AML Report 4618.

1206

Monkgate, Hull

MGB76 <1024> [1494]

The find

A cylindrical twist of fibres, 11.0cm long, was found in association with an iron clench bolt and is thought to have been used as caulking. The fibres have been twisted in the 'S' direction.

Under a high-powered microscope the fibres show the scale pattern and the fibre tips of a coarse lambswool. The diameters of 100 fibres were measured, the results as follows (measurements in microns): range 15-92, mode 37, mean 41.2 ±14.9. P.coeff.skewness +0.72 (positively skewed); 16% of fibres have medullas, one of them a kemp, and up to 10% are pigmented. This indicates a hairy fleece type.

Discussion

Similar S-twist rolls of fibre have been used as caulking on other medieval sites: both wool and cow-hair were used to plug a timber revetment at Coppergate, York (Walton forthcoming), and wool was used between two overlapping timbers of the medieval dock at Southgate, Hartlepool (unpublished).

The hairy wool of the Hull example is of a type to be found nowadays in the fleece of black-faced mountain breeds, such as the Swaledale and the Scottish Blackface. Such wools are sometimes to be found in medieval textiles (Ryder 1984 p26) and out of 38 wools from medieval Yorkshire so far examined, five have been hairy in type (ibid. and Walton op.cit.). However, the Hull example is particularly coarse, with many medullated fibres, which inhibit the take-up of dye, and would therefore be of little value to the textile industry.

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Penelope Walton 19.4.85

Medieval and 17th century textiles from High Street-Blackfriargate, Hull.

Penelope Walton
8 June 1985

I. MEDIEVAL

Introduction

By the 14th and 15th centuries, when the earliest of the Hull textiles were laid down, the production of wool cloth had become a commercial enterprise of some scale in England. In the 10th-13th centuries, technological developments such as the introduction of the treadle-operated loom, the spinning wheel and the fulling mill, had presented the tools whereby cloth could be made at a much greater speed than formerly (Hoffmann 1964 258ff); there was also an abundance of raw material in a wide range of types of wool from the various sheep-rearing parts of the country (Bowden 1962 pp28-40); and a ready market in the increasing urban populations (Platt 1976 pp21-26). As a result, textile manufacture had largely become the province of specialist craftsmen, producing quantities of standard types of cloth, for trade at home and abroad.

No doubt Hull, as other towns of the period, had its own textile craftsmen, but it would also have had access to the high-quality fabrics which York, Beverley and other East Riding towns were producing in the 13th and 14th centuries (Sellers 1974 pp407, 409; Heaton 1965 pp4,28). The 14th and 15th centuries also saw the rise of the West Riding industry, producing coarser woollens (Sellers op.cit. pp408-411), some of which must have contributed to Hull's cloth exports, which were evidently increasing at this time (Carus-Wilson 1954 p259). Cloth from Flanders was also being traded into Hull in exchange for raw wool and lead (Heaton op.cit. p7); and the coastal trade with London would have brought in textiles from other parts of England, as well as silks from Spain and Italy, channelled through southern ports (Carus-Wilson op.cit. pp50-55).

2/1 twill

Archaeological excavations of urban sites have, in recent years, produced enough fragments of medieval textiles to provide an outline of the main fabric-types of the period. 2/1 twill with a firm Z-spun warp and soft S-spun weft, is by far the most common textile type of the 11th-14th centuries, varying only in its weight and degree of 'finish'. Fragments similar to the two Hull examples, T4 and T6, have been recovered from 14th century sites such as Perth and Aberdeen (Bennett 1982), Carlisle (E.Crowfoot pers.comm.), Newcastle upon Tyne (Walton in prep.) and Baynard's Castle in London (E.Crowfoot pers.comm.), as well as many earlier sites (summarised in Walton forthcoming). However, this type of fabric appears to have fallen out of use rapidly in the 15th century, although it continued at least into the late 15th century in Scandinavia (Kjellberg 1979 pp85-86) and into later centuries on the continent (Tidow 1982 p267).

The Hull pieces are medium-coarse in quality and one of them is matted on one face, possibly as a result of fulling: 2/1 twill has two different faces (fig.1), so that when fulled the soft weft felts up on one side, while the smoother warp stays firm on the other. From the evidence of seams in some examples from Baynard's Castle, it would appear that the felted side was used facing inwards (E. Crowfoot 1979 p38).

An indication that the Hull 2/1's are not of the best quality can be seen in the use of wools with many brown (or black) fibres, which would have detracted from the purity of the colour: perhaps for this reason, T4 has been over-dyed with a yellow/brown dyestuff, which would probably have given a more solid brown colour. In T6, the pigment is present only in the coarser fibres, as is the case with native sheep of Germany and Scandinavia (Ryder 1968 pp159,164). In view of Hull's trade with the continent, noted above, it is tempting to suggest that we have here an import. However, medieval flocks were much more variable than today and it is possible

that a fleece of this sort was occasionally to be found in English herds.

Raw wool

The raw wool from Hull is from a shortwool type of fleece, similar to that of a modern Norfolk Horn (Ryder 1984 p20). The shortwool represents one of the later stages in the fleece's evolution away from the double-coated fleece of the wild ancestor, and does not appear in any significant numbers before the 14th century (op. cit. p26). One staple of shortwool type has also been found at medieval York, along with other more primitive types (Walton forthcoming): this example is fell-wool, probably plucked from a skin being prepared for the local tanning industry (Ryder in Walton forthcoming), and as such is likely to be a local fleece. It is interesting to note that Hull was a major exporter of Yorkshire wools, a trade on which one of her most noteable citizens, William de la Pole, built his fortune (Fryde 1964).

The Hull example of wool appears to have been opened out ready for spinning and dyed with a blue dye, which Visible Spectrophotometry showed to be indigotin. Indigotin may be derived from both the woad and the indigo plants, but in the 14th century woad (Isatis tinctoria L) is more likely, as indigo (Indigofera tinctoria L), a native of India, was not a serious rival in Europe until the beginning of the 16th century (Ponting 1976 pp78-79).

Silk tabbies

The three Hull silks are all very much alike, although all are from different contexts. Simple tabby weave silks of this sort, with a Z-spun warp, for strength, and a smooth non-twisted weft, for maximum lustre, have been recorded in several other sites. In particular, examples with a similar thread-count to the Hull pieces have been recorded at Southampton, from a pit dated to 1290-1300 AD (E. Crowfoot 1975 p338) and at three 14th century sites in London (Pritchard 1982 p206). Most

interestingly, the Southampton example also has eyelets similar to those of T2 (fig.2). Elisabeth Crowfoot (op. cit. p335) suggested that this piece was a facing, probably to one side of a neck or sleeve opening, the eyelets being for a lacing cord or braid.

Belt braids

Three copper alloy buckles contain remains of belt braids. One, T7, is poorly preserved and difficult to examine, but the structure of the other two , T1 and T2, is relatively clear: both are woven in a double-cloth technique and produced by tablet weaving.

Tablet weaving in its simplest form is worked with a set of perforated plates of bone, ivory, wood,etc, each threaded with two or more warps. The tablets are set on edge, side by side, and the warps put under tension. The tablets are then turned so that each tablet twists a cord of warps. The parallel cords thus formed are held together as a flat braid by passing a weft through the warps at each part-turn of the tablets.

The cross-section of T1 shows that the weft lies in two layers (fig.3). Each warp thread passes over two wefts on the front of the braid, idles in the core of the braid for two wefts, then reappears on the back for two more wefts, before returning to the middle again. On the front of the braid the tablet twists meet in a herringbone fashion.

This braid may be reproduced as follows (fig.4). A set of square 4-hole tablets are threaded up, so that alternate tablets are threaded from opposite sides. The warps are put under tension and the tablets set on their corners. Those threaded from the right are partially separated from those threaded from the left, by sliding one group part-way along the warps. The warps will be seen to form three layers. Weaving then proceeds: weft through space A and back through space B; front tablets ¼-turn forwards; weft through A, then B; back tablets ¼-turn forwards; repeat. The same effect may be

produced on octagonal 8-hole tablets, with only alternate holes threaded, a technique which does not necessitate dividing the set into two. However, the author's experiments showed that weaving proceeded more easily with the two sets of square tablets.

T2 also consists of two layers of weft and this time the complete width is preserved, so that the path of the weft can be seen as a flattened spiral (fig.5). A group of four warps runs down the centre of the braid, forming a simple motif which alternates between front and back of the braid, binding the two layers together. This braid is, however, incomplete (there were obviously originally other warps prsent, but these have decayed away), and only two of the central warps show the twisting which is diagnostic of tablet weaving. Nevertheless, it was found that, out of many techniques techniques attempted, 6-hole tablet weaving was the only one which successfully reproduced the passage of the pattern warps through the weft.

To make a copy of this braid, hexagonal plates with a hole at each corner are threaded, each with six warps (fig.6). The central three tablets of the braid are threaded with four warps of a different colour, as shown in the figure. The tablets are all turned ⅙ revolution at a time, and the weft passed through space A and back through space B at each turn. The motif forms automatically and revolves from front to back of the braid, maintaining the same appearance on both faces. A reconstruction in wool and linen was made by this method (see plate): when the wool ground warps were removed, as appears to have happened to the excavated specimen by some process of differential decay, the pattern warp and weft were found to follow the same path as that of T2.

These two braids form a valuable addition to our knowledge of medieval tablet weaving. The tablet weaving technique may be traced back ~~in Europe~~ to at least the

6th century BC (for a useful summary of the early evidence, see Collingwood 1982 ppl0-19) and examples from the 6th-15th centuries AD show that it reached a high standard of craftsmanship and design in several countries of N.W.Europe.

Attractively patterned and textured wool braids have been recorded in 6th century Scandinavia (Dedekam 1925), while wool and linen examples are known from several Anglo-Saxon cemeteries. Richer braids, often in silk, with brocading in gold, are known from wealthier Anglo-Saxon (E.Crowfoot and Hawkes 1967) and Viking Age (Geijer 1938) burials and from ecclesiastical interments, such as those of St Cuthbert at Durham (10th century)(G.Crowfoot 1956) and Archbishop de Gray (d.1255) at York Minster (King 1971 ppl28-129). Colourful silk braids in a variety of techniques and designs were also used to attach seals to documents in the medieval period (Henshall 1964). Simpler braids in less extravagant materials have also been found in church burials, such as that of Archbishop de Ludham at York (King op.cit.pl36), where undyed wool was used for a tablet-woven pallium. However, although all of these examples are tablet woven, none appears to be in the same technique as either of the Hull braids.

Two more medieval linen braids have been found inside buckle plates, in the manner of the Hull examples. One, from Bramble Bottom near Eastbourne, dated to the second half of the 13th century, has a surface appearance very like that of the Hull braid, T1 (G.Crowfoot 1954). This braid, which has parallels in Scandinavia (ibid.), has only a single layer of weft, being worked with 2-hole tablets. The second braid, from a stirrup-shaped bronze buckle, possibly 14th-15th century, is from Felixstowe in Suffolk (G.Crowfoot 1950). This example is worked on 4-hole tablets and has the herringbone-effect meeting of the tablet twists which is produced by threading tablets alternately from left and right and turning one group separately from the other, as in T1. Again, however, this braid has only one layer of weft.

These two examples appear to be distant cousins of the braid, T1, but parallels for the 6-hole weave of T2 are even more difficult to find. M.Lehmann-Filhés (1901 pp39-50) describes some Chinese examples of 6-hole tablet weaving in silk, and other braids and tablets from the Near East, but these appear to be relatively modern. However, Peter Collingwood (op.cit. pl33) cites an example of a 15th century silk velvet band woven on 8-hole tablets, which indicates that tablets of more than four holes were occasionally in use. More importantly, he also describes (op.cit. pl72) a patterned band of green and gold-wrapped silk from Germany, a strap for a hunting horn, dated to 1580-1590, which he has reconstructed with 6-hole tablets. In this braid, only three holes per tablet are actually threaded, but it is interesting ~~not only~~ for its evidence for hexagonal tablets, ~~but~~ and also because here at last we find a double thickness fabric, such as both the Hull braids. Moreover, it is combined with exactly the same 'herringbone' surface appearance as the Felixstowe braid and the Hull braid, T1. The German example therefore shows elements of both the Hull braids, although it is not exactly the same as either.

The fact that the techniques of the Hull braids have not been recorded before may not be coincidental. The majority of braids to have been studied so far from medieval contexts are decoratove silks, often of very little functional value. The need for greater strength in a narrow belt for everyday wear is obvious. The reconstructions of the Hull belt braids have shown that the double-weave structure is immensely strong, non-elastic and well-suited to heavy wear. It may well be that future examination of other buckles will yield many more braids of the same method of manufacture.

II. 17TH CENTURY

In the post-medieval period, the wool cloth industry continued to expand, although its balance altered as lightweight worsteds became more popular. These worsteds, made from combed wool, soon ousted the finer qualities of woollens (woollens are made from short-stapled wools, worked in simple weaves into fabrics which can be fulled, or teaselled and sheared, to give a felt-like finish). The woollen manufacturers were therefore obliged to concentrate on the heavier weights of cloth, and also began to pay more attention to their finishing techniques (Walton 1983 p230).

Few sites have produced any textiles of 17th century date, but there is one particularly large group, mainly tailors' offcuts, from Newcastle upon Tyne (Walton op.cit.) dated to the years after the Civil War. These show a range of fabric types, from fine dressweight worsteds, one of them a patterned damask, to heavy duty woollens, probably coat and cloak material. It is to this latter category that the four Hull 17th century textiles belong.

The Hull group consists of three tabbies and one 2/2 twill (fig.1). This is similar to the Newcastle group, where tabby outnumbered 2/2 twill, in the ratio 20:1 (op.cit.p220). The 2/1 twill of the medieval group had fallen out of use in the 16th century and was largely replaced by the balanced weaves, tabby and 2/2 twill (Walton 1981 pp194-195): these show the same face on either side of the fabric, thus rendering the raising of a nap on both faces possible. Two of the Hull tabbies are slightly matted, possibly as a result of fulling, while T10 has a denser, springier surface, which is probably the result of raising the nap with teasels and shearing it back with large cropping shears. None of the Hull pieces, however, shows the very dense nap of many of the Newcastle textiles.

CONCLUSION

The medieval and 17th century textiles from Hull are

all medium to coarse and lack any of the indications of a high quality fabric. From comparison with textiles from other sites, it seems likely that they are the standard clothing material of the lower ranks of society or perhaps were used for the heavier outer garments of the middle classes. The presence of silks, on the other hand, suggests a certain degree of affluence, even though they are not to be compared with the elaborately patterned and brocaded silks of ecclesiastical burials.

All of the Hull textiles are very simple in structure, apart from the particularly interesting belt-braids, which thus far are unique among medieval textiles.

CATALOGUE

The following has been expanded from an original catalogue by John Tovey.

Z and S indicate the direction of twist of the yarn, I represents no twist at all. Thread-counts have been taken over one centimetre. Dyes were analysed by solvent extraction and Visible Spectrophotometry.

For further explanation of terms, see Walton and Eastwood 1983.

T1. Late 13th century. A braid, 0.95cm wide by 2.8cm long, with fragments of a copper alloy buckle-plate adhering. Fibre:off-white vegetable fibre, probably flax. Yarn: S-plied from Z-spun threads, approx.0.4mm diameter (warp and weft). Technique: tablet weaving in double-cloth technique (see figs 3 and 4). Remains of a selvedge at one side, but the opposite selvedge has deteriorated. 16-24 cords and 12 pairs of wefts per cm.

T2. Early-mid 14th century. A braid, 1.1cm wide (complete) and 1.7cm long, with remains of a copper alloy belt-fitting adhering to it. Folded across widthways. Fibre of weft: light brown vegetable fibre, possibly hemp.

Fibre of pattern warp: off-white vegetable fibre, probably flax. Ground warp:remains and impressions of dark brown threads are visible over the surface of the weft, but the fibre is too decayed to identify. Yarn of weft: plied Z2S, 0.4mm diameter, used double. Yarn of pattern warp: plied Z2S, 0.7mm diameter. Technique: a double-cloth weave, probably tablet woven (figs 5 and 6). Approx. 10 pairs of double wefts per cm (i.e.40 threads per cm). (Context 382).

T3. 14th century. 11.0 x 5.0cm of silk textile in loose tabby weave: 36-40/Z/<0.1mm x 28-32/I/0.1mm. Rows of stitch holes visible, and eyelets (fig.2). Dark brown in colour, but no dye detected.(Layer 204 phase 2 [446]).

T4. 14th century. 12.5 x 4.0cm of tattered dark brown silk textile in tabby weave: 36-40/Z/<0.1mm x 28-36/I/01-0.2mm, similar to T3. One edge has been given a rolled hem, the sewing yarn plied silk, Z2S, 3-4 stitches per cm. No dye detected. (Layer 212 phase 1 [447]).

T5. ?early 14th century. 8.0 x 5.5cm of dark brown silk textile in tabby weave: 36-40/Z/<0.1mm x 28-36/I/0.1-0.2mm, as T3 and T4. No dye detected. (Layer 436 phase 2 [448]).

T6. 14th century. Three fragments, 16.0 x 6.5cm, 11.5 x 8.0cm, 6.5 x 4.0cm, of dark brown wool textile in 2/1 twill, warp 9/Z/0.8mm x weft 4/S/1.4mm (selvedge present). Warp a smooth even yarn spun from a particularly coarse wool, hairy in type. Weft, softer and thicker, hairy medium type. Possible yellow or brown dye present. (Layer 212 phase 1 [449]).

T7. Mid-late 14th century. Crimpy wool from a shortwool type of fleece. The fibres have been opened out and dyed with a blue dye, either woad or indigo. (Layer 406 phase 2 [450]).

T8. 14th-15th century. 3.2 x 3.0cm of mid brown wool textile in 2/1 twill, 8/Z/0.7mm x 7/S/1.2mm. Z and S yarns both spun from hairy fleeces with some pigment in

the coarser fibres. No dye detected. (Layer 52 phase 2 [445]).

T9 Medieval. Sandwiched between the two buckle plates of a copper alloy buckle, SF 4, are some crossways threads, probably the weft of a braid. These are S-spun, 0.7mm diameter, approx. 8 per cm, worked from a coarse vegetable fibre, possibly hemp. In places there are remains of ~~crossways~~ lengthways threads, probably the warp: these are S-spun, closer-set than the weft. Weave not clear.

T10. 17th century. 18.0 x 11.5cm of light brown wool textile in tabby weave, 9/S/0.9mm x 10/S/0.9mm. Matted on b_oth faces, probably as a result of teaselling. No No dye detected. Cut edges on all four sides. (Layer 138 phase 4 [451]).

T11. 17th century. Two fragments, 8.0 x 4.0cm and 2.5 x 1.5cm of mid-dark brown wool textile in tabby weave, 11/S/0.8mm x 10/S/1.0mm. Slightly matted, probably as a result of fulling. Dye indigotin (i.e. woad or indigo). (Layer 138 phase 4 [452]).

T12. 17th century. 9.5 x 7.5cm of mid brown wool textile in tabby weave, 8/S/0.8mm x 8/S/0.7mm. Warp and weft both generalised medium fleece type. No dye detected. (Layer 138 phase 4 [453]).

T13. 17th century. 32.0 x 24.0cm of light brown wool textile in 2/2 twill, 11/S/0.8mm x 9/S/0.7mm. No dye detected. (Layer 138 phase 4 [454]).

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ACKNOWLEDGEMENT

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CAPTIONS

Fig.1: From left to right, tabby weave, 2/1 twill, 2/2 twill.

Fig.2: Silk textile with eyelets, T3.

Fig.3: Tablet-woven braid, T1, showing cross-section on right.

Fig.4: Method of reproducing T1.

Fig 5: Braid with missing ground warps, T2.

Fig.6: Method of reproducing T2 (above) and the threading of the central three tablets (below): white holes represent ground warps and ~~the~~ dark holes the pattern warp.

MEASUREMENTS OF WOOL FIBRES FROM HIGH STREET/BLACKFRIARGATE,HULL

For each sample, diameters of 100 fibres were measured at x400 magnification.

Measurements in microns (1 micron = 0.001 mm).

Medieval

Sample	Range	Mode	Mean±S.D.	Coeff. Skew	Distribution	Medullas	Pigment	Fleece Type
T6/Z	22-83,97, 104	38	50.3±16.8	+0.62,	pos.skewed	<8%	36%	Hairy *
T6/S	17-50,58, 67,73	23	28.1±9.2	+0.71,	pos.skewed	≤ 5%	17%	Hairy medium
T7	17-45	24	28.7±5.9	+0.40,	symmetrical	0	0	Shortwool
T8/Z	13-118,153, 159	24	35.3±25.2	+0.96,	pos.skewed	10%	9% (coarse fibres only)	Hairy
T8/S	14-96,121, 128,146,185	23	35.0±27.4	+1.00,	pos.skewed	10%	8% (coarse fibres only)	Hairy

17th century

T12/a	13-51	24	28.6±8.3	+0.59,	pos.skewed	0	0	Generalised medium
T12/b	14-51	21,22, 24	28.0±8.4	+0,53,	pos.skewed	0	0	Generalised medium

* T6/Z is an unusually coarse specimen, but its identification as wool was confirmed by H.M.Appleyard.

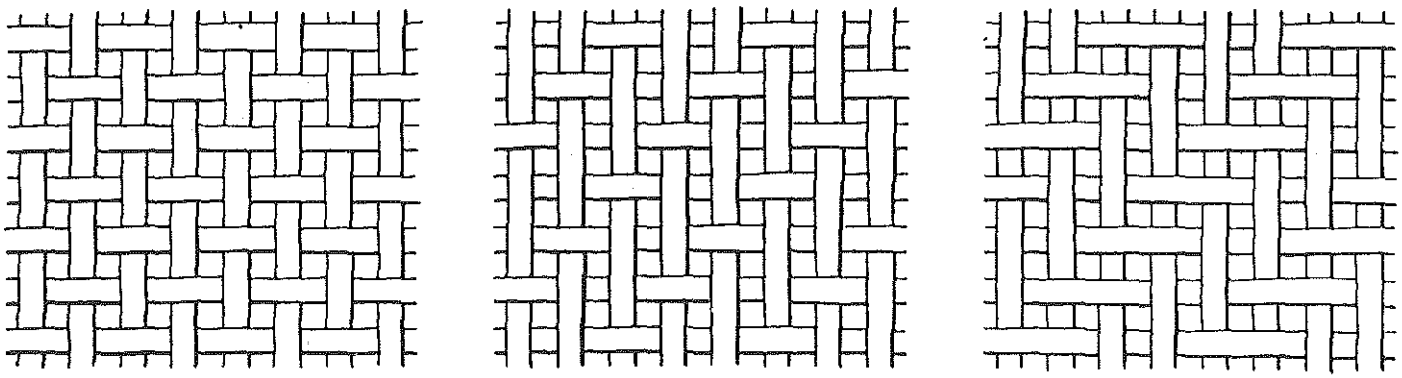

Fig 1.

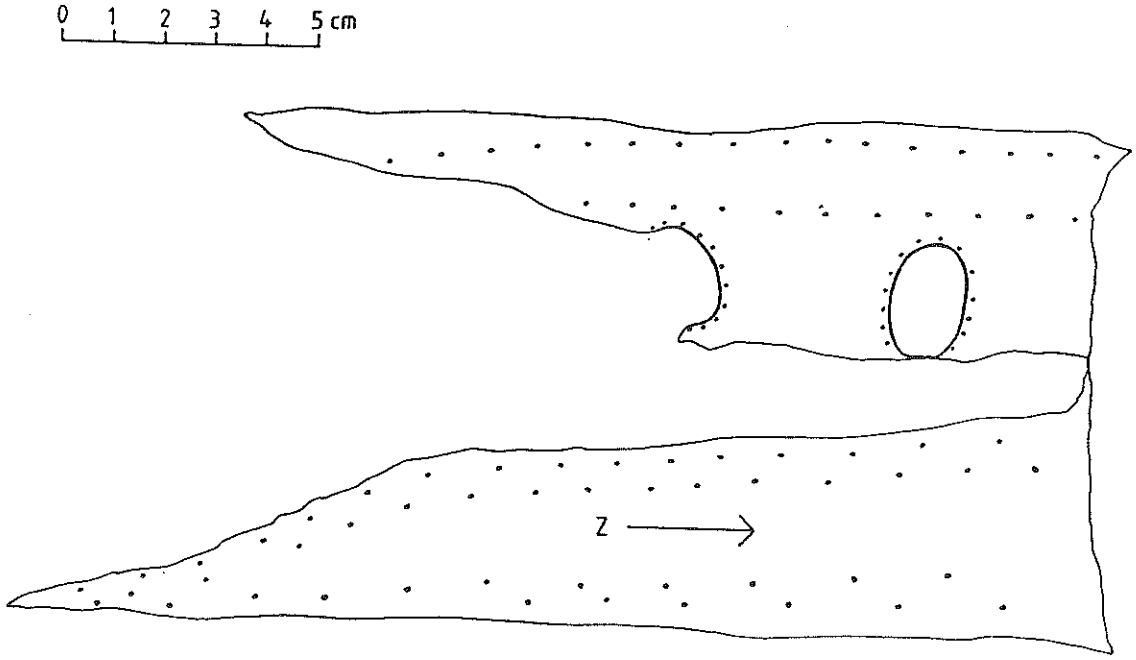

Fig 2.

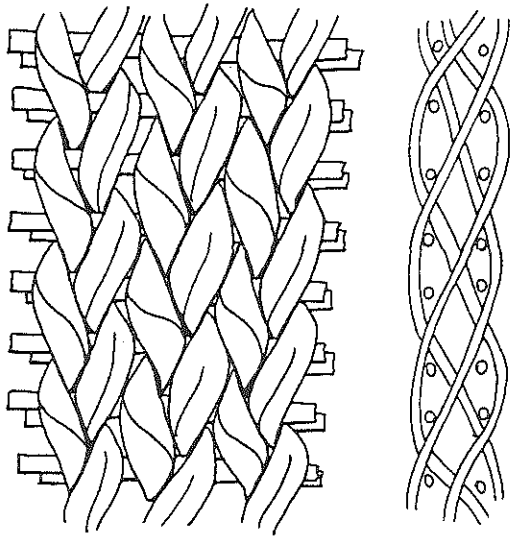

Fig 3

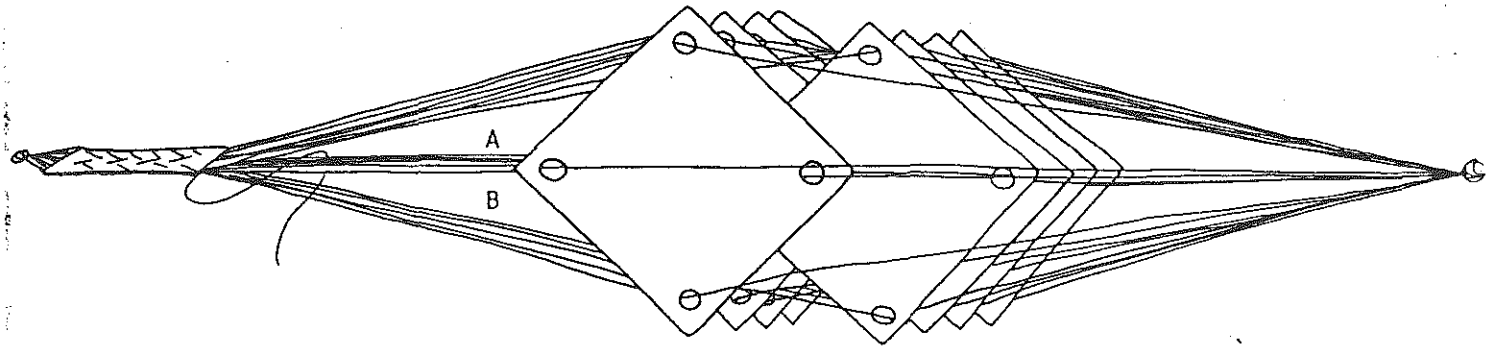

Fig 84

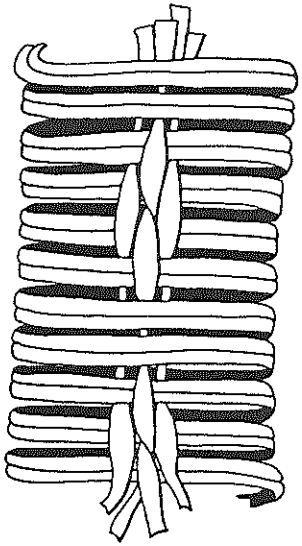

Fig #5

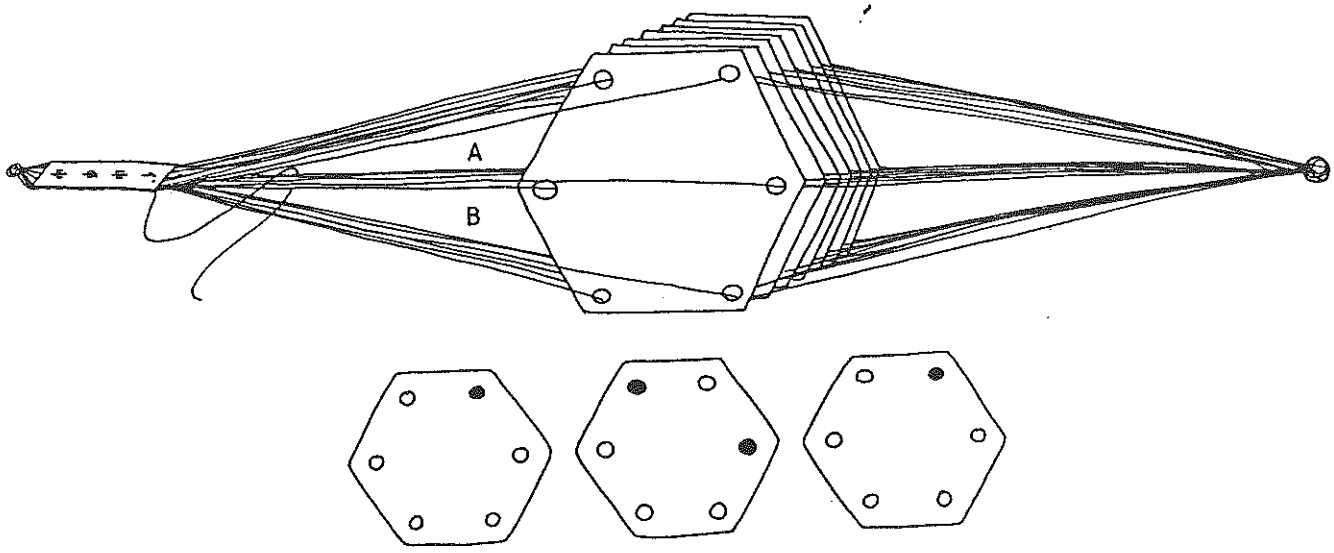

Fig 6