

MASTER WEAVER

BI-MONTHLY BULLETIN FOR HANDWEAVERS



OCTOBER 1952

FULFORD · QUEBEC · CANADA

I N F O R M A T I O N S E R V I C E

We shall try to help you with your own weaving problems, answering technical questions, supplying necessary information, finding books and periodicals, and locating supplies.

Here are the rules of our Service:

- 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.

Send letters to: Z - Handicrafts, Fulford, Que., Canada

MASTER WEAVER

Z - HANDICRAFTS · FULFORD · QUEBEC · CANADA

October, 1952

No. 6

~ FROM THE EDITOR ~

This is the last issue of the Master Weaver in its first year. The publication has been started on an experimental basis, because it was hard to tell, whether we shall reach a sufficient number of advanced weavers, and whether the subscribers will like our bulletin.

The first question has been already answered in the affirmative. We have enough subscribers to continue the publication. But now we have to ask for your help to answer the second question. IF YOU ARE SATISFIED WITH THE MASTER WEAVER, AND IF YOU INTEND TO RENEW YOUR SUBSCRIPTION, PLEASE DO IT AS SOON AS POSSIBLE. It is very important for us to have an idea of the number of subscribers in the coming year, so as not to print unnecessarily a too large number of copies.

We tried very hard to maintain the present rate of subscription, and since we do not carry any advertising, we hope that you find our rates reasonable. However, due to the fluctuations of the currency, to the mounting prices of paper, and to the higher (by 50%) postal rates in Canada, we are obliged to increase the subscription from \$ 2.40 to \$ 2.80 a year.

In the coming year the Master Weaver will have an additional feature: detailed descriptions of such weaving equipment, which can not be found on the market, but which should be of great help to a serious weaver. For instance: a warping mill combined with beaming drum (warping and beaming without help), a double-tie-up floating-harness loom (non adjustable tie-up), a draw-loom attachment to be used on any loom, etc. These descriptions will be specific enough to enable the weaver to build such equipment in his own hobby shop.

During the first year we have been forced to reprint some of our issues (the first issue four times). However this proved to be an expensive proposition, and we won't be able to do it in the future. Consequently if you want to be sure of getting all issues, please do not delay with sending us your subscription for 1953. This is our first and last appeal, and we shall not send any additional notices or reminders.

We thank you for your kind cooperation, encouragement, and moral support, and we hope to find your name on our mailing list in the coming year.

Z - Handicrafts

SELVEDGES.

There are few points on which most weavers are so touchy as on this particular one. And very justly so. Because fairly good selvedge maintained for yards of weaving is the best proof that the weaver has achieved a certain skill not only in throwing the shuttle, but in warping, beaming, setting the loom, winding the quills or bobbins, beating, maintaining a constant tension of warp, and incidentally in the speed of weaving as well.

It may be argued that an even beating is much more important than good selvedges, but it is a fact that one can not be achieved without the other. Uneven beating will nearly always result in wavy edges, and notches in the edges always leave marks in the beating.

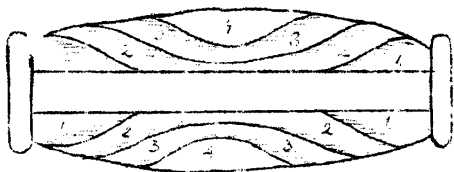
A good edge is not the same as a straight one. The straightness is only one factor. There is another even more important - the count of cloth should be the same at the edges as anywhere else in the woven fabric. If we set the warp, let us say at 30 ends per inch, and the shrinkage in weaving is 10%, we should have 33 ends per inch in the fabric, but not 31 in the middle and 40 at the edges. It is rather obvious why. If the weft is of a different colour than the warp, the cloth will have a different shade in the "bosom" than at the edges, and the texture will be different too. Not only that, but the edges will start "climbing" on the warp, and the fell (the last pick of weft) will be curved on both ends instead of being straight. Unfortunately such a phenomenon is often the result of the weaver's efforts to get straight edges at any cost by increasing the tension of the warp beyond reasonable limits, and without any regard to other factors.

What are these other factors? Bad edges can be often discovered even before the weaver started the warping. If the warp is planned too economically, with too few ends per inch, there is quite a chance that the edges are already doomed. An open warp means plenty of take-up on the weft, which pulls-in the edges. If we do not compensate for this the warp ends will lie much closer at the edges than elsewhere. If we do compensate - i.e. leave enough weft in each shed to overcome the pulling action, we must weave much slower, and the edges will be uneven. Thus when planning let us not be too stingy about the number of warp ends. A little more time spent on threading will pay dividends once the weaving started.

Then when warping and beaming, care should be taken to have an even tension of the warp all across its width. If anything - it can be a shade tighter at the edges, just the last few ends. The same applies to the tying-in: make the first and the last bight (strand of warp) smaller and tighter. This is because there is always less take-up on the warp at the edges, and unless we are careful the edges will become flabby, or we shall have to resort to the objectionable remedy of pulling in the edges.

The next step is winding of bobbins or quills. If they are much shorter than the spindle of the shuttle ($\frac{2}{3}$ of its length) they will work all right with any kind of winding but they will hold comparatively little weft, and the re-winding will have to be done more often. But if we decide on full size bobbins, we must wind them so that there is always free space in the center (fig.1), a depression

which gives a clearance to the unwinding weft, which otherwise would rub against the weft still on the bobbin. The winding starts on



one side where the weft forms a cone, then it moves rapidly to the other side to make a similar cone. Afterwards the space between the two cones must be filled gradually so that until the very last stage of winding there is a depression in the center.

Fig.1

The bobbin itself should be smooth and slightly thinner in the center than at the ends. When the bobbin is nearly empty the weft usually starts catching. The cones at the ends should be then slid towards the center, which would be impossible if the bobbin were not smooth and slightly tapered.

When the weft catches it produces notches in the edges. When it unwinds too freely, it makes loops. Loops are just as bad as notches. Not only that they are unsightly but if allowed to form for any length of time, they will produce flabby, and uneven edges. With proper weft they are seldom a problem, but with springy linen or metallics they may become one. Then some sort of a brake must be used. The spindle of the shuttle may be wound with soft yarn, or a piece of fur glued inside the shuttle so that the weft or the bobbin will rub against it.

The tension of the warp should be as low as possible, i.e. just sufficient to get a clear shed. If it is much higher, the warp ends at the edges will be pulled together too much, although the edges will be straight. In any case the tension must be always the same. Since the tension increases during weaving, the best remedy is to move the warp forward very often - every 2 inches or so.

The sequence of movements in throwing the shuttle, beating, and changing the shed is of smaller importance, on the condition however that this sequence is always the same. Probably the best method is to beat only once in the very moment of changing the shed i.e. of shifting from one treadle to the other, if there are small loops at the edges - beat a little earlier, if the edges are pulled in - a little later.

The coordination between the movement of the shuttle, and the beating is very important too. If we change and beat when the shuttle is still moving away from the shed the edges will be pulled in more than if we do it after the shuttle stops. The reason of this is very simple: when the shuttle stops the tension on the weft is greatly released.

In any case the weaving should be as fast as possible, because the speed warrants a certain rhythm in all movements, and identical movements must result in identical, even selvages. Getting good selvages by pulling at them with fingers, or by braking the weft in the same way is a hopeless task - it means slow weaving, lack of rhythm, and poor work.

A very illuminating experiment which will show how good your edges really are may be made as follows. Make a wide warp of white rayon or other slippery yarn, and weave plain tabby with black equally slippery weft trying to get 50:50 weave. This will show not only the slightest notch or loop at the edges, but the evenness (or otherwise) of the count of cloth near the selvages, and the evenness of beating

as well. Care should be taken to select the proper sett of warp.

There is however one shortcoming of which many weavers accuse themselves unjustly. This is having one edge better than the other. Granted that there are weavers whose right hand does not know what the left one is doing, but in most cases it is not the weaver who is guilty. The yarn used for weft has either the left-hand or the right-hand twist (it should be the former). Whichever is used there is always one edge where the weft has more tendency to form a loop, because the very action of changing the direction of the shuttle either adds or subtracts from the twist of the yarn. This slight effect may be quite noticeable. A perfectionist could examine his weft very carefully to find out whether winding the bobbin from a tube standing on one end will be better than when the tube is turned upside down, or perhaps it would be still better to place it on the bobbin rack. In the last case the twist is unchanged when in the former it is either increased or diminished.

Perhaps the best advice to most good weavers is to go on weaving. When one reaches the stage where one can weave without paying the slightest attention to the edges, one will notice with surprise that there are no more problems.

FROM THE CLASSICS.

"... WEAVING OF LINNEN CLOTH ..."

by Louis Crommolin, Dublin, 1705.

The way of dressing the Yarn in the Loom while it is weaving, is extremely bad in Ireland; for they make a fluff of Water and Meal, without Judgement wherewith they stiffen their Warp. Now in France and Flanders etc they are extremely curious in the making that Stuff wherewith they dress their Warp; I have therefore given them here the way of making it. They must take as much Wheat-flower and mingle it with cold Water, as will make the Water as thick as Paste; this they must boil on the Fire for two hours at the least, taking care all that time to keep it stirring, that it does not burn.

When it has boiled sufficiently, pour it into a clean Earthen Vessel, where you ought to let it stand till cold. When it is cold you may make a Hole therein sufficient for you to put some part of your old soure Dressing-Stuff, thereby to leaven the rest, which will set it a working. When it has fermented for five or six Days or more; then incorporate the whole together, and use it as you have Occasion. Note, that the older and staler your Dressing-Stuff is, it is so much the better, wherefore you ought always to have a Quantity beforehand of it.

There's but one thing more that is requisite to be spoken of in reference to the Weaving Part of fine Linnen, that at present occurs to my Memory, which is that each Weaver in this Kingdom, who designs to follow that way of Trade, ought to have a Cellar (or some such Place) under Ground to work in, for it is impossible for any Man (were he the best Artist in the World) to weave fine Linnen Yarn, unless it be in a close Place, but that the Weather shall affect such Yarn, and cause it to break and snap every moment.

DRAFTS FOR DOUBLE WEAVES.

By "double" we understand weaves which have two layers of cloth woven at the same time, and either: 1 - independent of each other, 2 - stitched together, 3 - penetrating each other to form a pattern.

In the first case the two layers can be either joined on one side (double width, or semi-circular fabrics), or on both edges (hose, circular fabrics). Theoretically they can be completely separated i.e. not joined at all, but there is hardly any point in weaving such cloth.

When they are stitched together, the two layers are either woven in the same weave, and the same count of cloth (double tabby, double twill, etc), or in different weaves (one simpler weave provides a lining for the other) and different counts of cloth. The stitching may form a pattern, and padding weft (wadding) may be inserted between the two layers (quilt weaves).

Finally when the two layers penetrate each other so that a pattern is formed we have double pattern weaves. The simplest may be woven on 8 frames in tabby, the most involved require a draw-loom with a double harness. Often there are two warps and two wefts - one fabric is then closely woven and makes the ground when the other is rather loose and stands out on the flat background (tissue weaves). Again the two layers may be free (in case of small patterns) or stitched together.

Before we can discuss all these weaves we must understand the principle of drafting double weaves. Although their theory may be quite simple, the drafts are certainly not. First of all we have to distinguish in the threading draft two kinds of warp ends: these which make the first layer, and these which form the second. Even when they are of the same grist and colour they should be marked differently. The same applies to the weft, i.e. to the treadling draft. In all we should use four different symbols for weft and warp.

The draw-down is the most difficult part of the draft. In single layer fabrics we always assume that the warp is of one colour and the weft of another, whether this is true in the practice or not. With two layers we must have two colours for each layer, i.e. four colours. These can be designated either by colours (which in print is rather expensive) or by symbols. But even with these four colours it is impossible to show in the draw-down the actual texture of the fabric since the draw-down is only two-dimensional and cannot represent two layers of the fabric on one surface of paper. Thus even with four colours or symbols we can get the draw-down of the upper layer only. However we assume that the fabric is open enough to show us through the spaces left in the upper layer, whatever there is to be seen of the lower layer.

Fig.1 shows a draw-down made in the familiar "white-and-black" of a double cloth with independent layers. It is obvious that the draw-down is misleading: it shows a fancy twill instead of two layers of tabby. The same draft made in four colours or rather symbols of colours (fig.2) is hardly any clearer, until we go to the trouble of marking the floats both in warp and weft (fig.3). Now the upper layer becomes visible and can be recognised as tabby. The lower layer still remains a mystery. What can we do to see the other side of the fabric? Well, we can reverse the tie-up by replacing the empty spaces in the

tie-up draft with ties, and the ties - with empty spaces (fig.4). Now after making another draw-down we have the view of the back of the fabric with only glimpses of the front layer.

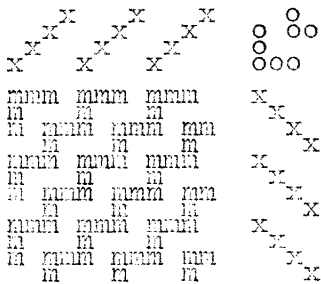


Fig. 1

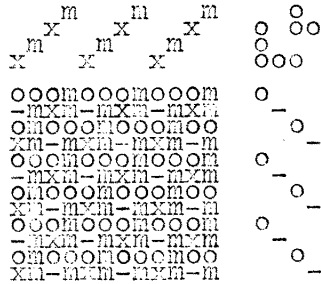


Fig. 2

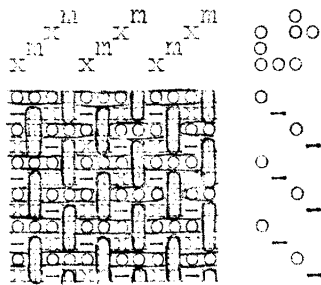


Fig. 3

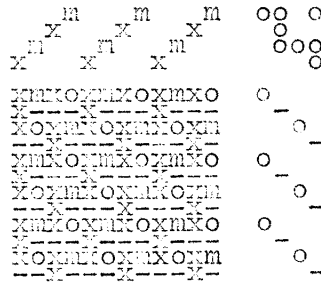


Fig. 4

In figures 2 and 3 the horizontal (weft) floats are "ooo", and the vertical (warp) ones "mmm". "x" and "m" are glimpses of the lower layer. In fig.4 horizontal floats are "---", and the vertical "mm". "m" and "o" belong to the upper layer.

It is advisable for a "beginner" in three-dimensional fabrics to perform with each new draft all the above operations, i.e. first draw it down as if it were a single-layer fabric, then use four symbols as in fig.2, then outline the floats, and finally draw the other side of the fabric. The first two drafts are necessary because in many books particularly about industrial weaving either of them (often only the first) may be used to illustrate the fabric, and no threading or treadling drafts are given. The last two are equally important at least in the beginning, because they help the weaver to visualise the actual structure of the cloth.

Of course the drafts for two separate layers, semi-circular, and circular fabrics will be always the same. Two shuttles, one for each layer, will give separate layers. When double-width fabric is required only one shuttle weaves both layers. It makes two shots in one layer, then two in the other.

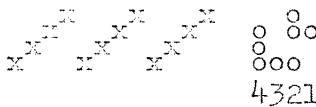


Fig. 5

For instance: 1,3,2,4 (fig.5). The fold in the fabric is made between the shots 3 - 2, and again between 4 - 1. Now it is obvious that only the direction in which the shuttle travels decides on the position of the fold. If we start from the right on treadle 1, then the fold will be on the right, and vice versa. For circular fabrics the treadling will be: one shot in one layer, then one shot in another, for instance 1,2,3,4. Here the direction of the shuttle does not matter.

The twill can be woven on the same principle as tabby. The number of heddle-frames will be always double, compared with the same twill woven in single layer. Thus the simplest double twill can be woven on 6 frames (fig.6). The tie-up has four parts or quarters. We shall call them further: NW (North-West), NE, SE, and SW.

The NW, and SE parts serve to separate the layers of fabric. NW keeps frames: 4, 5, and 6 out of the way, when the twill is woven on frames: 1, 2, and 3.

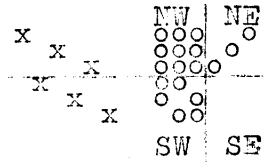


Fig.6

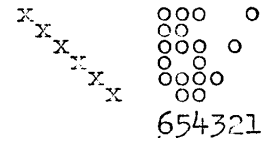


Fig.7

SE is doing the same for the other layer woven on frames 4, 5, and 6. The SW part of the tie-up serves to weave one layer, and NE - to weave the other. The threading in fig.6 is quite clear, because the two layers are separated but not very convenient. If preferred, the draft on the fig.7 can be used, Here the threading is simple, but the tie-up not so clear. The treadling for a circular fabric in both drafts will be: 142536, and for a double-width cloth: 124531642356.

Here however two additional factors come into play. One is the twill itself: as we know 1:2 twill becomes 2:1 on the opposite side of the fabric. Another is the direction of the diagonal. If we are weaving a double-width fabric, we would like probably to have the same uninterrupted diagonal all across the fabric after it is opened. The same may or may not apply to a circular fabric.

The twill on top of the upper layer should be the same as the one on the under-side of the lower layer. This is why in fig.6 NE part of the tie-up is just the reverse of the SW. If instead of the tie-up in fig.6 we would use the one in fig.8, we would have two identical layers of cloth, which means that after opening the fabric we would have one half of it woven in 1:2, and another in 2:1 twill.

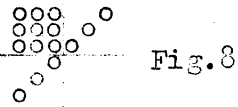


Fig.8

"Opening" a double-width fabric means reversing half of it, or turning it over. At the same time what has been on the left comes to the right, and vice versa..So that if we want a diagonal running in the same direction after opening, it must run in the opposite direction when being woven. In fig.6 both diagonals (NE, and SW) have the same direction. In fig.9 the directions are opposed, and it is this last tie-up which should be used. Or the tie-up may remain as before but the treadling will be changed. It is rather probable that a simple threading will be used, as in fig.7. Then

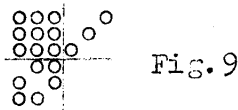


Fig.9

the treadling for a circular fabric with a continuous diagonal will be: 162534, and for a double width fabric: 126531462354.

The same applies to other twills and to other weaves as well: the general principle of making a draft for a double fabric is to divide the heddle-frames into two groups: one for the upper, and one

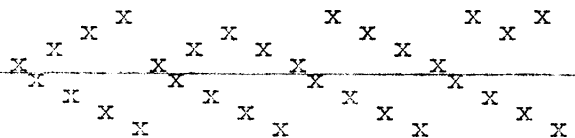


Fig.10

for the lower layer, and thread these two groups independently. If both groups have the same count, we alternate one heddle in the first group with one heddle in the second group.

For instance in fig.10 the upper four frames are threaded for diamond twill, and the lower four - for a biased twill. It depends on the tie-up and treadling, whether the twill will be 1:3, 2:2, 3:1, plain, or broken. Supposing that we make a cushion cover with one side in broken twill and the other in diamond pattern, we have to decide first on the twill - only then we can proceed with the tie-up. If the broken twill is 3:1, and the diamond - 2:2, we place ties for 2:2 twill in the NE section of the

tie-up and the ties for 3:1 twill (but reversed) in the SW (fig.11).

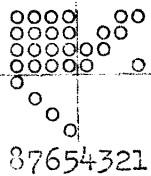


Fig.11

The SE corner remains empty, and the NW filled with ties. As explained before these last two sections of the tie-up serve only to keep the two layers apart. The treadling for the upper layer will be then: 432143412341, and for the lower layer: 5768. These two treadlings must alternate since both layers are woven simultaneously, and the final treadling is: 453726184537461825374618. In the same way any two weaves can be combined into a double fabric.

As stated previously, the two layers can be stitched together. However, if they are stitched it means that they will penetrate each other in spots, and that some of the first layer will be visible on the second, and vice versa. Stitching does not mean necessarily additional heddle-frames. It is quite easy to make a stitched double cloth on 4 frames.

Since two sections of any double-cloth tie-up are just separating the two layers, it is enough to change anything in these two sections (NW and SE) to have these layers stitched. For instance if in the tie-up on fig.8 we just drop the central tie in the NW corner (fig.12) we shall have one stitch every 6 picks and every 6



Fig.12

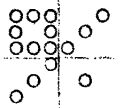


Fig.13

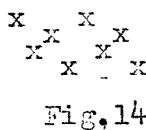


Fig.14

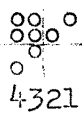


Fig.15

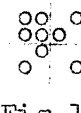


Fig.16

When working with 4 frames, stitching should be limited to

one tie only. Even then it is quite visible. Fig.14 shows the theoretical (seldom used in practice) draft for two layers of tabby.

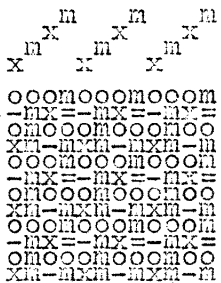


Fig.17

The treadling for a circular fabric: 1324.

To stitch the two layers we can either eliminate one tie in the NW corner (fig.15) or add one in the SE corner (fig.16). After the threading draft is changed into a conventional one, the tie-up is changed accordingly. On fig.17 we have the new tie-up as well as the draw-down. "x" - is the stitching tie, and "m" - the stitches visible on the upper side of the fabric. If we compare this draw-down with the one on fig.2 we shall notice that not only the stitches from the lower cloth are visible on the top,

but that some floats in the warp become shorter. This is because they in turn become "stitches" visible on the other side of the bottom layer.

Very often stitches obtained by changes in the tie-up are not satisfactory - they lie too close together and spoil the appearance of the fabric. They can be more

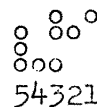


Fig.18

widely spaced in one direction by using an additional treadle - stitching treadle (1 on fig.18) In treadling this treadle is used only from time to time instead of treadle 4. E.g. 543254325132.

If it is necessary to space the stitches further apart in the horizontal direction as well - an additional heddle-frame must

be used. In our example on fig.17 the stitching takes place on frame no.4. The heddles on this frame are then distributed on two frames and only one of them used for stitching (fig.19). The treadle 1

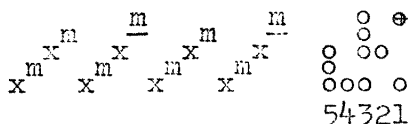


Fig.19.

is as before the stitching treadle. When an additional frame is used, the stitches may be as far apart as desired. In fig.19 every other heddle is transferred from the frame 4 to the frame 5. But if we transfer to the stitching frame only every third, or fourth etc. heddle - the stitches will be much farther apart.

The above remarks form just an outline of the theory of double weaves. We shall discuss in the coming issues the joining of unequal fabrics, patterns in double weaves, and a few simple tissue weaves.

MODERN PATTERNS IN TRADITIONAL WEAVES.

This article should form a logical sequence to the one about textures (MW - No.4). Since quite a large part of handweavers either are not interested, or do not qualify to work with textures, and still they have too much creativeness to limit their weaving activities to copying, they would be quite justified if they turned their attention to patterns.

In traditional weaving we can see two approaches to the problem of patterns. One consists on subjecting the pattern to the weave used - the best examples are diamond twill, and overshot. Here the pattern is an accidental result of the properties of the weave itself. The other is to gain complete freedom of design by either very painstaking methods of weaving (tapestry), or by a very elaborate equipment (the draw loom).

We still weave overshot in the traditional way. We still make tapestries. The draw-loom has practically disappeared, and although we hope that it will eventually take an important place in modern handweaving, we shall leave it aside for the time being. For different reasons we shall not speak about the tapestry weaving either. One cannot learn from books or articles how to make good tapestries any more than learn painting.

But there are several pattern weaves which at least give us a certain amount of freedom in pattern composition such as spot weaves and turned twills, huckaback and its derivatives, cross weaves, and many other. They are all traditional weaves inasmuch as they were known and used for centuries, but so far little attempt has been made to adapt these weaves to modern patterns.

Now what is a modern pattern? Since most of our hand-weaving is not intended to be an "objet d'art", but usually serves a very definite purpose, and must harmonise with our modern life, modern interior, and modern dress. we can at least get some hints about these patterns from the general trends in decoration.

When discussing "modernity" we should not confound it with fashion. The latter is seasonal, when the trends we speak about last for decades. The crafts are always leading and not following the

fashion. They follow only their own line of development, conditioned by the whole of our cultural life, but not by the speculations of a group of tailors or businessmen.

It seems that the characteristics of modern as opposed to traditional are two: simplicity, and freedom from symmetry. A third not so obvious but very important is the submission of pattern to the material, but not to the technique. In other words the pattern must suit the medium or material, then the technique must suit the pattern, but not the other way around as it was often the case in traditional weaving. Secondary traits such as a certain boldness in form as well as in colour, harshness of texture, and lack of "neatness" in design are of secondary importance.

Well, what the simplicity and the lack of symmetry mean in practice? The lack of symmetry is the easiest - it is not a rule, but an absence of rules. The simplicity is more difficult. First of all a pattern which is simple is not always the one which is easy to weave. The circle is one of the simplest elements of pattern, but to weave it with any degree of accuracy one requires a draw-loom. Thus the pattern should be not only simple but adapted to the material used. Since our materials of which we build the pattern are the warp and the weft, one running vertically and the other horizontally - the patterns best adapted will be ones composed exclusively of vertical and horizontal lines. This condition leaves us still quite a large margin for creativeness. The examples of patterns shown below are just a few suggestions for the weaver, to indicate the direction in which he might experiment rather, than anything worth copying. They are arranged according to the number of blocks in each pattern.

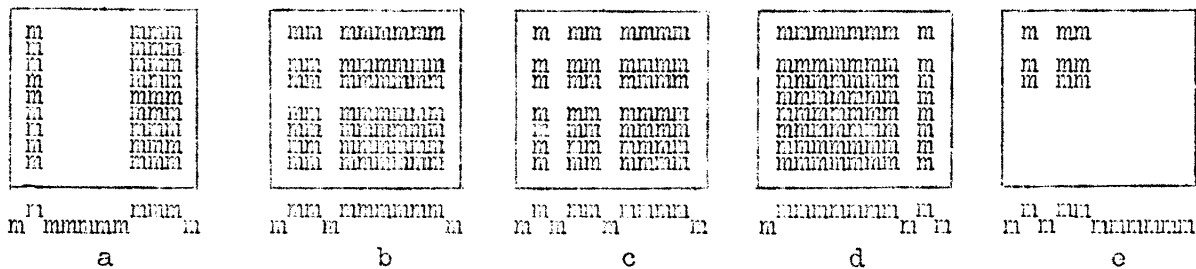


Fig.1 1 block + ground patterns.

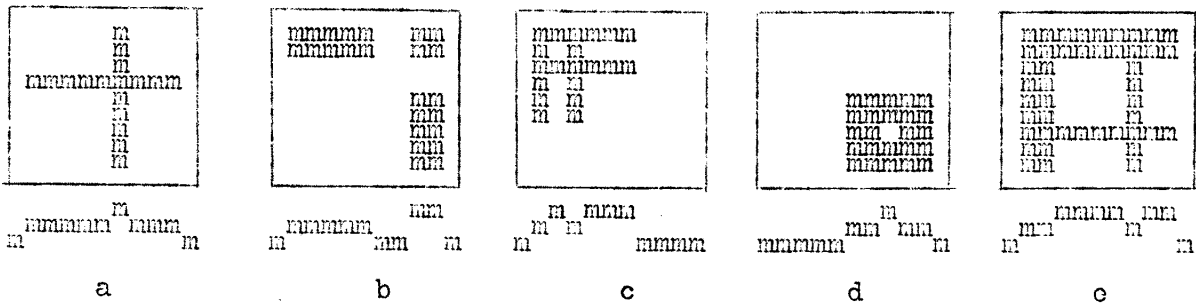


Fig.2 2 blocks + ground patterns.

All these patterns have a border of plain ground around the pattern. This is because many weaves such as lace, huckaback, leno would not give good edges if the pattern extended to the very border. Other weaves however do not require such a precaution, for instance summer-and-winter, damask, swivel, double weaves. Then any of the above patterns may look as in fig.2, which is about the same as fig. 4c without borders. For some reason or other this kind of treatment

makes the pattern look more "modern" than before, and incidentally with many weaves it reduces the number of heddle-frames necessary to weave the pattern.

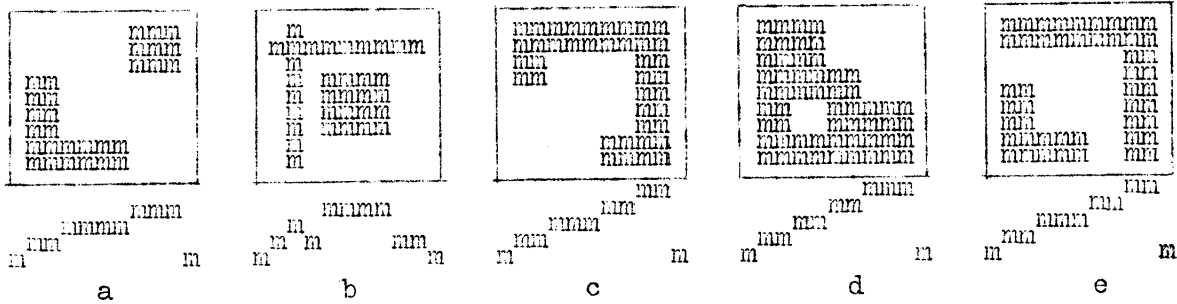


Fig. 3, and 4 blocks + ground.

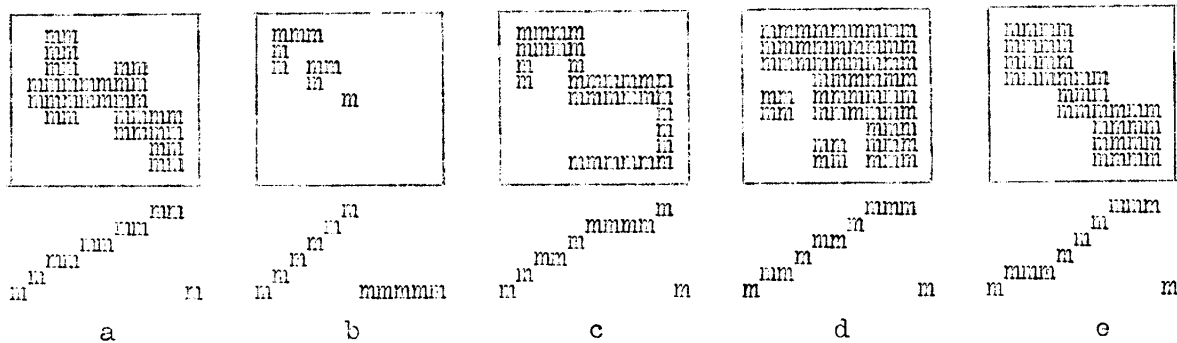


Fig. 4 5 blocks + ground

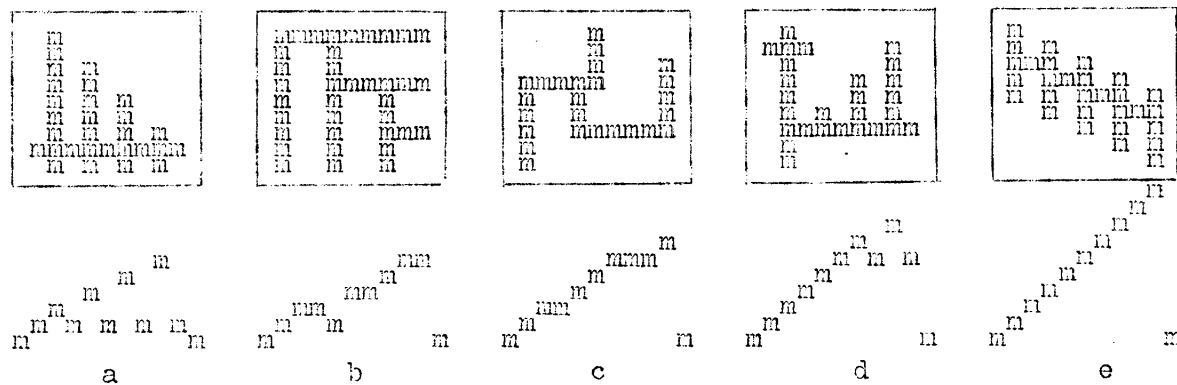


Fig. 5 5,6,7, and 9 blocks

The patterns given in figs: 1, 2, 3, 4, and 5 have their profiles drawn underneath. This is to indicate how one should proceed when making one's own patterns of this kind. The pattern is first drawn on graph paper, then analysed

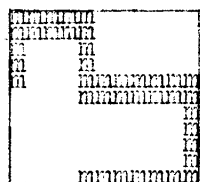


Fig. 6

(see "Analysis of Patterns" MW no.3) to get the graphical short draft (profile). The latter is then developed into a full threading draft (see "Short Drafts", MW no.4) by replacing each square of the profile with a certain number of units of the weave used. The number of units per each square depends

on the size of the article woven, and the sett of warp. The total number of warp ends is divided by the number of ends in one unit. This gives us the total number of units. Then this in turn is divided by the number of squares in the profile (11 in our patterns),

to find out the approximate number of units per square. Then the total number of warp ends or the pattern must be so adjusted as to have a full number of units (not a fraction) per square.

For instance if we use the pattern on fig.6 to make napkins in summer-and-winter with 2/16 cotton, we shall need about 400 ends. Since the profile has 11 squares, each square will have 36 ends or 9 units. Fig.7 shows the development of the profile into the full draft.

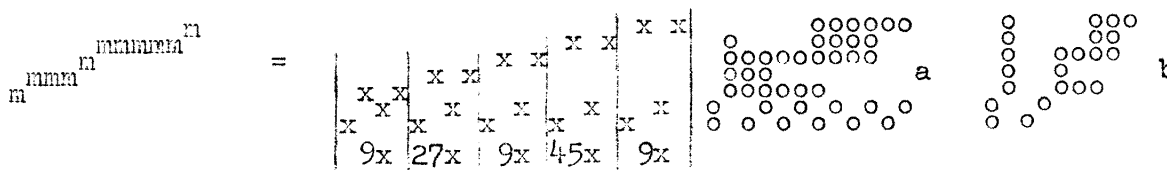


Fig.7

The tie-up may be as in "a" if the loom has 12 treadles, or "b" if it has only 10. In the second case two treadles are used simultaneously for the pattern, and one for the binder.

As another example let us take the pattern "a" on fig.3, and weave a bridge table cover 45 by 45 inches in 1:2 turned twill (dimity), using 2/8 cotton. We shall have 363 units (of three ends each) or 33 units per square of the profile. The draft will be:

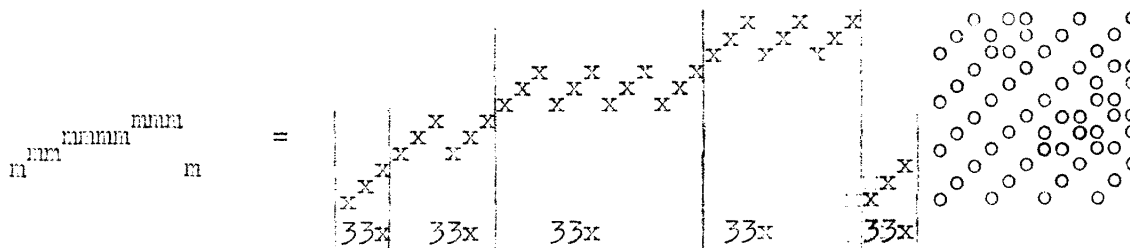


Fig.8

This way of representing the threading draft makes the comparison with the profile easier, although the draft may be written in a still simpler way (fig.9). The tie-up is rather large but really very simple (compare "The Logic of Tie-Ups" MW, No.3).

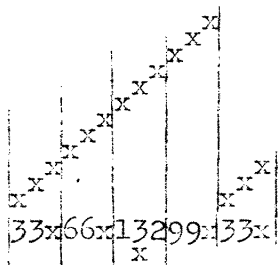


Fig.9

The treadles will be used in groups of three starting from the left. To square the pattern the following treadling will be used: 12, 11, 10 - 33x; 9, 8, 7 - 99x; 6, 5, 4 - 132x; 3, 2, 1 - 66x; 12, 11, 10 - 33x.

The ground does not always count as an additional block of pattern. In lace, or huckaback the tabby ground is woven on the same heddle frames as the pattern, but in other weaves it has to be threaded as a unit of weave.

Finally there are weaves without units, where the situation is not so simple, and where special technique must be resorted to if one wants to "modernise" them. Particularly interesting from this point of view is overshot, and we shall discuss it in the nearest future.

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