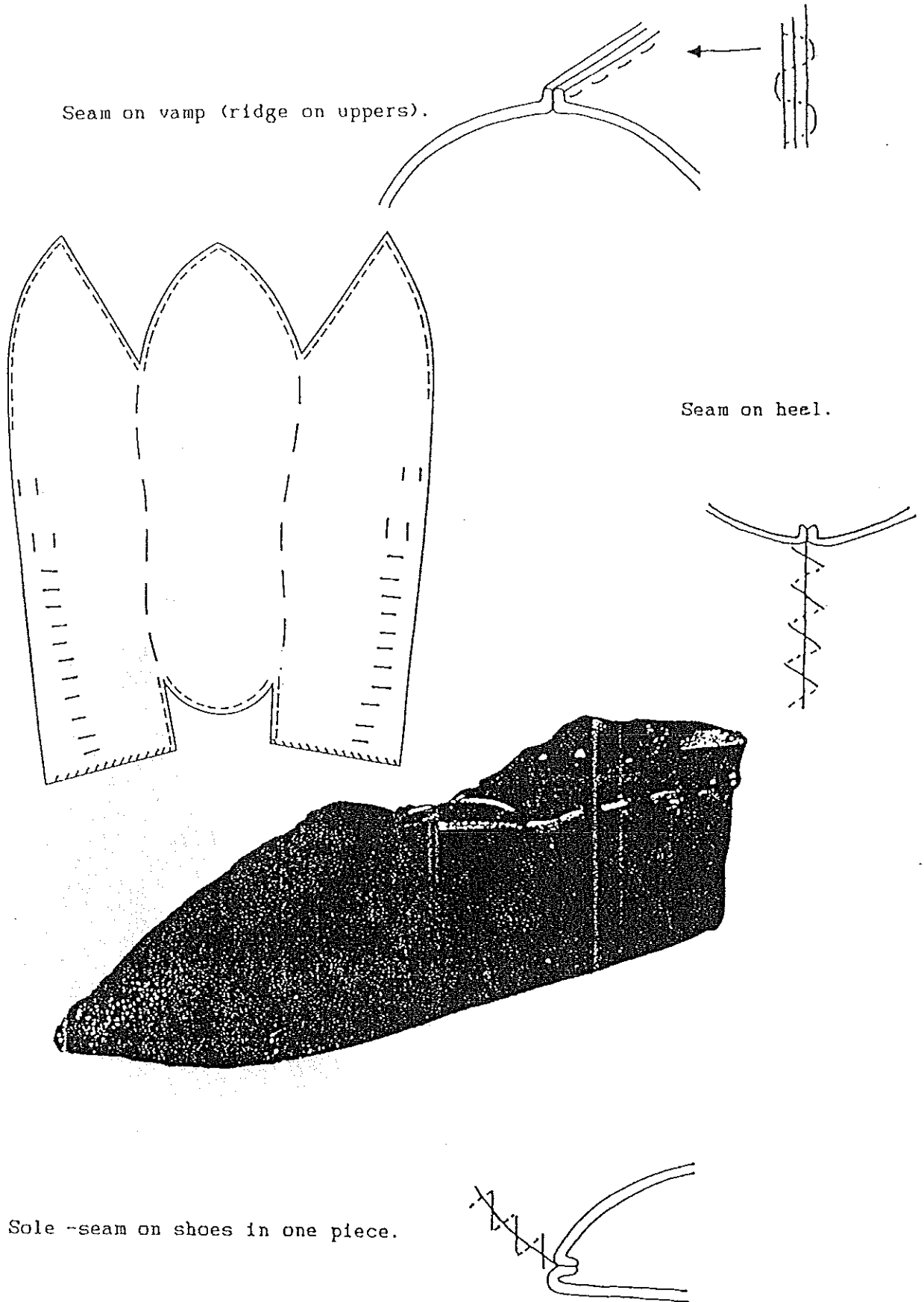
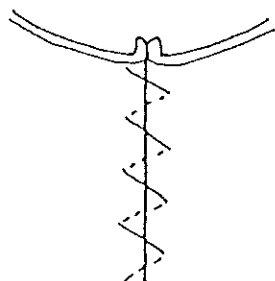
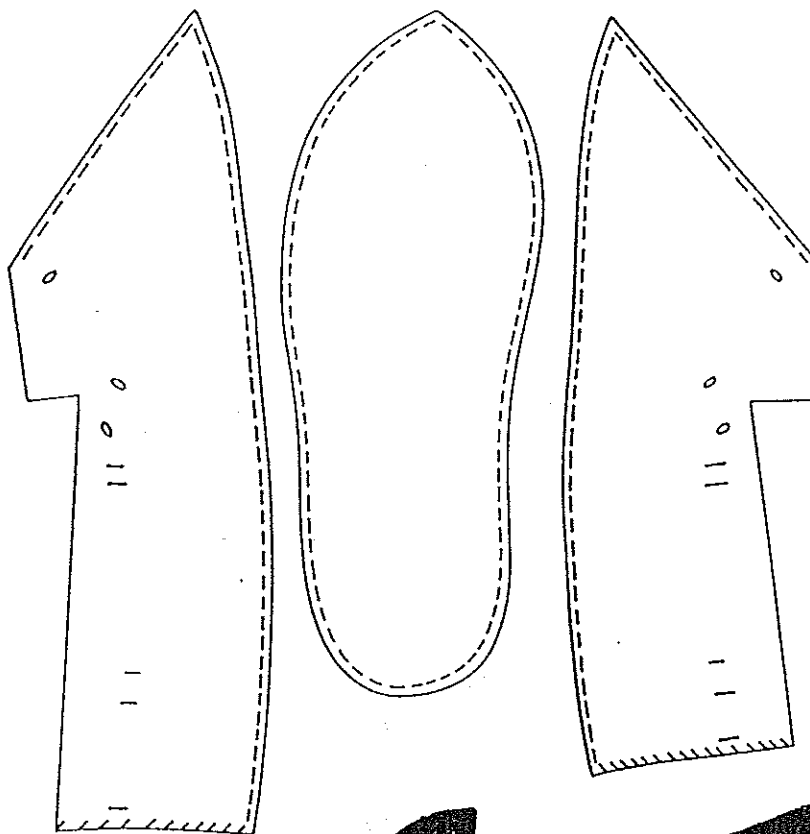
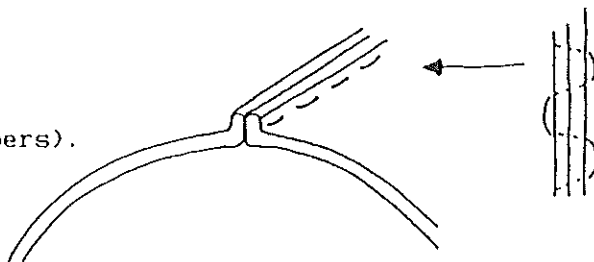


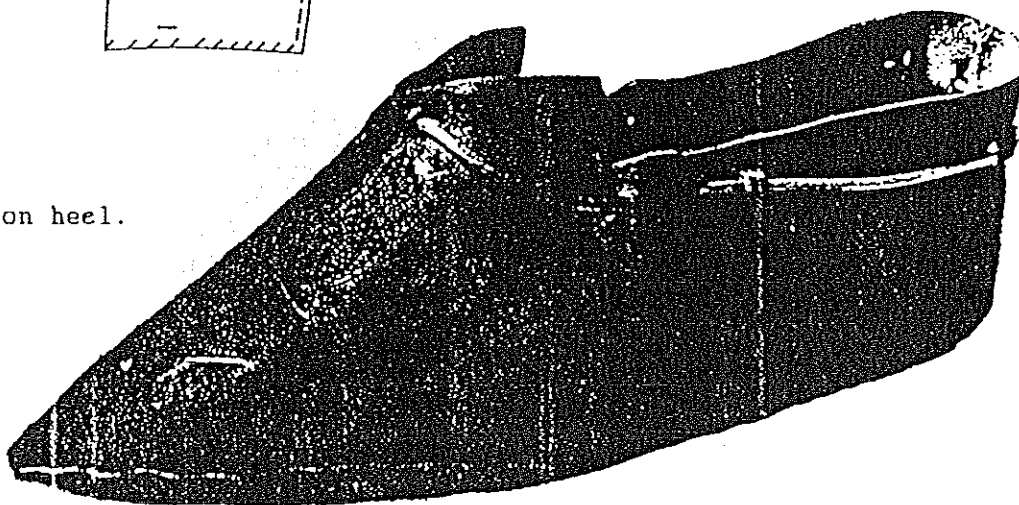
Figure 30g SHOE FROM HEDDEBY type 4

Shoe made out of three pieces (uppers made from two pieces and sole) and cuts for a lace.

Seam on vamp (ridge on uppers).



Seam on heel.



Sole attachment.

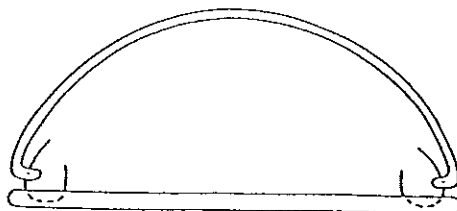
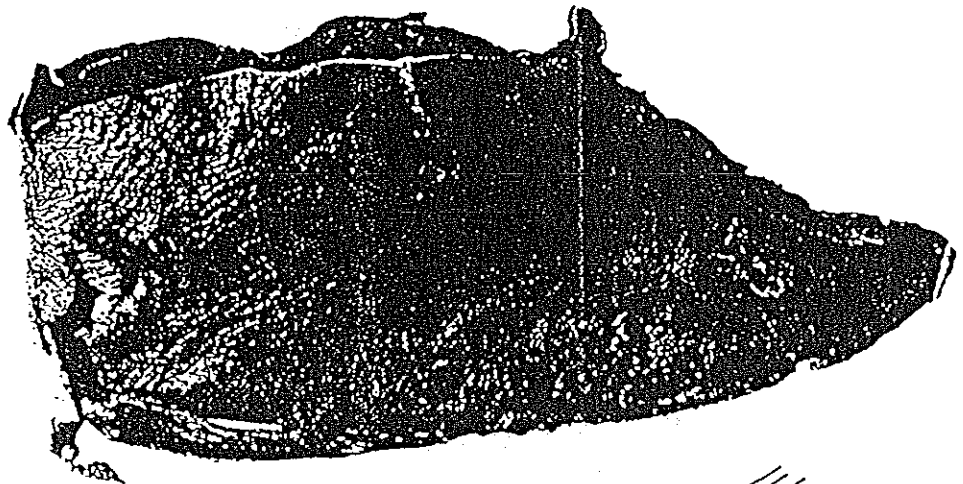
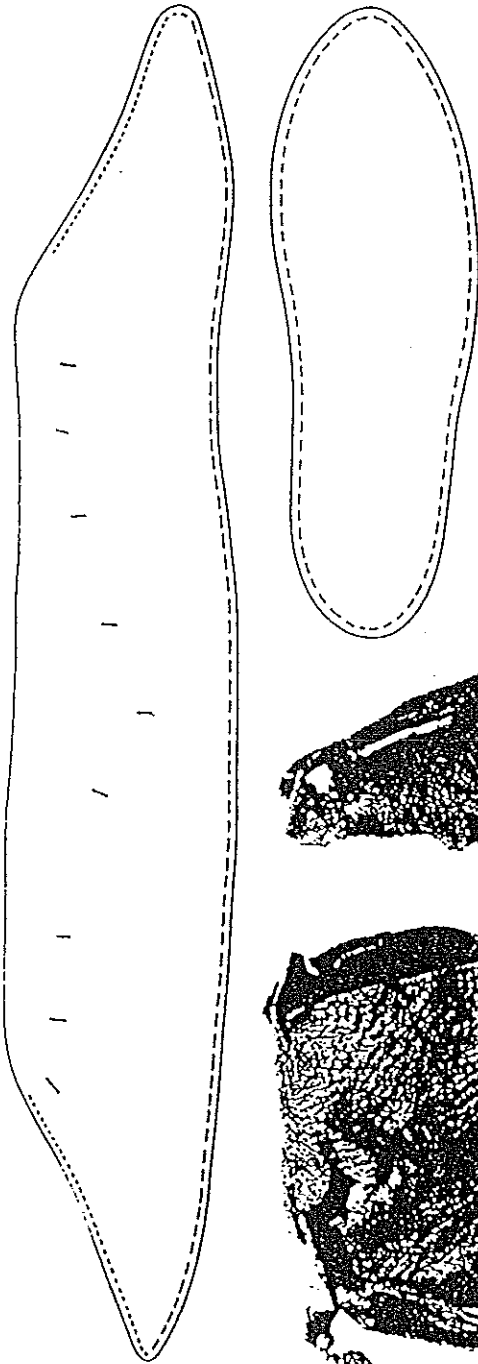
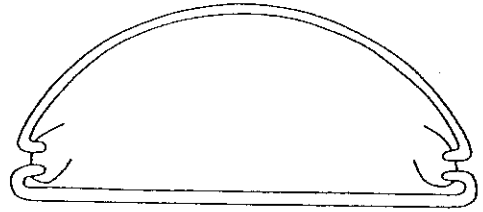


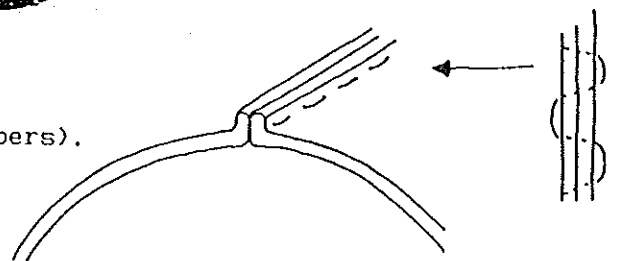
Figure 30h SHOE FROM HEDDEBY type 3

Shoe made out of two pieces (uppers and sole) with cuts for a lace.

Sole attachment.



Seam on vamp (ridge on uppers).



A helmet alone will not protect your head, you also need a helmet liner. All you need to make a cap / helmet liner, is some sheepskin or lambskin, sharp scissors (or a craft knife), a leather needle, and some thread. Leather needles have triangular points which cut through the leather much more easily than a normal needle point. If however, the skin is too tough, then you will also need an awl.

Leather needles can be bought at sewing shops, or in the haberdashery section of a department store.

The enclosed pattern fits most people, (see figure 33), if you have an enormous head or a tiny one you might have to scale it up or down a bit.

Trace the pattern and cut out four copies from a newspaper. Lay these out on the suede side of your sheepskin. Be as economical as possible, with careful laying out you can get three or four caps from one skin. Draw round the patterns with a pen then cut inside the marking out lines.

Sew the pieces together starting at the crown (the pointed end of the pattern) and working down to the brim. Ideally you should sew it from the woolly side then turn it inside out, but you may find that the wool tends to catch in the thread, so you may need to sew from the suede side of the skin. Use an oversewing stitch and try not to stretch the skin as you work. If the skin does stretch, the pieces may not meet at the brim, in which case just trim off the spare bits, as in figure 31.

You can wear you cap on its own as a hat, it looks quite good with the brim turned up to show the fur lining. A Viking is depicted wearing a similar hat on the door lintel of Gol church in North Jutland, similar hats have also been reconstructed in Walström & Widstrand's: "Viking". Nordbook 1975. (See figure 32).

Figure 31

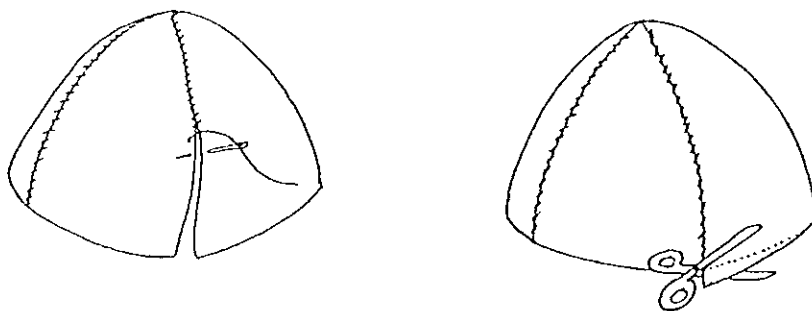
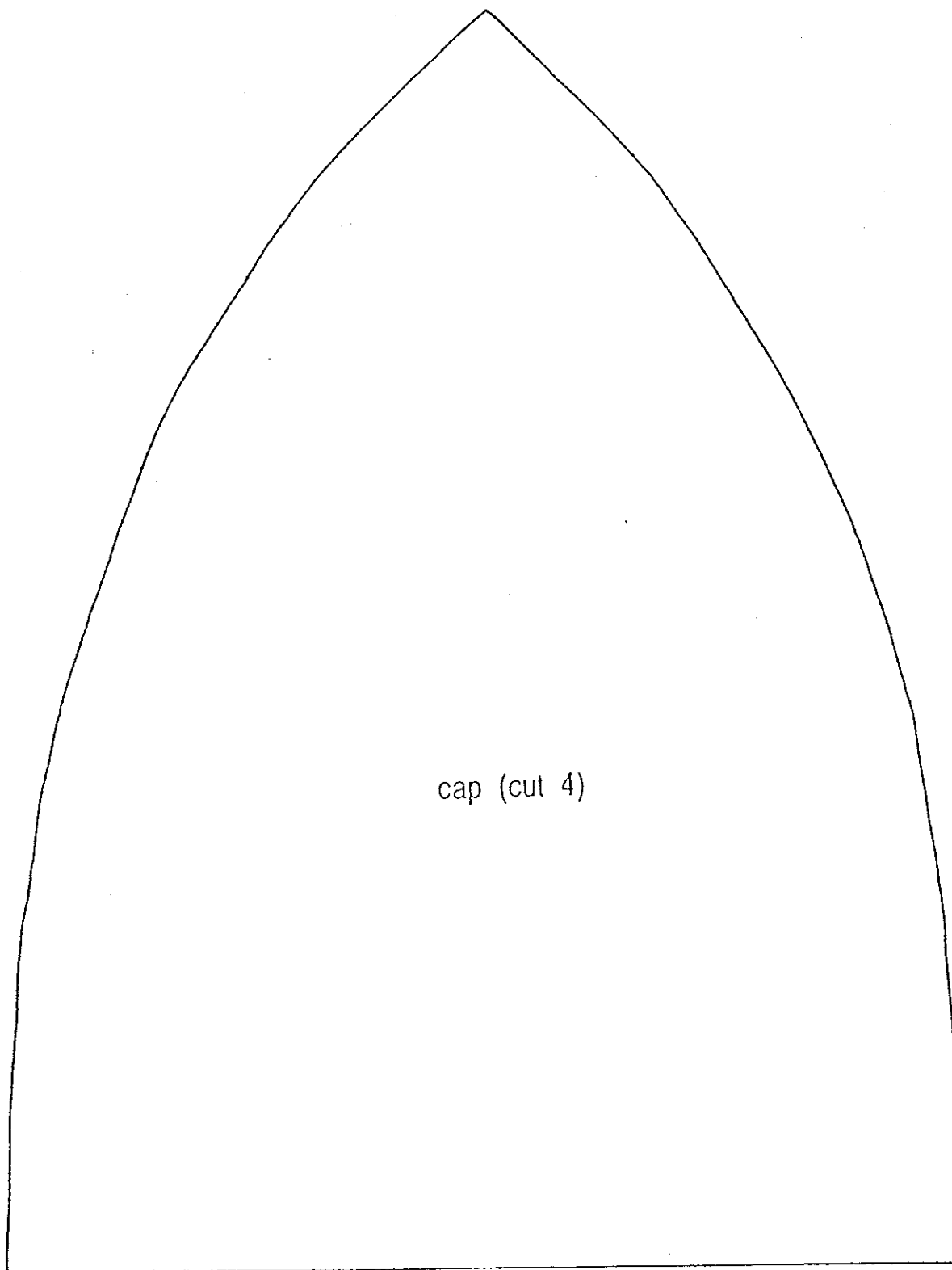


Figure 32



Figure 33



Clothing is something most people today take for granted, but then it had to be spun and woven into fabric, before clothes could be made. So what is in a piece of fabric?

CHOICE OF FIBRE

The only fibres available to the Northern European peoples were : wool, flax, nettle, hemp, and (as an expensive import) silk. It is also possible to spin the hair of other animals such as goats and young cattle, but these are harder and would tend to be blended with wool.

Wool is insulating, water-repellant, and inherently flame retardant, and therefore useful around open cooking fires. Most people used fabric made from wool for outer garments and cloaks.

Flax and nettle have similar properties. Both are highly absorbent, and have a smooth texture, in comparison to wool, and probable uses would have been for inner garments.

Hemp is a strong, and coarse fibre of little use for apparel, but suitable uses would have been for ropes and sacking.

Silk is not only soft and smooth, but also strong, however as an expensive import would only have been used as decorative clothing and dyed with the richest dyes.

THE FABRIC CONSTRUCTION KIT

Now that we know what clothes are made from, how are they made? Before a piece of fabric can be made the fibres have to be spun, or twisted into yarn. After the fibres have been spun, a fabric can be woven. This is done on a warp weighted loom (WWL).

Archaeological finds of cloth have been limited, but the small range of weaves that have been found, most of these are still available today.

WEAVING: THE TECHNICAL TERMS

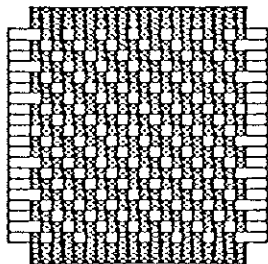
WARP OR ENDS: These are the ends of the yarn, that hang down by weights on a WWL.

WEFT OR PICKS: The yarn which goes across the warp.

SELVAGE: The yarn ends at the side of the fabric.

DENSITY: The density of a weave is measured in threads per centimetre, but to make it easy we will define fabrics in 3 densities. Coarse is up to 10 per cm. Medium is between 10 and 35, and fine is over 35. Any density of weave can be used in any pattern of weave. However, for obvious reasons silk would not have been found as coarse weaves, and linen has rarely been found with more than 20 threads per cm. 10 threads per cm. would seem to have been the most popular for everyday clothing.

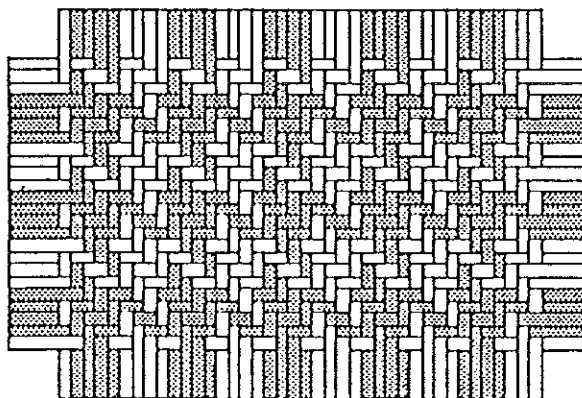
A second type of twill weave is 2/1. However, it is technically harder to set up on the loom than 2/2 twill, and 2/1 is consequently rarer as finds. High quality 2/1 twill fabric is still easy to get hold of, as fine woollen suiting, or as overcoat fabric. (See figure 36). The cost of 2/1 fabric however, may be quite expensive. You can find coarse woollen blankets as twill weaves, though these are prone to tearing.



Plain 2/1 Twill

Figure 36

A final method of patterning weaves, is to vary the colour of the warp and weft. If this is done, then Celtic checks are easy to construct. The dogs tooth weave, as found on sports jackets today, is also easy to construct, as seen in figure 37. Examples of "dogs tooth " weave have been found in Denmark.



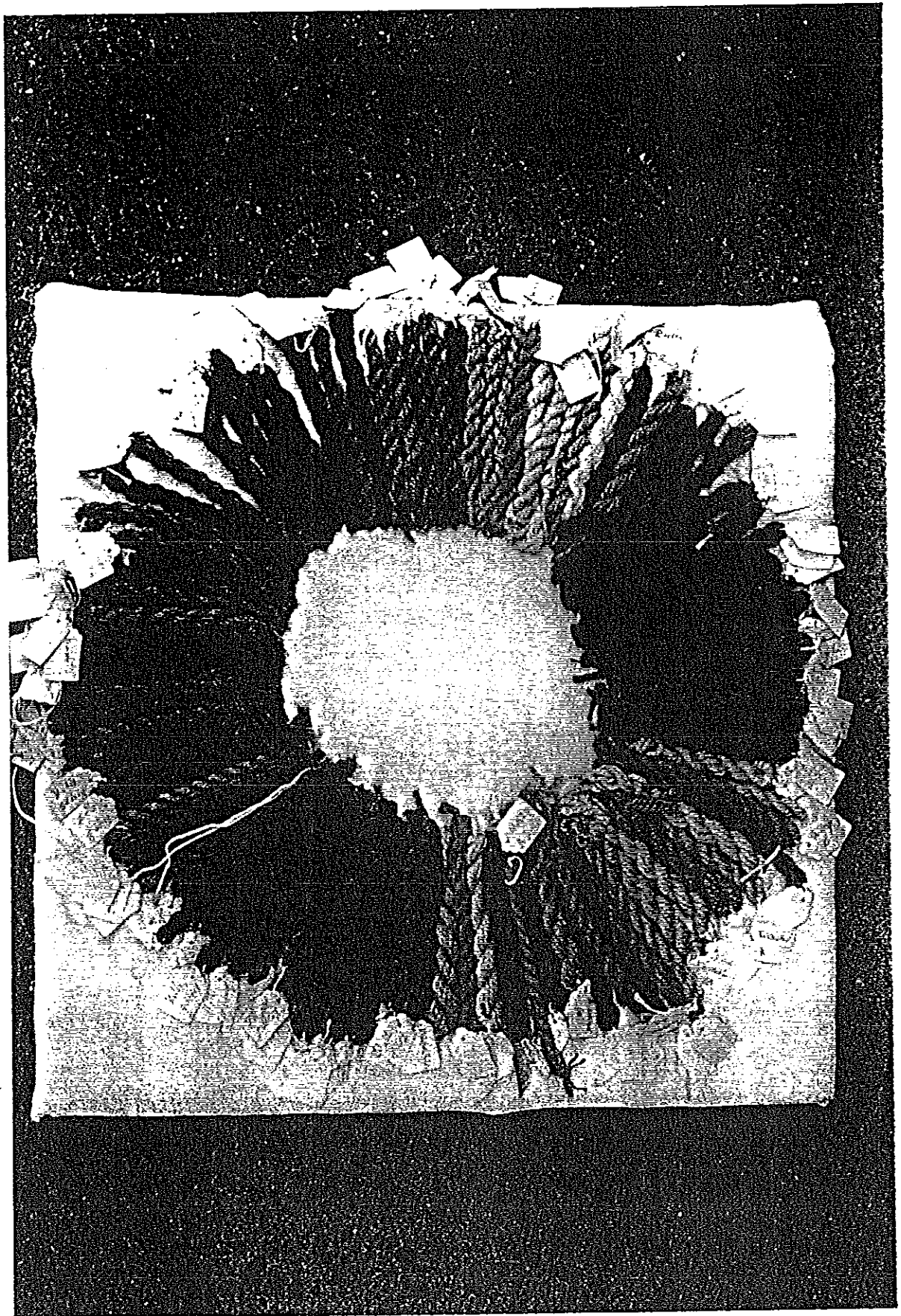
Dogs-tooth weave

Figure 37

There is much debate about the colours employed by the Vikings to dye their clothes, particularly as so little survives. What is clear from experimental archaeology however, is that the brightest and the most colourful dyes were usually the most expensive and thereby used by the more well to do Viking. In this category we also find Jet Black and Brilliant White. The former was a mixture of three of the most expensive dyes: cochineal - red, woad - blue, and a brilliant yellow probably weld. The later was produced by the repetitive process of wetting then sun drying, or else bleaching the material white with wood ash. More mundane shades of grey and very dark brown were commonly worn by the populace, similarly shades of off white were common amongst the lower classes. Earthy shades of brown, pink, yellow, pale blue and brick red were also fairly common. Yellow occurs in many plants and can be quite bright, although some may eventually fade. Wool should always be washed in cool water, to prevent shrinkage, and in any case modern detergents contain optical brightening and brightening agents, and should be used with care.

All these basic colours are fine for this guide but to help you further, a colour chart of naturally dyed wool using authentic dyes from Sweden is included, (see figure 38).

One final point is that Linen is fairly difficult to dye (naturally) and so even a fairly advanced garment may be left undyed, particularly if it is an under garment, for example the Viborg shirt. In the same vein, the York socks were made from undyed wool, but decorated at the top with red bands.



The hem is the seam at the edge of a piece of cloth, how you sew the hem depends on how thick the cloth is. The rolled seams in figure 39a, are only suitable for fabrics such as silk or very fine linen.

The next hems in figures 39b & c, are from Haithabu, here the cloth is only folded over once and can be used on thick wool.

The next hem in figure 39d, is from York, here the cloth is folded twice and can be used on linen or fine wool. If coarse wool is doubled over twice it will tend to stick out stiffly.

The herringbone stitch in figure 39e, is used to hold down a hem on wool which has been folded once. This is a decorative stitch and could be used on the outside of a piece of clothing.

In figure 39f, is a hem from London, here two different coloured threads have been used alternately to give a decorative edge. Unusually this seam does not use one of the standard four stitches. It has been worked over the edge of a piece of wool without any folding. This sort of hem should only be used on a cloth which does not fray much, or on leather.

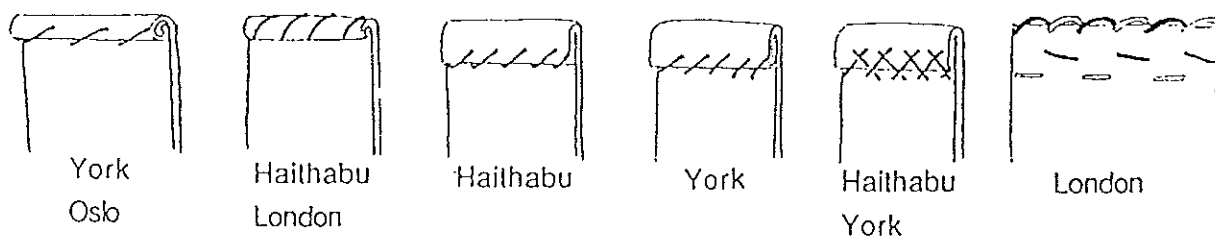


Fig. 39a

Fig. 39b

Fig. 39c

Fig. 39d

Fig. 39e

Fig. 39f

SEAMS

Seams are worked on the same principle as hems. If a cloth is fine, lightweight or tends to fray it should be doubled over. If it is thick, heavy and does not fray it should be overlapped. From the surviving sewn fragments, it would seem that just about any combination of oversewing and running stitches which can be used were used. (See figure 40).

When sewing on tablet woven braid there are two options: you can sew it over the edge of the cloth and cover up the hem with it, or you can use a row of blanket stitches to stop the edge of the cloth fraying, then use oversewing to join the braid to the blanket stitches. This method was employed on the cloak found in a chieftain's grave at Evebo Eide. (See figure 41).

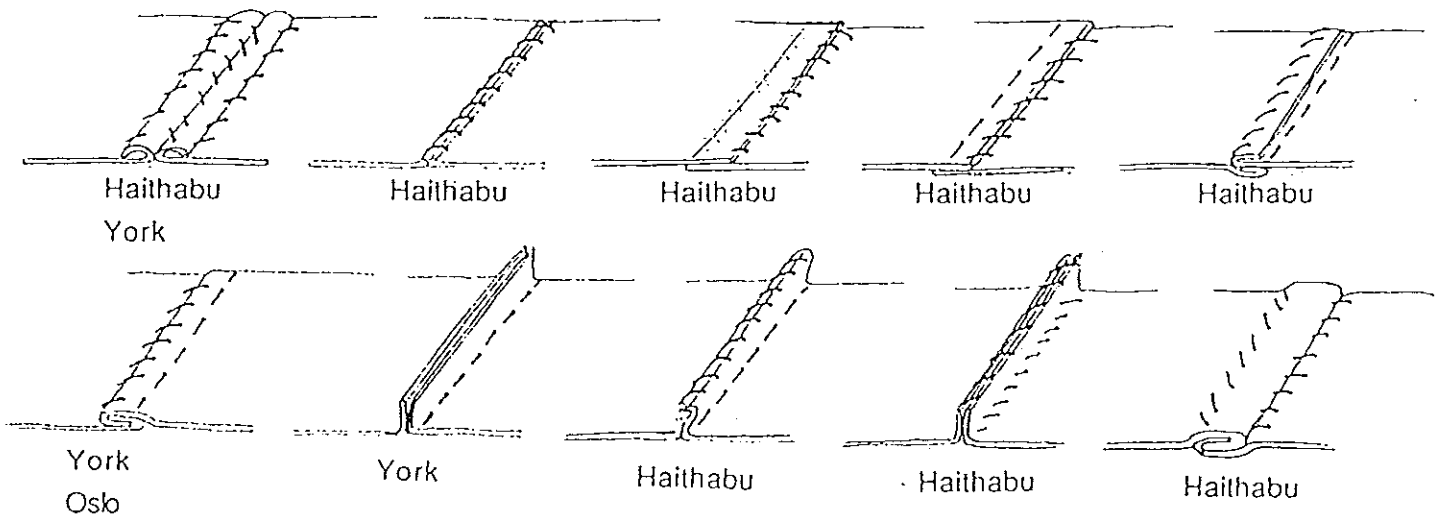


FIGURE 40

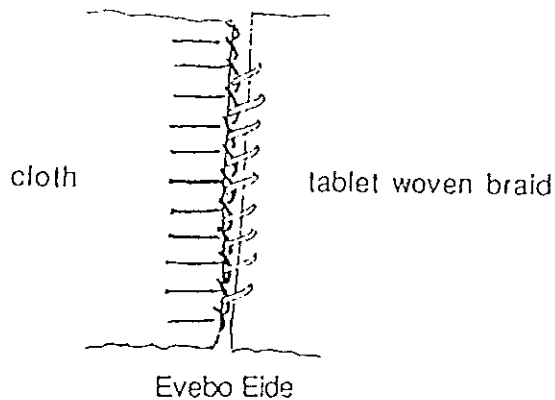


Figure 41

VIKING AND SAXON STITCHES

There are only four basic stitches to master: running stitch (see figure 40 - York), oversewing (see 39a, b, c, & d), herringbone (see figure 39e), and blanket stitch. (see figure 41). Running stitch is probably the easiest to start with followed by oversewing. With these two stitches you can make clothing. the other two are for decorative edging.

These directions are for a right handed person, if you are left handed remember to reverse all directions.

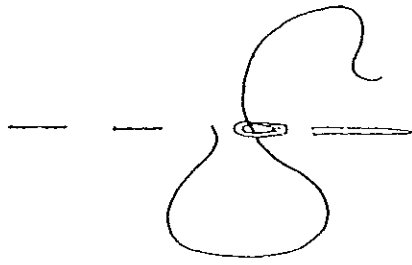


Figure 42a

Running stitch is worked from left to right. Several stitches can be picked up on the needle at once before pulling the needle through. (See figure 42a).

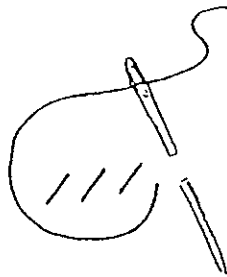


Figure 42b

Overseeing is worked diagonally from left to right. (See figure 42b).

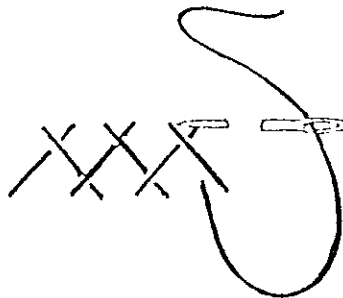


Figure 42c

Herringbone stitch is started at the top of the row. Work from left to right alternately taking a stitch at the top and a stitch at the bottom. (See figure 42c).

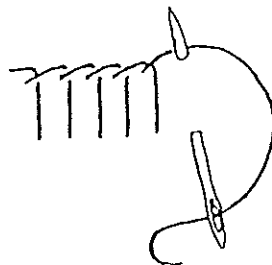
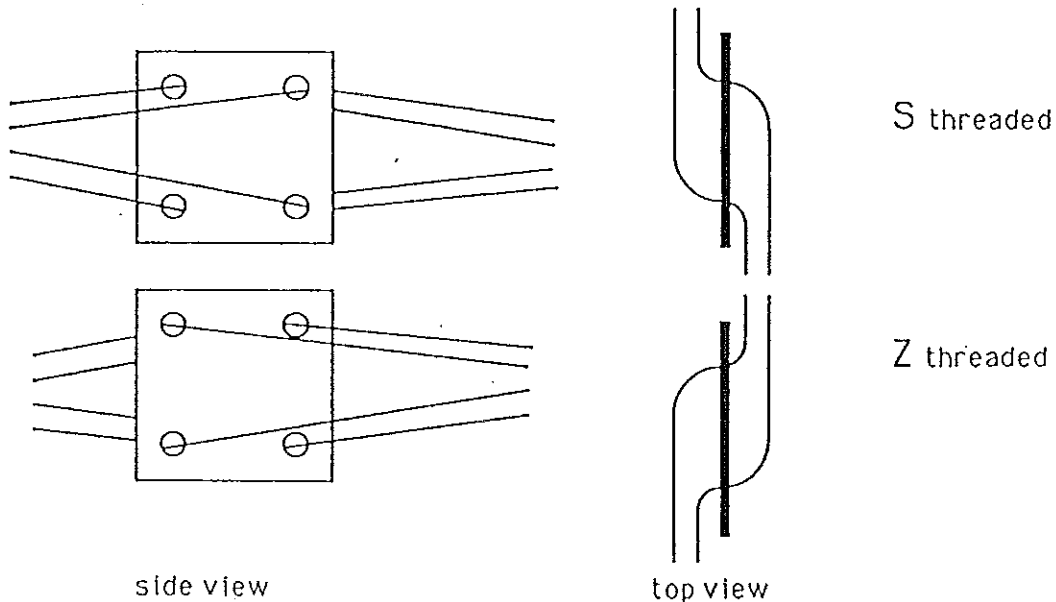


Figure 42d

Blanket stitch is worked from left to right. The needle is brought up vertically and brought out of the fabric with the thread tucked under the needle. (See figure 42d).

Tablet weaving is a technique for making ribbons used from Roman times up to the Medieval period. The Anglo-Saxons and Vikings produced beautiful braids by this method which they used to decorate their clothes. They also used tablet weaving as belts and as headbands possibly with headdresses. Some tablet weaving was done with fine silks decorated with gold and silver threads but examples have been found in homespun wool.

Very little equipment is needed for tablet weaving. The tablets were originally made out of bone, ivory and wood, but you can learn with cardboard tablets, for example a beer mat with four holes punched in it. Tablets are ideally square with a hole punched or drilled near each corner. Each tablet is threaded with yarn through the four holes. To begin with it is easiest if you use thick yarn, this will need large tablets, about two inches each side. Do not use very large tablets or you will not be able to hold them all. The yarn is threaded through the four holes in the tablets. They may be threaded in two directions S or Z. (See figure 43).



side view
Figure 43

top view

The four holes in each tablet are given the letters a, b, c and d. (See figure 44).

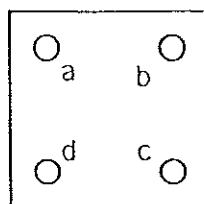






Figure 44

Figure 45, shows the threading diagram for a six tablet braid. The top row shows the direction the tablets are threaded in S or Z. The next four rows show what colour to thread through the four holes in the tablet. For example, starting with the tablet on the left;

hole a= 
 hole b= 
 hole c= 
 hole d= 

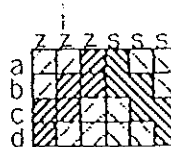


Figure 45

When the tablets have been threaded they are placed side by side in a pack. One set of ends are tied to a fixed object such as a door handle, or if you are outside a stake hammered into the ground. The other set of ends are pulled tight to an even tension, knotted and tied to the weaver's belt.

The threads through the tablets are called the warp. The thread that is woven is through them is called the weft. The weft can be wound into a small skein by winding it in a figure of eight around your little finger and thumb then tying the end round the middle of the eight, or it can be wound around a small stick, or just wound into a little ball. Tie the weft to your belt with the warp ends. You are now ready to start weaving. (See figure 46).

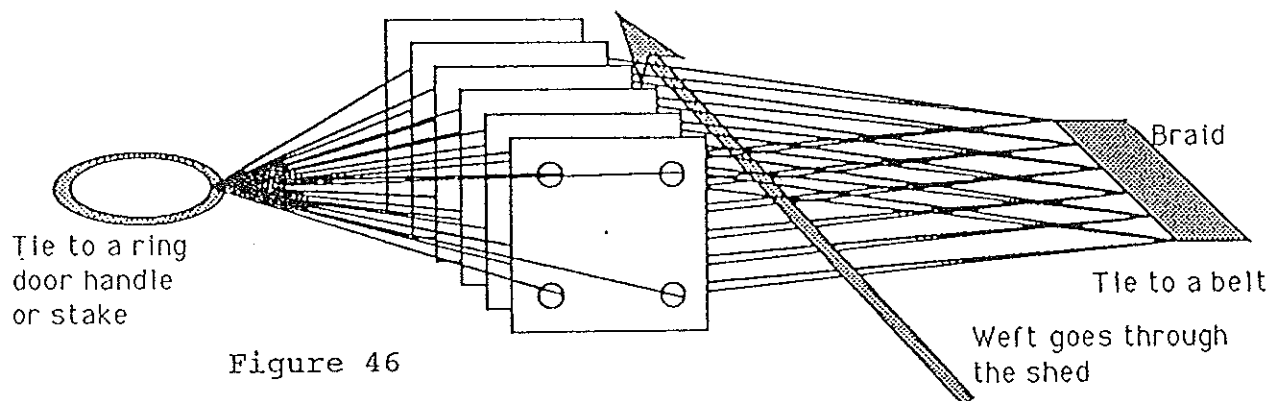


Figure 46

Lean back to pull the warp threads tight using your belt to keep the tension. It is very important to keep the tension on the warp threads. Find the shed, this is the gap between the top and bottom warp threads on the weaver's side of the tablets. If you have trouble finding the shed try pushing your fingers between the top and bottom threads along the edge of the tablets closest to you. If you still have trouble grasp the whole pack of tablets and shuffle them towards you and away from you a few times. If you still cannot find the shed try again with the warp threads pulled tighter. Next, open the shed up by pushing your hand into the gap and pulling the gap towards you. Pass the weft thread through the shed. The weft alternately goes left to right and right to left. Now turn the whole pack of tablets a quarter turn towards you. You have now completed the first row of weaving.

Find the new shed, opening it up towards you will push the first row of weaving tight, if your weaving looks loose push the shed hard towards you a couple of times to beat the weaving tight. Pass the weft through the new shed passing it in the opposite direction from the first row. Turn the tablets a quarter turn and you are now ready for your next row. If you do not get any sort of pattern look underneath the braid, you might have it upside down!

If the tablets become tangled during weaving, and you cannot untangle them, set them up again as if you were weaving the first row and start again. By changing the direction the tablets turn the pattern can be varied. It is necessary to change the direction of turning occasionally because twists build up in the warp threads on the side of the tablets opposite the weaver, these untwist when the direction the tablets are turned is reversed. Below is a diagram of a braid where the direction of weaving is reversed. (See figure 47).

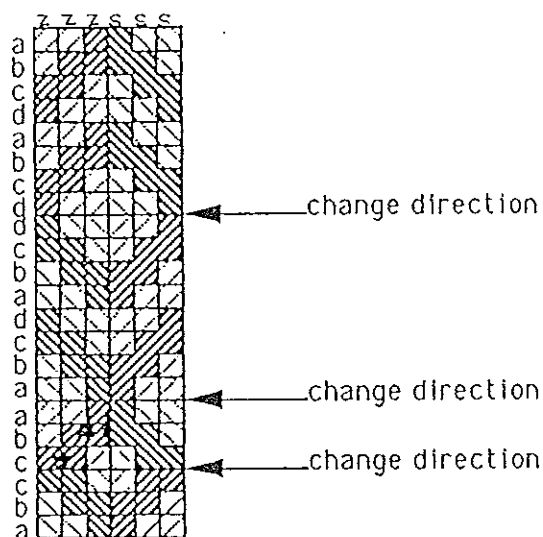


Figure 47

Once you have mastered this simple pattern you can draw your own patterns on squared paper, then weave them. To get different patterns on one length of braid tablets can be turned individually instead of as a whole pack. They can also be flipped over so that the S and Z threading reverses.

Garter or "clothing" hooks can be bought (contact the society trading officer), otherwise they can be made quite simply as follows:

Cut out a variant of the shape illustrated in figure 1 (diagram is full size), from thin sheet brass, silver or copper, with tin snips. Drill or punch 2 or 3 holes in the blunt end for attaching to the garment. Curve the pointed end round into a hook roughly 1/8" - 3mm. diameter. The hook need not be too sharp if the material is relatively loosely woven.

The hooks may be decorated or left plain. Decoration may be done with a modern engraving tool, acid etching or authentically punched. (See Annex 13 and figure 19).

Remember to decorate the garment hook after it has been cut out of the metal, but before the hook end is formed. Punching the metal will be made easier by annealing it first, (see annex 7). However, anneal the metal a second time before forming the hook as the metal may become brittle. Polish the hooks with a good metal polish before sewing in place.

Annex 6 - PRACTICAL NAALBINDING

To sew a sock in the naalbinding technique, you will need a blunt needle with a large eye and some thread. The thicker the thread you use, the quicker the sock will grow. Fibres in very thick wool tend to split apart and distinguishing between the loops that you have added and the splits in the thread may be very difficult.

Probably the most difficult stage in naalbinding is starting off the first series of loops around the central stitch. Study the following instructions and diagrams carefully before starting off.

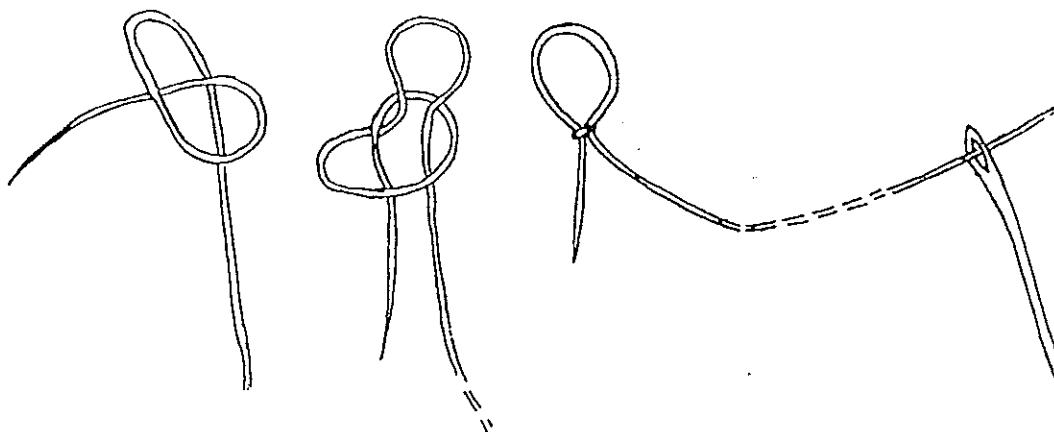


Figure 48a

1) First of all cut a length of thread about 18" - 46cm. long and make a loop at one end and pass the other end through the needle, (figure 48a). As a rough guide this loop should be no bigger than the circumference of the end of you little finger.

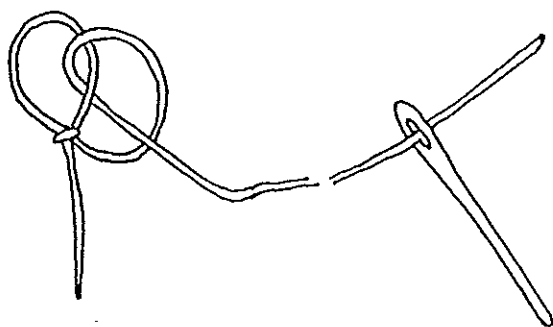


Figure 48b

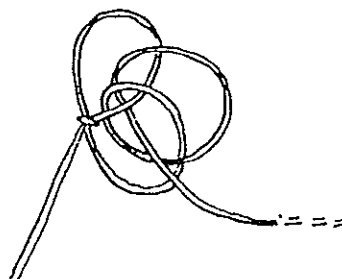


Figure 48c

2) Hold the loop by the knot between the thumb and forefinger of the left hand (assuming you are right handed) and with the right hand pass the needle and thread down through the loop, bringing it back up through the centre of the new loop you have created. (Figure 48b) Pull the thread through until this loop is the same size as the initial one.

3) Now hold the new loop firmly in position using the thumb and forefinger of your left hand and make another loop by passing the needle down through the initial loop again and bringing it back up through this new loop and the previous loop, (see figure 48c).

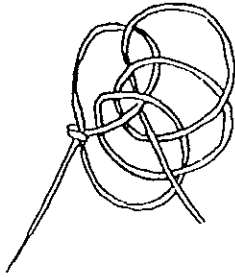


Figure 48d

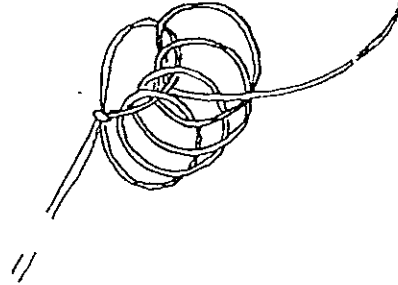


Figure 48e

4) Hold the new loop firm. Now we are ready to sew the first real stitch. Make another loop as before, but this time bring the thread back up through the new loop and the last but one loop. (Figure 48d). Once you have managed this initial step, you will find it easier going from now on.

5) Repeat the last step. (Figure 48e)

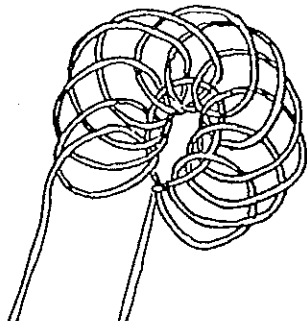


Figure 48f

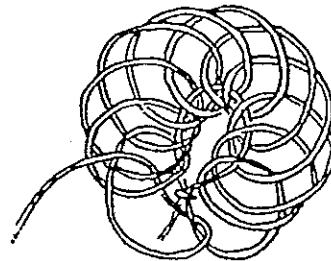


Figure 48g

6) Continue in this way until you have a series of stitches all the way round the initial loop. (Figure 48f)

7) You have now completed one row. The next row has to be built up on the this row instead of the initial loop. Pass the needle down through loop 1 of row 1 and back up through the last but one loop as usual. (Figure 48g).

8) In order to expand the fabric you have to work two stitches into each loop of row 1, so pass the needle down through loop 1 of row 1 again and back up through the last but one loop. (Figure 48h)

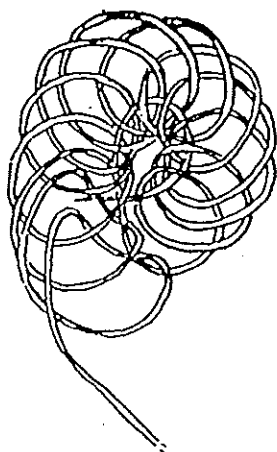


Figure 48h

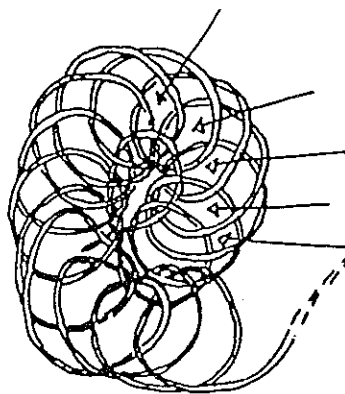


Figure 48i

9) In the same way work two stitches through loop 2 of row 1, (figure 49i). Continue in this way as indicated by the arrows working around the fabric. You'll find the more you do this the easier it will become as the previous row's loops become progressively easier to find as the fabric spreads out.

If you have floundered already, do not despair. You probably will not be able to sort out the mess, so start again. It sometimes helps to begin with a larger loop size until you get the hang of it. Try to keep the loops an even size and hold each loop firmly whilst you make a new one. It usually takes several attempts to get it right.

Eventually, you will run out of thread. The easiest way to join in a new piece by bringing the thread up from the back of the fabric and letting it lie next to the end of the old thread. Hold the thread firmly in place whilst stitching and worry about working the ends in afterwards! (This is not necessarily the best method but it works.)

As the rounds increase, you will end up with an oval shaped piece of fabric large enough to cover the end of your toes. At this point you no longer need to work two stitches into each loop of the previous row - only one. After working several rounds in this way you will begin to see the sock shape emerging. If you need to increase the size slightly to fit the sock over the ball or your foot or instep, work an extra stitch every 10th or so stitch, by working twice into the row above. (Decreasing if necessary is achieved by missing a loop in the row above.)

Finally your sock will be large enough to cover the foot from the toes to the front of the ankle. This is often worked as a separate piece then joined to the 'foot'. By now you should be able to work this technique out for yourself. Just work a new piece in the same way as you did the toe until it is large enough to cover the heel. Then join about half the circumference of this piece to the lower half of the 'foot' and work in rounds to form the 'leg' of the sock. (Figure 12)

Penannular brooches varied in size from perhaps 1" (2.2cm) in diameter to some Irish 'monsters' that had pins over a foot (30.5cm) long! These were hollow cast silver, but belonged to a very aristocratic Viking!

For our purposes simple brooches for fastening clothing or cloaks can easily be manufactured from mild steel, brass, bronze, or copper bar. All these materials will require a heat source to work - such as gas blowlamps (butane or propane) or even a gas cooker. A hammer, two pairs of pliers and a hard work surface such as a block of steel or plate of brass will also be needed.

Initially the metal will have to be annealed, for nonferrous metals ie brass, copper, bronze. heat up the metal to a dull or cherry red colour and immediately plunge into cold water. To anneal ferrous metals such as mild steel, heat up until cherry red and leave to cool slowly, in an oven or on a 'low light' gradually cooling down.

For the brooch you will need a round metal bar 8" (20cm) long by 1/3" (8mm) in diameter. For the pin you will need a thinner bar 4.75" (12cm) long by 1/8" (3mm) in diameter.

Make the pin first. Anneal the first 1.125" (3cm) of each end of the bar. Hammer one end flat and the other to a rough point as in figure 49a. Form an 'eye' in the flat end of the point by hammering around the brooch bar. You should ideally end up with an eye that is about 1/2" (1cm) in diameter as in figure 49b.

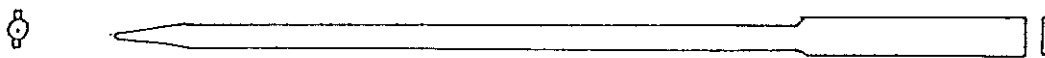


Figure 49a

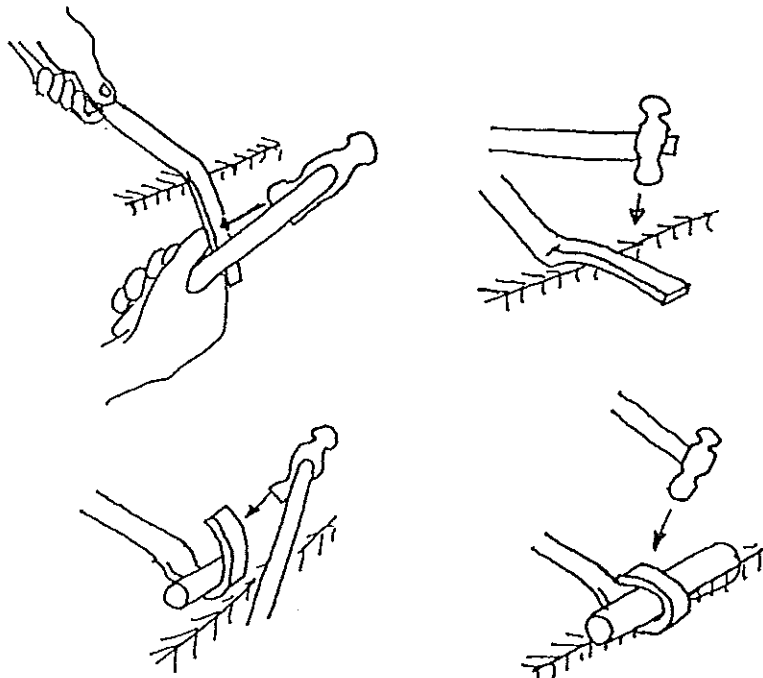


Figure 49b

To make the brooch, anneal the whole of the bar. Hammer one end flat. Then using the pliers, hammer and a block or plate of metal, form the bar into a circle with a small gap. Feed on the pin, then hammer flat the other end of the brooch. (See figure 50): You may decide to decorate the brooch and pin, instructions are given in annex 13 and illustrated in figure 19.

Finally, polish the brooch with metal polish, or if made of mild steel you can oil black the brooch.

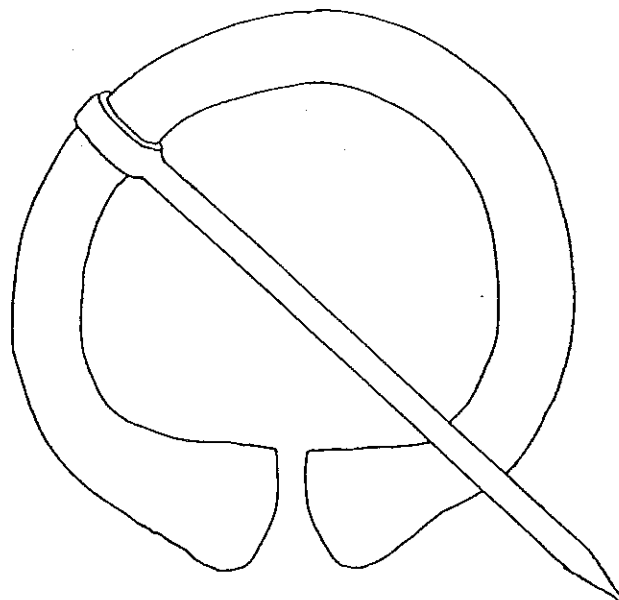


Figure 50

TO OIL BLACK

Go to your local garage and get hold of about 1/2 gallon of the thickest, blackest engine oil you can, usually free! Fasten one end of a piece of wire to the brooch and make a hook out of the other end. Coat hanger wire is ideal for this. Heat the pin and brooch up as hot as possible and plunge into the oil. Leave a few minutes to cool, then hang over the oil bath to drip dry, finally wipe dry with an old dry rag.

METAL BUCKLES

Metal buckles were made in three parts, a ring, a pin, and a throat plate. Simple 'D' ring buckles can be bought (addresses available from the society trading officer). The throat plate can be made from a thin sheet of the appropriate metal, corresponding well to the internal width of the 'D' ring. Drill the rivet holes and cut a slot for the pin (see figure 17a), then fold the plate around the buckle and secure to the belt with rivets. (See figure 18).

The strap end is made from a piece of metal roughly the shape shown below, in figure 51. Strap ends can be bought, cast in bronze, pewter or brass, or else made out of a sheet of the appropriate metal, about 1/8" - 3mm. thick, and decorated by etching or punching (see annex 13). They are secured similarly to the buckle, (see figure 18). They are always decorated and an example is given below, (see figure 51) but any variation of knot work (see figure 19) is appropriate.

ORGANIC BUCKLES AND STRAP ENDS

These had principally 2 parts; a combined ring and throat plate and a pin, although the pin has a second pin insert to rotate around. A typical buckle shape is illustrated in figure 17c. Cut the shape out of bone or antler at least 1/4" - 6mm. thick, with a hack saw and files. The slot is made by drilling out as much of the slot as possible, then filling to shape. The belt is secured to either a slot or step in the throat plate and sewn in through a series of small holes. (See figure 17c & 18). Caution should be exercised if riveting, because the shock can break the buckle. Always anneal your rivets first, (see annex 7) but never use steel or iron rivets.

The buckle pin is cut from the same material no less than about 1/4" (6mm) in diameter and fitted into the slot cut out. A piece of metal wire is inserted through the side of the buckle and the hole plugged with an offcut or piece of wood.

Strap ends are again, always decorated. One illustration is below, (see figure 52). Securing the strap end is done in the same way as for the buckle, other wise the strap end is slotted, whilst the end of the belt is correspondingly notched, folded through the strap end and then sewn back on itself. (See figure 53).

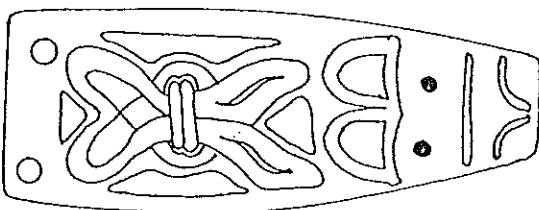


Figure 51

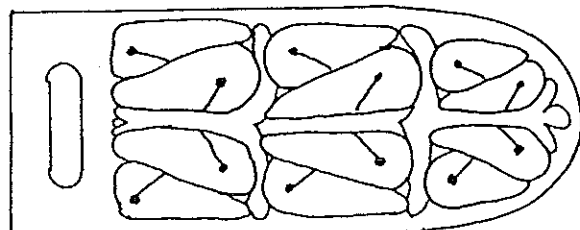


Figure 52

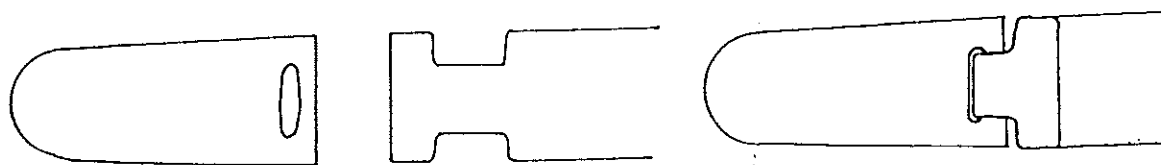


Figure 53

Sewing techniques for the belt end is the same as for shoes (see under shoes). Finally the belt was worn as below - the strap end hanging down the left hand of the body - between the sword and the sax. (See figure 54).

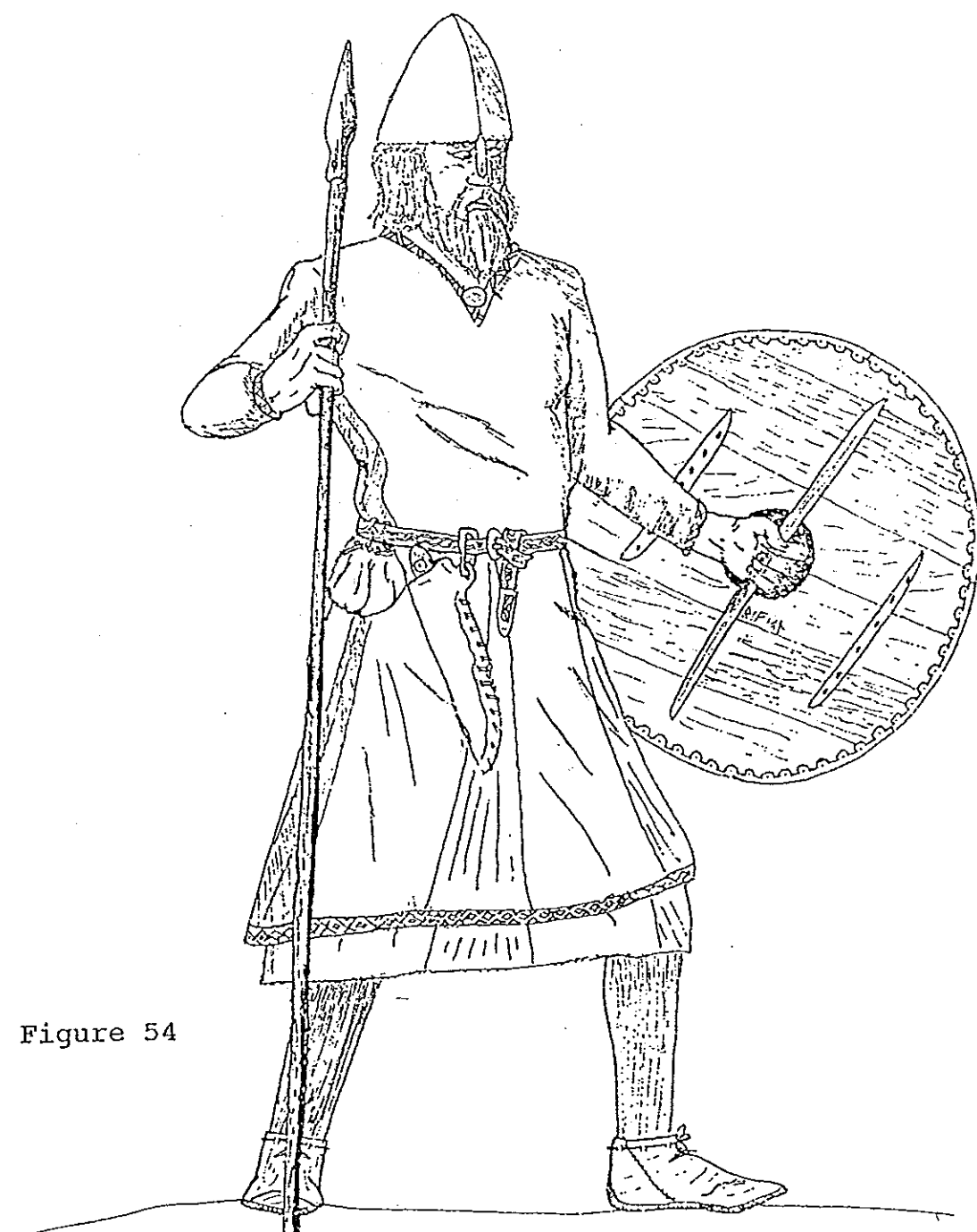


Figure 54

Leather comes in hides and skins. Large mammals such as adult cattle and horses have hides, smaller mammals such as sheep, goats and calves have skins.

Leather has two distinct sides. The side on which the animals wool or hair grew is called the grain side. The side which was next to the flesh or meat of the animal is called the flesh side, this side is tougher and sometimes has a hairy texture. The grain side of leather naturally has a pattern, some leathers have these removed so that they are perfectly smooth.

Thick leather may be split into 2 to 4 layers before tanning. The top layer is called the grain split or top split. The middle layers are called middle splits and the bottom layer is called the bottom split or flesh split. The middle and flesh splits are usually sueded on both sides. This means they have been buffed to give a fine velvety pile. An unsplit hide will be much thicker of course and may be described as full hide. (See figure 55).

Figure 55

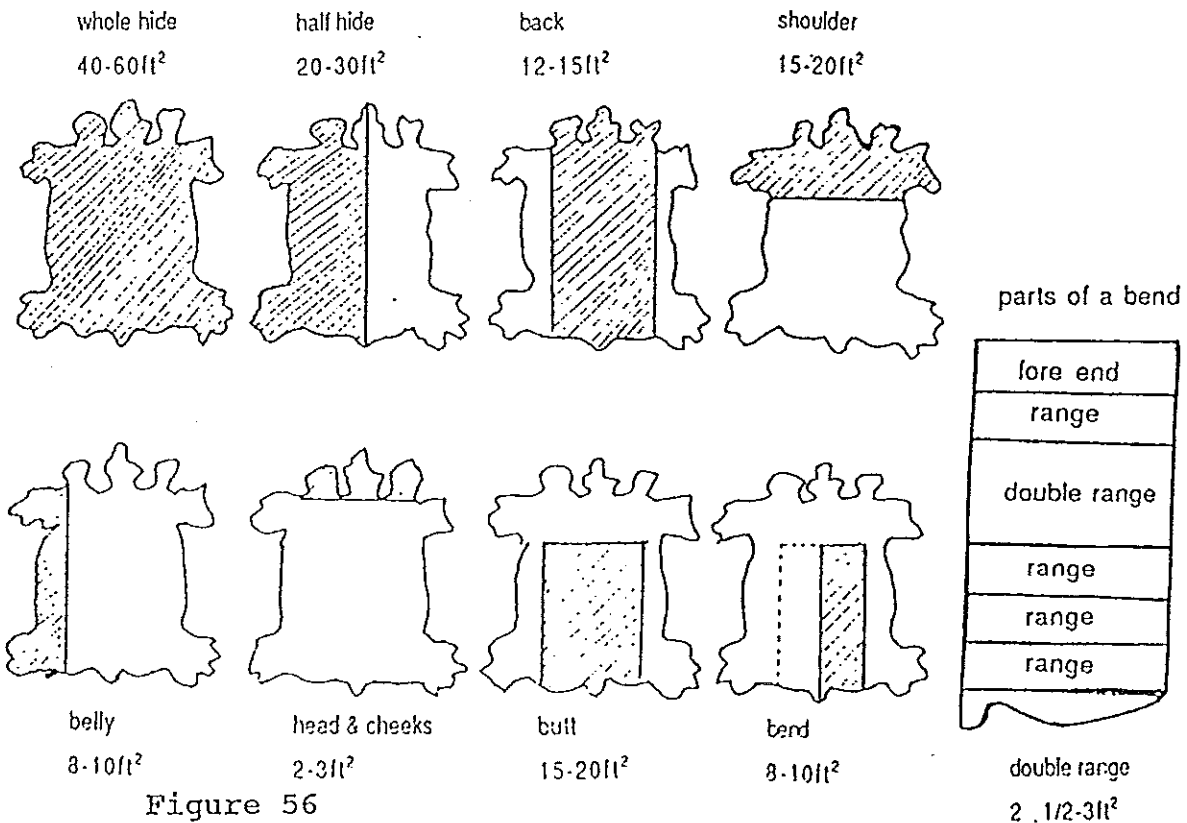
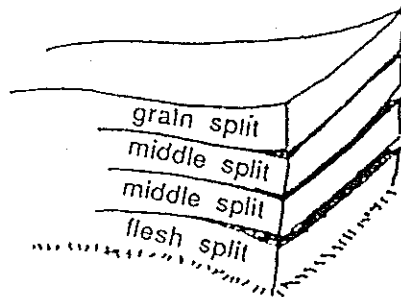


Figure 56

As a complete hide is 40-60 square feet hides are often divided up as in the enclosed illustration, (figure 56).

It is doubtful whether the Vikings had the technology to laterally split a hide, so the use of split hide should be avoided. However, the back of an unsplit hide is grainy, so in certain circumstances, when the other side (ie. the grain side) cannot be seen, (such as on a Hauberk) cheaper split hide is permitted. For most other dark age kit you will want vegetable tanned leather.

Thick vegetable tanned cattle hide is sometimes called tooling hide because it is easily stamped, carved and dyed, it is also called russet hide because it can turn a reddish russet red. Sometimes it is called after the tanning solution used for instance oak tanned leather. Leather is also described by a typical use: saddle skirting and soling leather are both heavy thick vegetable tanned leathers.

Chrome tanned leather is a soft flexible leather which does not take dye easily, but comes ready dyed in a range of colours. It is not so suitable for dark age kit, and cannot be tooled at all.

Leather is sold by weight, thickness, and occasionally by iron. You need to see a piece of leather to know if it is suitable for a particular job, but as a rough guide shoe soles and vambraces should be made from 10oz - 13oz = $5/32$ " - $13/67$ " = 4mm. - 4.5mm. = $7\ 1/2$ - $9\ 3/4$ iron. For shoe uppers and pouches you will want leather of about half this weight and thickness.

The best place to buy leather is from a wholesalers or tanners. Both will sell whole skins and hides singly, and if you are lucky they may sell smaller amounts such as bends and bellies which have a lot less leather in them. If you can get together with a few friends to buy a whole or half hide you will get a range of different thicknesses of leather across the hide, so you can each choose parts suitable for what you want to make. You will pay more per square foot if you are buying small amounts unless you are buying the cheap parts of the hide such as the belly add the cheeks, even then if you are buying from a craft shop the leather is much more expensive, so try to find a good wholesalers or tanners in your yellow pages.

The thicker parts of the hide are on the back and shoulders. These are the most expensive parts of the hide. The head and cheeks are usually cheap because they are such small pieces, (some tanneries don't even bother with them and throw them away instead of tanning them). The belly is also cheap because it is thinner leather than the rest of the hide.

TOOLING LEATHER

The only type of leather you can tool is vegetable tanned. Thicker leather is easier to tool because you can get deeper marks in it. Modern leather workers cut designs into the leather, but, judging from the dark age examples I have seen the 10th century designs were just pressed into the leather.

To do this all you need is a piece of leather, a wet rag, and a stylus. A stylus made from bone or wood looks impressive, but if you are working at home and not at a show you can use a ball point pen that has run out of ink. The slightly rounded end of a ball point is the ideal shape for pressing designs into leather.

Dampen the surface of the leather with your rag and it will become soft. The wetter you get it the softer it will become. If you get it soaking you will find the design tends to come out again as you work, experiment to find out how wet your leather needs to be, a lot depends on the leather and your work.

To get the design into the leather just press down hard and draw with your stylus as if it were a pen. If the leather is wet enough you will find the line you have drawn stays in the leather. (See figure 57). If the line is not deep enough for you keep going over it again and again. If you make a mistake you can rub it out by taking the leather between your hands and flexing it then rubbing with the back of a spoon to smooth the area.

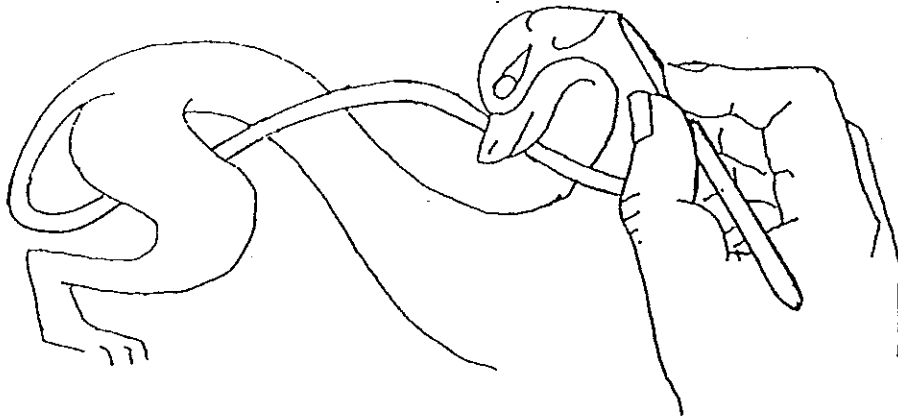


Figure 57

If you are working on a large piece you do not want to let your hand rest on a damp piece of the design as you will find it tends to rub out. To avoid this, start in one corner, working a small area at a time, moving gradually across the design away from the damp areas. Allow the leather to dry naturally before dyeing and preserving.

Annex 10 - SEWING LEATHER

If you are sewing lightweight leather use a leather needle or glovers needle. These have triangular points which cut through the leather. If you are sewing heavyweight leather you will need a diamond awl if you are using thread. If you are using thonging or lacing then you will need a bradawl. The awl is used to pre-punch holes in the leather before it is sewn up. You can then use tapestry needles to sew the leather. Awls can be bought from large "do it yourself" shops such as Texas homecare.

You may find them in the woodworking handtools section. They can also be bought from specialist craft and leathercraft shops. The strongest stitch for leather is saddle stitching. This is sometimes called cobblers stitch. Two needles are used at once each needle makes a row of running stitches. They are pushed through the leather alternatively so that one thread pierces the other, thereby locking the stitches and preventing 'running'. (See figure 58).

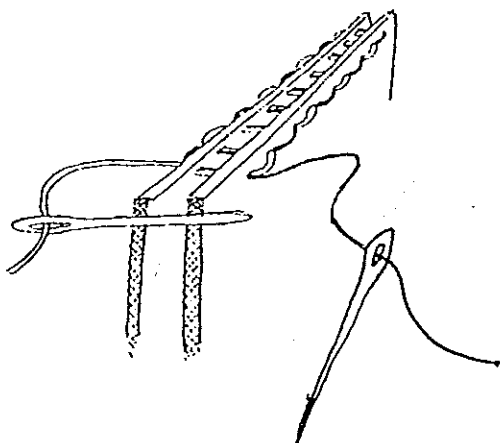


Figure 58

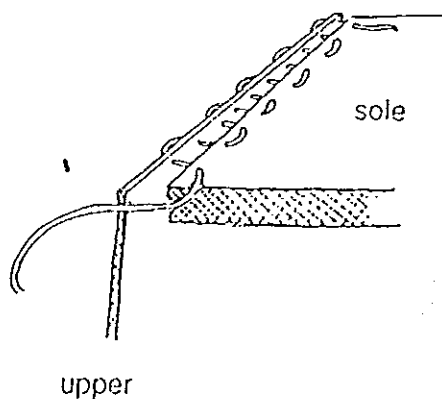


Figure 59

For shoe making you will need to know a few variations on running stitch and saddle stitch. The stitches are basically the same the needle is not taken through the leather. The first you will need is edge-flesh edge-grain stitching. This stitch is used to attach the soles to the uppers. The needle is taken through the flesh side of the sole leather, but instead of carrying straight through, it comes out of the side of the sole. The needle then continues straight through the upper from grain side to flesh side. (See figure 59). This stitch can also be done with two needles as a saddle stitch. (See figure 60).

Edge-flesh butt seams are used to attach edges to shoes and for the main seam of the upper. The needle goes from the flesh side out of one piece of leather then through the edge of the other piece to the flesh side again. This stitch can be worked as running stitch or saddle stitch, but it is usually done as a saddle stitch for extra strength. (See figure 61).

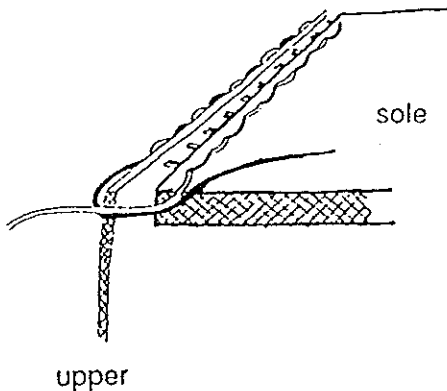


Figure 60

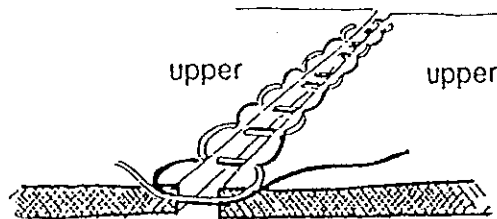


Figure 61

EDGE WHIPPING

Viking shoes from York and Heddeby had a single thread whipped around the leather edge that forms the opening of the shoe. Presumably the leather would be reinforced by this technique and also the idea can be extended to reinforce the mouths of pouches.

An example of this reinforcement method can be found amongst the textiles found in Saxon London. Here, two contrasting colours were sewn alternatively along the edge providing a decorative effect. Like the London example, some of the York shoes used a brightly contrasting coloured thread along the edge, the result being decorative as well as functional.

The technique is applied with a single glovers needle, waxed linen thread, and an awl. Pierce a row of holes around the mouth of the shoe or pouch etc. about $1\frac{1}{8}$ " - 2mm. apart and the distance below the edge of the leather. Start by sewing the thread around the first two holes, three or four times, then run the thread through one side, over the top, and back through the next hole on the same side. Finish the seam off in the same way as at the start. (See figure 62).

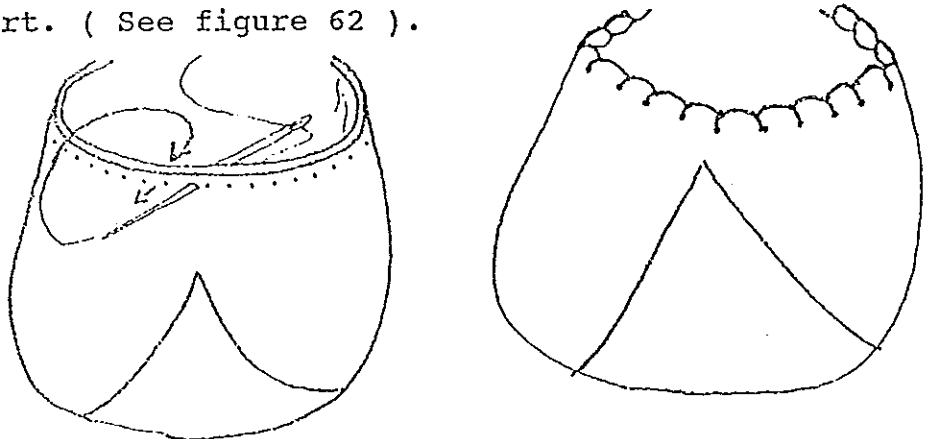


Figure 62

Shoe Heel from Back

Finished Seam

ANNEX 11 TOGGLES AND LACES

Shoes and boots can be fastened by toggles, whilst shoes can be fastened by laces. The toggle can be made out of either an antler or horn tine, about $3/4$ " - 19mm. long. Drill a hole $1/8$ " - 3mm. close to one edge and about halfway along, (see figure 63a). Sew the toggle onto the shoe or boot at the end of the fastener, with waxed linen thread as in figure 63b. Toggles can otherwise be made from a tapered strip of leather, rolled up and threaded back through a slit in itself, (see figure 63c). Leather toggles can be sewn on as described above.

The other half of the fastening mechanism is made by attaching a loop of leather to the footwear as in figure 63b. This loop is attached by punching two holes in the side of the footwear and feeding the pointed loop ends through the holes. The loop is secured by these triangular wedges as illustrated in figure 64a, or by inserting two leather "pegs" as in figure 64b, or by knotting as in figure 64c. The finished fastener is illustrated in figure 65.

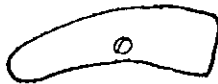


Figure 63a

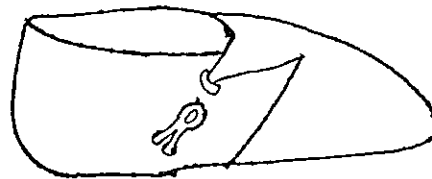


Figure 63b

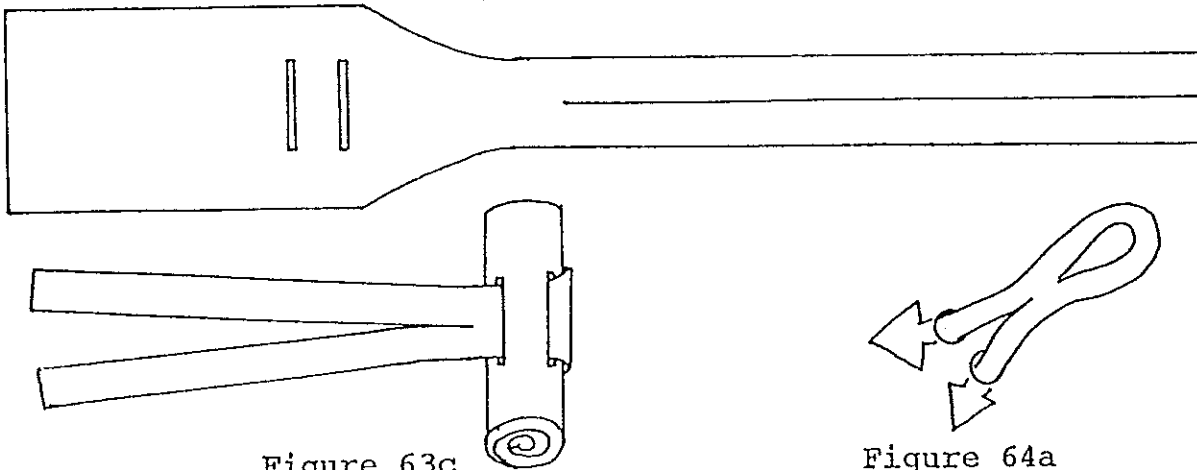


Figure 63c

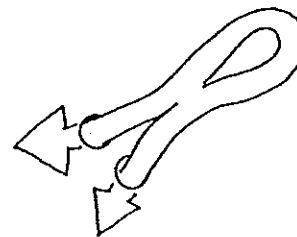


Figure 64a

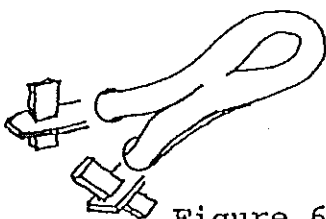


Figure 64b

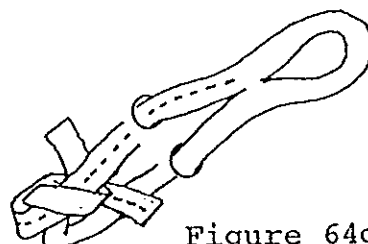


Figure 64c

The other way of fastening shoes was by lacing. Most people are familiar with modern lacing, Viking shoes however, usually had one or two holes either side of the opening. More often, the lace went through holes or pairs of slits around the top edge of the shoe, figure 66. Either way, Viking shoes tended to be laced up horizontally rather than vertically, as in modern footwear. Consequently, boots were never laced up to the top, they were either left open at the front, or fastened by two or more toggles up the side. Finally some illustrations of typical shoe lacings are included below, figure 67.

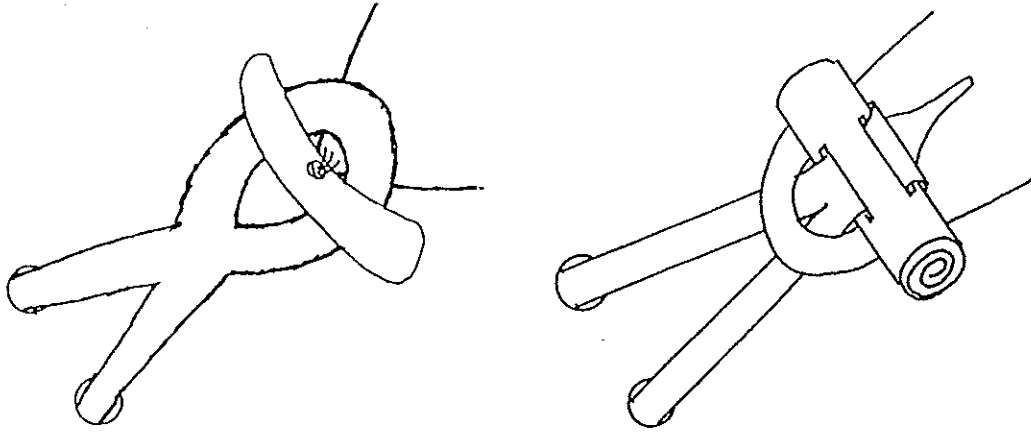


Figure 65

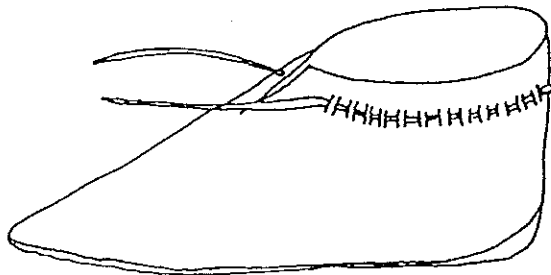


Figure 66

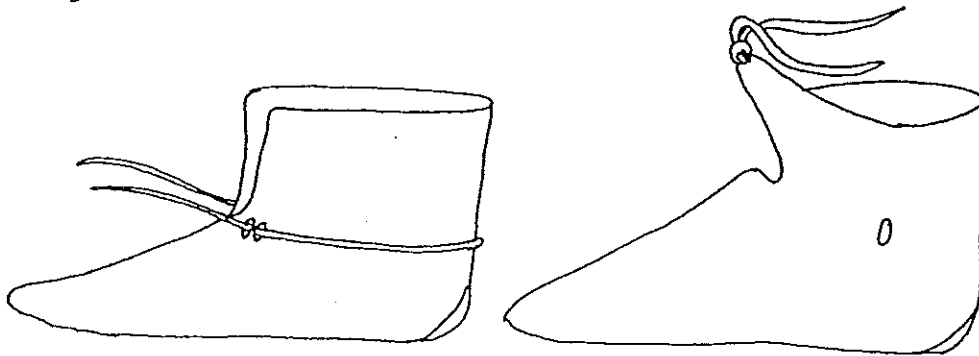


Figure 67

In annex 9 it was noted that the correct type of leather for our period was Vegtan leather. This is so called because untreated hide has been immersed in a solution of tannin or Oak bark to prevent decay. However, further treatment of the leather is necessary to prevent rot caused by exposure to the elements. We do not know for certain the dyeing and preserving techniques applied by the Vikings, but we know that they loved to decorate their clothing (embossing has even been found on shoes!) and that they must have applied some form of preservative. As all preservatives will dye the leather to some extent, it is reasonable to assume that the dyed their leather work also, especially as the dyeing of clothes was a well established industry. What we do not know for certain is the extent of artistic licence employed by the Vikings to decorate and dye their leather work. Given the variety of colours used to illustrate belts in manuscripts and tapestries, it is acceptable to allow all decoration from elaborate to plain, providing some common sense is applied. For example, the richer you were, the more highly decorated and coloured your attire, but it can be kept simple if you require.

DYES. Some dyes are right out, such as those with an oil or acrylic base. Use only water fast dyes. Since the various leather preservatives will prevent the leather from absorbing the dye, you must dye the leather first. All leather preservatives will also darken the various dyes, so remember to allow for this. Never use leather lacquer or varnish, as this will leave the leather looking like artificially chromed leather!

COLOURS. All the colours in the colour guide are acceptable, (annex 2) with the addition of grey/black. Leather readily absorbs this colour, especially when contaminated with iron. This is because the tannin in the leather reacts with the iron and turns the leather black. Some medieval parchment inks were made from iron salts, (probably sulphates) and Oak apple galls. Unfortunately this process does not work with linen or wool.

To colour the leather, use any water based leather shoe dye, wood dye or even food colourings. If you are dyeing a belt, roll it up and put an elastic band around the middle. Apply the dye with a paint brush from a small pot to the edges first. When dry to the touch, a matter of a few minutes, uncoil the belt and brush the dye along the top. If you are dyeing an interlaced pattern or knot work, you may wish to colour each ribbon separately. Paint the ribbons with a fine paint brush and do the background in brown or else leave it undyed. Colours are sealed when preserving the leather, but they will always invariably fade with time.

LEATHER PRESERVATIVES. Almost any animal fat or beeswax would be authentic for preserving leather. However, there are many useful commercial products available. "Dubbin" is a mixture of tallow and glycerine, softens and preserves. "Mink oil", not made from Mink, has a similar effect as does "Neat's Foot oil", which is made from (pigs) feet! "Nick Wax" is probably the best of all. "Leather Food" and neutral shoe polish both softens, preserves and nourishes leather against the effects of the weather. Do not forget that applying leather preservative is not a one off event, you will have to renew the treatment two or three times a year.

The purpose of this annex is to provide a guide to the relief working of metal as an alternative to buying expensive cast bronze or worked iron fittings, given that Viking metalwork was rarely plain usually well decorated. The annex is aimed primarily at the decoration of strap ends, but the techniques can easily be applied to buckles, brooches scabbard and sword fittings, etc.

ANNEALING. The first step in any metal working is to anneal the work, (annex 7) then to cut it to the right size and shape, then to anneal it again. This is because any work done to metal will automatically harden it so you may have to anneal the work many times.

STAMPING. The easiest way to relief work metal is to stamp the decoration on. The metal will need to be about 1/10" - 2mm. thick. Draw your design on, felt tip pen is probably the best but choose an appropriate art style from figure 19. If you cannot sketch freehand, trace the pattern onto tracing paper, then transfer it to your work by inserting a piece of carbon paper between the tracing paper and the work and re-tracing the design.

Next, stamp the design into the soft metal using a series of metal punches. These can be made by grinding old screwdriver or drill bits into curves, triangles and straight lines. If you accidentally get the "bits" too hot you will have to harden and temper them, as described below. Dot and ring marks can be made by using a small hollow tube and punching a ring into the metal. The "dot" is put in the centre of each ring with a simple centre punch.

Stamping the metal may distort the shape slightly and so the work may need to be reshaped after completion. The work will not necessarily have to be re-hardened after completion, as working the metal hardens it, also metal that is too hard becomes brittle and may break.

REPOUSSE. This form of decorative relief is done with very thin sheets of metal, which can be readily purchased from most Model shops. The design is pushed into the annealed metal surface in a way similar to that of embossing leather, (see annex 9). The advantage of repousse work is that the design can be further highlighted by turning the work over and pressing the relief through from the back, as in figures & below.

Repousse panels may be applied with glue such as araldite, this also provides extra support for the thin metal. Panels of repousse work may otherwise be riveted in place, however it is still a good idea to back the panel with araldite to protect against damage. A final alternative is to soft solder the panels in place, this has a more permanent effect than gluing, and is stronger.

CHISELLING. This final technique is definitely not for beginners as it involves a lot more skill as well as more tools such as a bench mounted vice and a special set of chisels. These chisels need to be narrow, but like the stamps mentioned above, they can be made from old screwdriver or drill bits,

Mark out your work as described above, and carefully chisel in the desired pattern. This technique lends itself to a decorative pattern described below, but remember that straight lines that cross the work are easier to cut in with a saw. This effect is particularly relevant when working on a curved surface (such as a pen-annular brooch) because broken lines can be achieved without chiselling.

ETCHING. There is no evidence that the Vikings knew how to etch metal, yet the results are very similar to those described in this annex. Consequently, etched fittings are acceptable, the bring the relief working technique into the hands of almost everyone.

Sketch out your design on the work as described above. Next paint the design on with a thin paint brush, remembering that the painted items will be untouched by the acid, but the unpainted areas will be eaten away, they will be areas of low relief.

When the paint is dry, build a little "wall" around the work out of plastercine and pour in the acid. For none ferrous metals circuit board etching fluid is best, (this can be bought from electrical component stores). For steel, a stronger fluid such as Sulphuric or Nitric acid will have to be used, (the former can be bought from garages, the latter is difficult to get hold of, try your local school or college).

The depth of etching will depend on how long the acid is in contact with the metal, a few hours should suffice. Do not leave the fluid on the metal too long, or it will eat its way right through! Finally rinse the acid off the work and flush with running water to purge the metal of the acid. Decorate and polish as described below.

DECORATING. Relief working can be highlighted by filling the grooves with a black coloration or else by hammering in wires of a contrastingly coloured metal. The Vikings used a black enamel called "niello" to decorate their relief work. Niello is unfortunately out of the scope of this guide, but an acceptable alternative can be made from mixing araldite with black paint. Apply the mixture with a gentle heat source, such as a hair dryer. This turns the araldite into a liquid and allows it to flow into the relief. When dry, any excess is easily filed away. Other alternatives include, black nail varnish, black enamel paint or simply fill the grooves with the dirt that accumulates when you polish the metal.

Decoration achieved by hammering in wires of a contrasting coloured metal include, brass or bronze hammered into steel and silver hammered in to blackened steel (see annex 7). Once grooves have been cut into the work by sawing or chiselling (described above), lay onto the grooves wire of a slightly greater diameter and hammer into place. Finally file any excess metal away and polish.

HARDENING AND TEMPERING. An overheated tool bit may become softened and require hardening. This is achieved by heating the bit to white heat and plunging straight away into cold oil. The work is now hard but brittle. To temper metal, heat it up again but this time till a blue temper line flows across the surface, then plunge again into cold oil.

CREDITS:

The Basic Kit Guide for the Vikings - NFPS was written by Russell Scott, with the exception of the section on Caps and Hats, which was written by Jenny Bray. Editing was done by Philip Meager and Duncan Probert.

The Annexes were the work of the following people:
Stephen Clarke Annex 1,
Russell Scott: Annexes 2, 5, 7, 8, 10, 11, 12 & 13
Jenny Bray: Annexes 3, 4, 9, 10,
Penny Lydiate: Annex 6.
Editing was done by Russell Scott.

The whole was typed by Russell Scott and Clive Rushen at the end of 1991 and the start of 1992. Impetus was provided by Chris Robinsons left boot and a bag of cement. Copyright exists on all material in this guide and is retained by the individual contributors.

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N. WALES

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