Explanations given in connection with weave Fig. 5 refer also to weaves Figs. 7 to and inclusive Fig. 16, crochet type used in illustrating weaves has been selected to correspond, hence no detail explanation necessary.

Weave Fig. 7, repeat 18 x 6. Ground weave (see *full* type) the 3-harness (warp effect) twill. Size of ribs: 9 x 9.

Weave Fig. 8, repeat 36 x 6. Ground weave same as before. Size of ribs: 18 x 18.

Weave Fig. 9, repeat 32 x 8. Ground weave: 4-harness even sided twill. Size of ribs: 16 x 16.

These four examples of rib weaves, presenting uniform size of ribs in connection with using our foundation weaves for interlacing the raised rib, will indicate that any size of rib may be used in designing new weaves without departing the least from the principle of their construction laid down in our explanations.

(*B*) Varying the Size of the Rib Float in the Repeat of the Weave.

Weaves Figs. 10, 11, 12 and 13 are given to illustrate the subject.

Weave Fig. 10, repeat 18 x 6. Ground weave: 3-harness, warp effect, twill. Size of ribs: 6 x 12.

Weave Fig. 11, repeat 16 x 4. Ground weave: plain weave. Size of ribs: 4 x 12.

Weave Fig. 12, repeat 12 x 4. Ground weave: plain weave. Size of ribs: 4 x 8.

Weave Fig. 13, repeat 40 x 4. Ground weave: plain weave. Size of ribs: 4 x 4 x 12 x 4 x 4 x 12.

(*C*) Using Two Ground Weaves.

This subject is explained by means of weaves Figs. 14, 15 and 16.

Weave Fig. 14, repeat 20 x 12. Ground weaves used: the plain weave and the 3-harness, warp effect, twill. Size of ribs: 8 ends plain x 12 ends twill.

Weave Fig. 15, repeat 30 x 12. Ground weaves used: the plain weave and the 3-harness, warp effect, twill. Size of ribs: 4 ends plain, 6 ends twill, 8 ends plain, 12 ends twill.

Weave Fig. 16, repeat 36 x 12. Ground weaves used: the plain weave and the 3-harness, warp effect, twill. Size of ribs: 6 ends plain, 9 ends twill, 12 ends plain, 9 ends twill.

(To be continued.)

GAUZE OR LENO WEAVING.

(*Continued from page 60.*)

Jacquard Gauze.

In gauze fabrics constructed upon the Jacquard loom, in which it is desired to produce large and elaborate designs by the aid of figuring with gauze and ordinary weaving, it will be necessary to arrange a slackener for every whip-thread.

We will now explain the method of adjustment and operations of slackeners for Jacquard fabrics composed of threads working in pairs (one whip-thread douping with one standard-thread). In such fabrics every whip-thread must be threaded three times; first in a heddle in rear of the regular harness, technically known as the *rear-heddle* or *rear-harness*, next in a heddle of the ground harness and finally to the doup. The rear heddles, *i. e.*, slackeners, have eyes 1¾ inches

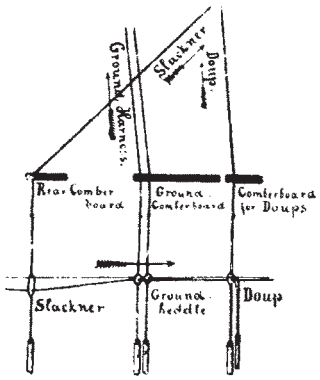

Fig. 35

high and are fastened from 1¼ to 1½ inches lower than the heddles of the ground-harness and the doup. This rear-harness is generally placed at a distance of 8 to 10 inches from the ground-harness. The harness cord of each rear-heddle is connected with the harness cord of its mate full-heddle of the doup, to one neck-cord of the Jacquard machine (thus both harness-cords are operated by one hook) and consequently the rear-heddle will lift at the same time when raising its mate standard. This arrangement will permit the whip-thread becoming slackened from the rear when required to twist around the standard-thread when douping.

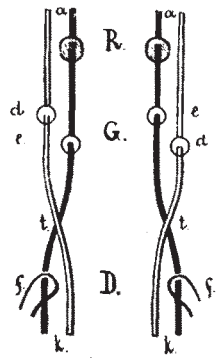

Fig. 36 *Fig. 37*

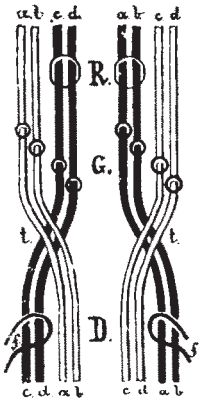

Fig. 40 *Fig. 41*

Fig. 38 *Fig. 39*

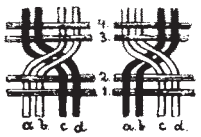

Fig. 42 *Fig. 43*

After the whip-thread is drawn in the rear-heddle, it is next drawn in its respective heddle of the ground-harness, from where it is threaded to the doup.

In diagram Fig. 35 a plan of the procedure thus explained is given.

In diagrams Figs. 36 and 37 are shown the ground plans of threading the previously explained Jacquard gauze. Fig. 36 represents the threading of the whip-thread in a left-hand doup.

Fig. 37 illustrates a respective threading of the whip-thread to a right-hand doup. Both positions of doups to their respective standard-heddle are referred to as if considered by the weaver standing at work, in front of the breast beam of the loom.

Letters of reference are selected correspondingly: *R,* rear-harness; *G,* ground-harness; *d,* heddle for standard-thread; *e,* heddle for whip-thread; *t,* passing of the whip-thread below standard-thread; *D,* doup-harness; *f,* doup.

Whip-threads are shown in full black, standard-threads outlined.

Fig. 38 shows the corresponding crossing as produced in the fabric, by using the arrangement illustrated in diagram Fig. 36.

Fig. 39 shows the corresponding crossing as produced in the fabric, by using the arrangement illustrated in diagram Fig. 37.

Figs. 40 and 41 illustrate the ground plans of using two whip-threads for douping against two ground-threads. The following letters of reference are selected correspondingly: *R,* rear-harness; *G,* ground-harness; *D,* doup-harness; *t,* passing of the whip-threads below ground-threads; *f,* doup. Threads *a* and *b* in Fig. 40 are standard-threads, and threads *c* and *d* whip-threads. In diagram Fig. 41 the standard-threads are indicated by letters of references *c* and *d* and the whip-threads by letters of references *a* and *b.*

Figs. 42 and 43 show the corresponding crossings as produced in the fabric by threading whip and standard-threads, as illustrated in diagrams Figs. 40 and 41.

Fig. 40 illustrates the threading of the whip-threads to a left-hand doup, and Fig. 41 to that of a right-hand doup.

FABRIC ANALYSIS

ASCERTAINING RAW MATERIALS USED IN THE CONSTRUCTION OF FABRICS.

(*Continued from page 61.*)

Tests by Burning.

Vegetable fibres are composed of carbon, hydrogen and oxygen; silk, in addition, contains nitrogen, and wool, nitrogen and sulphur. This enables a simple test to be applied for distinguishing vegetable fibres, wool and silk, from each other.

Wool, when burnt, curls up and forms a bead of burnt matter, and, owing to the presence of sulphur, gives off a disagreeable odor of burnt horn.

Silk burns in the same manner as wool, but as there is no sulphur present in the fibres, no pronounced smell of horn is evolved.

Vegetable fibres burn with a flash, and give off little smell.

Weighting or adulteration of silk fibre is readily ascertained by burning the thread. If it is pure and properly dyed, it will take fire with difficulty, and the flame will go out as soon as the fire is withdrawn, in turn leaving a nearly jet black mass, the same as wool. Weighted silk takes fire readily, and once burning, will smoulder, leaving a refuse, retaining the shape of the yarn or fabric tested, and is of a light yellowish red color.

Fig. 38 shows, at the left, the mass of bubbles or beads, composed of a hard, thin substance, which are formed as wool fibres burn. The right hand portion

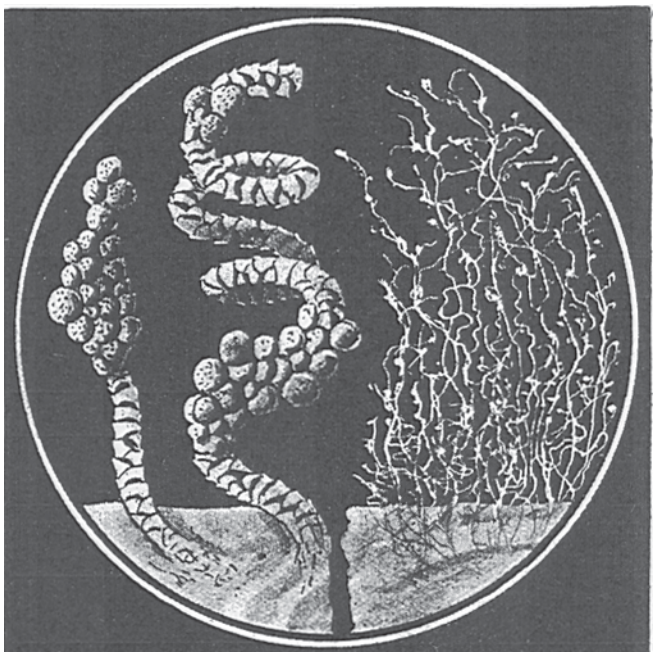

Fig. 38

of the illustration shows the ash of cotton fibres. Both illustrations refer to the testing of the nap of flannelets, *i. e.,* whether they are wool or cotton.

Tests by Reagents.

If it is wished to try the action of some chemical reagents on the fibres, or to recognize the fibres, it can be easily done at a small expense. A few test tubes and one or two beakers, together with a bunsen and the necessary reagents, will enable one to perform most of the test mentioned. The reagents may be prepared or can be secured from a chemical supply house.

The zinc chloride solution, which detects silk in the presence of cotton or wool, or both, may be prepared, according to Elsner, by dissolving 1000 grams of dry zinc chloride in 850 c.c. of distilled water and adding 40 parts of zinc oxide.

The ammoniacal copper hydrate solution, and which distinguishes cotton from wool or silk, or both, according to Neubauer's method, is prepared as follows:—A solution of copper sulphate is precipitated by caustic soda in the presence of ammonium chloride (sal ammoniac). The precipitate is filtered and well washed. If this precipitate is required to be kept, it must be stored under water. The ammoniacal copper solution is prepared from this precipitate by adding an excess of ammonia until it is completely dissolved, a deep blue solution being thus obtained.

The sodium plumbite, which recognizes wool from cotton or silk, or both, is made by heating lead oxide (litharge) with a solution of caustic soda. In doing