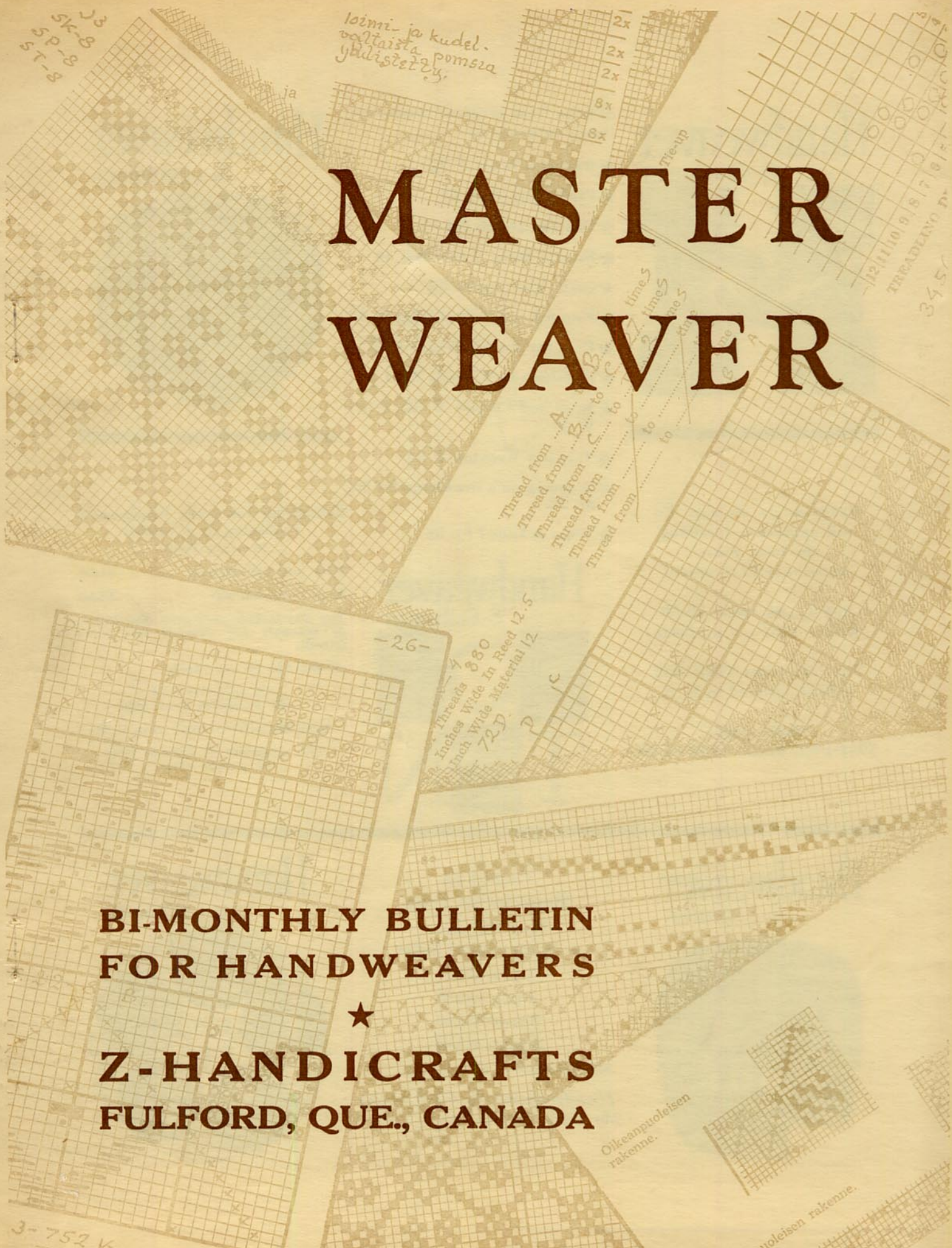


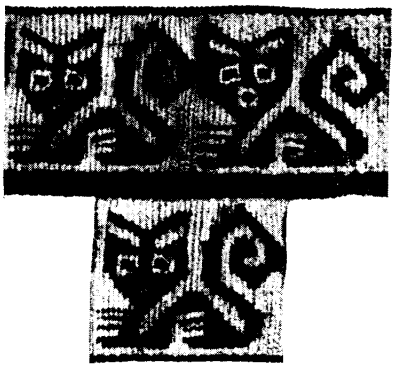
# MASTER WEAVER

BI-MONTHLY BULLETIN
FOR HANDWEAVERS

★

Z-HANDICRAFTS
FULFORD, QUE., CANADA

# Handweaver & Craftsman



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# MASTER WEAVER

BI-MONTHLY BULLETIN FOR HANDWEAVERS

Z-HANDICRAFTS - FULFORD - P. Q. - CANADA

November, 1957 No. 36

THIS IS THE LAST ISSUE OF THE "MASTER WEAVER"
IN 1957

If you did not pay your subscription for 1958

PLEASE DO IT RIGHT NOW!

In the coming year we shall try to revive a completely forgotten weaving technique, which should be of an immense help to those who are interested in texture effects. This is so called

NET WEAVING.

You will find long essays on this subject in books published prior to 1840, but there is nothing later on. It is true that commercial weaving knows and uses Net Weaves, but with such a complicated apparatus, that it would be entirely out of our reach. On the other hand equipment used for the same purpose in the 18-th century is comparatively simple and can be made still simpler.

The whole idea of Net Weaving is to make strong, but at the same time exceedingly open fabrics, similar in texture to netting. But on the other hand the Net fabrics can be closely set, and then whole strands of warp twisted together in a very coarse texture effect.

We have done and are still doing quite a lot of research in this field, and we shall keep you posted on whatever success we may have in the future.

Editor.

# WOOL

"That soft species of hair which grows on "sheep and some other animals, and which in "fineness sometimes approaches to fur. The word "generally signifies the fleecy coat of the "sheep. "

(Webster)

This is a beauty of a definition. And probably we shall get into trouble for quoting it without permission. What it means is, that wool is hair. It may grow on sheep or other animals. But sometimes it approaches fur in its fineness. Let us see what is fur... Well, here is a discovery: "The short, fine, soft hair of certain animals".

All this boils down to the fact that wool, fur, and hair are really one and the same thing. When we intend to use the whole coat of hair together with the hide, skin, or pelt, we say "fur". But when we separate the hair from the skin and then use it alone, we say "wool".

**********

Whatever the wool is by definition, it is certainly one of the most interesting yarns (after spinning) ever discovered. Its properties have never been duplicated in synthetic yarns, and what is more, they will never be. Not because the feat is impossible, far from it. Simply because as it is the wool is a headache for the textile industry: it is much too good. It has too many advantages as a yarn, and the worst of them is that when really good it is nearly indestructible. And who wants indestructible yarns in our age of economy based on waste and destruction? For the same reason linen will never be duplicated by synthetic methods, easy as the task may be.

Fortunately we are craftmen and do not need to worry about world economics.

What are the "induplicable" qualities of wool?

1. Insulation. The heat conductivity of wool made into a fabric is among the lowest known in textiles. There are also furs (caribou) which are insurpassable in this respect. The least amount of wool by weight gives the highest protection against cold or heat as the case may be.

2. Resistance to water. Wool spun in grease is water repellent. When felted in the same stage it is practically waterproof, but at the same time it is not air-tight. One can sleep under a raw wool blanket with the head covered - without suffocating.

3. Hygiene. When worn next to skin wool automatically cleans it until a point of saturation, which is not easily reached. There are cases of highlanders who do not wash for six months, and keep

reasonably clean. Alpinists, hunters, campers, and lumberjacks, who use raw wool socks - know about it.

4. Strength. This of course can be expressed in scientific terms and questioned. But we know that in practice a good woolen suit can last for more than a generation, and who wants more?

5. Elasticity. A good woolen fabric keeps its shape better than even cotton or linen. For the same reason it is extremely pleasant in weaving.

6. Dyeing. Wool can be dyed easily, permanently, and without loosing any of its properties usually associated with "raw" wool.

7. Texture. Wool is about the only fiber which can be made into a cloth without weaving, simply by pounding it.

8. Weaving. Wool can be woven into more "open" fabrics than any other yarn. Without any artificial ways of fixing the weft to the warp (sizing, dressing, impregnating) a fabric in pure wool may be made about 50% more open than any other fabric.

And about the only shortcoming of wool is its high price when the yarn is really good. But even poor quality wool such as the "native" yarn at a dollar a pound (price in Eastern Canada) is highly superior to its synthetic substitutes, and irreplaceable for heavy rugs, and all sorts of pile fabrics.

After this rather extensive build-up we must come down to the facts. Where Webster did not go very far from the truth is the fact that wool is made mostly from the fleece of sheep.

Then what is "fleece" and what is "sheep"? The first is easy: it is the whole coat of hair of the animal "shorn" in one shearing operation. The sheep itself is another matter. The word itself comes from Anglo-Saxon Sceap, Scêp. The origin uncertain; possibly from Bohemia, and other Slavic countries. But why the Anglo-Saxons should be influenced by Slovaks, as it is very unlikely that they ever met, remains a mystery. Unless of course sheep were brought to the British Isles by the Saxons, and Saxons in turn got them from the Slavs. This seems to be nothing but conjectures.

Sheep is "Ovis" in Latin, and it lives in higher mountains of Europe, Asia, Africa, and America. It is true however that the only species in America is "Ovis Montana" in the Rockies, and there is no mention of its wool being used for practical purposes. To write about all these animals would take more time and space than we can afford. Let us then state the fact that sheep wool has been known mostly anywhere for a long time. Of a particular interest are Merino bred in Spain for centuries. Their introduction to England was a failure, but they adjustem themselves well to the climat of Australia, and thence we have the famous Botany wool.

England did not need any help as far as the quality of wool is concerned. The climat seems to be the only in the world for the highest quality and the greatest variety of fleece. But before we turn to the English wool we may just mention the Northern wool, which probably originated in China, and by unknown channels reached Scandinavia, Iceland, and other North European islands. It is very fine

ard it is said that at its finest it can be hardly distinguished from silk. Quite remerkable for wool.

In English wools the following are the most important:
Leicester, Cotswolds, Lincolns, and Kents produce long wool, up to 15".
South Down, Hampshire Down, Dorset Horned - short and very fine.
Oxford, Suffolk, Shropshires - a little longer.
Cheviots - hair with hard tips, medium quality.
Welsh, Exmoors, Shetland - so called Mountain Sheep, medium long.

However the properties of a fleece depend not only from the breed, but also from the local atmospherical conditions. Thus the same sheep will produce longer wool in damp and cold areas, and shorter in warm and dry localities.

This is not all yet. Because one fleece of any sheep contains a variety of wools:

Britch - hind legs. Coarse.
Prime - higher than britch and along the back. Short, weak.
Picklock - belly. Short, fine.
Diamond - higher than prime and half way or so along the back. long, coarse.
Extra Diamond - flanks, and shoulders. Strong, good, varying length.
Poll Lock - head. Poor.

The whole problem of sorting a fleece is so involved that nothing short of reading a book on this subject will make it clear. What is the comparative value of Leicester Prime against Hampshire Diamond is matter for experts, or anybody's guess.

Then finally there is the question of spinning. There is carded, and combed wool. Any wool can be carded or combed. Carding means twisting the fibers in all directions so that in spinning they do not lie necesserily in a straight line, when combed fibers are all stretched in the same direction. For instance Worsted is a combed wool.

Which is better is hard to say. Carded wool is softer, but weaker. Combed wool is stronger and smoother. Again any of these can be spun with hard or soft twist. Now, please, let us imagine that we have some 6 basic varieties of fleece, all of which can produce about 5 kinds of wool, which can be carded or combed, or 50:50, and which can be spun in 3 (we are conservative here) different ways. Then the yarn may be single, 2, 3, or 4 ply. Finally it can be as fine as silk (theoretically 40.000 yds/lb) or as bulky or thick as a rope (used in peasant tapestry weaving). Thus the total number of all possible varieties of wool runs into thousands.

The count of wool is another headache. No.1 theoretically should have 560 yds, higher numbers being proportionally finer, exactly as in case of cotton or linen. But there are several methods of designating the "grist" of woolen yarn: the same as for cotton, the same as for linen, weight of 20 yds in grains, and so on. The most popular numbers (in proper wool count) are: 32/2 (8900 yds/lb), 16/2, 8/2, singles 8, 4, and 2, heavy yarn: 6/2, 4/2, 8/3, 6/3, 4/3.

**********

# ANOTHER TEXTURE WEAVE

We are not going to repeat here all we have already said about texture, 3D, accidental drafts etc. We refer our readers to the following articles: "The Third Dimension" 17/4, "Accidental Weaves" 26/1, "Texture" 34/1, and we shall start again where we left off in the "Accidental Weaves".

Although the method described there is absolutely safe if used with discrimination, there are craftsmen who just cannot trust such "unscientific" techniques as shuffling cards to make a draft.

On the other hand the method discussed in the "Third Dimension" of mixing several small weaves in one draft is really less satisfactory than the accidental drafts because it is more likely to produce too long floats or stripes in the texture.

Is there another way of getting the impression of an irregular texture without risk of floats, stripes, and unexpected patterns? Yes, there is, and we shall describe it now. It is not as good as accidental drafts from the point of view of irregularity of texture, but on the other hand it does not involve any corrections in the draft itself, and no necessity of making detailed draw-downs.

It is however best adapted to mixed warps, where several different yarns, or at least several different colours are used.

The method is based on the same principle as Double Diagonal Twills (MW 28/4). It has two different twills used alternately in the same threading draft. The twills may be biased or broken, but it is better to have at least one of them broken, otherwise it may be next to impossible to avoid all traces of diagonals in the texture.

How is it done?

Fig.1 shows two twills: A, and B, and then their combination C. "A" is a slow diagonal, and "B" a broken twill: 234, 341, 412, 123 - it could be even called "overshot", since the overshot is a derivate of twill.

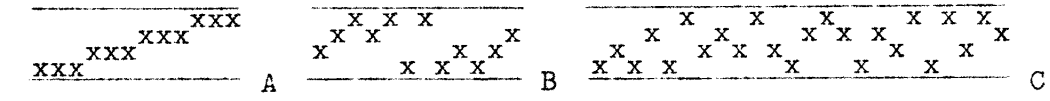



Fig.1

Fig.2 shows another example. Here "A" is another slow diagonal twill, but broken this time, and B is a dornick herringbone.

Now let us see what will happen when we start weaving one of these drafts. The tie-up is not a problem. Since both components of the threading draft are rather plain twills, there is every

reason to use a standard tie-up. We won't have any tabby of course. But it is a little harder to decide on the treadling. It would be

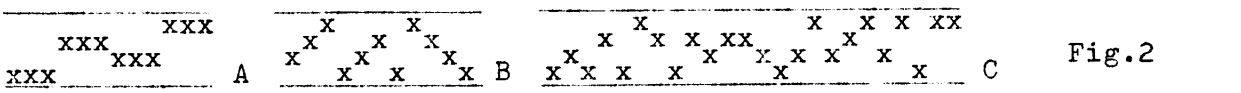



Fig.2

a mistake to follow the threading (weave as drawn in) because then we could not avoid having a diagonal, and besides this, one repeat of treadling would be much too long to be practical. The best way is to experiment with treadlings on the loom. In fig.3 and 4 we have two draw-downs made with the draft in fig.2 C. The treadling in fig.3 is: 45361526, and in fig.4: 61645253.

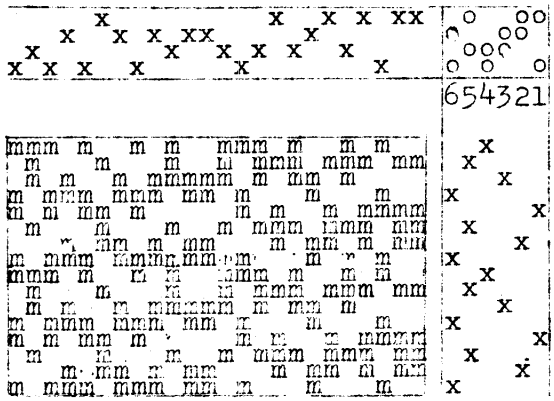



Fig.3

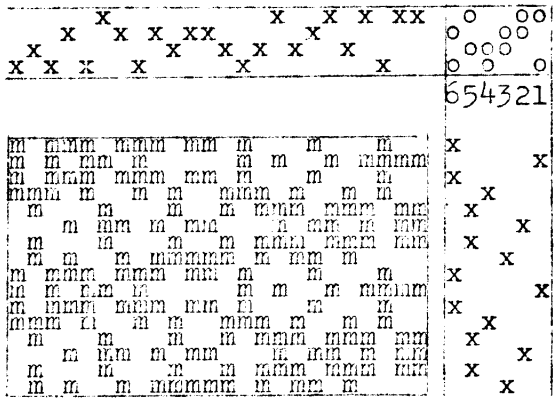



Fig.4

Both are satisfactory inasmuch as the repeat of treadling is short (8) and easy to follow, but even at the first glance we can see that the treadling in fig.3 gives a very poor texture. First there is a very distinct suggestion of waviness if not of an outright pattern (diagonals on the left, and small diamonds on the right); then the floats in warp are rather too short. There is nothing like that in fig.4. Not a trace of a diagonal, and the floats in warp are about the same as the floats in weft (2,3,4 in warp, and 2,3,5 in weft).

However there remains the fact that a comparatively short repeat in threading (24) means perhaps a little too regular texture. And this is why we have said that this method is at its best when mixed warps are used. It is not enough however to mix several yarns at random. In the case of our repeat of 24 in threading, nothing would change if we use for instance 3, 4, 6, or 8 warp ends in one repeat of warping. This is because 24 can be divided by all these numbers, and therefore each yarn or colour would find itself exactly in the same place in each repeat of threading. But if for instance we shall use 5 warp ends in one repeat of warping, then the same warp end will go into a different heddle 5 times before it comes back to the same place in threading, after 120 warp ends.

In other words if the number of warp ends in one repeat of the warp is 5,7,9,10,11,13 etc - the combined repeat in the texture

of the fabric will be much longer than the repeat of the threading alone. Thus if we use 5 different ends in warping we have 5 times 24 or 120 ends. With 7 ≠ 158 ends. With 9 - 72 ends. With 10 - 120 ends. With 11 - 264 ends, and so on.

In one repeat of warping the warp ends do not need to be <u>all</u> different. Even if only one end is different from the rest, it will do the trick.

Thus the general rule is that the number of ends in one repeat of threading should not be divisible by the number of ends in one repeat of warping, and it is still better if both numbers cannot be divided by a third smaller number. Thus in our case of a repeat of 24 in threading, a repeat of warping of 16 ends would be of little value, because both numbers can be divided by 8, and the repeat in texture would be of only 48. In the table below we give the best numbers for both repeats:

| Threading: | Warping: |
|---|---|
| 16 | 5,7,9,11,13,15. |
| 18 | 5,7,11,13,17. |
| 20 | 7,9,11,13,17,19. |
| 22 | 5,7,9,13,15,17,19. |
| 24 | 5,7,11,13,17,19. |
| 26 | 5,7,9,11,15,17,19. |
| 28 | 5,9,11,13,15,17,19. |
| 30 | 7,11,13,17,19. |

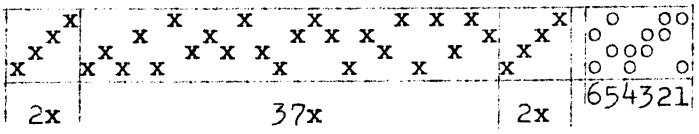
Longer repeats will be usually multiples of the above ones, and the same repeats in warping may be used.

**********

<u>PRACTICAL PROJECT</u>.

Upholstery fabric in mercerized cotton with 3D effect.
Warp: width as required, for instance 30"; sett: 30 ends per inch, total No.of ends: 900; reed No.15, 2 ends per dent, or No.10, 3 ends per dent.
Yarn: cotton No.10/2. Colours: I - ivory, B - beige, D -dark beige (or light brown), W - white.
Warping: 5 ends in one repeat. Order of colours: I, B, D, W, B.

Threading:




Weft: 10/2 cotton, ivory and dark beige twisted together (doubled).

Treadling: 1,5,2,6,4,5,3,6; or 1,5,2,5,4,6,3,6;

**********

# HIGH TWILLS

2.

(Compare "Master Weaver" 34/10)

When it comes to the "turned" treadling, or rose-fashion weaving, any twill will give a number of symmetrical variations, even a 4-frame twill, as in fig.1.

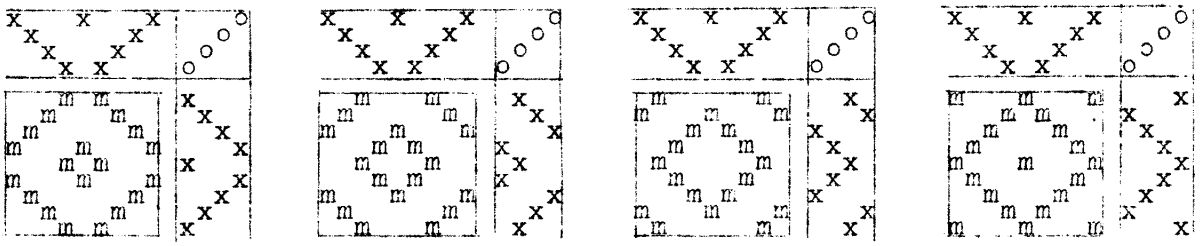


Fig.1

To find the treadling we take the basic (woven-as-drawn-in) treadling and reverse it; for instance instead 123456165432 we shall have 654321612345 etc. Fig.2 shows what happens when we use this method of treadling with 6-frame twills: 3,1,1,1; and 2,2,1,1.

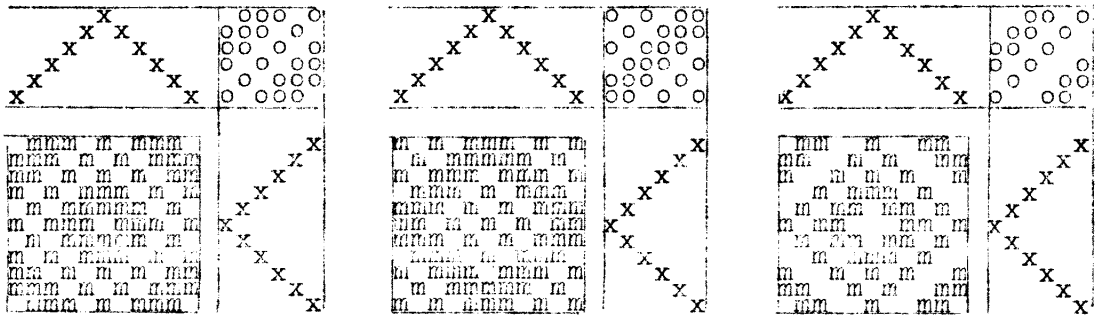


Fig.2

Here even the last twill (2:2:1:1) which did not want to become symmetrical in basic treadling gives a perfectly symmetrical pattern.

The next question is how many of those "rose-fashion" variations can be woven? In most cases, as many as treadles in the tie-up. The exception are "balanced" twills of the type: 2:2, 3:3, 4:4 etc. Here the number of variations is only half as many as treadles.

Let us take as an example the last (2:2:1:1) twill. We keep always the same direction of treadling but in each case we start with a different treadle: 1234565432(1); 2345616543(2); 34561216 54(3); 4561232165(4); 56123432l6(5); 6123454321(6). Fig.5 shows

three of these variations: the 2-nd, the 4-th, and the 6-th.

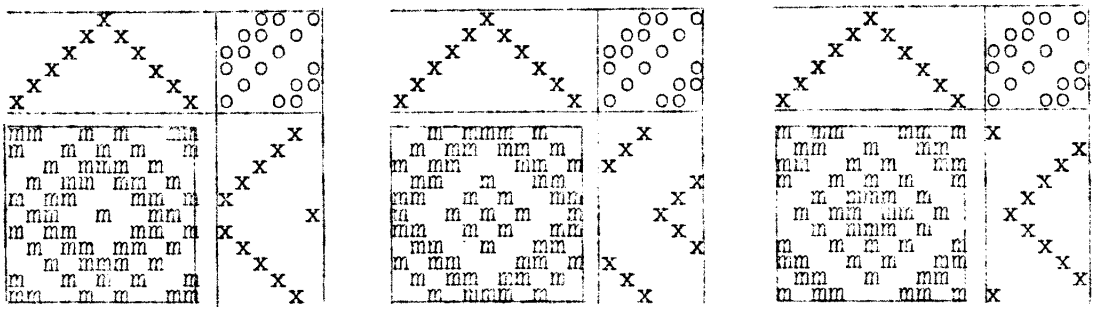


Fig.3

Eight frame twills will have also one or two basic patterns and 8 rose-fashion patterns. For instance the twill in fig.4

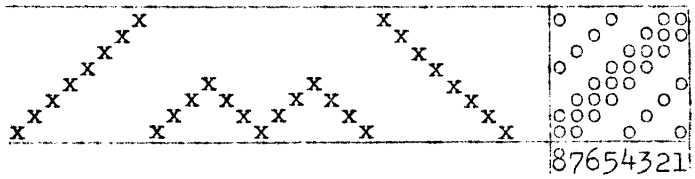



Fig.4

The basic treadling which follows the heavy diagonal will be: 876543218765678765678123456 78, and the treadling which follows the fine diagonal: 432187654321234321234567812 34, and the eight rose-fasion treadling are:

1) 12345678123432123432187654321,
2) 23456781234543234543218765432,
3) 34567812345654345654321876543,
4) 45678123456765456765432187654,
5) 56781234567876567876543218765,
6) 67812345678187678187654321876,
7) 78123456781218781218765432187,
8) 81234567812321812321876543218.

With 12-frame twills we shall have also from 0 to 2 basic variations, and 12 turned ones, or from 12 to 14 variations in all. A 16-frame twill will give from 16 to 18 symmetrical variations.

One more question: how many twills in each case? We have already answered this question for 6-frame twills. It was 5. An 8-frame twill can be either 2:2:1:1:1:1, 2:1:2:1:1:1, 3:1:1:1:1:1, 3:2:2:1, 3:2:1:2, 3:3:1:1, 4:4, 4:2:1:1, 4:1:2:1, 5:1:1:1, 6:2, and 7:1. A dozen in all.

We can imagine what will happen with 12 or 16 frames. To get the total number of variations <u>with one threading</u> we must multiply the number of different twills by the number of variations. The totals run into hundreds.

**********

We realise that this article is far from giving all the answers. But should we try to exhaust the subject of higher twills, we would have to write a book and not an article. The reader who is interested in this class of weaving should spend a lot of time with a soft pencil and fine graph-paper (20 divisions per inch). He will soon discover that there are "symmetrical" twills (this has nothing to do with symmetrical patterns) which give at least one woven-as-drawn-in pattern, and sometimes two, and that there are also unsymmetrical twills which must be woven in rose-fashion to produce symmetry in design. Here are examples of symmetrical twills with one diagonal: 2:2, 1:3, 2:3, 1:2, 3:3 etc.

The following twills will produce two basic patterns:

2:1:1:1, 3:1:2:1, 3:2:1:2, etc.

Finally twills which can give only rose-fashion symmetry:

2:2:1:1, 2:3:1:2, 3:3:1:1, etc.

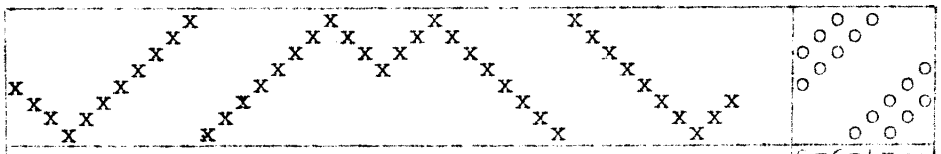
When making projects for such twills one starts with the tie-up. This establishes the kind of twill we are going to work with, and incidentally the texture of the fabric, because the length of floats depends here mostly on the tie-up. Then comes the threading. This must be on the conservative side i.e. not too fancy - at least in the beginning. When changing the direction of threading very often, leaving gaps, etc., we may run into unexpected long floats. The treadling is usually a replica of the threading draft, but it may run from the right to the left or vice versa, and it can start on any treadle. Finally we make a draw-down, and see whether we like it or not.

In the next article on this subject we shall take up the problem of fancy tie-ups, i.e. containing more than just one straight twill.

****************

PRACTICAL PROJECT.

A table cloth in linen, woven in 5:1:1:1 twill. Size as required. Warp: 50/2 linen. Sett: 48 ends per inch. Reed 16, 3 ends per dent, or 12 - 4 ends per dent.




treadling: 432123456781234567876567876543218765432123; (one repeat).
weft: single No.20 linen.

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