FIGURING WITH EXTRA WARP.

In this instance figures are produced upon single cloth structures by means of floating (after a given design) an extra warp alternately on face and back of said single cloth. In most instances one set, or system, of extra warp-threads is thus used, whereas in others two sets are required, the latter referring to two main extra warp-threads taking the place of the one thread called for in the first arrangement, resulting in a more expensive fabric on account of the higher number of warp-threads needed in the warp for a given width of fabric.

One Set of Extra Warp.

This method of designing finds extensive use in the manufacture of dress goods, shirtings, ribbons, and produces most attractive styles.

As previously mentioned, a regular single cloth structure (one system warp and one system filling) forms the body of the fabric, the same being interlaced either with the plain weave, the 3 or the 4-harness twill, or a closely interlacing granite, crépe or similar well broken-up weave may be used.

Upon this single cloth structure the extra system of warp-threads, by means of floating on the face to suit the outlines of the design, forms a figure. Where not required to show in the figure portion of the design this extra warp-thread is then made to float on the back of the fabric structure, hence not visible on the face.

The design itself may in some instances refer to an all-over pattern, other times to spotting, but most often to stripe effects.

Figs. 1 and 2 are given to assist in explaining this weave-formation. Fig. 1 shows the design, as produced for practical work, on the point paper; a stripe effect calling for 13 warp-threads and 20 picks. Full squares show the floating of the extra warp on the face of the fabric, empty squares show where the same has to float on the back of the structure, i.e., is not seen on the face of the fabric.

Fig. 2 is the analysis for design Fig. 1. i.e., shows the interlacing of the ground and the extra (i.e., the figure) warp with the filling.

In connection with cotton dress goods, figured gingham, shirtings etc., the extra warp used, besides being of a different color, may at the same time be of a different material, so as to heighten the pronounced appearance (lustre) of the figure. Mercerized Cotton, Spun, Artificial or Thrown Silk, Mohair, etc., being used, depending upon the character and value of the fabric under consideration.
different, requires 13 harness for its execution on the loom.

The weave for the ground cloth calls for 2 or 4 harness; using (preferably) the latter, gives us 17 harness for weaving the complete fabric on the loom.

Fig. 9  Fig. 10  Fig. 11  Fig. 12

Adding cords, i. e., heavy ends (one, two or more warp-threads interlacing the same side by side) to the ground portion of the fabric between two stripes, in order to produce a more fancy fabric structure, will not increase the number of harnesses necessary, neither will fancy colorings interlaced on the plain weave and introduced in the shape of small stripes in the ground portion. If these small stripes, to be produced

cial stripes, in order to then hide the filling from the face and at the same time bring up the stripes pronounced, whereas fancy colored threads interlaced with the plain weave will result in a modifying of the value of the color of these threads by means of the filling showing combined (intermixed) with the fancy color of the warp in such stripes.

Ideas for Figure Stripes.

Figs. 3 to 16 are given to show a variety of such stripes to be produced with an extra warp, the same as explained in detail in connection with point paper design Fig. 1 and its analysis Fig. 2.

Geometrical as well as floral designs are given, and will show the endless variety of new designs that in a similar way can be constructed.

Designs given may be used as small single stripe effects, or two of them, placed a few ends of ground warp-threads apart, may be used as one stripe. In connection with some of the geometrical designs the position of the second effect can be inverted, producing in turn another stripe effect. Again, the position of the second effect, both in floral and geometrical designs, may be dropped, as compared to position of the first, producing in turn another stripe effect; single and double effects distributed may be used, in fact the combinations possible to be made are unlimited.

Fig. 3: Repeat 19 warp-threads, 9 harness point draw with 3 ends alike for the point. If using two of these effects, for one stripe in the fabric, you may drop the second effect 10 picks. This however will call for 9 more harnesses, i. e., 18 harnesses complete for the stripe, plus the 2 or 4 harness for the plain weave for ground, or any other weave that you care to use for the interlacing of the ground. Should you desire an extra wide stripe, use three effects of Fig. 3, keeping the two outside effects the same and dropping the centre effect as before explained. 2 or 4 ends plain between each two effects will improve the appearance of this combination stripe effect in the fabric. Combination as thus explained with stripe effect Fig. 3 can be practised with any of the designs given in this article; no special reference to this will be made again.

Fig. 4: Repeat 11 warp-threads, to be drawn on 6 harness, point draw.

Figs. 5 and 6: Repeat 11 warp-threads, straight draw.

Fig. 7: Repeat 12 warp-threads, straight draw.

Fig. 8: Repeat 11 warp-threads, to be drawn on 6 harness, point draw.

Fig. 9: Repeat 9 warp-threads, straight draw.

Fig. 10: Repeat 15 warp-threads, to be drawn on 14 harness, drawing twice in rotation on harness 7.

Fig. 11: Repeat 13 warp-threads, to be drawn on 9 harness, drawing five times in rotation on harness 5.

Fig. 12: Repeat 14 warp-threads, to be drawn on 13 harness by drawing two ends in rotation on harness 7.

Fig. 13: Repeat 18 warp-threads, straight draw.

Fig. 14: Repeat 11 warp-threads, straight draw.

Fig. 15: Repeat 14 warp-threads, straight draw.

Fig. 16: Repeat 13 warp-threads, straight draw.

Fig. 17 shows the application of one of these floral stripe effects to a silk shirtwaisting, the illustration being a photographic reproduction of the actual fabric.

The color arrangement of the warp is thus:
30 ends light (ground) = 30 ends
1 end dark \times 36
1 end light (floral stripe) = 72 ends
30 ends light (ground) = 30 ends
9 ends dark \times 5
12 ends light (five stripes) = 105 ends
9 ends dark (sixth stripe) = 9 ends

Repeat of pattern: 246 ends

In reeding these fabrics, pay only attention to your ground warp, adding the figure warp in its proper position in the same dent with its mate ground warp threads. This will give us in our example the following plan:

Fig. 17

Ground warp is shown by dash type, Figure warp by full type. On each side of the stripe 14 warp threads of ground warp are shown, interlacing on taffeta, and in unison with those ground threads as are used in the figure stripe.

With reference to drawing-in the warp in its set of harness, the figure warp calls for 18 harnesses straight draw, with two threads drawn in rotation on one harness. The ground, i.e., taffeta calls for 2

Fig. 18

Draw:
10 dents with 3 ends (ground only)
12 dents with 6 ends (3 ground and 3 mate figure)
48 dents with 3 ends (ground only)

70 dents for one repeat of design, i.e., 246 ends.

Fig. 18 is the point paper design, executed on 12 by 8 paper, to suit texture of fabric shown in Fig. 17, two repeats of the repeat being given.

Fig. 19 shows the analysis of the stripe, the arrangement of which is:

1 end ground warp
1 end figure warp \times 36 times over.
36, the unit of the figure stripe. This will give us 
(18 + 6 =) 24 harnesses for the drawing-in draft 
to use.
Two figure warp-threads have been drawn on one 
harness, a feature which shows an enlarging (double-
ing) of the original design. The same principle can 
be applied (with proper modifications) to any one of 
the figure stripes given previously in this article, to 
produce larger, i.e., more prominent effects.
(To be continued.)

HOW MITCHELINE QUILTS ARE MADE.

By W. Watson.

The Mitcheline quilt structure is a double cloth in 
which two plain fabrics are so firmly bound together 
as to be inseparable. The design is due to the inter-
change of the two fabrics, and the cloth is equally 
compact and solid in every part. A representation of 
a cloth is given in Fig. 1, while Fig. 2 shows a por-
tion of the point paper design to correspond.
The following are the weaving particulars of a 
medium quality of cloth:
Warp: 2 ends of 18's cotton to alternate with 1 
end of 32's cotton.
Filling: 2 picks of 40's cotton to alternate with 2 
picks of 8's soft spun cotton,
64 ends and 96 picks per inch.
The 18's warp contracts about 2 per cent, and the 
32's warp (which is placed on a separate beam) from 
20 to 25 per cent, while the shrinkage in width varies 
from 10 to 15 per cent.
The 18's warp and the 40's filling form the plain 
ground fabric, and the 32's warp and the 8's filling 
the plain figuring fabric, on the right side of the 
cloth, and vice versa on the reverse side. The 32's 
fabrics solidly together. The cloths are mostly 
woven in the grey, and then bleached, but sometimes 
the ends which form the ground (the 18's) are all 
colored, or are arranged in stripes of white and color; 
a white figure then being formed upon a colored or a 
striped foundation.

Method of Loom Mounting.

The same as in weaving Marseilles quilts, a com-
position of two working comb-board-shafts and two 
harness-shafts are employed. Diagram A in Fig. 3 
illustrates the principle of the tie-up of the Jacquard 
harness, while diagram B in Fig. 3 shows the system 
of drafting.
Two-thirds of the warp-threads (the 18's) are 
drawn upon the Jacquard harness, and one-third (the 
32's) upon the two shaft harnesses, as shown in dia-
gram B. Two harness cords, however, are connected 
to each neck-cord (as shown also at A); one 
of these harness cords passes through the front 
comber-board, the other through the back board, so 
that including a thread drawn in one of the harness 
shafts, each neck-cord and its corresponding hook in 
the Jacquard machine, is equivalent to a group of 
three threads.

By raising a hook, two harness threads—one on 
each side of a thread drawn in a shaft harness are 
lifted together, but by raising the comb-board separa-
tely, the two Jacquard harness threads, by 
means of knots tied to them, resting upon the boards, 
are operated independent of each other.

Method of Designing and Structure of Cloth.

Taking the arrangement of the filling as 2 picks 
fine (40's) and 2 picks coarse (8's) the order of 
shedding then is as follows: The comb-board-shafts 
raise in alternate order on the two fine picks, and form 
the plain weave, represented by dots in diagrams C 
and D in Fig. 3. The harness-shafts lift in 2-and-2 
order alternately, and produce the weave shown by 
 crosses in diagrams C and D in Fig. 3. The Jacquard 
is raised on the first coarse pick and remains up on 
the second coarse pick and lifts the harness threads