

With reference to amount of twist for the filling, we must take more particularly into consideration the wear the fabric is subjected to, *i. e.*, whether the garment is intended to be subjected to excessive wear out-door, under the various climatic changes, snow, rain, dampness, etc., or if the filling only is intended to be used in connection with fabrics where warmth is the main object. For this reason, in connection with overcoatings, like chinchillas, whitneys, montagnacs and similar loose textured fabrics, a slightly twisted filling yarn will be the one to use, whereas a loosely twisted filling, for example, in connection with trouserings would soon be the cause of fibres loosening their hold in the thread, *i. e.*, the garment would soon wear out.

The character of the face of the finished fabric is also of importance, since if a smooth, clear face is required, a harder twisted yarn is desired, whereas if the fabric is to carry a napp, it will not be advisable to twist the filling harder than necessary, in order to permit a ready raising of the napp, on the gig or napper, whereas hard twisted yarn would not permit this ready raising of the napp, and when then the required napp only could be raised (but, at the same time, in an inferior quality) by weakening the threads, *i. e.*, tentering the fabric. This point must be carefully taken into consideration, in connection with mills manufacturing cloakings, beavers, etc. Another point to be taken into consideration, is the fact, that in connection with woolen fabrics and where a soft pliable handle is required for the finished fabric, the same is either lost, or only partially obtained by the finisher, provided he receives a fabric structure in which a harder twisted yarn was used than was necessary, for which reason, in connection with such fabrics, especial care must be given to the twist of the yarn, more particularly the filling, *i. e.*, that only that amount of twist, necessary to produce the required strength to the fabric, is used. In connection with smooth clear fabrics, and where the weave is distinctly seen, the tighter the interlacing of the threads in such fabrics, the less amount of twist necessary to be used, compared to loosely interlacing weaves, in order to produce the necessary strength to the fabric. In connection with fabrics where the warp forms the face of the fabric, like warp satins, twills or diagonals, warp rib effects, corkscrews, etc., and where the filling rests, respectively, either, more or less, on the back, or in the centre of the structure, *i. e.*, is kept away from the face, then a less amount of twist can be used for the filling, in this way, greatly adding to the softness of the character of the fabric.

At the same time, the character of the machinery used for imparting the twist, will be worthy of consideration, for instance, compare the same count of cotton yarn, spun respectively, either on the mule or on the ring frame, and where in the first instance, on account of the nature of the spinning process, a slightly less twist will be necessary, compared to similar yarn spun on the ring frame, which has to withstand the strain of the traveler, as well as difference in the spinning process, compared to that of the mule.

(To be continued.)

## RIBBONS, TRIMMINGS, EDGINGS, ETC.

(Continued from Page 151, Vol. VII.)

### Producing Figures in Smooth Ribbons.

SKETCH: The first to be done by the designer is to prepare, on drawing paper, a sketch, actual size, as he wants the design to appear in the fabric. The designer, besides having a talent for drawing (sketching) must at the same time possess a clear understanding of the principles of fabric structure, single cloth, as well as 2 or more ply cloth, in all its varieties. He must know how to judge quality and counts of yarns as well as fabric textures; have taste for proper color combinations, to produce pleasing effects, *i. e.*, he must have a thorough knowledge of the manufacture of ribbons in all their varieties.

### TO TRANSFER SKETCH ON POINT PAPER.

After the sketch has been made, ascertain the proper dimensions the latter has to cover on your point paper, after which transfer the heavy ruled squares of the point paper, in proper proportions reduced, on your sketch. If, for example, the fabric is to be constructed with an even texture for warp and filling and calls for 64 warp threads in its width (not taking any selvage into consideration) and we use 8 x 8 point paper, said 64 warp threads then call for 8 heavy ruled squares. In this case, divide the width of your sketch into 8 uniform parts and over-rule your sketch, *warp ways*, with 7 lines, each line representing one of those heavy ruled lines (lengthways) on your point paper. Next square-off sketch lengthways, corresponding to dimensions used previously widthways, producing in this way, an over-checking of the sketch, corresponding to those heavy ruled over-checks you see on the point paper.

Next transfer sketch in outlines, either with charcoal or pencil, upon your point paper, being guided in this work by the squares on your sketch and the heavy ruled squares on your point paper. Be careful to use a good free-hand in drawing, so as to reproduce a nice outline to the design on the point paper. Next paint in the figure effects of the design with a good vermilion, using a brand of water paint which will permit washing point paper clean in case of a mistake.

### HOW TO CALCULATE THE PROPER POINT PAPER TO USE.

Since in connection with smooth faced, figured ribbons, the design on your point paper represents an exact enlargement of the design in the ribbon, the proportion of the warp threads to the picks in the ribbon (*i. e.*, its texture) must correspond to the rows of squares representing warp threads and picks, respectively, on the point paper. This is the reason why point paper is met with in the market in all varieties of light rulings inside the heavy square; for instance, we meet paper ruled 8 x 6, 8 x 7, 8 x 8, 8 x 10, 8 x 12, 8 x 16, etc., the difference between the ruling indicating the difference in warp and filling texture in the fabric.

Consequently, when calculating which ruling of point paper to use, we must first ascertain the texture of the ribbon, since the proportion of warp threads

to picks, in the fabric, must be in the same proportion to that of its respective light squares in one heavy square of the point paper we are to use.

For example, if the fabric contains 72 (figure) warp threads (ground warp threads not to be considered) with 48 ground picks to the inch, the proportion of the texture then is 72 : 48, or 3 : 2. This will then call for a point paper ruled 12 : 8, *i. e.*, a point paper in which the heavy squares are ruled-off one way with 11 light lines and the other way with 7 light lines, *i. e.*, each heavy square contains 12 rows of squares one way (for warp) and 8 rows of squares (for filling) the other way.

Another example: If the ribbon, in question, calls for 40 (figure) warp threads and 32 (ground) picks to the inch, this texture of 40 : 32 then would call for a point paper 10 : 8 to use, using the ruling in 10's for the warp and that in 8's for the filling.

Provided the texture of a ribbon calls for a point paper not met with in the market, use in that instance the one nearest in proportion to it you can procure.

For example, if the fabric structure should call for a point paper 17 : 11 to use, you will not be able to procure this paper, except you have it made to order. The nearest point paper then to use, and of which there is a constant supply, is either 10 : 6 or 8 : 5, giving in this instance the latter (closer to fabric texture) the preference.

To prove which paper is most suitable to use:

Multiply the smallest number of the fabric texture with the largest number of the point paper, and the largest number of the fabric texture with the smallest number of the point paper you have on hand, or can procure. The nearer these two sums correspond, the more suitable the paper. If the ruling of the paper corresponds with the texture of the fabric, both sums will be equal.

Using previously given fabric texture (17 : 11) for illustrating subject, we then find the following calculations:

Fabric texture 17 : 11 in connection with point paper 10 : 6 gives us ( $10 \times 11 = 110$ , and  $6 \times 17 = 102$ ) the sums 110 and 102, *i. e.*, a difference of 8 points.

Fabric texture 17 : 11 in connection with point paper ruled 8 : 5 gives us ( $8 \times 11 = 88$  and  $5 \times 17 = 85$ ) the sums 88 and 85, *i. e.*, a difference of 3 points only.

This explains that the latter point paper, *i. e.*, the paper ruled 8 : 5 is more suitable to use, since the difference in points is only 3, compared to that of the first paper and which figured 8 points difference.

This proportion of ruling point paper, expressed by means of a *colon*, is also expressed technically by means of a *multiplication sign* or the *letter x*, or the *word by*, viz: 8 : 5, or  $8 \times 5$ , or  $8 x 5$ , or  $8 \text{ by } 5$ , either method of indicating point paper being met with.

#### A FEW PRACTICAL EXAMPLES.

We will now explain the subject by means of sketch and point paper design, showing also the

analysis of the interlacing of warp and filling in the fabric structure.

Fig. 164 shows us a sketch for a single shuttle ribbon in which the figure is to be produced by means of an extra warp, *i. e.*, two systems of warp and one system filling are to be used in the construction of the fabric. Five repeats of the design are given. The texture of the fabric to be: 25 picks, and 25 figure warp threads and 25 ground warp threads per inch, and in the same proportions to fractions of an inch.

For this reason, when calculating as to point paper

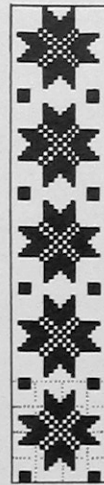


Fig. 164

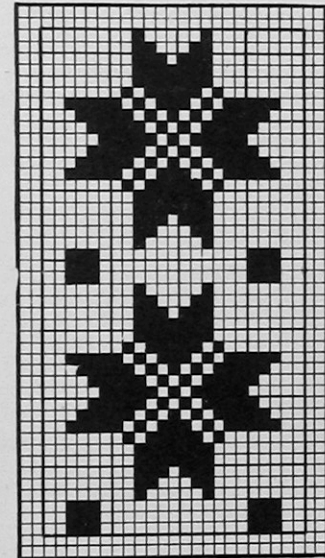


Fig. 165

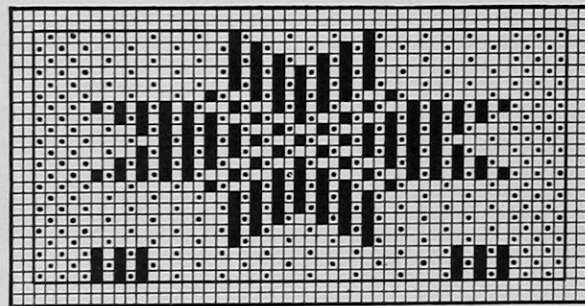


Fig. 166

to use, since only figure warp threads and picks are taken into consideration, the proportion of the texture to be considered is 25 : 25, or point paper 6 : 6, 8 : 8, or 12 : 12 may be used. The lower portion of the sketch is shown ruled-off, by means of dotted lines, to correspond to the heavy ruled squares on the point paper in

Fig. 165, which shows us the complete design, 2 repeats, painted on 6 : 6 point paper. This is, for the experienced designer, all that is required, he building from it drawing-in draft and harness chain. Two repeats of the design are given, to more clearly illustrate subject—only one repeat being necessary for practical work.

Fig. 166 is given to illustrate the analysis of figure and ground warp, as they interlace with the filling in



the fabric structure. The ground warp is shown by *dot* type, the figure warp by *full* type. The arrangement of the warp is thus:

|               |            |
|---------------|------------|
| 4 ends ground | } 19 times |
| 1 end ground  |            |
| 1 " figure    |            |
| 4 ends ground |            |

46 ends, repeat.

It is immaterial what kind of point paper we use for illustrating the interlacing of both systems warp with the filling, having used, for this reason, plain point paper, *i. e.*, such as is not over ruled with heavy squares.

#### NOVELTIES FROM ABROAD.

##### Piece-Dye Dressgood.

*Warp:* 2000 ends, all 2/20's worsted, in the grey.  
*Weave:* See Fig. 1; repeat 24 warp threads and 24 picks, 24-harness straight draw.  
*Reed:* 21 @ 2 ends per dent, 47½ inches wide.  
*Filling:* 38 picks per inch, all 2/20's worsted, in the grey.  
*Finish:* Scour well, dye russia-green or any other fashionable color, clear face on shear, press; 44 inches wide.

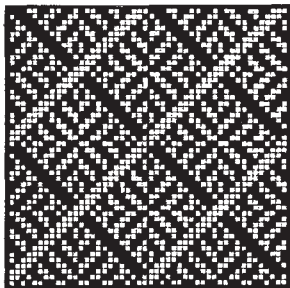


Fig. 1

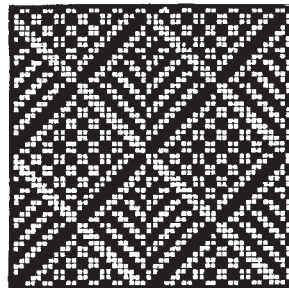


Fig. 2

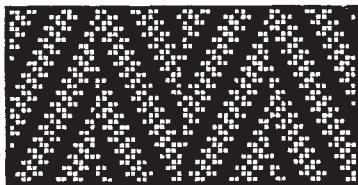


Fig. 3

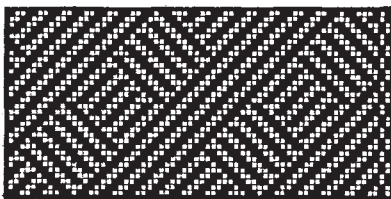


Fig. 4

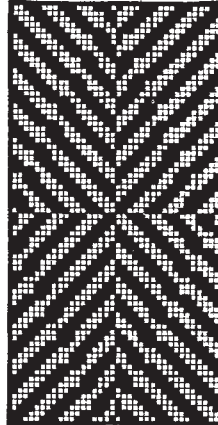


Fig. 5

##### Fancy Dressgood.

*Warp:* 1620 ends, all single 10's worsted cheviot, white.  
*Weave:* See Fig. 2; repeat 24 warp threads and 24 picks, 24-harness straight draw.  
*Reed:* 13½ @ 2 ends per dent, 60 inches wide.  
*Filling:* 26 picks per inch, all single 10's worsted cheviot, dark olive brown.  
*Finish:* Cheviot finish, full slightly, clip on shear, press; 52 inches wide.

##### Piece-Dye Dressgood.

(HERRINGBONE-EFFECT IN 2 COLORS)

*Warp:* 2200 ends, all 2/36's worsted cheviot, in the grey.  
*Weave:* See Fig. 3; repeat 30 warp threads and 1 picks, 15-harness fancy draw.  
*Reed:* 15¼ @ 3 ends per dent, 48½ inches wide.  
*Filling:* 45 picks per inch, all 2/32's worsted cheviot in the grey, twisted over with single cotton.  
*Finish:* Scour well, dye blue, clear on shear, press; 4 inches wide.

##### Worsted Suiting.

*Warp:* 3564 ends.  
*Weave:* See Fig. 4; repeat 66 warp threads and 3 picks, 18-harness fancy draw.  
*Reed:* 12¾ @ 4 ends per dent, 70 inches wide  
*Dress:* 1 end 2/32's worsted, green mix  
 1 " 2/64's worsted, lt. green  
 60 ends 2/32's worsted, green mix  
 1 end 2/64's worsted, red  
 1 " 2/32's worsted, green mix  
 2 ends 2/32's worsted, black  
 66 ends, repeat of pattern.  
*Filling:* 56 picks per inch, all 2/32's worsted, black.  
*Finish:* Worsted finish, only clip lightly on shear press; 56 inches wide.

##### Fancy Cloaking.

*Warp:* 1440 ends, all 1¼ run, woolen cheviot yarn.  
*Weave:* See Fig. 5; repeat 36 warp threads and 72 picks, 18-harness fancy draw.  
*Reed:* 10 @ 2 ends per dent, 72 inches wide.  
*Dress:* 1 end light gray mix. } 3 times.  
 1 " silver gray }  
 30 ends silver gray  
 36 ends, repeat of pattern.  
*Filling:* 21 picks per inch, all 1¼ run woolen cheviot, black.  
*Finish:* Cheviot finish, full, clear face on shear, 56 inches wide.

#### SILK WEAVING OF INTERIOR CHINA.

One of the greatest and most important industries of Szechuan Province is silk, sericulture, and silk weaving. The Chengtu loom differs very little from the ordinary hand loom, which still survives in parts of Europe. The operators of these looms are in nearly every instance men over 16 years of age. The hours are usually from about daylight to dusk. In Chengtu there are more than 6,000 looms engaged in the manufacture of silk and satins only, and in the Province there are about 6,000 crape looms, but no figures are obtainable for an approximate estimate of ribbon or gauze looms.

The manufacture of silk braid by hand by women is a common street sight in Chengtu. The weaving is done by families, the finished article being sold to native brokers. The men engaged in the different lines of work earn from 5 to 25 cents per day, while the women average from 5 to 10 cents. In those cases where children under 16 are employed their wages average 3 to 5 cents per day. The silk fabrics manufactured include satins, crapes, braids, velvets, gauzes, plush, ribbons, thread and cords.