

MASTER  
WEAVER

BI-MONTHLY BULLETIN FOR HANDWEAVERS



FULFORD · QUEBEC · CANADA

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# MASTER WEAVER

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February, 1952

No. 2

## ANALYSIS OF FABRICS

The importance of fabric analysis is very often not quite appreciated by a handweaver, since it is quite seldom that he is called upon to reproduce a piece of weaving. What he is supposed to do is rather to create than to repeat other people's work.

But the usefulness of analysis does not end with copying. Just the contrary, it is needed most when creating new patterns, or new weaves. Conscious creating (as opposed to more or less accidental discoveries) means visualising a new fabric, then drawing it down on graph paper, and finally analysing it exactly in the same manner, as one analyses a sample.

Since analysis of samples is a little easier than analysis of ideas, we shall start with the former.

As far as the analysis is concerned the fabrics are either "two-dimensional" or "three-dimensional". In the first case the whole structure of the weave can be represented in two dimensions i.e. on a flat surface, in the second it cannot, at least not without distortion. Most of the single layer fabrics belong to the first category, when those with two or more layers as well as pile fabrics, belong to the second.

Single-layer fabrics can be analysed in a very simple way, once a complete and accurate draw-down of a sample is made. This is the only operation which may present certain difficulties and which requires a lot of attention.

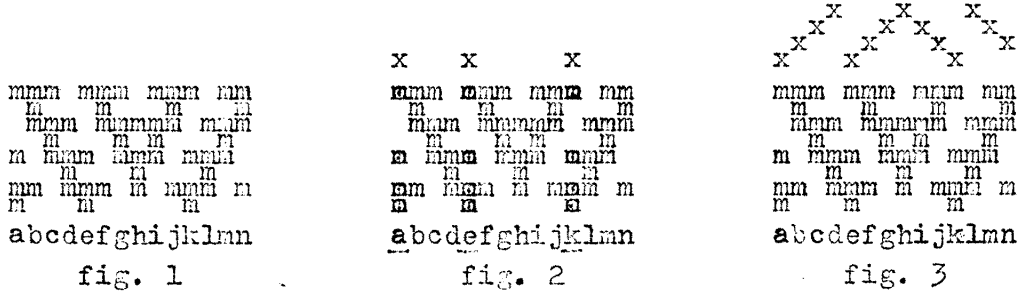
First of all we try to find on the sample just one repeat both in warp and weft i.e. in threading and treadling. When in doubt it is better to take more than one repeat, although this means more work later on. The repeat should be marked off with pins on all four sides. Good, strong light (better not diffused) is necessary, and a magnifying glass may help.

Then we copy this repeat on a piece of graph paper, marking the visible weft - black, and the visible warp - white. Just the opposite is often done in industrial weaving, but the difference is immaterial. One space between lines on the paper corresponds always to one thread, regardless of the actual grist of this thread, and no thread can be omitted, even if we know in advance that it is "only" a binder.

If the individual ends of warp and picks of weft can be hardly distinguished, as for instance in fabrics which have been "processed" (fulling, felting, napping), the only way to make the draw-down is to unravel the sample thread by thread, marking each

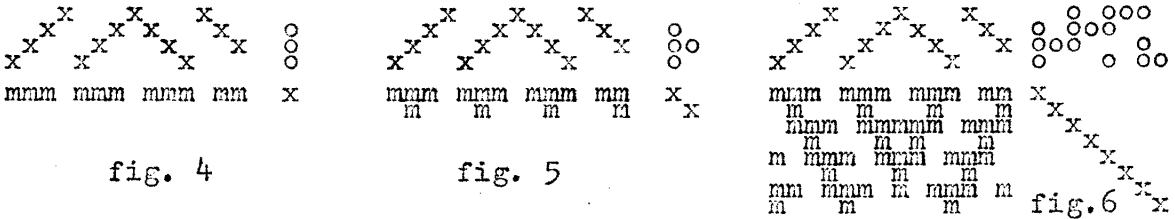
pick of weft after it is separated from the next one, but before removing it from between the warp ends.

Let's suppose that the draw-down we have obtained in this way looks like the one on fig. 1. Its vertical columns correspond to the warp ends, and since we shall start our analysis with the threading draft, we shall turn our attention to them first.



To find the threading draft we have to examine carefully these vertical columns one by one. Identical columns can be woven (and threaded) on the same heddle-frame. For instance columns: a, e, and k are exactly the same, because the warp end in all three goes under one, over three, under one, over one, and under two. Consequently in the threading draft the heddles corresponding to these warp ends can be placed on the same heddle-frame. It does not matter in the least on which, but since we do not know as yet how many frames we are going to use, we shall place them all on frame 1 (fig. 2). In the same way we shall discover that column b is identical with f, j, and n. These four heddles shall be attached to the frame 2. Column c is the same as g, i, and m, and column d - the same as h, and l. The final result shown in fig. 3 is the full threading draft: a, e, k - frame 1; b, f, j, n - frame 2; c, g, i, m - frame 3; d, h, l - frame 4.

The second part of a draft is the tie-up, but since it is interdependent with the treading draft, we shall get these two at the same time. Let's make a treading mark in line with the first



pick of weft. To get this pick we must sink frames: 1, 2, and 3. Thus assuming that we work with sinking shed, we mark the three ties corresponding to these frames on our tie-up draft and directly above the treading mark (fig. 4). We come next to the second pick (fig. 5) which is made by sinking frame 2. We make a mark on the treading draft in line with the second pick and to the right of the first cross, and directly above the corresponding tie. In the same way we analyse the remaining 6 picks of weft. Thus we have a full draft: threading, tie-up, and treading. If our loom has only 6 treadles we shall have to use a different tie-up. For instance:

Here we shall have to use two treadles at the same time.  
 treading: 2+5, 3, 3+6, 2, 4+6, 1, 1+5, 4.



## TECHNICAL PERFECTION

This is another controversial subject. What is more it is a subject which can be looked at from so many angles, that no particular approach to it will satisfy everybody.

Mary Atwater in her "Shuttle-Craft" warns the reader, that although small technical imperfections give to the handwoven fabrics their peculiar charm, one should not try to make mistakes on purpose, there will be enough of them in any case.

Since she wrote this however, the general tendency among weavers is to get as near to the technical perfection as possible. And some of them are making astonishing progress. We are all familiar with pieces of handweaving looking as if they were made on a power-loom, which seems to be a doubtful distinction particularly if the pattern and colour scheme are not too original. If we concentrate too much in this direction, hand-weaving may become a pointless sport, like building ship models in bottles, or copying old masters just for the fun of it. Perhaps this example with old masters is not so far-fetched as it sounds. In the curriculum of art schools copying is one of the subjects, and is considered very beneficial in training, since it is the best test of the technical skill of the student. Which does not mean that the student will go through life imitating old masters. The analogy is here: we should have enough weaving skill to be able to imitate the work of a power loom, but we should never take advantage of this ability. Or hardly ever.

The "neatness" of a piece of weaving depends on: accuracy in threading and treadling, edges, beating, and on the absence or presence of knots in the fabric. Many exhibitions and competitions for handweavers require that there be no mistakes of any kind in threading and treadling, absolutely straight edges, mathematically even beating, and no knots of any description. One can agree that mistakes in the pattern or in the weave are objectionable unless fairly uniformly distributed (but then are they "mistakes"?). But a certain irregularity of beating decidedly improves the appearance of fabrics, particularly in case of tabby and simple twills. Too straight edges are not an asset. A slightly wavy line (without loops and notches) is more like what one expects to find in a handwoven piece. Knots must be avoided at all costs in tweeds for the simple reason that sooner or later they will produce holes, but they are quite harmless for instance in table linen, and if properly trimmed they will show only as lighter or darker specks. We would not go so far however as to say that they enhance the beauty of the fabric.

When we examine samples of real native weaving, whether European peasants', or American Indians', we won't find them particularly "neat". It is not that these weavers have not got the necessary skill - they just did not bother. The whole idea of "neatness" belongs to the industrial weaving, and originated with hand-weavers engaged in mass-production for exacting masters, and still more exacting, though not necessarily discerning, customers. Since the very idea of mass-production is diametrically opposed to our own aims, there is hardly any reason why we should accept the exigencies and standards of industrial weaving.

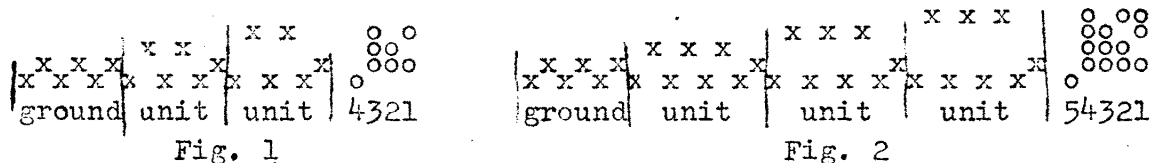
# SPOT WEAVES - 2

## SINGLE · LACE · HUCK · ONE-FACE · TURNED FLOATS ·

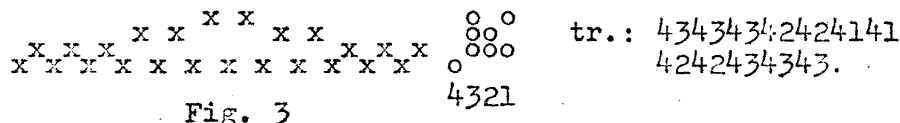
What we understand now by single spot-weave is very nearly the same as previously described Swivel, with the difference that the floats form the pattern and are never cut. They are vertical on one side of the fabric, and horizontal on the other. There is no distinction between pattern-weft and binder. The same yarn is often used both for weft and warp. The weave itself is too well known to deserve any particular attention, and we shall discuss only its less known variations.

This particular kind of spot-weaving is called single, because it requires only one frame for the ground (fore-leaf in old British terminology) which leaves us three frames for the pattern in a four-frame harness, or seven in an eight-frame harness. When only small patterns divided by tabby are woven, the tabby spaces between patterns require another frame. Thus only two-block patterns can be woven on four frames.

The size of units of a spot-weave depends on the length of floats required, on the grist of yarn, and on the yarn itself. Short floats are better for linen, when other yarns can stand slightly longer floats. Theoretically the shortest float is one of 3, but it hardly shows at all, and looks more like a mistake (scobb, or blotch) than anything else. On the other hand very long floats make the spot weave look like overshot, and it is rather pointless to imitate the latter in spot weave, which requires more frames for the same number of blocks. Thus for purely practical reasons floats of five, or seven are used here most often. The unit of weave in the first case is 6 (fig.1), in the second - 8 (fig.2).



The reason for returning to the frame 2 at the end of each unit is to "cut" the floats to the standard size, when one unit (e.g. 13131312) is used several times in a row, or when different units (as 131312 and 141412) are woven simultaneously. If units are always used singly, this last part (12) can be dispensed with, as in fig.3.



Here the units of the weave are only 4 in length, but they give floats of 5, exactly as in fig.1.

What is called "Lace", and what means of course "imitation lace" (since lace cannot be woven) is not so much a weave, as an effect due only partly to the weave, but mostly to the yarn used. The holes in the fabric which produce the lace effect appear not on the units of weave, but between these units. Hence the condition of using at least two units in a row both in the threading and treading drafts.

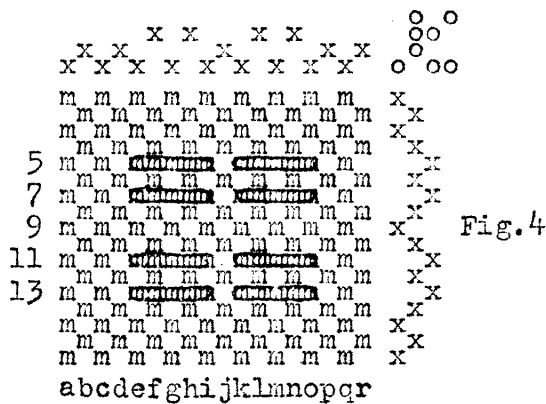


Fig. 4

What happens here is that the floats in weft (5, 7, 11, and 13 - fig.4) do not separate the warp ends: e, f, g, h, i, and k, l, m, n, o - just the contrary, they try to bring them together. The floats in warp: f, h, l, and n (on the back of the fabric) have the same effect on the weft. If the yarn is elastic it may overcome this tendency by its own tension. If it is not, it will form bunches of loose threads, thus leaving empty space between the four units,

crossed only by one vertical (j) and one horizontal (9) thread. This is why every hole in the lace looks like a tiny 4-pane window.

Huckaback on spot threading.

The draw-down of a spot weave with units of 6 is strikingly similar to the huckaback. Thus a variation of huck can be woven on a spot-weave threading. Whether this variation is a real huckaback or not, remains open for discussion, but it looks very much like the real thing. The only difference between this variation and the original weave is that we have here an additional line of tabby (t - fig.5) both in warp and weft.

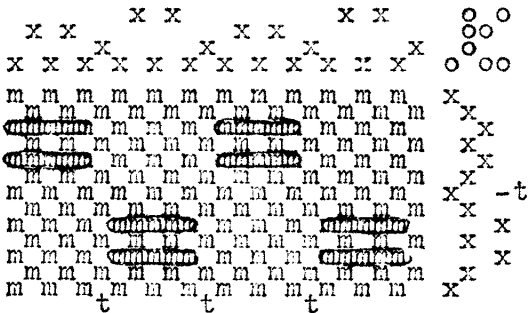


Fig. 5

False basket weave as well as turned huckaback can be woven in the same way, but it is only fair to

admit that there is no particular advantage in weaving huckaback or its derivatives on spot-weave threading.

Single face spot weave.

In certain cases floats are objectionable when appearing on both sides of a fabric, as in handbags without lining etc. In spot weave (but not in lace) they can be easily eliminated on one side. For instance in fig.1 the floats in the warp will disappear when instead of treading 323234313134 etc, we shall treadle: 43243243431431 etc. The rule for floats on one side only is to treadle both tabbies (3 and 4 in fig.1 or 3) between shots of pattern. It is advisable to use finer weft on these two tabby shots, or still better one of the usual grist, and the other (treadle 3 in the above tie-ups) much finer.

Turned floats.

As we have mentioned before, the floats are vertical on one side of the fabric and horizontal on the other. Sometimes it becomes desirable to have floats in both directions side by side. For instance an "O" in spot weave looks more convincing if the side floats are vertical and lower and upper ones - horizontal (Fig.6 a), instead of all of them being in the same direction (fig.6 b). Or they can radiate from one center (fig.6 c) forming a small cross.

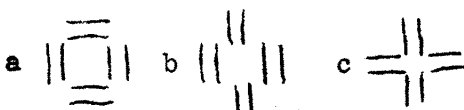


Fig. 6

One way of turning the floats is to replace the tie-up by its opposite (e.g. Fig.7 a and b). By doing this we actually reverse the whole fabric. With weaves which have different direction of floats on both sides (twills, huckaback, spot) we reverse the floats at the same time. It would not work with weaves which have the same direction of floats on both sides (overshot, crackle, summer-and-winter). Consequently we need two sections in our tie-up: one for

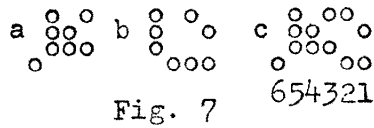


Fig. 7

vertical, and one for horizontal floats. The tie-up "a" (fig.7) gives vertical floats with a sinking shed, and tie-up "b" - horizontal ones. Tie-up "c" combined both. Treadles 3 and 4 with tabby 6 gives vertical, and 1, and 2 with tabby 5 - horizontal floats.

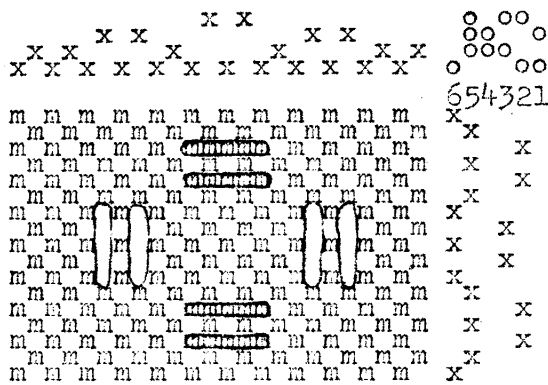


Fig. 8

To weave any of the small patterns shown in fig.6 we can use draft and tie-up on fig.8. The example shown is the "O" mentioned before (fig.6 a). If the cross (fig.6 c) is preferred, the treadling will be: 56464651 515646465. Or we can have an "I": 651515646465151565, and finally an "H" (more or less): 563636525 256363656.

Then another question arises: can we have both kinds of floats in one row? The answer is not so obvious, but we can try. Since both floats use a different tabby, we could combine them to supplement each other as far as the ground is concerned, and keep the tabby treadles

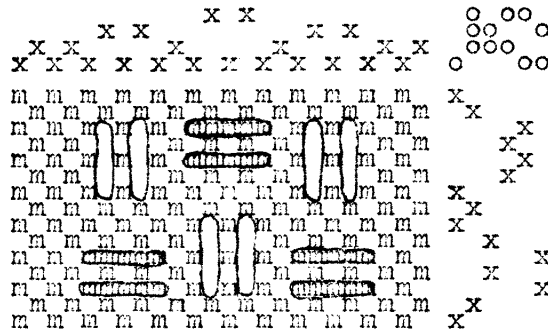
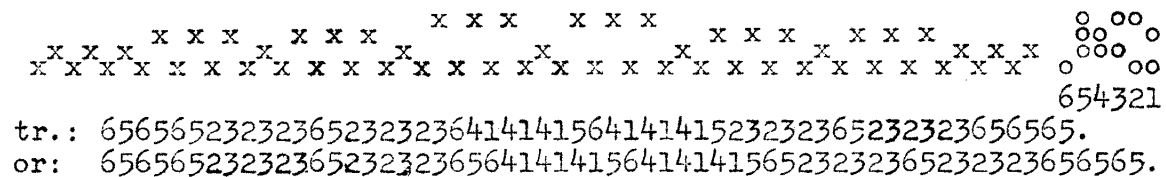


Fig. 9

for spacing the pattern blocks. For instance (fig.9) we can alternate an "X", and an "O", one in vertical, the other in horizontal floats. The two sets of floats are not quite centered, and there seems to be no way to get around this difficulty. A partial remedy is to use longer floats in both directions (units of 8), then the difference won't be so manifest, although it will be still there.

Since it is possible to have the two kinds of floats in the plain spot weave, the same principle applies to the lace, the only difference being, that the units of weave must be repeated at least twice both in threading and treadling. The general effect, provided that long floats (of 7) and fine, glossy yarn are used, is not unlike damask. As an example worth trying here is a suitable draft:



tr.: 65656523232365232323641414156414141523232365232323656565.  
 or: 656565232323652323236564141415641414156523232365232323656565.



# SCOTTISH PATTERN TWILLS

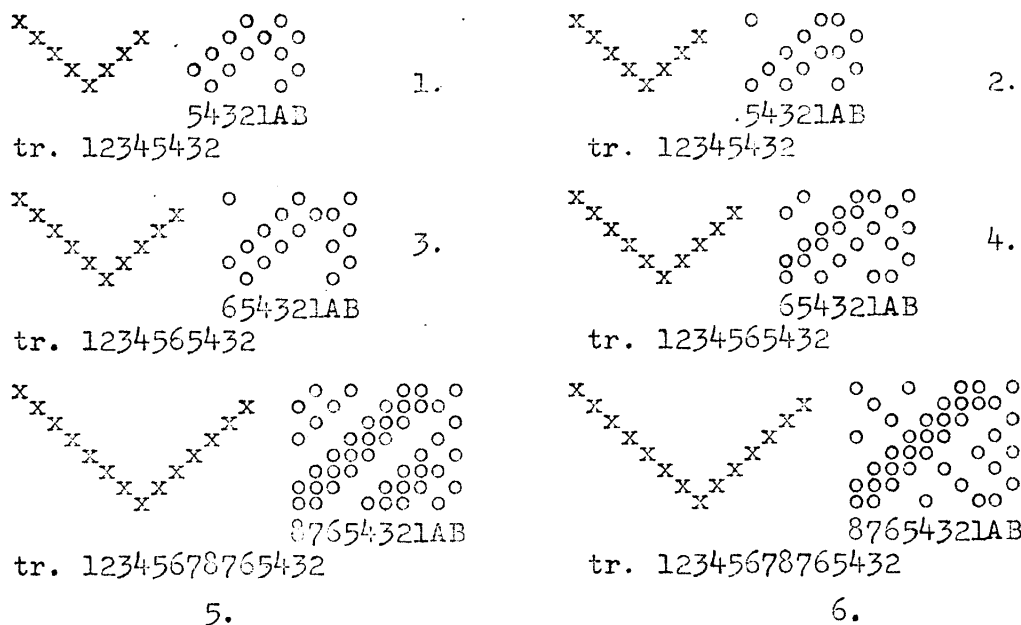
(adaptation from "Lined Work" by John Murphy, 1833)

Whenever there is question of pattern twills, called variously "fancy twills", "diamond twills", or "lined work", we turn instinctively to Scandinavian sources. Although it is true that these twills were and still are extensively woven in Sweden and other Scandinavian countries, nevertheless it is equally true that they flourished at the peak of development of handweaving in British Isles as well. The main if not the only difference is that in Britain the handweaving disappeared with the coming of power looms (except for tweeds and similar fabrics), and in Scandinavia it did not, and that the last British books on handweaving are out of print, when the Swedish ones are easily available. Thus it may be of interest to our readers if we bring back some of the forgotten Scottish pattern twills. They require little comment, and we shall limit ourselves to the threading, tie-up, and treadling drafts, since the draw-downs would take too much space. It is advisable however to make a draw-down before trying to weave any of these twills, taking at least two repeats in both directions.

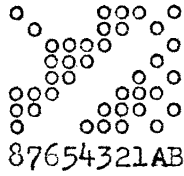
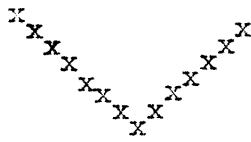
The drafts are written for different numbers of heddle-frames, from 5 to 16. The most interesting ones are for 8 or more frames.

The pattern twills can be woven either as plain twills i.e. without binder (the sett of warp should be then rather close, and the yarn fine, or the fabric will be too heavy), or we can use one shot of tabby binder after every shot of twill, as in overshot. Then the warp may be much more open, and the fabric lighter.

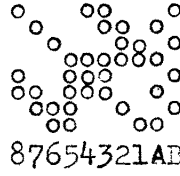
When weaving twills with binder the following conditions must be fulfilled: the draft must have tabby sheds, which in some cases with odd number of heddle-frames is impossible; when changing the direction of treadling double the point. For instance if the plain treadling is: 1234565432123 etc., the treadling with binder will be 123456654321123 etc. plus the tabby shots.



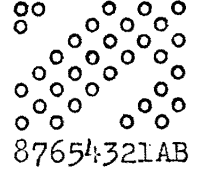
In all drafts "A" and "B" are tabby treadles.



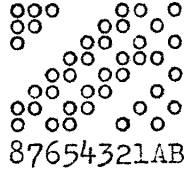
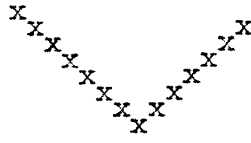
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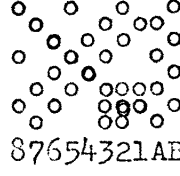
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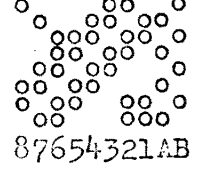
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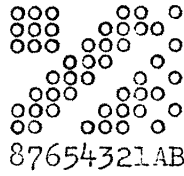
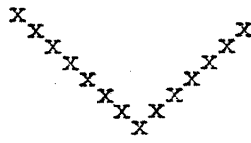
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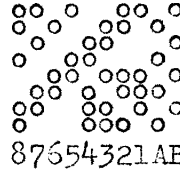
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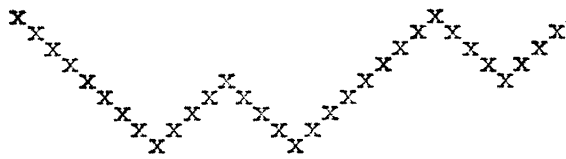


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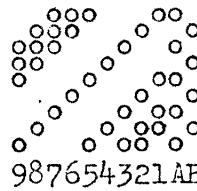


14.

treadling for drafts: 7 - 14  
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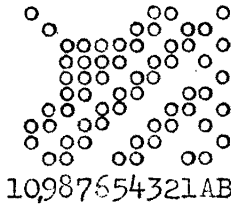
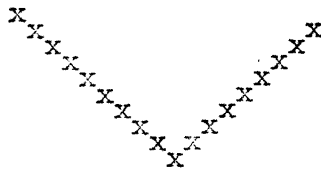


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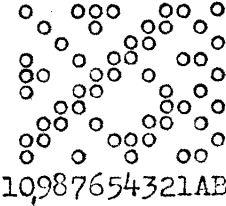
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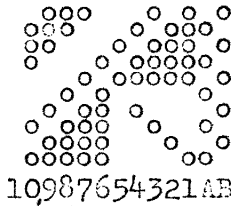
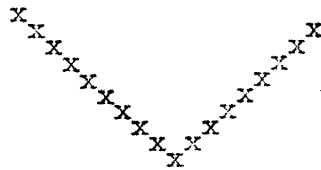
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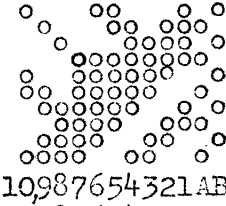
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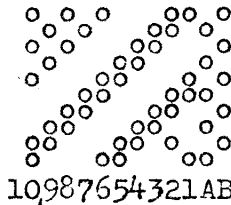
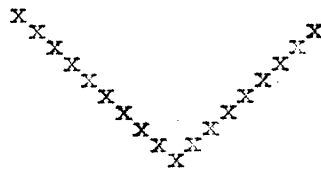
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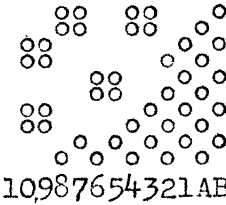
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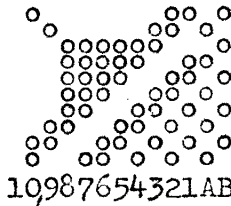
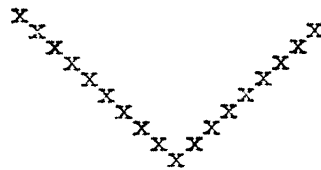
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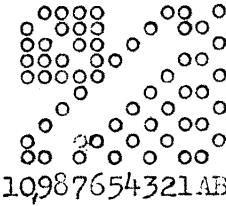
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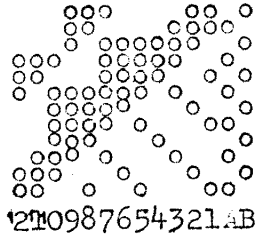
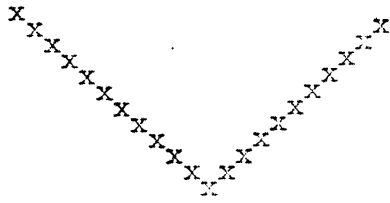
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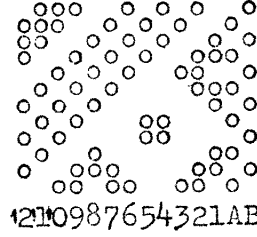
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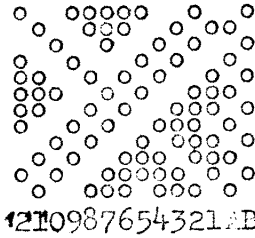
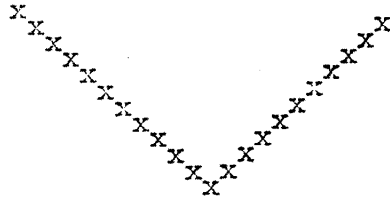
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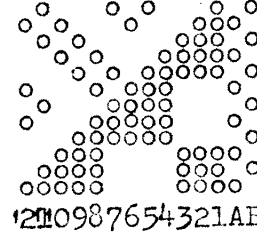
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25.

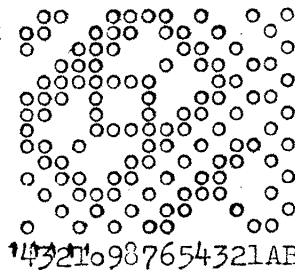
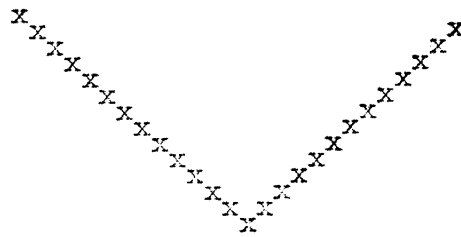


26.

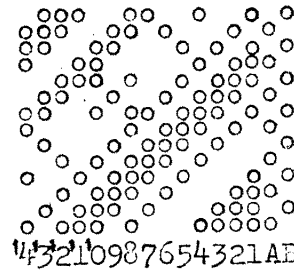


27.

treading for drafts 24 - 27 - 123456789 10 11 12 11 10 98765432.

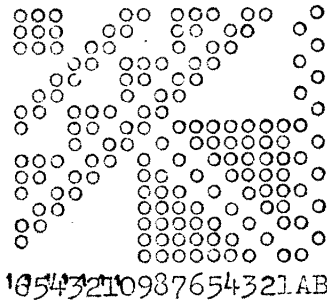
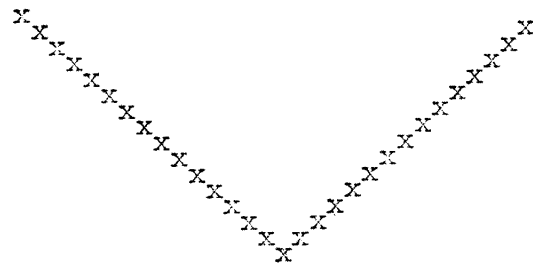


28.

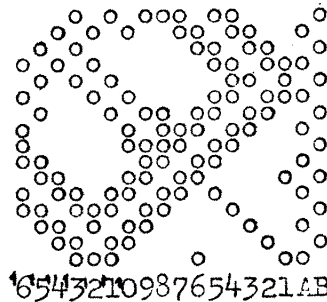
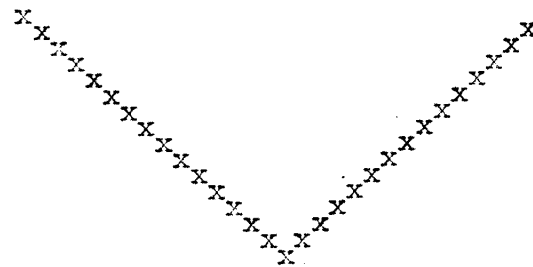


29.

tr. for drafts 28, 29 - 123456789 10 11 12 13 14 13 12 10 98765432.



30.



31.

treading for drafts 30, 31 - 123456789 10 11 12 13 14 15 16  
15 14 13 12 11 10 98765432.

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NOTES ON WEAVING TERMINOLOGY

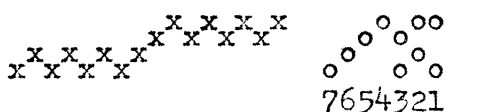
HONEYCOMB = WAFFLE

There is a difference of opinion as to the proper meaning of the term: Honeycomb Weave. Very often Swedish "hålkрус" is translated as "honeycomb", which is rather a very free translation, since "hål" means a hole, and "kрус" - a ripple, a wrinkle (perhaps of the same origin as our "crush"). The mistake originated probably with E.F.Worst, and then has been repeated by F.Siminoff-Cohn. At any rate there is not the slightest similarity between a "hålkрус" and a real honeycomb.

On the other hand authorities on commercial weaving such as G.H.Oelsner, or J.Read call the Waffle weave by the name of Honeycomb, and use the latter term exclusively.

Honeycomb is not a particularly lucky term when applied to any weave at all, since the cells in a honeycomb are hexagonal, and consequently hard to imitate in weaving.

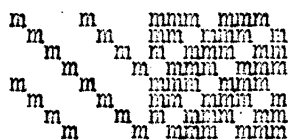
So far we have found out that Honeycomb and Waffle are the same weave, and that "hålkрус" is not honeycomb. But then what is it? The French have a term "ondulé" (wavy) for hålkрус, which seems to be very appropriate, but we do not know any English term designating this particular weave, which does not mean that such a term does not exist. We shall be very grateful for any information on this subject. To avoid any misunderstanding here is one of the "hålkрус" drafts:

 tr.: 25454545432767676763 (floats in warp and weft)  
or: 1212121213131313 (no floats)

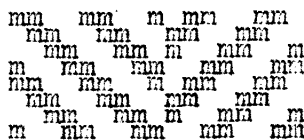
DORNICK TWILL ≠ DORNICK WEAVE

(from the "Encyclopedia of Handweaving")

The term came undoubtedly from a small weaving center in Northern Scotland (now Dornoch), where a particular kind of turned twill was made. The fabric was later known as Dornock, or Dornick, and thus the weave itself got its name. But later on the same name has been used for a herringbone twill, and the origin of the word ascribed to Belgium or even Scandinavia. At first it would seem that there is no possible connection between these two weaves, but a closer examination shows that the way of joining diagonals in the blocks of pattern of the original weave is the same as in the Dornick twill. The point in both cases is to avoid long floats. It is obvious that a weaver familiar with the first weave invented the second one, and called it accordingly "dornick twill", which later has been abbreviated to "dornick".



Dornick Weave



Dornick Twill

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- 1 - Each question will be answered by letter.
- 2 - If the problem is of a general interest we may print the answer in the Master Weaver independently from the letter.
- 3 - There is a fee of one dollar which must accompany each question. This is returned immediately if we cannot answer your question.
- 4 - If the question is of such a nature that it cannot be answered in 500 words, we may either give you information about books or other publications discussing your problem, or advise you what would be the cost of a complete answer.
- 5 - We shall try to answer your letters immediately. In exceptional cases when we shall have to consult sources not readily available, it may take up to two weeks.
- 6 - To avoid misunderstanding, your questions or problems should be presented with all details.

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