of potash and 30s. acetate of soda; for medium blues, 150s. of red prussiate, and 50s. of acetate of soda; and for deep blues, 20s. of prussiate and 50s. of acetate.

**INSOLUBLEazo-DYES ON COTTON.**

Fiechers and Pokorny propose to use the beta-oxynaphthoic acid, having a melting point of 210° C., of beta-naphthol, which has hitherto been used for the production of the so-called naphthol colours in calico printing. Difficulties in the preparation of the 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 30 grams of beta-oxynaphthoic acid, 60 grams of caustic soda lye 70° Tw., 100 grams of water.

In this the calico is padded, then dried, when it is ready for printing. This is done with a colour made from 14 grams of dianisidine liquor A, 50 grams of nitrite liquor B, 220 grams of tragacanth liquor A.

The diazonium salt is prepared from 26 grams, 77.5% dianisidine sulphate, 40 grams of hydrochloric acid, and 250 grams of ice, between the sheets of filter paper, when the nitrite B is made from 14 grams of sodium nitrite, 76 grams of water, 260 grams of tragacanth liquor B.

In printing it is well to use a roller with a rather deep engraving, and to give a strong pressure. The printing row should be rather thin, and if the calico thus treated is washed well, and soaked. The addition of 25 grams of 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. As is the case with beta-naphthol, in all cases there is a blue shade of colour produced, as seen in the following table:

<table>
<thead>
<tr>
<th>Dianisidine Acid</th>
<th>Beta-naphthol</th>
<th>M.P. 260° C.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anilin</td>
<td>Orange</td>
<td>Red</td>
</tr>
<tr>
<td>Pantolodine</td>
<td>Orange</td>
<td>Red</td>
</tr>
<tr>
<td>Xylole</td>
<td>Orange-red</td>
<td>Red</td>
</tr>
<tr>
<td>Betanaphthylide</td>
<td>Scarlet</td>
<td>Bordeaux</td>
</tr>
<tr>
<td>Tolidine</td>
<td>Brown</td>
<td>Violet</td>
</tr>
<tr>
<td>Dianisidine</td>
<td>Violet</td>
<td>Blue</td>
</tr>
</tbody>
</table>

From this, the following acid is made in the following method: The cotton is prepared in the usual way, then washed and dried, it is then discolored with dianisidine, sodium nitrite, and sodium acetate, which is then imbedded in a bath of the oxynaphthoic acid, when the colour is developed.

**DELAWARE** are prepared for printing by soaking, and are then passed through the sulphite bath. This may be the most striking and attractive designs, so as to eclipse all previous efforts. This involves changes in weave, style, colouring, and widths. The patterns must be designed in beautiful blending of mauve, mallow, fawn, violet, and greens, either in stripes or plaids. Ladies’ dresses, shirt-waists, fancy aprons, and morning gowns, are mostly in light muslin fabrics, plain charmeuse, with large patterns and small lines of silk, in pink, blue, or canary, all becoming everyday more popular. Cotton crepeous, or really coarse crape, 27 inches wide, in white and delicate blues, blush, and pink are the favourite. Gauze and cambric fabrics in wide widths and of a soft finish are in demand, and are fast displacing the China silk and all wool damasks for night gowns, and in all these classes of fabrics allied to, conspicuous designs are not desirable.

**Design A** is composed for a muslin dress fabric with spun silk; it is on 12 shafts, 20-end draft, 10 to the round; the figures shown on the margin include the values of 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, are for the plain ground of cotton, and 5, 6, 7, 8, 9, 10, 12, are for the diagonal stripes of spun silk; the cotton and one of silk, in a dent; the cotton and one of silk form the ground; the stripe two in a dent, four dents empty. Warp 40's cotton spun silk, 30's two-fold, 40 picks per inch, 100 picks per inch, 40 picks per inch, white bleached, 80 picks per inch, white pattern; 30 spun silk, amber colour, with 120 cotton. At the bottom of the silk must have two coats of leather for the ground, the diagonal stripe will be composed of 186 threads in all, 60 going on the 5, 6, 7, 8, 9, 10, 11, 12 shafts, and the two central threads on shafts 7, 8, 9, which are the parallel shafts; the design for this full stripe would be 180+30×2=360 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. If the warp all cream, with the weft all cream, the weft warping will give the same effect: 2 cream cotton, 1 amber spun silk, repeated to repeat, 2 azure blue cotton, 4 cream cotton, 2 weft stripes may be increased or diminished at will by the shaft; and for ground cotton, all shrimp; the eight greens and all 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 much as to weaken the fabric.

**Design B** extends to 42 ends before commencing the repeat, as seen from the design, which is fully carried out, that there are two distinct runs of the diagonal, through 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, sitting, or dress material. We can only give a few details for a medium cloth. Warp all 2-6's cotton, 36 dents per inch, dark fawns, browns, blues, or deep green, and yellowish white, of grey, all canary for a ground of blue or brown, and coral for a ground of deep green. In the use of two or three colours for this class of designs, contrasts must be carefully sought for. Perhaps the remarks in connection with the rule for contrasts may be useful. The contrast indicates the giving out of one or two colours through the aid of each other. Blue and yellow are good if equal in tone. The words “light green” and “light blue” will always carry the same colour downwards towards black, the tint to be employed as a perfect contrast of light and shade, the other tint to approximate in the same proportion towards white. In the case then of a very dark blue warp ground, the lightest yellow or straw, blue, blue-green, and 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 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 wine wefts are useful for contrasts; a blue green is the complement of blue, and to harmonize a blue gives a very nice effect. The browns grounds are excellent: almost any light tint of weft will be suitable for any shade of brown. Butts form a very nice effect in orange. Green and violet are in what is called harmony rather than contrast. The most beautiful of all contrasts is that of the strikingly blue, with a weft having the warm tint of a delicate orange. A very fashionable colour, having many names, one of which is in reality the tint of a greenish-blue dull rose, forming a ground, a pattern, and a weft, 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 web material.

**WORSTED COATINGS.**

A simple yet pleasing stripe weave effect is given in Design C, simply consisting of a fancy 12-end with white contrast in the web. Any delicate colourings may be used to further develop the effect, or even twill yarns as follows:

Warp: 24 threads 2:4:4, dark red, black and blue twist. 40 threads 4:4:4 black. 40's red. 4's. Weft: All 20's black, dark blue, or dark brown; 80 picks per inch. It will be observed that 20 picks are required to complete the pattern, since one weave repeats on twelve and the other on eight ends. For a good contrast of goods likely to be more and more in favour is that in which loose, flaxine 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 will 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 2-3/4's cross-bred; 13 1/2's reed 4's.
- W/f.

All 16's cross-bred; 12 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 so 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.