In fabric shown in Fig. 4, we find every pair of warp-threads (1 standard and 1 whip) to twist in the same direction, the crossing of the whip-threads in its drawing-in draft (Fig. 3) being arranged from right to left. The doup used in this instance is known as a left-hand doup.

This crossing of the whip-threads can also be arranged in the other direction, see drawing-in draft
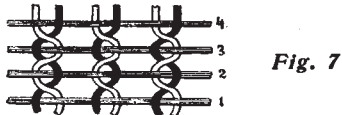

Fig. 6

Fig. 7

Fig. 6, but this will not change the general appearance of the woven fabric, as is readily seen by consulting fabric sketch Fig. 7 and comparing it with Fig. 4. The doup used in this instance is known as a
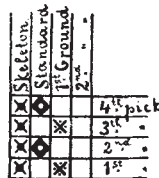

Fig. 8

right-hand doup, *i. e.,* arrangement shown in Fig. 2. Consulting drawing-in draft Fig. 6 shows the drafting of the warp in its ground-harness set to be: one whip to alternate with one standard thread, or, it is the reverse arrangement from that used in draft Fig. 3.

Fig. 8 shows us the harness chain for weaving fabric shown in Fig. 7. Compared to chain Fig. 5, it shows that ground-harness 1 is raised on picks 1 and 3 in place of ground-harness 2 as was done in chain 5. Picks 2 and 4, *i. e.,* the raising of the doup (standard and skeleton-harness) is the same in both chains.

<center>(To be continued.)</center>

Raw cotton forms the bulk of Egyptian exports, the value last year reaching $121,208,510, or 84 per cent of the whole.

Chinese cotton is sold in the United States to a greater extent each year, the following statistics showing the direct receipts from China for fiscal years ended June 30:

	Pounds.	Value.
1906	360	$ 36
1907	764	45
1908	201,619	17,548
1909	1,452,808	139,650
1910	4,596,821	526,080

Danish cotton manufacturers propose to form a union at Ziel, Denmark. This union will affect 82,000 spinning spindles and 12,000 doubling spindles, with an annual consumption of 26,000 bales of cotton.

NOVELTIES IN COTTON FABRICS.
Figured Madras Shirting.

Fig. 1 shows a photographic view of the woven fabric, reproduced actual size.

Fig. 2 shows the design on point paper; one repeat in its width and one and one-half repeats in its length are given. 60 picks comprise one repeat.
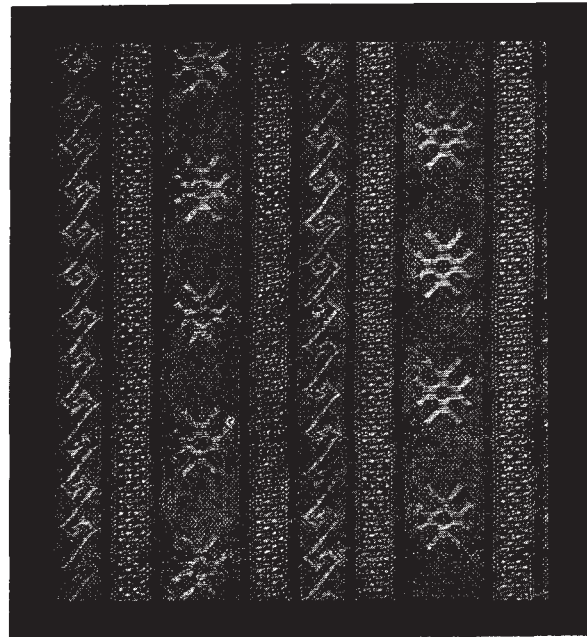

Fig. 1

Fabric sample Fig. 1 shows just one repeat of the design in its width.

Two different styles of stripe effects are worked out in the design: (*a*) Two 6-harness satin stripes (warp effect) having between them imitation gauze, and (*b*), two figure effect stripes produced by floating the filling on plain ground work. One of the effects is a "Wall of Troy" stripe, the other a "Star" effect placed after the "plain setting."

Warp: 3860 ends, all single 60's cotton, cream color.

<center>Arrangement of stripes:</center>

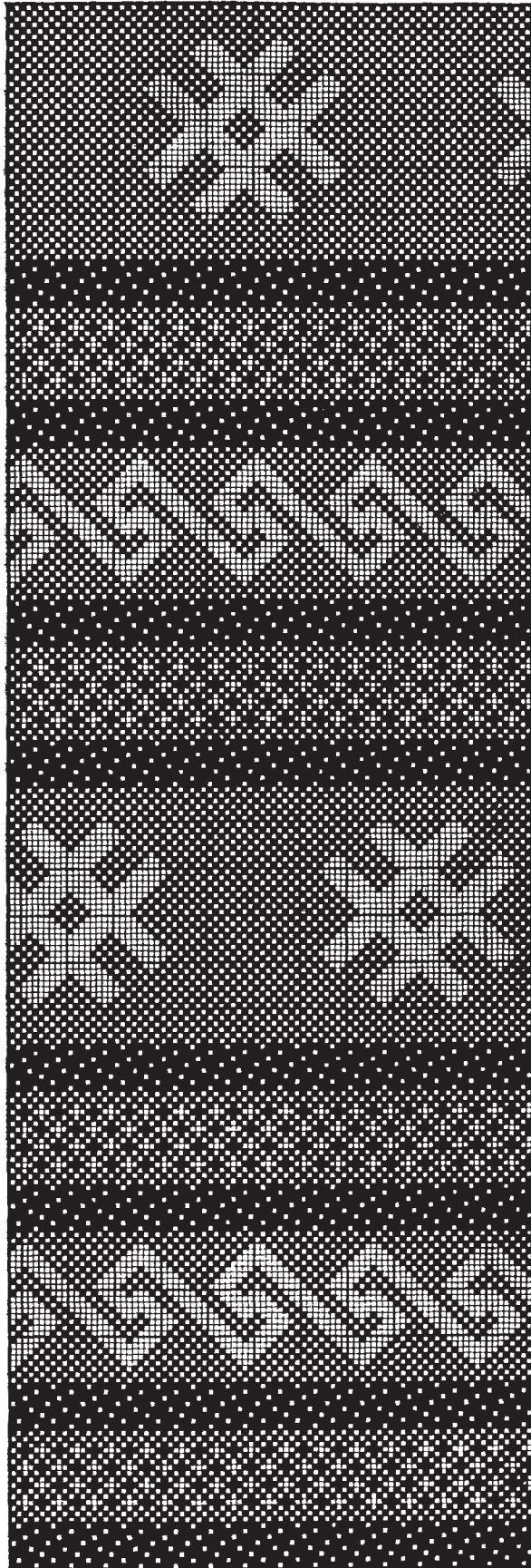| 8	ends	satin
2	"	plain
12	"	imitation gauze
2	"	plain
8	"	satin
26	"	figure (wall of Troy) effect
8	"	satin
2	"	plain
12	"	imitation gauze
2	"	plain
8	"	satin
44	"	figure (Star) effect

134 ends—draw in 75 dents.

Two repeats, *i. e.,* 268 ends, drawn in 150 dents from one repeat of the design on account of the "plain setting" of the star effect.

Reed: 58 = 37½ inches exclusive selvages, or 38 inches including selvages.

Draw *satin* 4 ends, *plain* and *figured* 2 ends, in one dent.

Gauze draw 2 empty
        3 in one dent } 4 times
        2 empty
        or 12 ends for 14 dents.

Selvage: 60 ends 2/60's cotton, 2 ends per dent.

Fig. 2

Layout for the Loom: Use 2 Beams—one for the satin, the other for the plain, figure and gauze.

32 ends satin
102 "   plain, figure and gauze
_____
134 ends, repeat of stripe pattern.
3860 ÷ 134 = 28 repeats + 108 ends
In full warps are:
   928 ends satin, Beam 1 (5½% take-up)
  2932 "   plain, figure and gauze, Beam 2
(4½% take-up)
   60 ends selvage (put on Beam 2)

AMOUNT OF MATERIAL REQUIRED FOR 1 AND 1000 YARDS OF FABRIC.

For 1 yard.

Warp: Satin   136.045 grains
       Plain etc., 426.339   "
       Selvage   17.449   "
                  _____
               579.833 grains, weight of warp.

Filling: 90 picks (single 28's cotton) per inch = 1017.-856 grains.
      Warp   579.833
      Filling 1017.856
            _____
      Total 1597.689 grains, weight of fabric for one yard.

For 1000 Yards.

Warp: 579833 grains =   82.833 =   83 lbs.
Fill.   1017856   "   = 1145.407 = 145   "
                                    _____
Total 1597689   "   =   228 lbs. of yarn required to produce 1000 yards of fabric.

The Crompton & Knowles Doup-Heddle for Jacquard Leno-Weaving.

The object aimed at in the construction of this doup-heddle is to provide an efficient and at the same time durable leno heddle, with a metal doup supported thereon instead of the easily breakable twine doup in general use.

To more clearly explain the construction and operation of the new heddle, the accompanying four diagrams are given, and of which Figure 1 is a side view of the heddle looking in the direction of arrow x in Fig. 2. The latter illustration is a front view of the heddle, looking in the direction of arrow y in Fig. 1. Diagram Fig. 3 shows, on an enlarged scale, the center portion of the heddle shown in Fig. 1, and the doup wire lowered; Fig. 4 shows the center portion of the heddle shown in Fig. 3, looking in the direction of arrow z, same figure.

The new doup-heddle comprises two members, indicated by numerals of reference a and b respectively in our illustrations.

Member a is made of wire and formed with an eye c at its top for adjustment to its respective harness cord d; its bottom end is formed into a similar eye e for convenient adjustment of its lingo f. The latter is of a fork shape, its two prongs straddling a cord or wire g, extending the width of the loom, preventing member a and thus the complete heddle from turning.

Member a of the double-heddle is made of three strands of wire, and has a central strand h extending