Sewing techniques and tailoring

Careful examination of the textiles preserved from medieval London reveals a much greater range of evidence for sewing techniques than is immediately obvious. Furthermore, a fair number of the 14th-century fragments can be associated with items of clothing with a certain degree of confidence. Yet the very fact that the overwhelming majority of these textiles represent discarded scraps from worn clothing several or many years old at the time of deposition, makes such an exercise of identification hazardous and uncertain, and it is to be hoped that more light will be shed on the identification of some of the scraps as a direct result of this publication.

For the present some supporting evidence can be drawn from the extensive corpus of medieval clothing excavated in Scandinavia, from London's rich remains of 16th-century clothing fragments, and from more recent European excavations. At the other end of the scale is the fine array of surviving medieval embroidery, most especially the group attributed to English manufacture (*opus anglicanum*), much of which is believed to have been worked in the city of London (King 1963, 5). These embroideries demonstrate the high level of stitching skills which existed side by side with the tailoring needs in a major conurbation like medieval London.

Contemporary illuminations and sculptures have been much used in the study of medieval dress (Cunnington & Cunnington 1952; Evans 1952; Herald 1980; Scott 1980; Scott 1986), but these mostly give a generalised impression of clothing at the time: they rarely provide the details of construction and sewing techniques which particularly interest us in the late 20th century. Such images can certainly help to guide us to datings for the textiles excavated in London, evidence which in turn is corroborated by the dating evidence of associated artefacts from the same sites coupled with dendrochronology (tree-ring dating).

Documentary sources have been used much less by dress historians, with one or two exceptions (Goddard 1927; Evans 1952; Newton 1980). Contemporary comment in the form of literature or chronicles needs to be judged with caution, full though they are of powerful images and details. Each contains an element of fact or interpreted fact. But how do we today identify these elements or judge the bias of a chronicler, probably a very conservative churchman, vehemently attacking some whim of fashion which he might himself eventually adopt through familiarity and the desire to conform?

Far more important as a factual source are the records relating to the making of garments at the time, most of which centre upon the Great Wardrobe of the English royal household. These accounts record the purchasing of cloths, silks, linen, furs, threads, braids, fringes, etc. from drapers, mercers and silkwomen in London, the subsequent treatment of some of the woollen cloths, and finally the distribution of these goods to the royal tailors and armourers who made the clothing and such other textile items as bed and room hangings, horse trappers and jousting gear, and flags and banners for the king and his family and friends (Staniland 1978; Staniland 1989). Information about the prices and range of materials which these accounts provide can be usefully associated with surviving textiles like those excavated in London and can help to extend our knowledge and understanding of what are now small brown scraps of cloth.

Other Great Wardrobe accounts detail the expenses claimed by the tailors and armourers for additional requisites and labour costs. The latter are particularly valuable for the information that they can provide about the time taken to make certain garments, the number of work people involved, and, on rare occasions, the actual names of the workforce. Thus we can see that men and women often worked alongside each other, the women receiving lower wages (about half) than their male counterparts. It is clear that the clothing of the rich incorporated many refinements and subtleties of finish which might not be found in the clothing of the less affluent. Nevertheless, the information that we can gather about

the time taken to make certain types of garment in the 14th century is of great interest, and matching wages against manufacturing costs we can gain some idea of how long it took to put together certain garments in the 14th century:

a pair of hose	about half a day (*c.*1½d.–2d. each)
a hood	a half to a whole day depending upon whether it was lined or not (2d.–3d. each)
a cloak	three to six days depending upon whether it was lined or not (1s.–2s. each)
a supertunic	three to six days depending upon whether it was lined or not (1s.–2s. each)
a tunic	one to six days depending upon complexity, lining, etc. (3d.–2s. each)

These records, albeit for an extremely wealthy household, provide a quantity of information which is either directly relevant to aspects of the excavated textiles or which illuminate such topics as use or cost. Where appropriate, therefore, reference to some of these accounts is included in the following commentary.

The general account of the evidence for sewing techniques and clothing construction which follows brings together information from the technical analyses originally made of the fragments together with a more recent study of them. This evidence, which is crucial to the history of the development of sewing and tailoring skills, has tended to be overlooked or obscured in the past but can lead to a richer understanding of sartorial attitudes in medieval times.

Sewing threads

As far as is known the sewing thread in general use in the later middle ages was linen, the spun fibres of the flax plant (*Linum usitatissimum*). Being cellulose this decomposes rapidly in wet conditions and is rarely found in north European archaeological excavations. Traces of stitching survive in textiles from BIG82 and BC72 in

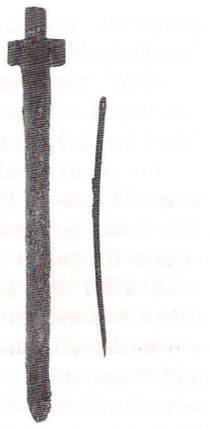


Fig 123 Copper needlecase (missing cap) with an iron needle, which was found inside, from a late 14th-century deposit. Scale 1:1

London, mostly of an undetermined vegetable fibre believed to be flax; these occur in seams and hems, exactly where one might expect to find linen stitching (e.g. No 221, Fig 164A and B, No 246, Fig 170, and No 249, Fig 182A). Elsewhere the former presence of stitching is attested by a multiplicity of holes (e.g. No 136, Fig 152) and it is probably not unreasonable to assume that in most cases linen rather than silk thread has disappeared.

The Great Wardrobe accounts of the 14th century show that linen thread was used extensively in the various workshops supplying the court with clothing and other textile items. Naturally linen thread was used for sewing linen clothing and such other domestic items as towels, tablecloths or napkins; it was also used for quilting bed coverlets and mattresses. Some intricate linen embroidery of the 13th and 14th century survives in Germany (Schuette & Müller-Christensen 1963, XVII, 306–7, nos 142, 143, 146, 154–7, 168) and Switzerland (Schmedding 1978, 107–9, nos 100–103), but whether this technique played a significant role in England is less certain. The linen thread supplied to the Great Wardrobe in the 1330s cost between 2s. and 2s.8d. per lb and came not only in different thicknesses, but also in a variety of colours. The thread came either from the London mercers or from women who, like the better known silkwomen, also made linen tapes, braids, and cords.

There is little documentary evidence for cotton sewing thread in medieval England. Raw unspun cotton was certainly imported in the 13th and 14th centuries, and was used as wadding in jousting

tabby-woven cloths, including one which is patterned with weft-faced bands (No 285). It is also inserted through the selvedge of a twill (No 158) and to stitch a fragmentary roll of twill cloth (No 156). The roll could have been used as a belt, but equally may have been a tie for fastening a cloak or mantle. The stitching thread is similar to the woven threads and it is possible that the thread was unravelled from the material. Wool thread made from worsted yarn (later known as crewel thread) occurs only occasionally in the Great Wardrobe accounts when it seems to have been used solely for embroidery motifs (Nicolas 1846, 33).

Sewing techniques

The original construction of clothing in northern Europe from animal skins no doubt brought about a set of sewing skills appropriate to fur and leather which were gradually modified for use with cloths woven from wool, linen, and, eventually, silken textiles. The repertoire of stitches used to join and finish textiles is not a large one but the mechanical process of analysing and listing stitching, seaming, hemming and other finishing techniques is a useful contribution to a broader understanding of the development of sewing and constructional skills in medieval and early modern Europe. In the following commentary sewing is translated from the point of view of a right-handed technician; it is very likely some stitching was carried out by left-handed sewers, but it has not been possible to identify this with certainty.

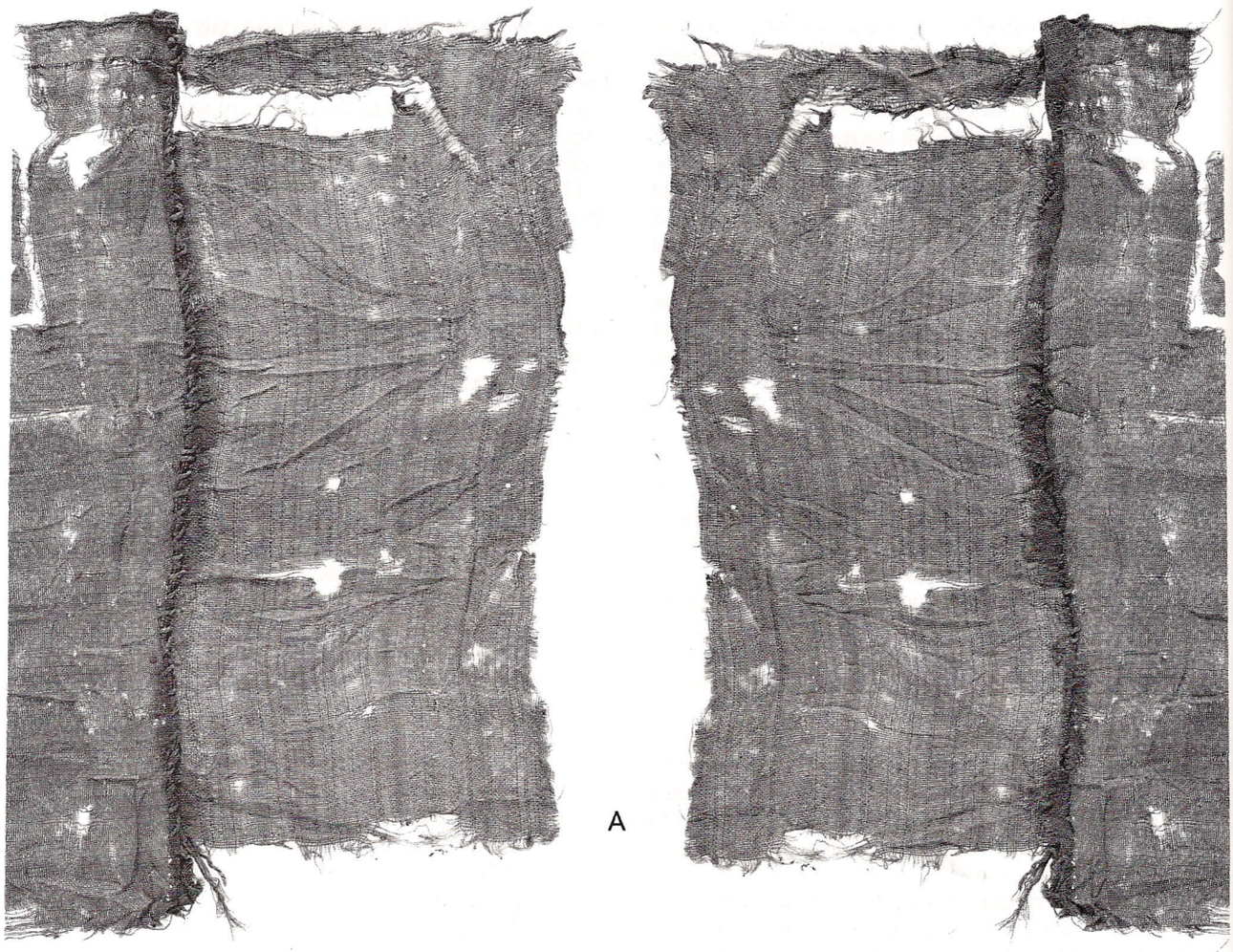
As we currently understand it, stitching was primarily a joining technique that was gradually extended in its use on woven textiles to embrace such practical refinements as hemming, gathering or decorative effects achieved by the application of bands, braids or fringes. Stitching also came to be used on its own to create decorative effects (embroidery).

Seams

Overstitching, or whipping two edges together, is a common technique for joining two pieces of fine leather or felt, allowing a flat, or almost flat, surface when the pieces are opened out, and being economical of precious material. It is most easily carried out with the two pieces face to face, but can be worked with them flat and only the two requisite edges in contact. Such a method of joining is usually unsatisfactory for woven textiles, since fraying is likely to occur except where the edges are selvedges or where they are both folded.

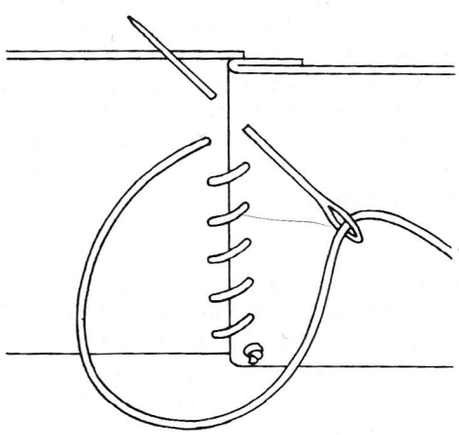
The most obvious example of this method among the London textiles occurs in Nos 326 and 327 (Fig 124A). Two pieces of medium-weight tabby-woven silk are very firmly overstitched together, with a fairly coarse two-ply silk thread, along the selvedge of one piece and the folded edge of the other; the stitching is consistently even, and so by an experienced hand, but the sewing does not display the care for matching fineness of thread and smallness of stitch which is appropriate to such a silk and which is demonstrated on other finds in the group. It is not clear what purpose these fragments served; they were perhaps a lining of a garment, already recycled from some earlier use. The join appears not to have been opened out or to have had tensions placed upon it from each side, and as the method is an obvious way of joining edges of a purse or bag, for instance, this is another possible interpretation. The direction of the stitching, coupled with what seems to be a starting knot at the left-hand side, suggests that it was carried out from right to left, or with the work held in the left hand, in a direction away from the body. In recent times it has been more usual for right-handed sewers to work from left to right, or towards the body.

Another joining technique which may derive from leather working is that of *overlapped* edges, again rather less satisfactory on woven textiles because of fraying. This is a method where the folding of one or both edges will bring greater strength to the join, as in run-and-fell seams, for example. A small group of fragments from the late 14th century (Nos 236 and 238–242) display evidence of overlapped seams although all the stitching threads, presumably originally linen, have long since disappeared (Fig 125). The pattern of stitching holes coupled with the distribution of worn and unworn areas confirm this was the seam that was used. With one exception all these fragments appear to be the remains of the foot section of hose, where flat seams would be most comfortable; the double stitching technique would enable the seams to resist the greater pressure of wear experienced inside a shoe or boot. It



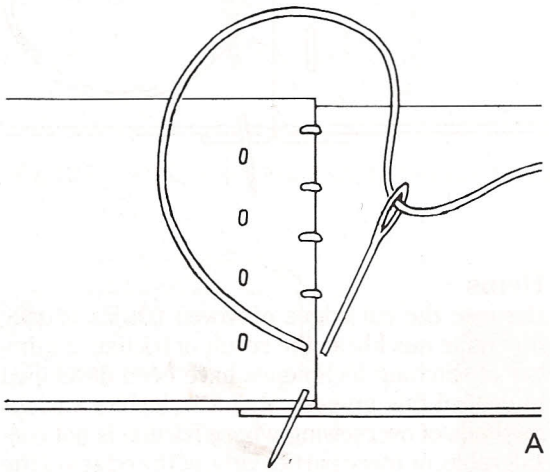
A

B



C

Fig 124 Seams formed by overstitching two edges together: (A) Nos 326 and 327 (both sides): the starting knot is shown at the top of the photograph and further rows of stitching holes can be seen on either side of the seam, (B) No 347, note the warp is shown horizontally. From late 14th-century deposits. (C) illustrates how (A) may have been stitched. Scale 1:1



would seem likely that the heat and dampness of the human foot created conditions where further shrinkage of the cloth took place: the raw edges along the seams now have an undulating appearance which has suggested 'pinking' or oversewing to earlier researchers, but in fact it is simply that the sewing thread remained in place whilst the surrounding threads of the cloth shrank. The usual overlap on these seams is 4–7mm, whilst the stitches are about 3mm long and placed at 3–4mm intervals. The stitching holes and associated depressions in the cloth show that a fairly upright hem-stitch was used along both raw edges. Fraying was thus minimised; furthermore the cloth would have been fulled before being manufactured into garments, a process which also reduced fraying. The special use of a seam of this kind on the foot sections of hose is confirmed by fragments of hose of 16th-century origin found in the City earlier this century. The stitching on some of these latter fragments is still intact and, although one edge is usually folded to give strength on the finer twilled cloth which superseded tabby-woven cloth hose, essentially the approach is the same. One fragment (No 242) with much more deeply overlapping seams of 6–9mm does not appear to be from hose, and may be from another garment, although at present it is impossible to hazard what this might have been.

Today the most traditional form of seam is that where a line of stitching runs parallel with the two raw edges to be joined, and it has to be assumed

Fig 125 (A) Seam formed by overlapping edges usually found on foot sections of wool hose, (B) photograph showing stitch impressions and evidence of overlapped edge, No 215. Scale 1:1

that by the middle ages too this was the most usual method for joining textiles. Although a number of seams of this kind survive among the London textiles, the stitching threads have almost completely disappeared, leaving well-defined stitching holes. From this evidence it is possible to show that in the majority of cases a fairly fine *running-stitch* was usual for holding the two edges together (Fig 126A). The size of the stitch varies somewhat, as is to be expected, but it is usually

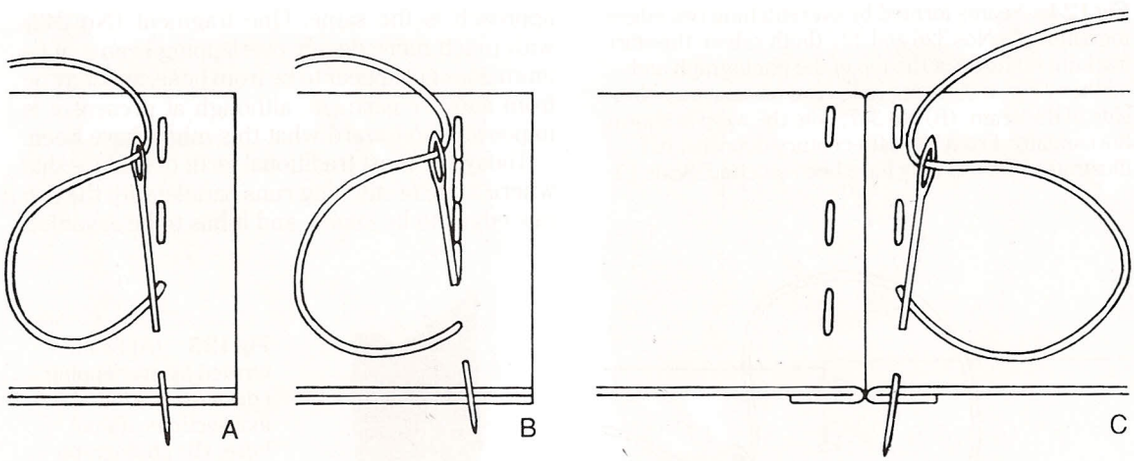


Fig 126 Seams joined by (A) running-stitch, and (B) back-stitch; (C) seam opened flat and reinforced with running-stitch

related to the fineness and flexibility of the cloth; stitch lengths of 2–4mm have been recorded, 2–3mm, being usual. Detailed microscopic examination of the holes and impressions left by the lost stitches could very well produce more exact information about the sewing methods used.

A line of running-stitches has long been the usual method of holding garment seams together and is present in many examples of surviving clothing of the 16th and 17th centuries onwards. Where seams came under pressure, particularly those employed in shaping garments to fit closely to the human form, or in forming crucial joints (armholes, for example), one of the variants of *back-stitch* would have been more appropriate (Fig 126B). There is no certain evidence of back-stitched seams amongst the London textile fragments, but it is possible that the seams of bias-cut hose may have been back-stitched to prevent them coming apart during use. Added strength was given to these seams through the use of a row of running-stitches on each side of the seam, worked through both seam allowance and outer layer, parallel with and close to the seam (about 2–3mm). This held the seam allowances underneath flat (Fig 126C), a technique which is also found in fragments of 16th-century hose in the Museum of London collections.

Hems

Because the cut edges of woven fabrics usually fray quite quickly as the result of friction, a number of stitching techniques have been developed to control this process; they can involve various methods of oversewing where friction is not considerable, or more particularly, at the edges of the garment, single or double folds (hems) of material which greatly strengthen the edge. Whereas today exposed raw edges are invariably strengthened in some way, certainly at garment edges, it is likely that in past centuries raw edges sufficed much more, since cloth-finishing processes rendered many wool fabrics less likely to fray.

The evidence of the textiles from London suggests that on a woollen cloth a single hem was usually considered adequate during the 14th century. This could be hem-stitched (Nos 235, 238, Fig 127A), held with a running-stitch (Nos 219, 243, 244, Fig 127B) or top-stitched from the right side (Fig 127C). The first method offers a protection to a raw edge and is appropriate to the hem of a garment. The two other methods produce an edge more capable of taking some stress and it is not surprising to find them the preferred methods for the tops of hose or the wrist edges of sleeves.

A sleeve fragment from the deposit dating to the second quarter of the 14th century at BC72 has 4–5mm folded back, held by back-stitching in silk thread 2mm from the edge; a further two fragments with edges treated in this way may be suspected to have come from sleeves as well (Nos

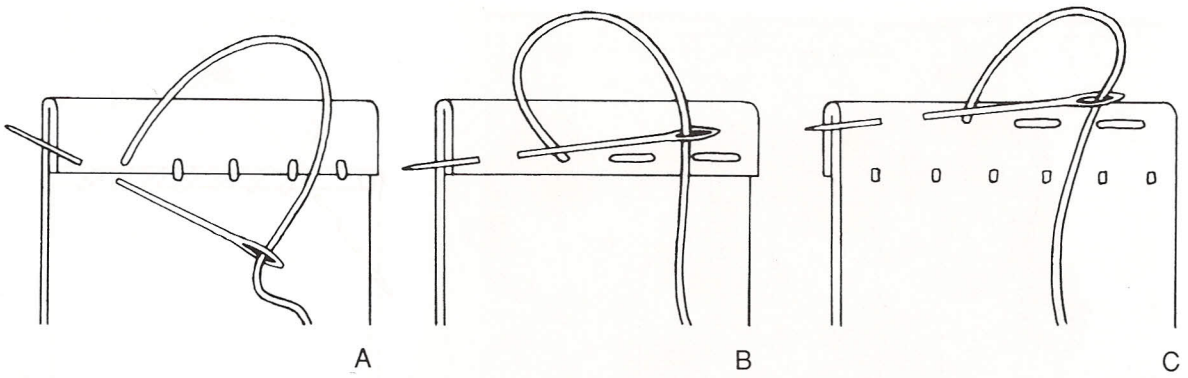


Fig 127 Single-folded hems: (A) hem-stitch, (B) running-stitch, (C) top-stitch

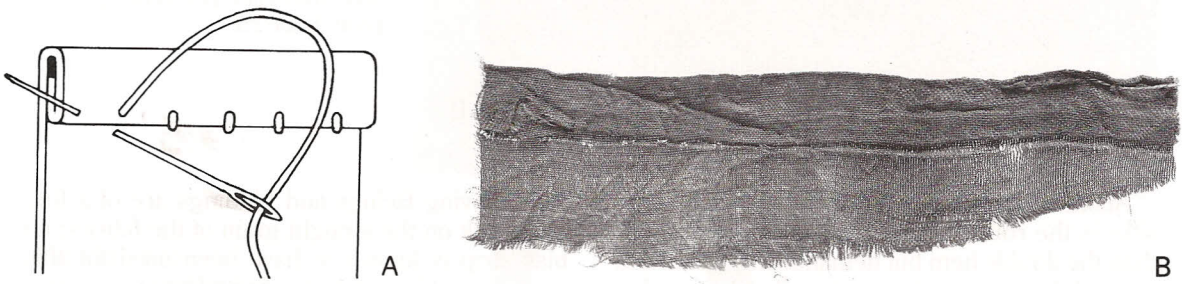


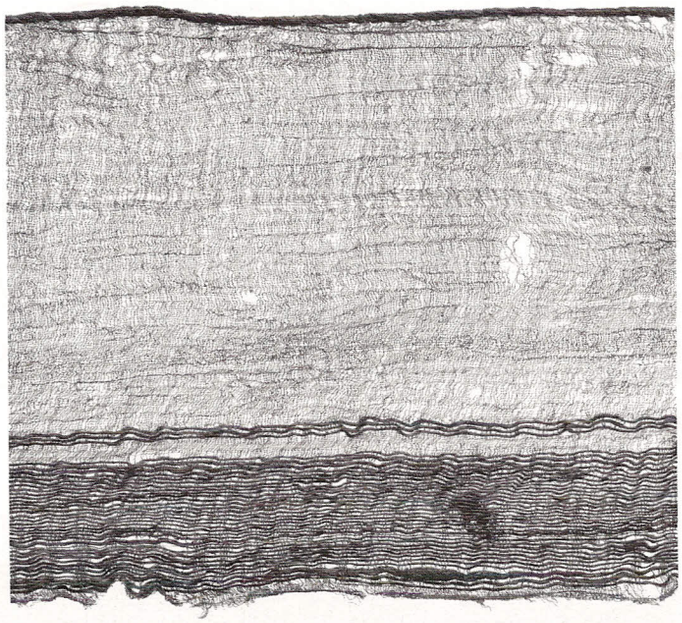
Fig 128 Double-folded hems: (A) hem-stitch, (B) with running-stitches along edge, No 330, from a late 14th-century deposit. Scale 1:1

34, 159). The same method may have been used on the top edges of hose; two examples of such hems on the edge of bias strips (Nos 245, 276) are more likely to be from hose than from any other part of a garment, whilst an almost complete lower leg section of hose has a straight, horizontal upper edge with a single hem and the remains of top-stitching in silk thread (No 235, Fig 167A).

Part of a coarse woollen garment patterned with coloured bands from an early 13th-century deposit seems to have been hemmed with running-stitches in linen thread (No 430). Traces of two hems which together form a corner are present. The side edge was folded back 8–9mm and stitched 5–6mm in from the edge. The lower edge was then folded back to a depth of 25mm resulting in a large hem allowance and also stitched 5–6mm in from the edge.

There are only two examples of double hems — one fold imposed upon the other — amongst the wool fragments. One small offcut of 60mm × 35mm (No 197), almost but not quite on the straight of the grain, has a preliminary fold of 5mm and a final hem depth of 9mm held by hem-stitching. The second and considerably larger fragment is probably from the hem of a mantle, a dress or supertunic made from a fine twilled wool (No 44, Fig 160). The finished depth of the hem is 5mm and it is held by hemming stitches at about 4mm intervals. Certainly in this instance a double fold was necessary because of the nature of the twilled cloth, and it is possible therefore that this was the edge of a trailing garment, such as a soft, flowing dress or cloak.

Because the cut edge of silk cloth is so much more likely to fray, and to fray rapidly, many more examples of double hems survive among the silk textiles from London. These hems reflect the quality of the cloth, ranging in depth from 6–9mm, with carefully executed hem-stitching in fine silk thread (Figs 66, 128, 138).



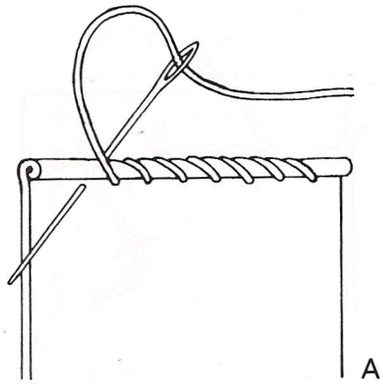


Fig 129 (A) Rolled hem, (B) No 333, from a late 14th-century deposit. Scale 2:1

Another form of hem particularly suited to fine silks is the rolled hem. This is less conspicuous than the double hem but demands more skill and manual dexterity as it cannot easily be pinned in place before sewing. The left hand rolls the raw edge and holds this in place whilst it is stitched by the right hand. The technique is used solely on the fine transparent silk veils of the late 14th-century (Nos 333, 334, Figs 68, 129) where it has proved most efficient as well as unobtrusive. The rolling and stitching — long diagonal hem-stitching which wraps itself around the roll — is especially finely executed, the roll being less than 1mm deep and with approximately 5–6 stitches per cm. These hems are clearly the work of a highly experienced and skilled worker and often seem to have been stitched with the material facing away from the sewer; today it is more usual for the material to be held the other way round.

Bindings and facings

Where a single or double hem was an inappropriate finishing for an edge, and particularly where some additional strength was required, strips of material could be applied as facings or bindings. All surviving facings and bindings are of a fine tabby silk on the straight grain of the fabrics; no bias strip is known to have been used for this purpose on bias-cut or curving edges.

Three examples of bound edges survive, all from late 14th-century deposits. One is a short length of silk ribbon on the slightly curved edge of a fragment of cloth with eight small buttonhole slits (No 219). The function of this piece is puzzling. It may be the lower edge of a buttoned hood, perhaps a child's hood, as the buttonholes are so small (8mm): or it may be the wrist of a sleeve extended to cover the back of the hand. The ribbon was held by slanting hem-stitching on both sides, but only one stitch is now preserved. A second example (No 216, Fig 144) is almost certainly from the lower edge of a tightly buttoned sleeve which extended over part of the hand, similar to those portrayed in many effigies and monumental brasses dating to the second half of the 14th century (e.g. Fig 157). The third example is an unattached evenly-folded length of silk ribbon. 155mm long (No 386), which has a succession of small regularly-spaced stitching holes along each edge and may well have been used as a binding in a similar way, although folded ribbons of this type were also used to bind the edges of pouches, including examples made from leather (Fig 130)

Fig 137 Buttonhole edge, No 34, from a deposit dating to the second quarter of the 14th century. This was originally finished with a tablet-woven edge but only the stitch holes of this are preserved. (A) Complete piece, scale 3:4, (B) and (C) details, scale 2:1

Fastening methods

The chief method of fastening among the remnants of garments is that of buttons and buttonholes, although lacing was almost certainly widely used, and perhaps predominant, at the time. The latter was a method of considerable antiquity, ultimately derived from the age of skin clothing.

Fig 138 Detail of eyelet holes on silk facing and associated strip of silk, No 329, from a deposit dating to the late 14th century: (A) front, note traces of the woollen cloth to which the facing was originally stitched are visible round the eyelet in the centre, (B) reverse, (C) associated strip with two rows of stitching holes down the centre. Scale 1:1

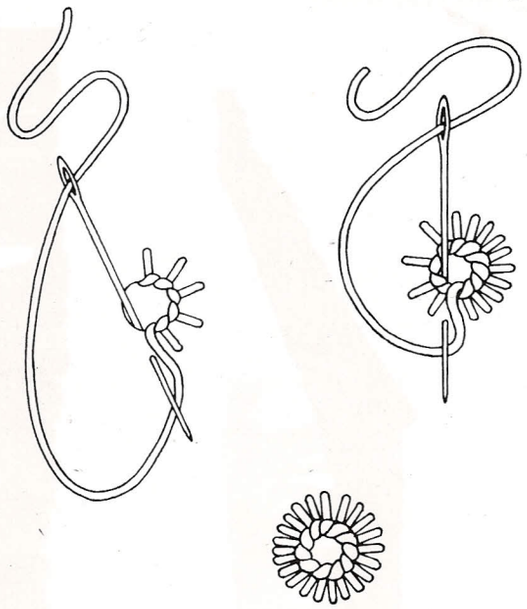


Fig 139 Diagram showing how the eyelets were stitched on No 329

Only one example of eyelet holes for lacing is preserved among the textile finds from London. This is a strip of fine tabby-woven silk (No 329, Fig 138) from a deposit of the late 14th century. The now fragmentary strip is 186mm long and 17–20mm wide; it has narrow turnings along the long edges, to one of which is still attached a folded length of similar silk. A companion strip of silk facing 255mm long and 16–22mm wide has been held in place by running-stitches on three edges and by two equally spaced lines of stitching extending the full length of the strip. The eyelet strip has six eyelets still intact, evenly placed 22mm apart. They are worked in two-ply silk thread, the overstitching of each hole being achieved by two complete circuits of buttonhole-stitch (Fig 139). After the completion of each eyelet the sewing

Fig 140 Alabaster effigy of Catherine Beauchamp, Countess of Warwick, *c.*1370–75, St Mary's Church, Warwick. She wears a gown fastened at the front with lacing while the sleeves are buttoned to above the elbow. (Conway Library, Courtauld Institute of Art, reproduced by permission of Canon M H Ridgway)