

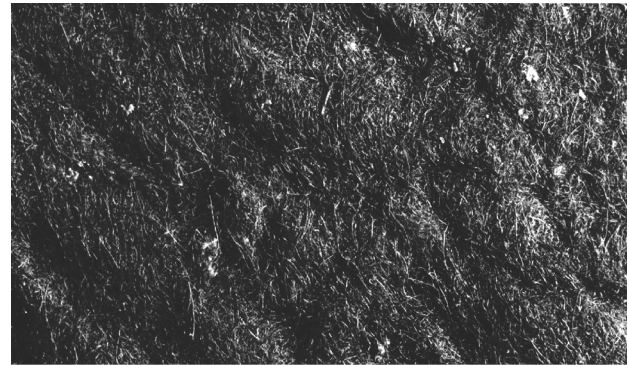
Non loom-woven fabrics

H Bennett, P Z Dransart and the late N Q Bogdan

Felt

Felt may take the form of a flat fabric or a simple three-dimensional article such as a cap or coat. This type of fabric does not have an ordered structure, but is composed of a mass of animal hairs amalgamated by compression in the presence of heat and moisture. As is shown by Mary Burkett's survey (1979, 7–29), felt-making was widespread in the ancient world, where it was used for the production both of mundane goods and such items as fine decorated rugs. It is noted that references to felt are common in Nordic literature from about AD 1000 and it is probable that its use was well established in north-west Europe by that date. Finds of felt have been reported from 13th- and 15th-century contexts in the old town of Oslo (Kjellberg 1982, 137, 147). Virtually nothing is known of the early history of felt in Scotland, but it appears that by the late Middle Ages, if not before, it was being produced on a professional basis in the Scottish burghs. This may be deduced from the existence of hatters – practitioners of a craft in which felt-making was the primary process – in south-east Scotland before 1400 (Craigie 1925, 66). Even so, finds of felt among excavated material from Scotland have been rare. Audrey Henshall (1952, 29) records just one: an undated cap of wool felt from a peat bog in Shetland. Medieval pieces from Scottish sites include a tiny, bright mid-brown fragment excavated from 14th- or 15th-century levels in Kirk Close, Perth (Bennett 1987, 166), a piece from Threave Castle (Bennett nd b) and four fragments from Sillerholes, West Linton (Thea Gabra-Sanders pers comm). Felt has also been recovered from English sites (Crowfoot 1979b, 36; Crowfoot et al 1992, 75).

The finds of felt from the High Street, which came from contexts ranging from the second half of the 12th to the early 14th centuries, are all fragmentary



Illus 51 Felt, wool. Cat No 131/A9126.

and of undistinguished appearance. Cat No 131/A9126 (Illus 51), which is typical, is thick, irregular and made from coarse fibres; unlike the good quality fragment from Kirk Close, it shows no signs of having been dyed. For Cat No 406/A9821 alone is there any indication of its function: it was found inside a leather boot and appears to have been a lining or inner shoe.

Tablet-woven textiles

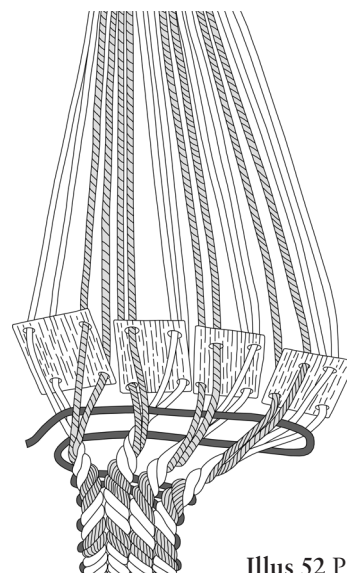
Tablet weaving is a method of making narrow bands by the employment of thin perforated plaques or tablets, of wood or some other rigid substance; it can also be used for the production of cordage. To begin, the threads which are to form the warp of the textile are passed through holes in the tablets and held taut; the

Felt.

<i>Cat/Accession</i>	<i>Area</i>	<i>Rig</i>	<i>Feature</i>	<i>Phase</i>
South Sector				
112/A6775	2	V	B5, North Room–Floor/Occupation (1)	IIa–IIff
131/A9126	3	VI	M1.2, Pit 2648	<IIg(IIh)
175/A09–0107	9	VII	B19 (Phase 2a), North Room–Occupation (3c)	IIIb
202/A09–0132a	7	VI	MC119, Pit 7390	<IIIc–IVa
262/A09–0063	9	VII	B18 (Phase 2a), North Room & Hall–Construction (1)	IVb
295/A6696	3	VI	M1.4d	IVb,IVc
387/A09–0070	7	VII	M8a	Va,Vaa
406/A9821	3/4	V, VI	Unstratified	u/s

most common form of tablet is square, with a hole in each corner, accommodating up to four threads. The threading of the warp through the tablets automatically produces a shed (opening) for the weft to pass through (see Illus 52), and the weaving proceeds by the turning of the tablets, forward or back, to create new sheds. In the process, the warp threads held by any given tablet are twisted round each other, locking the weft in place. This gives the work considerable strength, and also its characteristic corded appearance. The products of tablet weaving may be plain, but often they are decorated, as the technique offers exceptional freedom of patterning. Textured patterns may be achieved by threading some tablets from the opposite side to the remainder (thus giving the groups of warp ends contrary twists, as in Illus 52), and by varying the sequence of rotation of individual tablets. Greater possibilities still are offered by the use of warp threads of different colours, and the introduction of one or more brocading wefts. A technical description of tablet weaving, together with indications of its history and geographical distribution, may be found, for example, in Schuette 1956.

During the medieval period silk, sometimes embellished with metal foil, was used extensively in tablet weaving. The products, made for both clergy and well-to-do laity, served as tapes and edgings or applied ornaments on garments and other items, and occasionally took the form of complete objects, such as belts or ecclesiastical stoles (Henshall et al 1956, 29–30). Of the instances of tablet weaving from Scotland, all but one are of silk and fall within the Middle Ages; the exception is the woollen braids on a 1,200-year-old hood, from St Andrew's Parish, Orkney (Henshall 1952, 9–15). The majority exhibit a simple foundation weave, with the patterns executed entirely in brocading in one or more colours. In this group are fragments from the tombs of King Robert I (d 1329), Gavin Dunbar, Archbishop of Glasgow (d 1547) and an unknown bishop of the mid-16th century or earlier, in Fortrose Cathedral (Henshall et al 1956, 29–35); there is also a narrow band brocaded with silver thread, of possible 14th-century date, excavated from Kirk Close, Perth in 1979 (Bennett 1987, 166 Cat No 28). A seal tag



Illus 52 Principle of tablet weaving.

of this structure is appended to a supposed *inspeximus* by King Robert II, dated 1371, but the document proves to have been a later forgery by an English antiquary (Henshall 1964, 159–61). This form of tablet weaving is not, however, represented among the High Street material.

The examples of tablet weaving from the High Street take two shapes: bands and cordage. In all cases the warp and surviving weft are silk, although instances where the weft has decayed entirely may indicate the use of linen thread. This combination of a silk warp with a weft of another fibre would discount such an item from being the product of the Parisian silk guild which, in its statutes, ordered its members (male and female) not to 'warp thread with silk' because the work is 'false and bad' (*fause et mauvèse*) and, if found, 'must be burnt' (Depping 1837, 88; Dixon 1895, 221).

Amongst the finds there are two examples of bands, both from the second half of the 13th century. In Cat No 217/A6694b, the weft has perished and only the accident of the band having been tied in a knot has kept the short lengths of warp together and in sequence. Despite its poor condition and small scale – the band was probably no more than 8mm wide – it is apparent

Tablet-woven textiles.

Cat/Accession	Area	Rig	Feature	Phase
South Sector				
80/A11162b+	3	VI	B4, 'Courtyard'–Occupation	IIC
102/A12651+	4	V	MC081a	IId
117/A9899+	3	V	B23, North Room–Occupation (1a)	IIB–IIff
217/A6694b+	1	VI	B20, Levelling	<IIId–IVaa
234/A09–0124a+	7	VII	MC126, Pit 7402	IVaa,IVb
235/A09–0124b+	7	VII	MC126, Pit 7402	IVaa,IVb
238/A09–0109+	7	VII	B18 (Phase 1/2)	IVaa,IVb
271/A09–0097+	7	VII	B18 (Phase 2b), North Room, Hall & Hall South–Occupation (10)	IVb

+ Silk



Illus 53 Fragment consisting of tablet-woven bands of silk and lengths of silk tabby ribbon; the diagram indicates the design on the central band. Cat No 271/A09–0097.

that there was at least a simple form of patterning, for the texture of the centre of the band is distinctly softer than that of the edges. The effect cannot be accounted for either by the yarn or the putative weave; a fine 2 ply yarn has been used for all the warp threads, and close examination suggests that the weave was probably plain throughout, that is, the weft was passed through the work after every quarter turn of the tablets. It appears that the variation in texture has been achieved solely by the simple expedient of threading the six tablets bearing the centre warp ends in the opposite direction to the remainder. In effect, these ends have been twisted in Z direction, against the ply, whereas the border warp threads have been twisted in S direction, reinforcing the ply; this textured weave is without parallel in Scotland. Whether further differentiation was made by using warp threads of different colours is no longer evident. The scale of the band would have made it suitable for a fastening.

The fragments of tablet-woven band which form part of the fabric of Cat No 271/A09–0097 (Illus 53) are a good deal more complex in structure than Cat



Illus 54 Tablet-woven stole, German, 12th–13th century (Victoria and Albert Museum, 142.1894).

No 217/A6694b. The weaving has been so arranged that the warp appearing on the surface forms diagonal lines, giving the effect of a twill; further, two colours have been used, worked into a geometric pattern which is the same on the back of the band as the front, but in counterchange. The style of the geometric ornament is familiar from European textiles of the 12th and 13th centuries, and may be compared in particular with that on a tablet-woven stole, thought to be German work of the period, now in the Victoria and Albert Museum (Illus 54). The double-faced diagonal weave is also known from elsewhere: it was described in detail by Hans Dedekam (1925) in an analysis of woollen bands of the fifth to sixth centuries AD from Norway, and by Grace Crowfoot (1939, 59–63) in relation to the early tenth-century ‘girdle’ of St Cuthbert; in addition, it was identified by Audrey Henshall (1964, 157–9) as the technique used in the weaving of a silk seal-tag worked with zoomorphic ornament, attached to a charter of William, King of Scots, dated 1189 x 1196. It should be noted, however, that the Perth fragments do not have the plain borders exhibited by these parallels,

nor are they embellished with brocading. The work is competent, and slightly finer than the seal-tag, but does not approach the exquisite quality of the Cuthbert piece nor yet the finely controlled craftwork of the Victoria and Albert Museum's stole.

A double-faced tablet-woven band is known from an archaeological context at Baynard's Castle in London, dating from the second quarter of the 14th century (Crowfoot et al 1992, Cat No 143, Fig 100A). It is woven in a lozenge pattern with at least two colours, but the design is simpler than the Perth piece. Since it has a higher weft count (25–26 picks per 10mm) using a plied weft (Z thrown and S plied), rather than a weft with a slight Z twist and a count of approximately 20 picks per 10mm in the Perth piece, it undoubtedly served a different purpose, for instance a girdle or even, as suggested by Crowfoot et al (1992, 132), a spur leather.

The larger group of tablet-woven pieces from the High Street (six items) takes the form not of flat bands but of cords. This shape is achieved by causing the weft to follow a spiral course; instead of being passed to and fro through the fabric it is continually inserted from the same side and drawn tight after each passage, pulling the work into a tube. The cords, which were recovered from layers dating from just after 1150 to the second half of the 13th century, are all unpatterned and apparently in single colours. Three have a diameter of 2mm, while the remaining three have a diameter of 3mm. However, there is some variation in the number of tablets with which the bands were worked, ranging from a possible eight to sixteen tablets. As Audrey Henshall has commented (1964, 162), the results are not unlike shoe laces. She was referring to similar cords used as seal-tags, but the Perth pieces could equally well have served as drawstrings or fastenings, or even for the suspension of personal ornaments; Cat No 102/A12651, which has bound ends, might have been used in this way (Illus 55). A further function has been attested from the late 14th century at Baynard's Castle in London, where two short lengths of silk tablet-weave were found strung with a total of eight amber beads, evidently the remains of a rosary (Crowfoot et al 1992, Fig 106; Egan and Pritchard 1991, 306). The London tubular cords are somewhat later than the High Street examples, since most were dated to the end of the 14th century. As listed by Crowfoot et al (1992, 135), they range in diameter from 1mm to 2.5mm, and were constructed using either 12 or 16 tablets.

A structurally related tubular cord attached to a charter granted by King John (Balliol) at Lindores Abbey, dated 1294, employed eight tablets. Four colours were used in the warp, and one of the tablets was threaded in a different order from the rest. Periodically, the twist was reversed, creating a pattern in the cord (Henshall 1964, 161).

The places of origin of the examples of tablet weaving from medieval Scotland are uncertain. Since they are of silk it is tempting to assume that they were imported ready-made, and Audrey Henshall

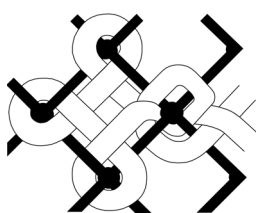


Illus 55 *Tablet-woven cord with bound ends, silk. Cat No 102/A12651.*

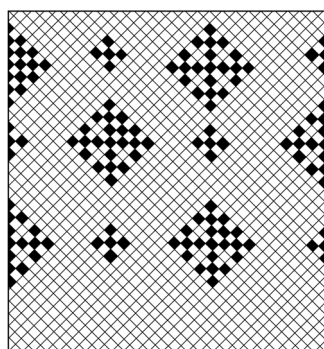
has tentatively suggested a Spanish origin for one of the Fortrose bands. On the other hand, that the craft of tablet weaving was not totally unknown here is indicated by the find of a fine, four-holed square bone tablet, of possible 9th-century date, from the Brough of Birsay, Orkney (Curle 1982, 60). Since tablet weaving had a specialised use in the Nordic world in the preparation of the warp for a warp-weighted loom, the find is not unexpected. It is not impossible, however, that the craft was also known on the mainland of Scotland, and that some of the Perth finds may have been locally made.

Net

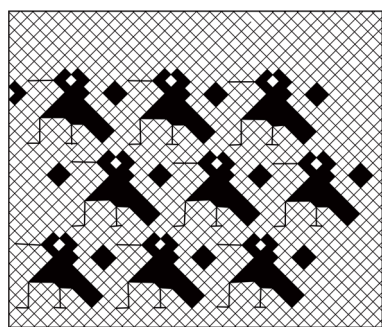
The three examples of net were all deposited during the first decade or so of the 14th century. They may indeed have come from one property for there is reason to believe that Rigs V and VI may have been combined by that date. All three are delicate works, constructed from fine 2 ply silk yarn, and two have embroidered designs carried out in varieties of darning in a form of needlework known, among other names, as *lacis*. Although the third example is plain net, the fragment could well have been part of a similarly ornamented



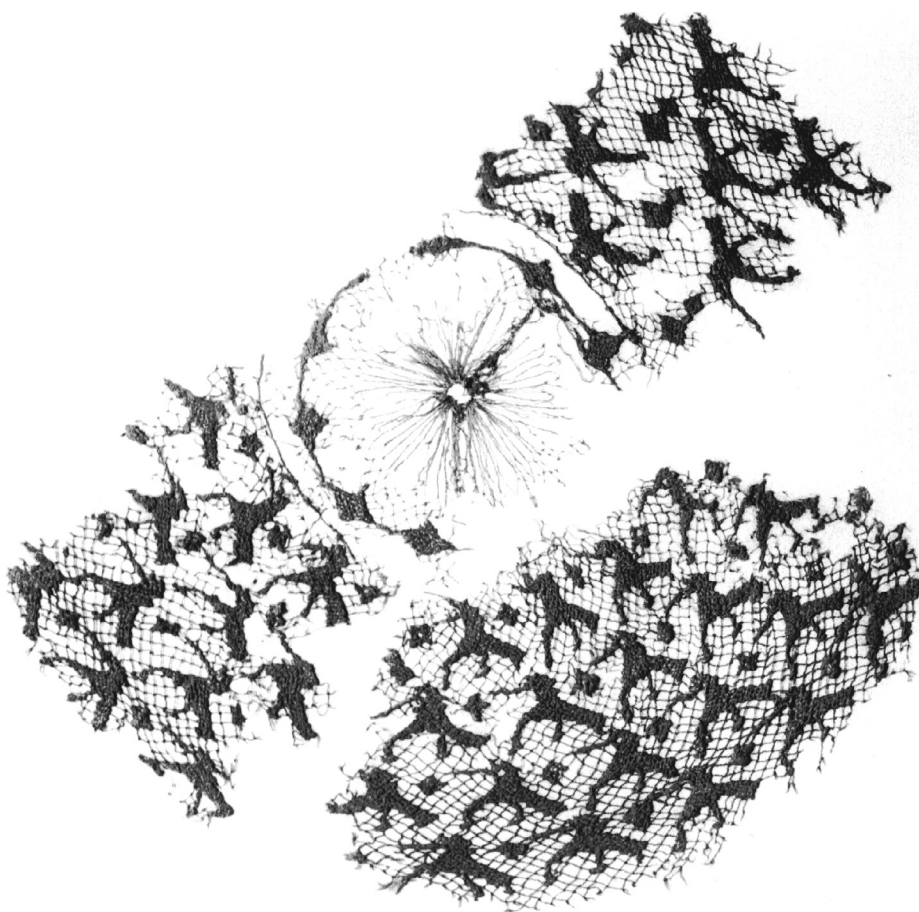
*Illus 56 Interlace stitch.
Cat No 351/A7577a.*



*Illus 57 Embroidered design
on net. Cat No 351/A7577a.*

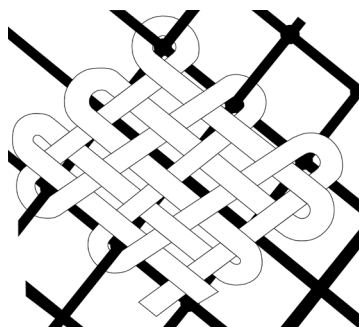


*Illus 59 Embroidered design on net.
Cat No 370/A10112.*



*Illus 58 Hair-covering
of embroidered silk net.
Cat No 370/A10112.*

0 5cm



*Illus 60 Surface darning.
Cat No 370/A10112.*

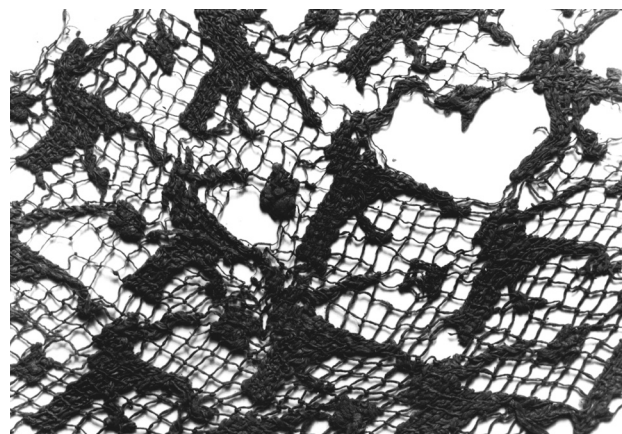
piece. In the embellishment of the net, three different forms of darning have been used. On Cat No 351/A7577a (Frontispiece) the embroidery has been worked entirely in an open, interlaced stitch, creating a four-lobed form (Illus 56), the repetition of which builds up the cross crosslet design (Illus 57). Cat No 370/A10112 (Illus 58 and Illus 59), by contrast, is worked with solid forms, and the effect of the bird and lozenge design is

altogether less dainty. The lozenges and the bodies of the birds are carried out in a more familiar form of darning; the decorating yarn is run forward and back to lay down a series of parallel threads, and is then woven across them, alternatively under and over, to create a solid fabric (Illus 60). This should properly be called surface darning, for the net serves only to provide a framework for the first set of

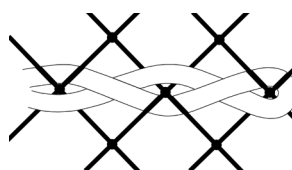
threads, and is left free behind each motif as is visible on the reverse (Illus 61). A third technique, a cord stitch, has been used to work the beaks and legs of the birds (Illus 62).

Cat Nos 351/A7577a and 370/A10112 are notable among the Perth textiles as being identifiable entities; both are recognisable as decorative hair coverings. The wearing of the hair confined in a net came into vogue among Northern European women by or during the 13th century and, in various forms, continued into the 15th century and beyond (Cunnington and Cunnington 1952, 53; Heinemeyer 1966, 16ff). Parisian guild members who made such nets were called *crepiniers* in their statutes (Depping 1837, 85) and, in England, the contemporary term for this kind of head-dress was *crepin* or *crepine*, direct from the French (*MED*, sv *crepin*; *NED*, sv *crepine*). Among the later manifestations of the fashion is the jewelled caul worn by Margaret of Denmark, wife of James III (1460–1488), on the Trinity Altarpiece of Hugo van der Goes, possibly painted 1478–9, now in the National Gallery of Scotland. The date of deposition of the Perth pieces, however, and the evidence provided by Continental parallels (discussed below) indicate that they belong to the earlier years of the fashion. Too little is known about dress in medieval Scotland for certainty as to how they would have been worn, but if English and Continental modes were followed they may have appeared as on the figure of St Anne, embroidered on a velvet band in c1320 (Illus 63). Here a decorated net covers the hair on the back and sides of the head; it is worn beneath a barbette, the band of linen which passes under the chin, and a fillet, a stiffened linen circlet. Alternatively, the Perth nets may have been worn so as to cover all the hair but a small portion at the front, perhaps with the fillet alone. A further possibility is that both barbette and fillet were omitted, although the Cunningtons (1952, 53) maintained that in England these hair nets ‘were never worn alone except by women of the lower class’. A simply dressed woman wearing her hair in a net is depicted in the scene of Iwein and Laudine on the Malterer Hanging, a German couched embroidery of c1310–20, given by the Malterer family to the Convent of St Catherine at Freiburg im Breisgau (Staniland 1991, 42).

Illus 63 *St Anne, wearing her hair confined in a decorated net or crespine. Detail from embroidered velvet band, England, c1320–40 (Victoria and Albert Museum 8218.1863).*



Illus 61 *Detail of reverse of hair-covering of embroidered silk net. Cat No 370/A10112.*



Illus 62 *Cord stitch. Cat No 370/A10112.*



Net.

Cat/Accession	Area	Rig	Feature	Phase
South Sector				
336/A09-0055+	7	VI	B34–Courtyard	Va
351/A7577a+	3	VI	B1(b), Destruction, Tumble 2775	Va
370/A10112+	3	V, VI	M1.5a	Va, Vaa(VI)

+ Silk

Although the making of net, for use in fishing, hunting, and so on, must have been one of the earliest human textile achievements, this ornamented variety has a much shorter history. In recent times, as may be seen from instruction books of the Victorian era and of the early 20th century (eg, Caulfield and Sawards 1882, sv *Guipure d'Art*; Carita 1908), *lacis* was among the forms of needlework practised by leisured ladies. Pattern books for *lacis* were produced as early as the 16th century (Palliser 1910, 17–18), at which time it was employed by well-to-do women on the Continent in the making of hangings, bed furniture, and so on, and in the embellishment of household linen (Carita 1908, 12); linen, and gold and silver threads, were used, as well as silk. That *lacis* was worked in Scotland at this period, at least at the Court, is indicated by a reference to '*mes ouvrages masches*' in the will made by Mary, Queen of Scots, before the birth of the future James VI in 1566 (Palliser 1910, 22). About *lacis* in the earlier centuries much less is known, but there is sufficient evidence to indicate that during the late Middle Ages it was used for garments and furnishings in both lay and ecclesiastical settings. A distinctive feature of the few early pieces remaining, those from Perth included, is that the embroidery is generally worked diagonally on a ground of lozenges, whereas most post-medieval pieces have been made on a foundation of square meshes.

From England there are references to net-work in inventories of church furnishings from the late 13th century (Roch 1876, cix–cx). There are also four unembroidered mesh hair-nets, all of Z thrown and S plyed silk, from sites in London (Crowfoot et al 1992, 145–9). These are Cat No 399 from Trig Lane, late 13th century; Cat Nos 145 and 153 from Baynard's Castle, second quarter of the 14th century; and Cat No 391, also from Baynard's Castle, late 14th century).

However, the Perth pieces are the first surviving examples of *lacis* from medieval Britain to have come to light. It is, therefore, necessary to look to the Continent for parallels. The graves of the Castilian royal family in the Convent of Las Huelgas, near Burgos in Northern Spain, have yielded three pieces. Two are a pair of cushion covers from the coffin of Sancho (d 1343), illegitimate son of Alfonso XI; they have a heavy geometric design worked in coloured silks and gold thread (Gómez-Moreno 1946, 39, Plate 133). The third, also a cushion cover, from the tomb of Isobel de Molina (d 1292) is embroidered with four-lobed rosettes in the same open interlace stitch employed on Cat No 351/A7577a (ibid, 33, Plate 134); the work is not true *lacis*, however, for the ground is not knotted. As befits their purpose, the fabric of all three cushion covers is considerably more robust than that of the Perth pieces. Closer in both scale and workmanship are several examples from Germany. Among several such in the Boch collection in the Victoria and Albert Museum is a fragment of delicate silk net embroidered in pink, white and green silk yarns (1854.1863); it incorporates the cross motif found in Cat No 351/A7577a, although worked in solid darning rather than interlace stitch. Comparison with German embroideries and silks suggests it was made in the 13th or 14th century. Closer still is another hair net, recovered from a grave of c1300 in the Church of St Elisabeth, Marburg, and now in the Germanisches Nationalmuseum, Nuremberg (Illus 64). The Nuremberg piece has a tablet-woven band attached to the lower edge, whereas the Perth example has a flat braid (see Braids, below), but otherwise the similarity in design and technique is such as to suggest that both were made in the same area, presumably in Germany. In the case of Cat No 370/A10112, although the technique is familiar



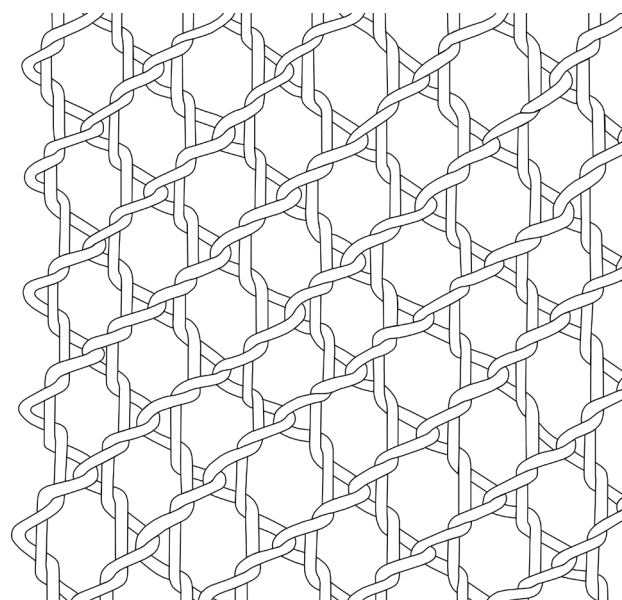
Illus 64 Hair-covering of embroidered silk net, found in Marburg, c1300.
(© Germanisches National Museum, Nurnberg)

from other medieval pieces it is difficult to find parallels for the design. Several examples of *lacis* from Germany are worked with birds or animals, usually of heraldic significance; a fragment of probable 14th-century date in the Victoria and Albert Museum (326.1896) is ornamented with closely-darned escutcheons, some bearing beasts, while another (307.1894) has a diaper design, each alternate lozenge containing a double-headed eagle; a hair net of late 13th- or early 14th-century date in Dusseldorf bears the arms of Middle and Lower Rhenish families, some of which include birds, although in this case the escutcheons have been embroidered separately and then applied to the net (Heinemeyer 1966, Figs 1–4). None of these examples, however, has a bird motif resembling that on Cat No 370/A10112. The identity of the long beaked, broad tailed bird is dubious and it has been worked so clumsily that it may be doubted whether the embroiderer had a particular species in mind. A possible explanation is that it is a considerably devolved version of a peacock motif (see Twill weaves of silk, above), such as is found, for example, on some Spanish silks of the period, the lozenge being the last remnant of the raised fan of the tail.

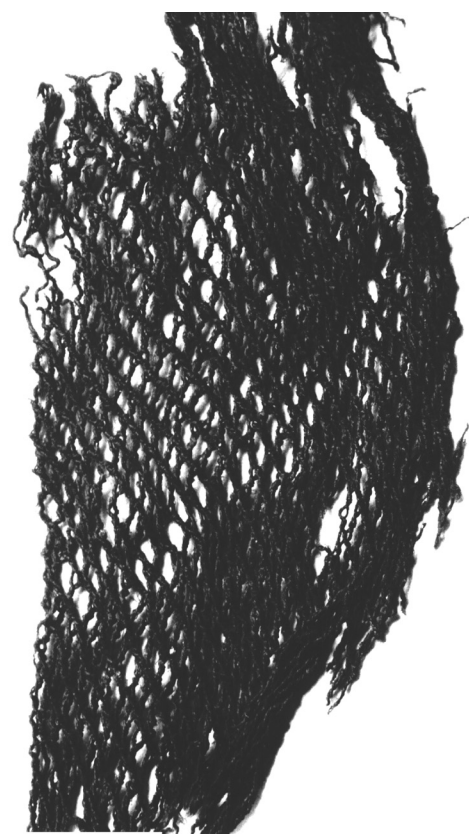
Sprang

Sprang may be defined as ‘a method of making fabric by manipulating the parallel threads of a warp that is fixed at both ends’ (Collingwood 1974, 31). Generally, the threads are stretched over a frame and then plaited or interlaced with the fingers. Because both ends are fixed, the interworking of one half of the warp has a similar, but reversed result in the other half; when the work is complete just one transverse line of fastening is required to lock the contrary twists of the two halves in place and prevent them from untwining. The technique is capable of producing fabrics of widely differing appearance, from an open lace-like mesh to a dense material with a superficial resemblance to closely-worked knitting. This versatility, combined with the elasticity common to all forms of sprang, has suited it to a variety of purposes; the method has been utilised in the making of close-fitting garments such as caps, head-dresses and stockings, as well as bags and military sashes.

As has been shown by both Hald (1950, 249–80) and Collingwood (1974, 35–43), sprang has a long history and wide geographical distribution. The technique is common to, amongst others, Prehispanic Peru, Bronze Age Denmark and Coptic Egypt; in Scandinavia it has continued in use into modern times, as also in parts of south and east Europe and elsewhere. Despite this distribution, no similar tradition can be traced in Britain. Archaeological finds of sprang here have been



Illus 65 *Sprang*. Cat No 227/A09–0121.



0 3cm

Illus 66 *Sprang* worked from very firm worsted yarn. Cat No 227/A09–0121.

Sprang.

Cat/Accession	Area	Rig	Feature	Phase
South Sector				
227/A09–0121	7	VII	B18 (Phase 1b), North Room–Occupation (5b)	IVa,IVaa

very rare: impressions on a Viking 'tortoise' brooch from Unst, Shetland, may have been left by sprang, but a footless stocking found near Micklegate Bar, York, possibly dating from the period of Roman occupation, may until now have been the only extant example (Henshall 1950; 1952, 16). The find from Perth appears to be the first from a medieval context in Britain. However in Ireland, a piece of openwork sprang constructed from silk thread has been reported from Viking levels at Dublin (Pritchard 1988, 156).

The sprang from Perth is composed of two small fragments made from very firmly spun smooth wool yarn. It was worked into a uniform open mesh in which each interstice is formed by eight intersections of the threads (Illus 65, 66); there are no signs of shaping, or of a meeting line. As has been pointed out by Collingwood (1974, 34), since the thread structures which can be made by sprang can also be attained by other methods, the identification of the technique cannot be regarded as certain where a piece is largely incomplete. Even so, it is difficult to imagine what other technique could have been used in this case. The purpose of the fragments is not clear. The highly elastic open fabric would be very suitable for a hair-covering and, indeed, the same structure is found in the hair net or cap of the early Iron Age from Haraldskar, Denmark (Hald 1950, 52–5, 260) but the fragments are too small for this to be more than conjecture.

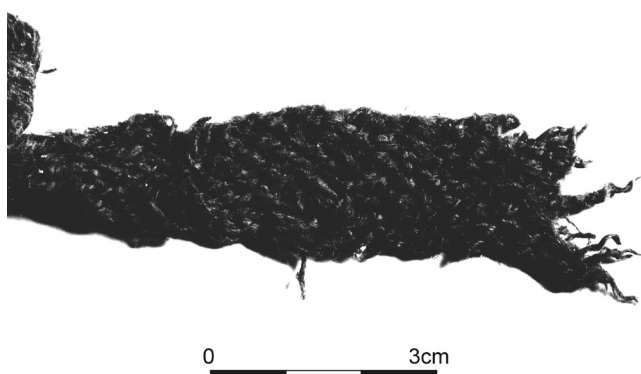
Braids

There are five pieces which have been braided from lengths of wool or silk yarn. Three different techniques have been used, all of which have wide currency and are

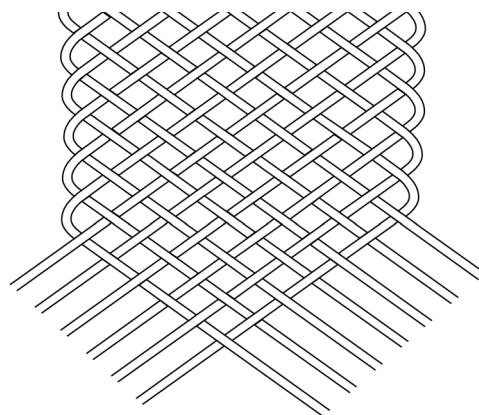
not specific to a particular area or period. Two of the methods produce flat bands, the third, tubular cords. In each case the piece could have been made with the fingers alone, although for the third method bobbins are sometimes employed to help control and order the threads. None of the braids is complete.

The earliest of the group, Cat No 30/A11567a (Illus 67), deposited before 1150, is a flat band about 18mm wide. It is made from thirteen strands of plyed wool yarn worked in a simple plait in which each thread moves diagonally back and forth across the braid, passing alternately under and over the other threads as it goes (Illus 68). Plaits made according to the same principle, but containing fewer threads, have been found in 13th- and 14th-century contexts at Southampton, Oxford, and at least two sites in London (Crowfoot 1975, 336, 338, Fig 275; 1980, 113–114, Fig 52). Elisabeth Crowfoot considered most of these narrow braids are likely to be shoe laces, although the example from Riverside Wall, London, which is divided into two tails at one end, may have served a more decorative purpose. These English medieval finds are all in silk. For a parallel in wool it is necessary to look to Scandinavia in the Viking period, notably a tabby diagonal braid in 24 threads, from a grave dated about AD 1000 at Mammen, Denmark (Hald 1950, 245, Figs 246–247). As Dr Hald commented, though, the technique is an old one and of widespread use, not limited to north-west Europe. She added (*ibid*, 246–52) that such bands, often patterned, have a prominent place in Scandinavian folk dress, principally as garters. The Perth piece, too, is an appropriate width to have been a garter.

The second flat braid, Cat No 352/A7577b, which is of silk, is sewn to the lower edge of one



Illus 67 *Tabby diagonal braid, wool. Cat No 30/A11567a.*



Illus 68 *Tabby diagonal braid, wool. Cat No 30/A11567a.*

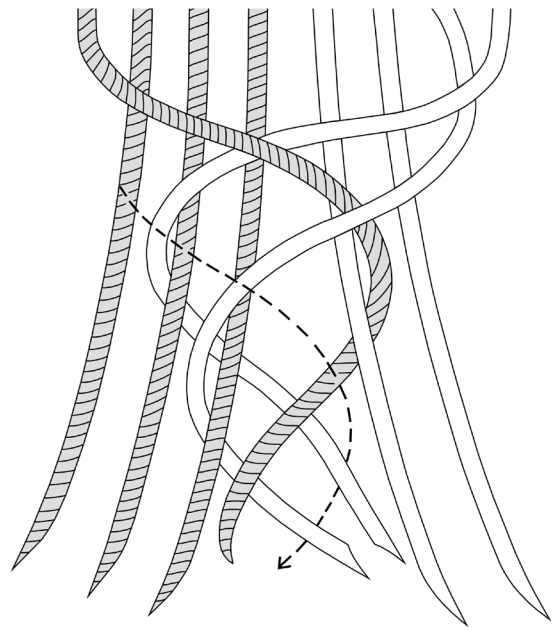
Braids.

<i>Cat/Accession</i>	<i>Area</i>	<i>Rig</i>	<i>Feature</i>	<i>Phase</i>
South Sector				
30/A11567a	3	VI	MC037a, Pit 5157	Ia–Ie
166/A9974	3	VI	M1.3	Ili
307/A6637+	3	V, VI	M1.4c	IIIa–IVcc
352/A7577b+	3	VI	B1(b), Destruction, Tumble 2775	Va
391/A09–0021+	7	VII	B53 (Phase I), North Area–Occupation (3a)	Vb

+ Silk

of the embroidered hair nets, Cat No 351/A7577a (Frontispiece), which may be dated c1300. The outer side resembles a diagonal braid, but the inner side is dissimilar, and from this it is evident that a different technique has been used from that of the diagonal braid. The band appears to have been made from seven double threads (each originally with a loop at each end) by the method known as finger- or loop-braiding. The procedure for this form of braiding, which was formerly used throughout the Nordic world, and is still current in Norway, is described in detail by both Dr Gudjónsson (1979, 65–6) and Aagot Noss (1966, 134–136). Again, although well-known in Scandinavia, the technique was clearly not confined to that area. Dr Gudjónsson (1979, 67) cited the example of loops for buttoning made in this manner on a 14th-century *aumonière* of possible Rhenish workmanship; Elisabeth Crowfoot (1975, 336–8) described a complete braid of five loops from Southampton, deposited in the last decade of the 13th century; while from a late 13th-century deposit in London there is a nine-loop braid, probably part of a silk purse, and a five-loop braid stitched to a caul of plain netting (Pritchard 1982, 198–9). Twenty-four fingerloop braids made from two ply thread, using from seven to twenty loops, are also recorded from London (Crowfoot et al 1992, 138, Table 12). Like the Perth braid, these other medieval pieces are of silk.

The remaining three braids from Perth are cords. The two of silk (Cat Nos 307/A6637 (Illus 69) and 391/A09–0021) are narrow, while the third, Cat No 166/A9974 (Illus 70) of coarse wool, is massive by contrast. The first two are composed of 32 and 24 single elements, respectively; the third is of eight elements, each consisting of four strands. All three are firm and close-textured and much less elastic than the flat braids. The technique is whipcording (Illus 71), the method of working of which is described in detail by Dr Hald (1950, 243–5,



Illus 71 *The principle of whipcording with eight elements (after Hald 1950).*

Figs 237–245). Plain or patterned, the cords may be of few or many threads, but always in multiples of four; short lengths may be made without tools, but bobbins are employed for longer lengths. Dr Hald notes that the uses of such braids are very varied, from providing cords on slings in Palestine to decorative trimmings on women's skirts in Denmark. The Perth braids appear to have been designed for strength rather than ornament; the heavy wool cord would have been suitable for a handle or perhaps part of a harness, while the silk pieces may have been drawstrings, or possibly garment ties.

Yarns

Of the 65 finds in this category five, or possibly six, are of silk, two probably of horsehair, and the rest of wool. All but four are yarns of a suitable weight for weaving or needlework, and most are probably scrap from these activities, or fragments from woven articles.

All the samples of silk are fine 2 ply yarns thrown in S direction. The yarns in Cat No 330/A7841 resemble the dark sewing threads used in tabby silk Cat No 346/A09–0044. With the exception of Cat No 339/A09–0053, the condition of which is too poor for judgement, these samples show signs of having been worked. Cat Nos 17/A11512, 183/A09–0098 and 250/A09–0116 appear to be the remnants of tablet-woven pieces – bands or cord – the weft from which has perished. Cat No 223/A7835 may have been a finger braid, but is unravelled for most of its length. The majority of the wool yarns are coarse 2 ply, 3–6mm in diameter, composed of hairy fibres; Z spun and S plied is the usual structure. These are identical with the yarns used in the weaving and, occasionally, the sewing of the



Illus 69 *Braid made by the whipcord method, silk. Cat No 307/A6637.*



Illus 70 *Braid made by the whipcord method, wool. Cat No 166/A9974.*

Yarns.

<i>Cat/Accession</i>	<i>Area</i>	<i>Rig</i>	<i>Feature</i>	<i>Phase</i>
South Sector				
3/A9496	1/2	VI	MC006	Ib
7/A11202	1/2	V, VI	M2.1b & B10, South Room–Floor/Occupation (1)	Ic,Icc
10/A11085	4	V, VI	MC017	Ia–Icc>
16/A11080d	3	V	MC025, Pit 5337	(Ia–)Id
17/A11512+	3	V	MC025, Pit 5337	(Ia–)Id
28/A8496	2	VI	P5.1b	Icc,Id
43/A10490	4	VI	B16 (Phase 1), Occupation (1b)	(Id)Ie
44/A7312a?	2	VI	M14b(b)	Ie
45/A7312b?	2	VI	M14b(b)	Ie
49/A7353a	2	VI	M14b(b), Pit 3625	Ie
50/A7353b	2	VI	M14b(b), Pit 3625	Ie
51/A7416a	2	VI	M14b(b), Pit 3625	Ie
52/A7416b	2	VI	M14b(b), Pit 3625	Ie
53/A7429	2	VI	M14b(b), Pit 3625	Ie
54/A7432	2	VI	M14b(b), Pit 3625	Ie
56/A10770	3	V	MC034a	Ie(If)
57/A09–0002	3	V	MC034a	Ie(If)
65/A10414	4	VI	B16 (Phase 2), Destruction	If,IIa
67/A11086	3	VI	P5.3b	If,IIa
71/A10681	3	V	MC049	IIa
†72/A09–0020	3	VI	MC054a, Pit 5267	(IIa)IIb
79/A11162a	3	VI	B4, ‘Courtyard’–Occupation	IIc
85/A11090	3	VI	MC066	IIc
86/A10347	4	VI	M1.1f	IIb–IIId
88/A10036	4	VI	M1.1c	IIId
122/A9520	4	VI	B12, Occupation (1b)	IIe–IIg
124/A9842	4	VI	B12, Pit 2345	IIe–IIg
129/A10071	4	VI	B12, Pit 2345	IIe–IIg
135/A9320Aa	3	VI	M1.2, Pit 2648	<IIg(IIh)
136/A9320Ab	3	VI	M1.2, Pit 2648	<IIg(IIh)
137/A9320Ac	3	VI	M1.2, Pit 2648	<IIg(IIh)
152/A10436	3	VI	M1.2, Pit 2648	<IIg(IIh)
171/A09–0145a	9	VII	B19 (Phase 1), North Room–Occupation (4b)	IIIa
172/A09–0145b	9	VII	B19 (Phase 1), North Room–Occupation (4b)	IIIa
173/A11309	1	VII	MC112b	IIIb
179/A09–0144	9	VII	M13	IIg–IIIb
183/A09–0098+	9	VII	P8.1b & B19 (Phase 2b), South Room–Occupation (1a)	IIIc
194/A09–0082	9	VII	M15	IIId
203/A09–0132b	7	VI	MC119, Pit 7390	<IIIc–IVa
214/A8864	3	V	MC156	IVaa
216/A6694a	1	VI	B20, Levelling	<IIId–IVaa
223/A7835+	3	V	B3 (South), Occupation (1b)	IVa,IVaa
232/A09–0129*	7	VII	MC126, Pit 7402	IVaa,IVb
237/A09–0143	7	VII	MC126, Pit 7402	IVaa,IVb
240/A09–0065	9	VII	B18 (Phase 1/2)	IVaa,IVb
250/A09–0116+	7	VI	M1.4f	IVc
256/A09–0125	7	VI	M1.4f	IVc
265/A09–0112	7	VII	B18 (Phase 2a), External 1, Pit 7314	IVb
266/A09–0118	7	VII	B18 (Phase 2a), External 1, Pit 7314	IVb
268/A09–0128	7	VII	B18 (Phase 2a), External 1, Pit 7314	IVb
285/A09–0095	7	VII	B18 (Phase 2b), Hall & Hall South–Occupation (12a)	IVb

(continued)

Yarns (continued).

<i>Cat/Accession</i>	<i>Area</i>	<i>Rig</i>	<i>Feature</i>	<i>Phase</i>
296/A8099	3	VI	M1.4d	IVb,IVc
300/A8084	3	VI	M1.4d, Pit 2566	IVb,IVc
308/A6642	3	V, VI	M1.4c	IIIa–IVcc
312/A6653d	3	V, VI	M1.4c	IIIa–IVcc
317/A8914	3	V, VI	M1.4c	IIIa–IVcc
327/A8867	2	VI	M1.4e	IVcc(Va)
330/A7841+?	3	VI	P6	IVcc,Va
339/A09–0053+	7	VII	P8.4	Va
341/A09–0087	7	VII	P8.4	Va
345/A09–0047b	7	VII	P8.4	Va
353/A2947	3	V, VI	M1.5a	Va,Vaa(VI)
366/A6628	3	V, VI	M1.5a	Va,Vaa(VI)
383/A09–0073	7	VI, VII	M1.5b	Vaa
401/A6130	4	V	M3c	Vd

All are of wool with the exception of those indicated thus:

+ Silk

+? Possibly silk

* Horsehair ?

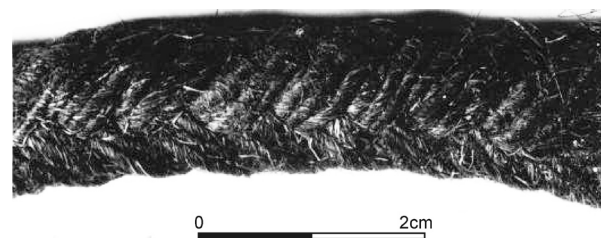
† indicates item is not listed in original site Finds Register

heavy tabby fabrics (see Tabby weaves from 2 ply yarns above). There are also a few fine 2 ply yarns. Composed of combed fibres, smooth and firm, they are likely to have been sewing threads. The five samples of single ply thread include a tiny clew of fine Z spun yarn, dyed a bright pink, Cat No 265/A09–0112, and a mass of medium weight strands, Cat No 341/A09–0087, Z spun and in various shades of brown, which appear to be waste perhaps trimmed from the end of a web of cloth.

Cordage

The items in this category are heavier plies than the yarns listed above and may be termed cordage. These have been produced by the simple method of twisting together multiple strands of one or more plies, perhaps with the aid of a cross-bar handle. Cords manufactured by other techniques, namely tablet weaving and braiding, are considered under the appropriate headings above. The most substantial of the four listed here, Cat No 174/A09–0141 (Illus 72), is 10mm in diameter. Made from three strands of 2 ply yarn twisted together firmly and evenly, and of thoroughly professional appearance,

it must originally have been of considerable strength. The fibres have the visual characteristics of horsehair, but this has not been confirmed by analysis. A second example which also appears to be of horsehair, Cat No 15/A11080c, but exists only in a short length, is simply a heavy yarn plied back on itself, leaving a loop at one end. The remaining samples, Cat Nos 26/A09–0026a and 261/A09–0061, are fragments in poor condition, of bulky, rather soft cordage. These are composed of from 18 to 34 smooth Z spun strands of wool yarn twisted together in S direction. Similar cordage has been found on habitation sites elsewhere, for example one of seventh- to eighth-century date from Hessen, north Germany (Tidow and Schmid 1979, 125, Plate 2), but its purpose is not known.



Illus 72 Cordage, ?horsehair. Cat No 174/A09–0141.

Cordage.

<i>Cat/Accession</i>	<i>Area</i>	<i>Rig</i>	<i>Feature</i>	<i>Phase</i>
South Sector				
15/A11080c*	3	V	MC025, Pit 5337	(Ia–)Id
26/A09–0026a	3	V	MC025, Pit 5337	(Ia–)Id
174/A09–0141*	9	VII	B19 (Phase 2a), North Room–Floor (1)	IIIb
261/A09–0061	9	VII	B18 (Phase 2a), North Room & Hall–Construction (1)	IVb

All are of wool with the exception of those indicated thus:

* Horsehair ?