Pick 1[c], *Yellow pick:* 1st Section Red
(*Dot* type) 2nd " White and Red
3rd " $\frac{1}{1}$ plain weave.

2ND LINE OF DESIGN.

Pick 2[a], *Red pick:* 1st Section $\frac{1}{1}$ plain weave
(*Cross* type) 2nd " White
3rd " White and Yellow.

Pick 2[b], *White pick:* 1st Section Red and Yellow
(*Empty* type) 2nd " $\frac{1}{1}$ plain weave
3rd " Yellow.

Pick 2[c], *Yellow pick:* 1st Section Red
(*Dot* type) 2nd " White and Red
3rd " $\frac{1}{1}$ plain weave.

WARP:		FILLING:		RESULT:
Yellow	with	Yellow	=	(1) *Yellow*
Red	"	Red	=	(2) *Red*
Blue	"	Blue	=	(3) *Blue*
Yellow	"	Red	=	(4) *Orange*
Red	"	Blue	=	(5) *Violet*
Blue	"	Yellow	=	(6) *Green.*

Continue in this manner, always cutting three cards for each line of your design, reading the same line three times over. Remember to change the plain weave, cutting $\frac{1}{1}$ for all uneven lines and $\frac{1}{1}$ for all even lines of your design in the section of the card where plain weave is called for. This indicates that the design must have an even number of lines to cut cards by, so that the plain weave will repeat evenly.

As mentioned before, besides the three pure colors now explained three additional mixes can be obtained, by transposing the unit of the 3-ply plain weave to six different starting points, considering warp and filling in unison, a feature readily explained by an example, using for this purpose *Yellow, Red* and *Blue.*

A STUDY IN WEAVE FORMATION.

FANCY EFFECT DIAGONALS.

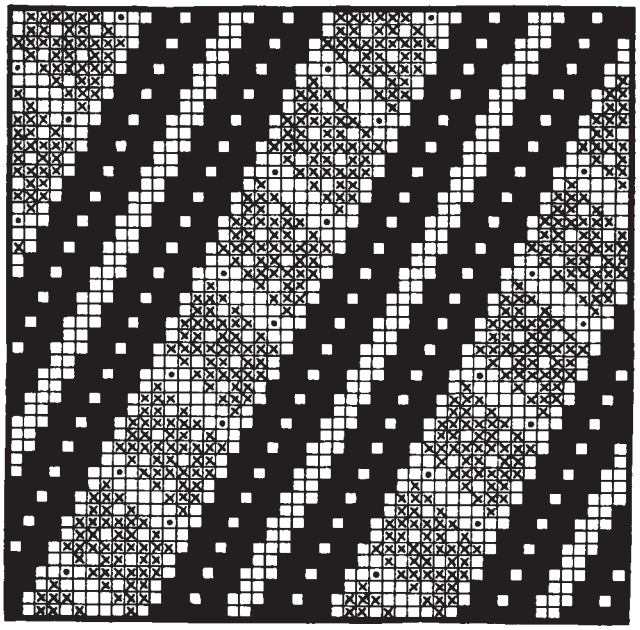

Fig. 1

The basis of construction of these fancy weaves is a 63 deg. steep twill, or diagonal, as often called; in some instances a 70 deg. steep twill may be used.

RULE FOR CONSTRUCTING THESE WEAVES.

(1) Select a steep twill showing a prominent filling effect twill line, *i. e.,* more sinkers than would be permissible, provided we would use the steep twill direct.

(2) Construct two repeats of this steep twill side by side.

(3) Insert your fancy effect (risers) in the open space left for this purpose in the plan of the foundation steep twill.

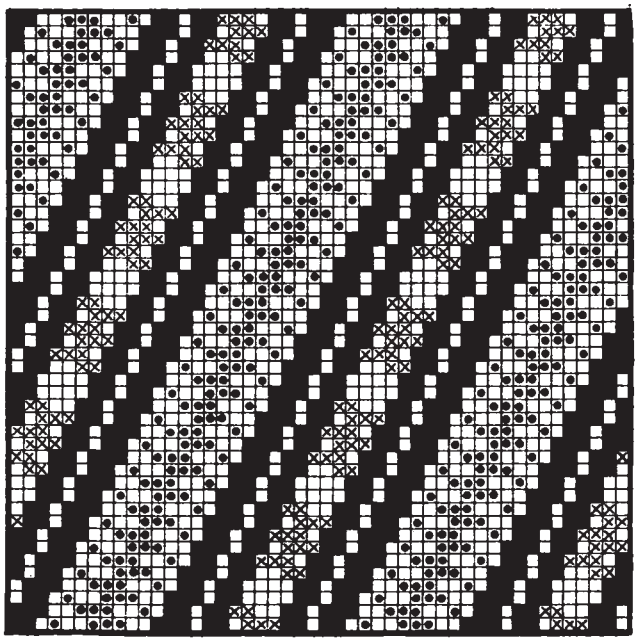

Fig. 2

The construction of these fancy effect diagonals will be fully explained by describing the construction of the accompanying three weaves, every one of which repeats on 24-harness straight draw, and 48 picks. Two repeats, side by side, of each weave are shown, to better explain their construction and their effect in the fabric.

Weave Fig 1 has for its foundation the $\frac{5}{1}\frac{5}{5}\frac{5}{1}\frac{5}{2}$ 24 by 48 steep twill, as shown by *full* type. The fancy effect is then inserted into the 21 sinkers, *i. e.,* then empty squares, see *cross* type. *Dot* type is used to bind down a filling float otherwise flushing over four warp-threads. In inserting the diamond shaped fancy effect and which is interlaced with the 3-harness warp-effect twill constructed with a back pick, we placed the heavy pick of the fancy effect on the light pick of the steep twill, and *vice versa* the light pick of the fancy effect on line with the heavy pick of the steep twill.

Weave Fig. 2 has for its foundation the $\frac{5}{2}\frac{4}{8}\frac{4}{2}\frac{5}{1}\frac{8}{1}$ 24 by 48 steep twill, as shown by *full* type. The 8 sinkers in turn are interlaced with the fancy effect shown by *cross* type, inserting another 63 deg. steep twill (see *dot* type) in the 18 down float.

Weave Fig. 3 has for its foundation the $\frac{9}{42}$ 24 by 48 steep twill as shown by *full* type. The 42 sinkers are taken care of by inserting what we call a curved twill shown by *cross* and *dot* type.

CONSTRUCTING FANCY EFFECTS BY MEANS OF SINKERS.

In the same way as we thus inserted risers into sinkers of the steep twill provided for this purpose,

we can also add sinkers into the risers of the steep twill. In this instance we then do not need the excessive filling float referred to in previous examples, pro-

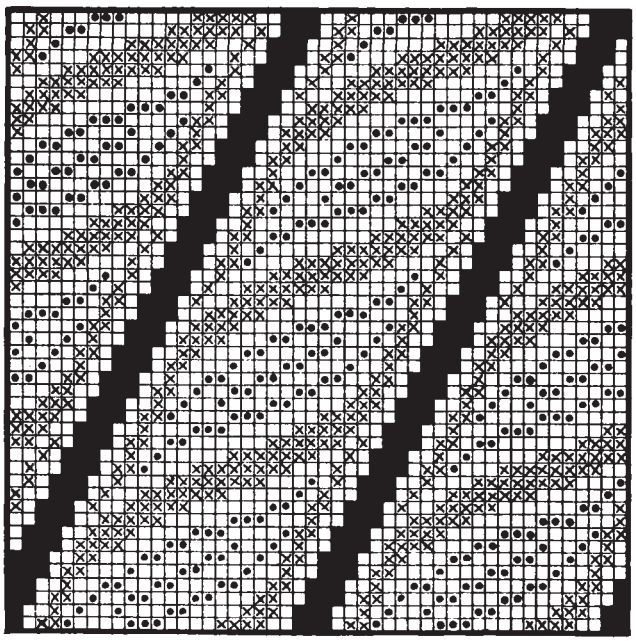

Fig. 3

viding in its place a prominent warp cord for the steep twill.

Fig. 4 explains subject, showing a novel stripe effect (see *cross* type) introduced every eight warp-threads in one of the three cords as contained in the 48 picks of the $\frac{10}{6}$ 16-harness steep twill, as shown by *full* type. The fancy effect in this instance is pro-

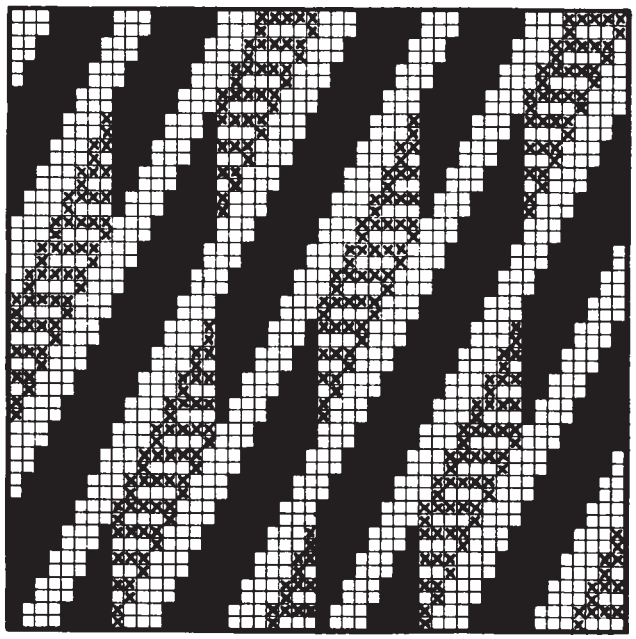

Fig. 4

duced by sinkers, changing the 10 *up* in the steep twill, for 8 warp-threads, to the $\frac{2}{1}\frac{1}{1}\frac{1}{1}\frac{3}{1}$ 63 deg. twill, as shown by *cross* type in our weave.

The Silk Association of America reports that the receipts of raw silk for October amounted to 3,736,932 pounds, as compared with 2,259,005 pounds for October of last year.

ARTIFICIAL SILK.

Chardonnet v. Viscose.

By *A. F. Barker and F. Pickles.*

Troubles have been experienced in dyeing and finishing cloths in which one kind of artificial silk has replaced another. This has been attributed to Chardonnet silk being weaker than viscose, hence the breaking of silk stripes.

A single thread test of both types of silk, 240 denier, two-fold, however, gave the figures:

Viscose 12.17 oz., 1.42 inch elongation;

Chardonnet 12.7 oz., 0.83 inch elongation.

Viscose was thus found to be 70 per cent more elastic but similar in strength.

Tested in the wet condition:

Viscose 4.22 oz., 1.8 inch elongation;

Chardonnet 4.09 oz., 0.963 inch elongation.

Moisture has practically the same effect in each case. Two similar cloths with cotton warp and artificial silk filling were woven with these two kinds of silk. The two patterns were boiled with water for 30 minutes and allowed to dry. It was found that the viscose filled cloth had shrunk 4 per cent in width and the Chardonnet filled cloth 8½ per cent. It is evident that if a cloth containing Chardonnet silk is made to the same particulars as a cloth containing viscose, and is required to be finished to the same dimensions, a defective cloth will result owing to the Chardonnet silk shrinking more than viscose.

A comparison of two cloths dyed and finished, one with viscose stripe, the other with Chardonnet stripe, showed the latter to handle perceptibly tighter.

Tests made on single threads taken from the cloths gave the following results:

Viscose 9.45 oz., 1.71 inch elongation;

Chardonnet 3.54 oz., 0.408 inch elongation, showing a decrease in strength and elongation from the grey figures quoted before much greater in the case of Chardonnet silk. In tests on the cloth in which it was noted when the silk stripes gave way, the viscose stripe did not break until the cloth itself broke, while the Chardonnet stripe broke under 42 per cent of the total load necessary to break the body of the cloth. These tests were carried out some years ago, and the same results might possibly not be obtained with present-day products, as the manufacture of both viscose and Chardonnet silk has undergone modification.

Preparation of a Saline Solution of Viscose.

According to a late English patent by the Société Anonyme de Soie de St. Chamand, viscose is made by dissolving cellulose xanthate in alkaline water, and the viscose thus made is precipitated in a bath of an acid, an acid salt, or an ammoniacal salt. By this process a considerable amount of the precipitating material is used to neutralize the alkali combined with the cellulose before precipitation takes place.

The patentees have found that if the xanthate is dissolved in a solution of an acid salt, preferably the salt of a feeble acid, instead of in an alkaline solution, this is overcome. The xanthate is dissolved in known manner in a solution of a bicarbonate or an alkali bisulphite, in the proportion necessary to neutralize the free alkali and part of the combined alkali. It is found that for 100 kilos. of cellulose 10-15 kilos. of sodium bisulphite, 8-12 kilos. sodium bicarbonate, or 13-20 kilos. acid sodium phosphate (Na_2HPO_4) are required. By this means a saline solution of viscose is obtained which contains no free alkali.