

IX.

TWO TEXTILES FROM THE NATIONAL MUSEUM, EDINBURGH.

By MRS GRACE M. CROWFOOT.

1. THE BALMACLELLAN DIAMOND TWILL (fig. 1 and Pl. XLII).

FA. 14. Twill cloth found with Celtic mirror and other bronzes at Balmaclellan, Dumfriesshire.¹

Several fragments of the cloth are preserved, the largest measuring 9×5 cm., and others 8×2.5 cm., 3×2.5 cm., and 2.3×2 cm. respectively; they are irregular and torn; all appear to come from the same textile. There is no trace of a selvedge.

Material.—Wool, a light brown in shade, probably the natural shade of the fleece. The wool was not sufficiently well preserved for study of the scale structure. Experts who examined it agree that the quality is fine. Monsieur R. Pfister writes: "La laine est fine . . . la plupart des fibres ont un diamètre de 15 a 25 μ . Les fibres au-dessus de 25 μ sont rares, je n'ai trouve aucune au-dessus de 30 μ et pas un seul poil (hair)."

Thread.—There are two qualities of yarn. The finer, better spun thread, direction S, is taken to be the warp, the thicker, softer thread with direction Z is taken to be the weft. Counts about $11-14 \times 14-16$ per cm. The counts varied a good deal in different parts of the fragments; sometimes there was disproportion, wefts predominating, sometimes warp and weft were nearly equal. The thread looks as if the wool had received some preparation before

¹ *P.S.A.S.*, vol. iv. (1860-62), p. 294; vol. vii. (1866-68), p. 348 ff; E. T. Leeds, *Celtic Ornament*: C. F. C. Hawkes, *Antiquaries Journal*, vol. xx. (1940), p. 348 ff.

spinning, more possibly than the teasing by hand usual among primitive people. Miss I. F. Grant considers that the wool was not carded but combed, a traditional Highland craft method now extinct.

Weave.—Diamond twill, based on 2/2, displaced, repeating on 14 ends by 20 picks. Dr Martindale says of it: "This gives a good warp-ways elongated effect, and also the same appearance at the centre of every diamond. In this respect it is an improvement on the ordinary diamond with a square

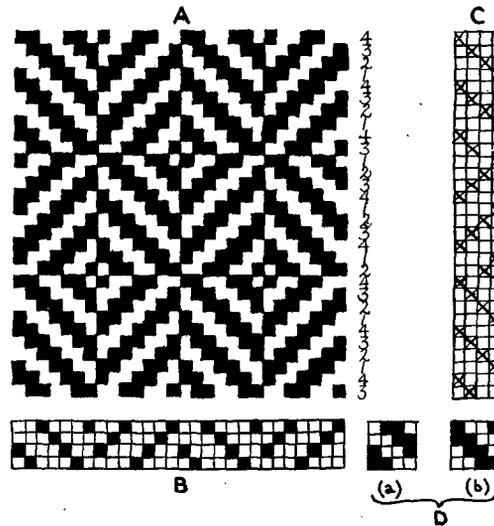


Fig. 1. The Balmaclellan diamond twill.

- A. Plan of weave.
- B. Entry.
- C. Order of pedalling or lifting plan (also shown by figures).
- D. Tie-up. (a) lower heddles (pedals); (b) raise heddles.

Black squares in plan of weave = weft, white = warp.

centre . . . the displacement referred to is the normal practice to produce a clean-cut effect at the junction of the twills."

Dating.—The cloth was found at Balmaclellan in a bog about half a mile from the manse, during the cutting of a drain. It was wrapped round four little packets of Celtic bronzes. Fortunately the Rev. George Murray, then minister of the parish, was able to record and preserve the hoard, and it was afterwards presented to the National Museum. On the dating Mr R. K. Stevenson says: "It is extremely hard to say what the likely date of the Balmaclellan cloth is, for though the objects round which it was wrapped might perhaps be first century A.D., there was no evidence to show how much later they ceased to be of practical value, for the plates had been removed from the box or whatever it was before the hoard was buried.

Still, I do not think that the burying of the hoard need be supposed to be later than the second or third century A.D."

Comparisons.—The earliest twill with which this cloth can be compared is the famous cloak from Gerumsberget in Sweden, dated to the Bronze Age by pollen analysis.¹ This is also a woollen reversible twill with a diamond, but a large one with irregularities, and the fabric is checked, so the resemblance is not close. In the same period to which the Balmaclellan cloth is attributed, second to third century A.D., the only diamond twills that I can quote are two from Palmyra, of much finer quality.² Later, we have a diamond twill among the Sutton Hoo textiles, probably of c. 650–670³ A.D., and one from Valsgårde in Sweden, c. A.D. 750.⁴ These two are both finer than the Balmaclellan twill, and have extreme preponderance of warp over weft, so that they are very different in appearance.

2. THE FALKIRK TARTAN (fig. 2 and Pl. XLII).

FR 483. Tartan cloth found with the Falkirk hoard, dated third century A.D.

Two fragments of this cloth are sufficiently preserved to show the weave; the largest, 7 cm. × 4 cm., shown on Pl. XLII, gives a full repeat of the design. Some tiny fragments and loose threads certainly come from the same textile.

Material.—Wool in two colours, dark brown and a pale greenish-brown shade. Both are natural shades of the fleece, the greenish hue being probably due to contact with the coins. Experts consulted agree that it is of fine quality. Monsieur R. Pfister writes: "Les fibres sont très fines. Il y a (dans les deux) beaucoup de fibres au-dessous de 20 μ ; dans les deux il y a quelques grosses fibres de 50, 70, 90 μ avec gros canal médullaire." The material was not sufficiently well preserved for study of the scale structure.

Thread.—The thread is Z spun throughout. Count about 6–7 × 6 per cm., but the pieces preserved are too small and too loose for accuracy in measurement. Miss I. F. Grant suggests, as for the Balmaclellan thread, that the wool had been prepared for spinning by combing. There is no selvage, and the same quality of yarn is used throughout, so that there is nothing to show which actually is warp and which weft.

Weave.—The weave is shown in fig. 2 as a herring-bone twill, reversible. Having stripes both in warp and weft forming checks it may fairly be described as a tartan, although the weave is not the typical diagonal of the

¹ Post, L. Bronsalders manteln från Gerumsberget i Västergötland, 1925.

² R. Pfister, *Nouveaux textiles de Palmyre*, 1937, p. 24; L. 43, 44.

³ The Sutton Hoo textiles are not yet published, but a photograph of twills, including the diamond variety is shown in the Saxon Monastery of Whitby (*Archæologia*, vol. lxxxix. (1943), pl. xxx, a).

⁴ Greta Arwidsson, *Valsgårde 6*, p. 93, pl. 39, D, G–H (1942).

clan fabrics. The stripes are formed, as shown, by setting up nine dark and nine light threads alternately in the warp, and eight dark and eight light in

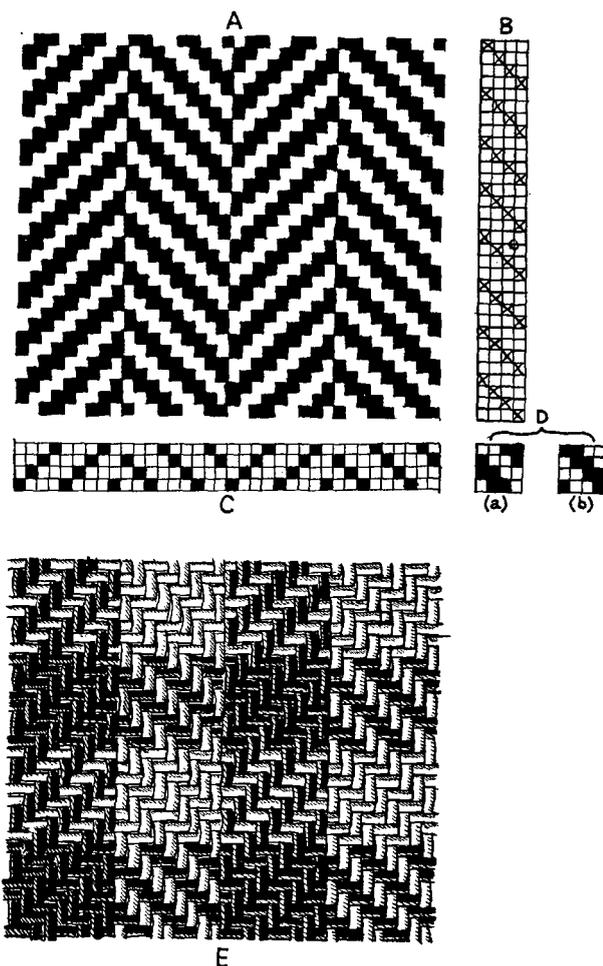
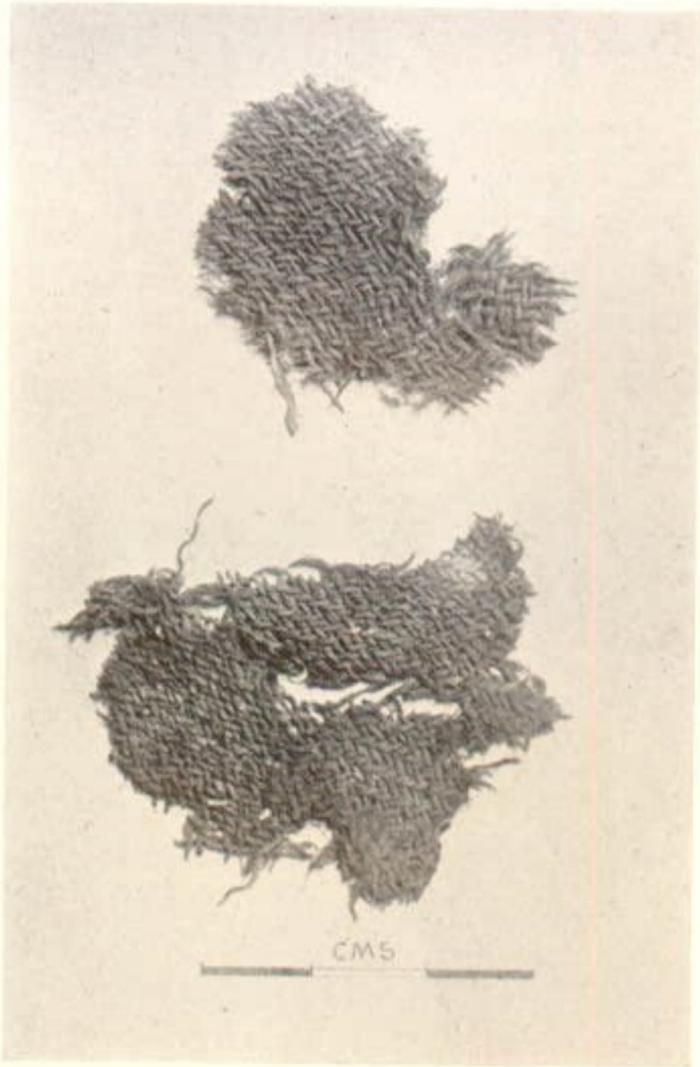


Fig. 2. The Falkirk tartan.

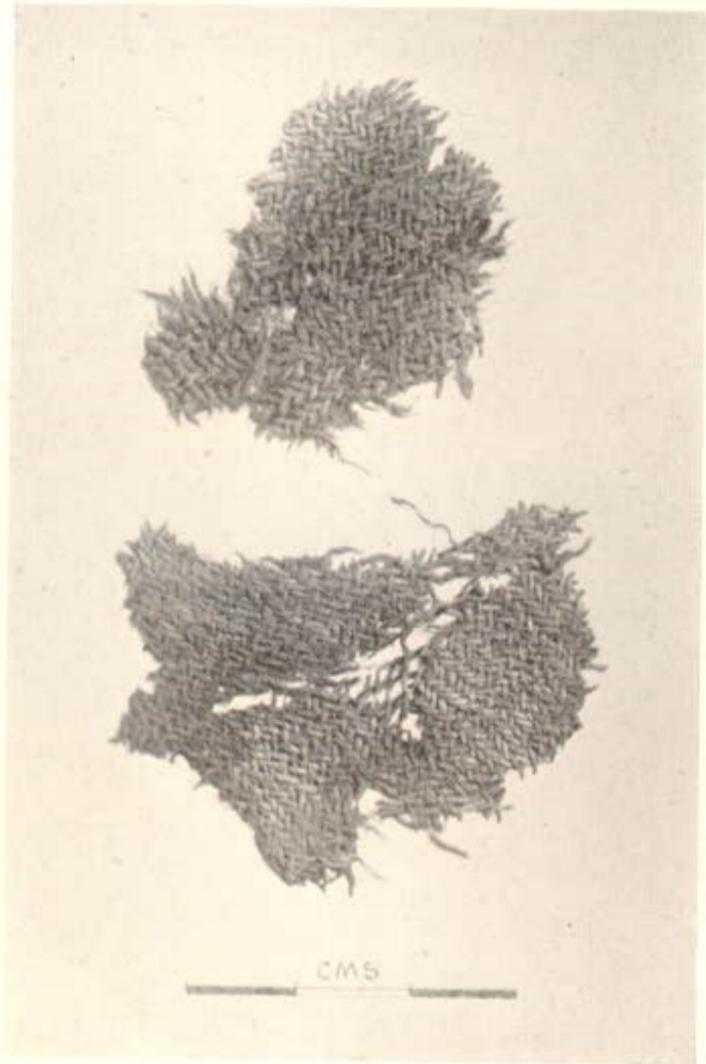
- A. Plan of weave.
- B. Pedalling or order of lifting plan of weave.
- C. Entry or thread-up of weave.
- D. Tie up or lifting plan. (a) lower heddle; (b) raise heddles.
- E. The check pattern.

Black squares in plan of weave = weft, white = warp.

the weft. The piece might, of course, have been set up as a "wave" instead of a "herring-bone," in which case there would be eight dark and eight light threads in the warp, and nine dark and nine light in the weft. The latter would suit better with our ideas of keeping the check square to the eye, but

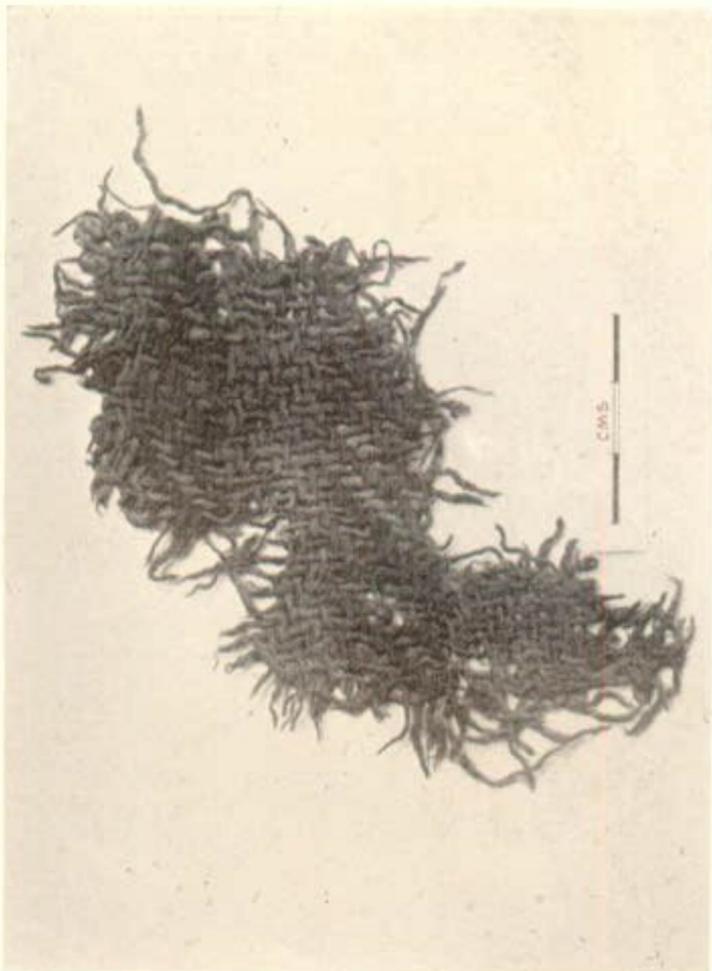


(a)

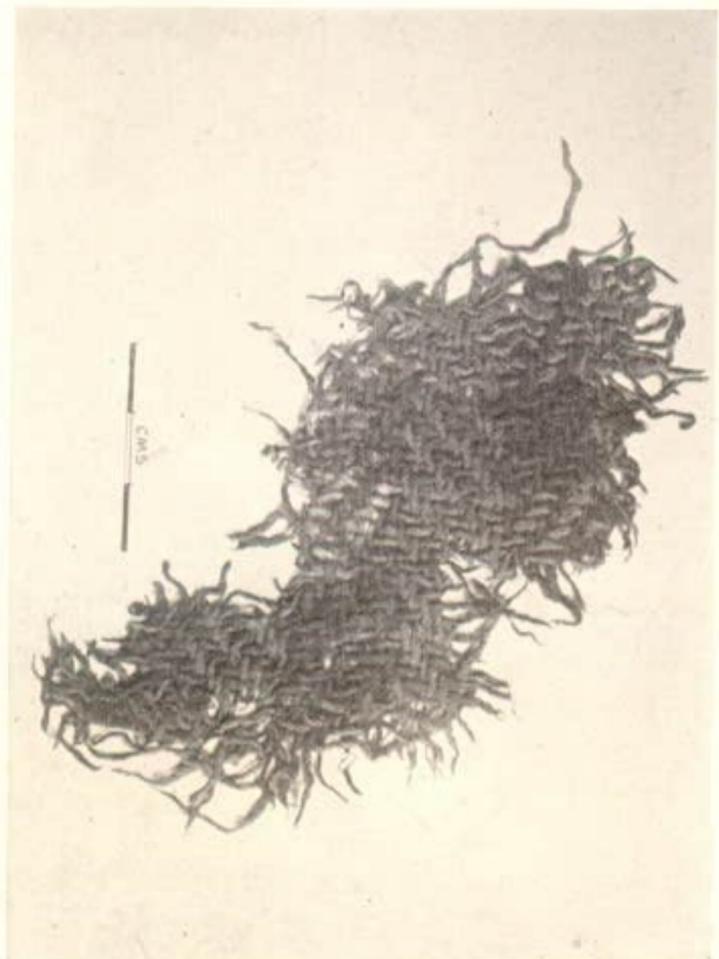


(b)

The Balmaclellan diamond twill: (a) back; (b) front.



(a)



(b)

The Falkirk tartan: (a) back; (b) front.

[Photos by Leyneck.

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on primitive looms without a reed there is a tendency for the warp to draw in, and the extra thread may have been put in the warp to counteract this. If set up as a herring-bone the entry is complicated but the weave is simple, 1234; if as a wave the entry is simple, 2/2, but the heddlings somewhat difficult. Dr Martindale, of Galashiels Technical College, to whom the vexed question, herring-bone or wave? was submitted, replied that he considered it highly conjectural, but favoured a herring-bone.

The Loom.—This twill could have been woven on the loom usually thought to have been in use in the North during this time, the warp weighted loom, or on the loom known to have also been used by the Romans, the vertical or tapestry loom. In either case four rod heddles would probably have been set up for the herring-bone design, or three heddles and a shed rod as for the twills woven by Navaho Indians on their vertical loom.¹ There is no evidence for the treadle loom in the North at this time.²

Dating.—This fragment of a woollen tartan was found with the famous Falkirk hoard of silver coins in circumstances which make it certain that it is of the same period as the hoard.³ Sir George Macdonald describes how, during levelling operations in Bell's Meadow, north of Callendar Park, a workman struck with his spade "a vessel of red earthenware approximating in shape to a type familiar to excavators on Hadrian's wall, where it occurs in association with objects of third-century date. The jar must have been cracked with the blow it had received. It broke on being lifted, and there fell from it a hard metallic cluster covered with green mould, as well as the remains of a cloth which had evidently been used to protect the mouth. Fragments which detached themselves from the mass were seen to be silver coins."

The date of the earliest of the coins (more than 1925 in number) is 83 B.C., while the latest was minted in A.D. 230. All the coins, even the latest of them, appeared used, and therefore Sir George concluded that the hoard was probably the "outcome of perhaps 120 years of thrift, the family savings of four generations," and that the date of concealment must have been about A.D. 240 or 250. Owing to the troublous times the treasure was never recovered. It is safe, therefore, to assign the cloth found in the earthenware jar with the coins also to the third century A.D.

Comparisons.—Twill weaves are known as early as the Hallstatt period, the herring-bone variety not until later, *e.g.* in the Roman period at Sackrau and at Dura on the Euphrates.⁴ But I can only find one example of a check twill, and that is of still earlier date—the Gerumsberget cloak already mentioned.⁵ This has stripes in both warp and weft, of light and dark wool,

¹ Amsden, *Navaho Weaving*, pls. 17, 31, p. 53.

² Weaving instructions for treadle loom, figs. 1 and 2, are added for benefit of modern handweavers.

³ Sir George Macdonald, "Roman Coins found in Scotland," *P.S.A.S.*, vol. lxxviii. (1933-34), p. 32.

⁴ R. Pfister and L. Bellinger, *The textiles, Dura Europos*, 1945, p. 22, No. 36, and pl. xxxii, Dw.

⁵ Post, *L. op. cit.*

usually four threads of each, making small checks; the thread is all S spun; the count of 74-65 per 10 cm. is very similar to ours. The technique has so many primitive traits that Dr Bjorn Hougen thinks that twills may have been new to the weavers of that day.

The Falkirk twill is certainly the earliest herring-bone recorded for Scotland, and the earliest tartan too if we may claim it as such on the strength of the stripes and checks. Tradition is strong that tartans were in use in very early days under the Gaelic name *breachan* from *breac*, vari-coloured or speckled, but it is not till the sixteenth century that we have evidence for their general use. The Falkirk tartan is no legendary or rare piece, no *cath-dath*, with seven colours for a chieftain or four for his followers, but a "poor man's plaid" with two colours only, dark and light brown. It is a true folk weave, of a kind we may imagine to have persisted for homely wear while the coloured varieties were evolving, and which to-day we should include in the lowly class of "district checks."

Conclusion.—Both the textiles described here are of considerable interest. They are unusually well dated: the Balmaclellan diamond twill with some probability to the second-third century A.D., if not earlier; the Falkirk tartan with certainty to the third century A.D., that time after the Romans left, when "thick darkness descends upon Central Scotland." Both are good technically, the Balmaclellan cloth being perhaps the more remarkable of the two—a finer weave and a slightly finer quality of wool, while the tartan has more bearing on the evolution of weaving in Scotland.

A further question, whether any light could be thrown on the evolution of the sheep of our isles by a study of the wool, was referred to Dr Wilsdon, Director of Research, W.I.R.A., accompanied by samples from these two textiles (Nos. 1 and 2), as well as one from a Viking grave on Eigg (No. 3), and another from Loch Laggan (No. 4). Dr Wilsdon most kindly writes: "We have examined the samples of archæological interest you sent us. First, we must state that it is difficult to draw reliable conclusions from such materials: the presence or absence of coarse hairs is not really very conclusive. We know, however, that the early sheep of Britain, *i.e.* those occurring during the periods represented by samples 1 and 2, had relatively fine wool. This is borne out by these samples 1 and 2, which consist of fine wool only. It is thought that at a considerably later period the double-coated sheep (fine wool undercoat and coarse outercoat), represented to-day by the Scottish Mountain Blackface, immigrated from the Pennines into Scotland. It is interesting to note, therefore, that sample No. 3 from a Viking grave contains a *few* coarse fibres, and that sample No. 4 (mediæval) contains a considerable proportion of coarse fibres."

He further comments that there has been little or no continuous study of types of wool grown in Britain through the ages, and that "such an

investigation should provide an extraordinarily interesting and useful contribution to historical knowledge."

The work done here, with his assistance, and that of others mentioned below,¹ is a small contribution towards this end.