

of potash and 30 grms. acetate of soda; for medium blues, 150 grms. of red prussiate, and 50 grms. of acetate of soda; and for deep blues, 200 grms. of prussiate and 50 grms. of the acetate.

INSOLUBLE AZO-DYES ON COTTON.

Fischesser and Pokorny propose to use the *beta*-oxynaphthoic acid, having a melting point of 216° C., in the place of *beta*-naphthol, which has hitherto been used for the production of the so-called naphthol colours in calico printing. Different results are obtained: thus, while *beta*-naphthol with dianisidine gives a violet, a blue is obtained with the *beta*-oxynaphthoic acid. The method of using is to prepare a bath from

35 grms. *beta*-oxynaphthoic acid,
60 grms. caustic soda lye 70° Tw,
100 grms. water.

In this the calico is padded, then dried, when it is ready for printing. This is done with a colour made from

50 grms. dianisidine liquor A,
50 grms. nitrite liquor B,
220 grms. tragacanth liquor.

The dianisidine liquor A is made from

26 grms. 77% dianisidine sulphate,
40 grms. hydrochloric acid,
280 grms. tragacanth liquor.

The nitrite liquor B is made from

14 grms. sodium nitrite,
76 grms. water,
260 grms. tragacanth liquor.

In printing it is well to use a roller with a rather deep engraving, and to give a strong pressure. After printing, the goods are dried, washed well, and soaped. The addition of 25 grms. sodium acetate to the printing colour makes the colour of a greener shade of blue, but this is paler. By using other bases than dianisidine, a variety of other colours can be obtained from the new acid, as is the case with *beta*-naphthol. In all cases there is a bluer shade of colour produced, as is seen in the following table:—

Base.	<i>Beta</i> -naphthol.	<i>Beta</i> -oxynaphthoic Acid. M.P. 216° C.
Aniline	Orange	Red
Paratoluidine	Orange	Red
Xylidine	Orange-red	Blue-red
<i>Beta</i> -naphthylamine	Scarlet	Bordeaux
Tolidine	Brown violet	Violet
Dianisidine	Violet	Blue

For dyeing, the new acid may be used in the following method: The cotton is prepared in Turkey-red oil, then passed into a bath made from sulphate or hydrochlorate of dianisidine, sodium nitrite, and sodium acetate, and immediately into a bath of the oxynaphthoic acid, when the colour is developed.

DELAINES are prepared for printing by soaping, and are then passed through the sulphur stove, (hydrogen peroxide gives better results, but is much more expensive); and afterwards treated with chlorine in the usual manner.

BINDER has described to the Mulhouse Society a process of discharging indigo-dyed goods, and at the same time fixing alumina on the discharged places, so that they can be dyed subsequently. This process consists in printing a mixture of bromide and bromate or chlorate of potash or soda, to which is added, as a simple thickening, a salt of alumina, preferably the sulpho-glycerate, or the sulphate or chloride. After printing, the goods are passed through a steamer and washed, when they are ready for the dyeing process.

DIE PRAXIS DER FÄRBEREI.—We have received the first part of Dr. J. Herzfeld's new work on dyeing, published under the above title. This really forms the third portion of a comprehensive work on bleaching and dyeing of all kinds of textile fibres. The first and second parts have already been published, and deal with the materials used in the various industries and with the processes of bleaching. The part on dyeing, to judge from the first portion, promises to be a good one. It is to be issued in twelve parts, at the price of 1 mark each. We would commend this method of publishing expensive scientific works in parts to the notice of English publishers. It is published in Berlin by Fischer and Heilmann.

VEGETABLE fibre in woollen or silk tissues may be detected by taking a small piece of the fabric, about six square inches, and thoroughly washing in water to free it from any starchy matter that may have got in in the process of manufacture; then steeping in a small quantity of strong sulphuric acid for from five to ten minutes, diluting with water, boiling up, making the solution strongly alkaline with caustic soda, adding a few drops of a dilute solution of archil, and boiling for five minutes. If there is 1 per cent. of vegetable tissue—cotton, flax, or China grass—present, the violet colour of the archil will be discharged; if it is retained after five minutes of boiling, there can only be an inappreciable quantity of vegetable fibre present in the tissue.

WOOL that has been treated with chlorine acquires a stronger affinity for mordants and dye-stuffs, and in consequence is dyed much deeper shades than untreated wool. In so treating wool care should be taken not to use too much bleaching powder, from 2 to 2½% of the weight of the wool being quite sufficient. This is made into a clear solution, acidified with sulphuric acid, and the wool is worked in this for 30 minutes, rinsed in water, and then dyed in the usual manner. For dyeing mordant-dyeing colouring matters, a preliminary treatment with chlorine is a great improvement: much deeper shades can then be obtained, which is due to the fact that the wool takes up the mordant very much better than untreated wool—with the exception of those dye-stuffs that require copperas as a mordant, as, for example, the gambines, when, instead of a green, a brown is obtained; as also is the case with logwood.

THE wool spinning and quilt factory at Ambroise, in the department of Indre and Loire, belonging to Eric Pat'nault, has been destroyed by fire. The damage is extensive, and 500 workpeople are out of employment.

Designing.

NEW DESIGNS.

COTTON, LINEN, AND SILK DESIGNS.

There is a keen competition among manufacturers to put into the market the most striking and attractive designs, so as to eclipse all previous efforts. This involves changes in weave, style, colouring, and widths. The texture must be soft, and woven in beautiful blendings of mauve, melon, fawn, violet, and greens, either in stripes or plaids. Ladies' blouses, shirt-waists, fancy aprons, and morning gowns, are mostly in light muslin fabrics, plain ginghams, with large patterns and small lines of silk, in pink, blue, or canary, all becoming every day more popular. Cotton crepons, or really coarse crape, 27 inches wide, in white and delicate blues, buff, and pink are favourite goods. Nainsook or cambric fabrics in wide widths and of a soft finish are in demand, and are fast displacing the China silk and all-wool cashmeres for night-gowns, etc. In all these classes of fabrics alluded to, conspicuous designs are not desirable.

Design A is constructed for a muslin dress fabric with spun silk; it is on 12 shafts, 20-end draft, 16 to the round; the figures shewn on the margin of the draft indicate that 1, 2, 3, 4 are for the plain ground of cotton, and 5, 6, 7, 8, 9, 10, 11, 12, are for the diagonal of spun silk; two of cotton and one of silk, three in a dent; the gauge or open portion of the ground stripe two in a dent, four dents empty. Warp 40's single cotton, spun silk, 30's two-fold, 40 dents per inch; weft 40's single cotton, well bleached, 80 picks per inch. Warp pattern: 60 spun silk, amber colour, with 120 cream cotton. As each thread of the spun silk must have two of cotton for the ground, the diagonal stripe will be completed with 180 threads in all, 60 going on the 5, 6, 7, 8, 9, 10, 11, 12 shafts, and the 120 cotton threads on 1, 2, 3, 4, which are the plain shafts; the dents for this full stripe would be $180 \div 3 = 60$: two azure blue, two in

a dent, four dents empty, 2 cream, two in a dent, four dents empty, 2 cream, four dents empty, 2 red, and repeat from the first of the spun silk; weft all cream, white, or ivory. The warping will be as follows: 2 cream cotton, 1 amber spun silk, repeated 60 times, 2 azure blue cotton, 4 cream cotton, 2 red cotton. The stripes may be increased or diminished at will by the shaft; and for ground cotton, all shrimp; the silk light green; the weft always the same tint as the ground cotton. It will be clearly seen that a great diversity of patterns can be obtained, and the gauge stripe extended if desirable; but in no case so much as to weaken the fabric.

Design B extends to 42 ends before commencing a repeat, 21 weft picks. It will be seen from the design, which is fully carried out, that there are two distinct runs of the diagonal, though of the same character. We have constructed it as a suggestion for a mixed fabric of cotton and linen, suitable for rough out-door wear as a vesting, suiting, or dress material. We can only give a few details for a medium cloth. Warp all 2-60's cotton, 36 dents per inch, dark fawns, browns, blues, or deep greens; weft 30's single, 72 picks per inch, all canary for a ground of blue or brown, and coral for a ground of deep green. In the use of two colours for this class of fabrics, the contrasts must be carefully sought for. Perhaps a few remarks in connection with the rule for contrasts may be found useful. Simultaneous contrast indicates the giving of value to pure colours through the aid of each other. Blue and yellow are good if equal in tone. The word tone means really that if the shade of any colour deepens towards black, the tint to be employed as a perfect contrast of light and shade as well as colour ought to approximate in the same proportion towards white. In the case then of a very dark blue warp ground, the weft would, according to rule, go into the lightest yellow or straw, etc. Blue and scarlet, green and yellow, are good. For green grounds, wefts red and rose; for yellow grounds, wefts violet and purple; for orange grounds, wefts blue, though orange as a ground is, if anything, too intense in textiles, except it be used sparingly or very much subdued in brilliancy. In green grounds with yellow wefts, the green should approach a yellow hue, and the yellow weft a primrose. A delicate green is very effective; cold light greens with lilac wefts are useful for contrasts; a blue green is the complement of lilac, and to harmonize a lilac with green requires a very warm yellow green. Brown grounds are excellent: almost any light tint of weft will be suitable for any shade of brown. Buffs form a good ground, better than orange. Green and violet are in what is called harmony rather than contrast. The most beautiful of all contrasts is a celestial or sky blue, with a weft having the warm tint of a delicate orange. A very fashionable colour, having many names, but which is in reality the tint of a greenish-blue duck egg, is a capital ground for a warp, and will give a splendid effect with wefts of soft delicate tints, browns, etc. These remarks will form a guide for obtaining the very best results from half-tones when in warp and weft, and can be amplified by experiments through the weft materials.

WORSTED COATINGS.

A simple yet pleasing stripe weave effect is given in *Design C*, simply consisting of a fancy 12-end warp rib combined with 8-end sateen. Any delicate colourings may be used to further develop the effect, or even twist yarns as follows:—

Warp.

24 threads 2-44's dark red, black and blue twist.

40 threads 2-44's black

20's reed 4's.

Weft.

All 20's black, dark blue, or dark brown; 80 picks per inch.

It will be observed that 24 picks are required to complete the pattern, since one weave repeats on twelve and the other on eight ends.

A class of goods likely to be more and more in favour is that in which loose, flimsy binding of the warp and weft threads is aimed at, with

a slight addition to the stability of the texture in the milling to which the goods are submitted. *Design D* is an example of this style and effect, consisting of warp and weft ribs and warp twill. Here it is given in its pure form, but the addition of plain to the warp and weft ribs may considerably enhance the value of the effect; even then it will be found that milling has considerable power over the cloth. The sett should be in proportion to the following:—

Warp.

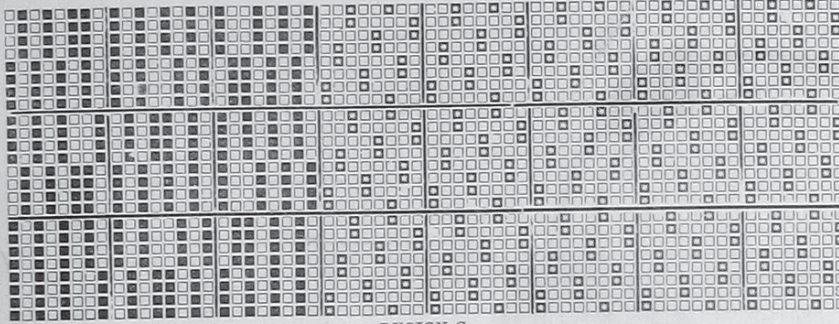
All 2-32's cross-bred; 13's reed 4's.

Weft.

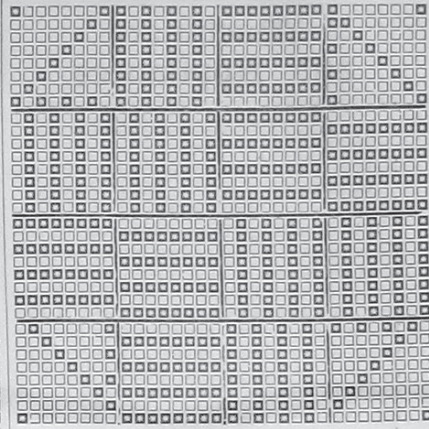
All 16's cross-bred; 52 picks per inch.

A modification of the 13-end corkscrew weave is given in *Design E*. As in previous examples given in these columns, it is formed by dotting

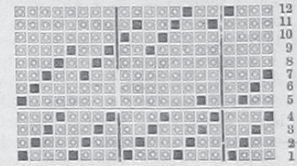
the pure corkscrew weave over a given number of threads and picks, and then dividing by means of a more or less strongly marked twill in both directions. If the number of small checks formed be counted there will be found to be thirteen, and if the design were placed on twice the number of ends there would still be only thirteen checks, but they would be twice the breadth. Fully realizing this, it is evident that there are some splendid effects to be obtained on this basis, the only drawback being the large figuring capacity required. The jacquard, however, is now so universally adopted that there is every prospect of such effects as these being experimented with more and more. Any sett suitable for the 13-end corkscrew may be employed with this.



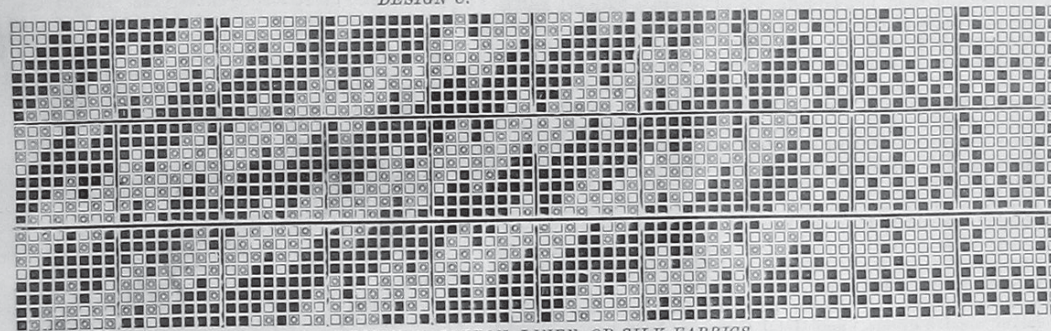
DESIGN C.



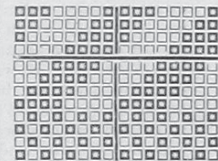
DESIGN D.



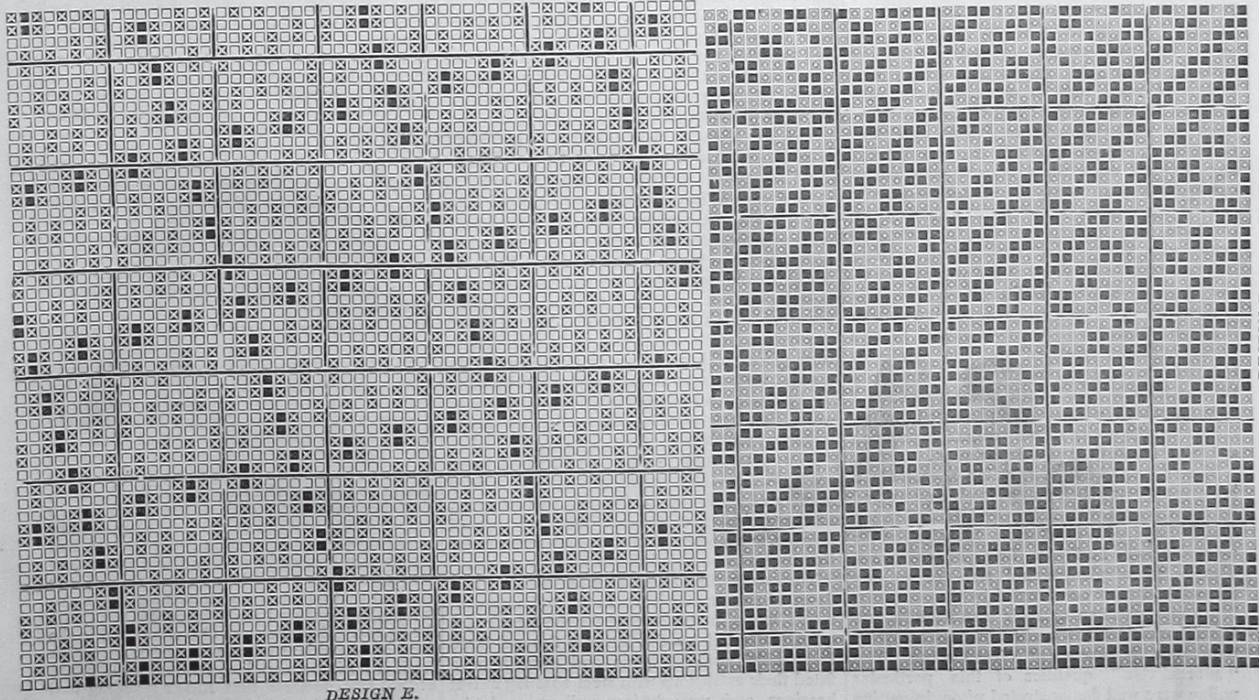
A: DRAFT.



DESIGN A: COTTON, LINEN, OR SILK FABRICS.



A: PEGGING PLAN.



DESIGN E.

DESIGN E.