BLEACHING AND DYEING COVERLETS AND SHAWLS*

In order to obtain a pure white it is not sufficient to merely sulphur bleach the washed yarn, although this practice is, it is true, followed in the majority of cases, the result being that the natural yellow tinge of the fibre remains unaltered, except for being considerably cleaner. Very pure -in fact, probably the purest -white can only be obtained by dyeing a faint blue before sulphuring. Formerly a spirit violet, generally in combination with Pense lake, was used for this purpose, the two being mixed together and boiled up in the soap vat before use, and then added to the dyeing bath as required. This spirit violet is, however, no longer obtainable (presumably because the demand for it was so small), and recourse has therefore to be had to methyl violet, either alone or mixed with the lake. Here again there is difficulty, since it is not every methyl violet that is suitable for the purpose in view, and many experiments have been made to find a reliable successor to the spirit violet, with the result that such a color has been found in violet 350 N (Poirrier and Dalsace, Paris), which may be used alone, and gives a very beautiful white.

The dyeing vat is prepared with good soap and kept at a temperature of about 125° F. Carded woolen yarns are washed in the usual manner before dyeing, but worsteds and weft yarns need no preliminary cleansing, the soap in the bath easily removing the few fatty and dirty particles they contain. After stirring ten to fifteen times, and working through the liquor well until the shade is right, the yarn is removed and dried in the centrifugal machine. It is essential that the transfer from the vat to the drying machine should be effected as rapidly as possible, otherwise inequalities in the color may ensue, so that a third man must be put on to assist in this work if the yarn has to be carried any distance. If left hanging, though only for a short time, the dyeing liquid runs down and colors the lower portion much deeper than the upper end of the hanks. To avoid this, in the case of the yarn left to hang the longest, it is advisable to partly wring out the hanks by hand as soon as they are taken from the vat. If the color be too deep, the yarn must be immersed in a warm soap bath. All inequalities may be also remedied in this way and by afterwards passing through a weak bath of dye.

In de-sulphuring with soap and ammonia, or by the latter alone, the bloom is somewhat injured. Nevertheless, this operation is in many instances necessary, on account of weaving the yarn along with other yarns the colors of which are susceptible to the action of sulphur.

To blue yarn evenly after sulphuring, a little soap but not by any means so large a quantity as in the operation already described—is added to the warm water, as well as the violet dye, the soap effecting a gradual and even absorption of the color; but much better results are obtained by dyeing before bleaching.

Piece goods are treated in exactly the same way as yarns. These also are usually sulphured only, but look much better if blued. In the ordinary process the sulphured goods are well damped, then opened out and drawn several times through a warm bath (about 90° F.) containing the requisite amount of color, and finally dried in the centrifugal machine. The machine for this purpose consists of a large beam, on which the cloth is wound--full width—by setting the axis in motion, and is then fastened by a surrounding cord. A cover is provided from which depend hinged sideboards, which when closed catch and drain the water expelled by the machine. It is highly advisable to have the dyevat and the dryer near to each other so as to avoid carrying the goods any distance.

Less frequently practised, but yielding better results, is the method adopted for yarns of dyeing before sulphuring, the former operation being effected in the washer after cleansing the goods. The percentage of soap depends on the water and the class of article treated, so that it is difficult to give definite particulars. The dye liquid should, however, handle very soapy and lather well. The goods are left in this bath for a quarter of an hour, and then sampled. Before adding any more color they must be taken out, since, owing to the form of the apparatus and the small quantity of liquid it holds, cloudy patches will be formed in the stuff if left in during the addition of more dye. In order to save trouble, as far as possible, it is a good plan to take a cutting of the piece to be treated, and test the dyeing bath with this sample to see if the right shade is obtained, and if not to modify the bath accordingly. A little practice and skill will be required to obtain equal results from sample and bulk. This testing should also be performed when dyeing yarns. When the goods have been colored, the dyeing liquid must be run off and fresh water admitted for rinsing, or else the piece must be rinsed in another washer. The latter is preferable when more stuff is to be dyed, since thereby a certain saving of soap is effected, the conditions here being different to those prevailing for yarns, the soap not being removed from the latter by rinsing.

The selvages and borders of white coverlets are mostly colored scarlet, rose, or pale blue. The first is still frequently produced by cochineal dye in a bath of 6½ per cent. cream of tartar, 5½ per cent. aluminum sulphate, 2½ per cent. stannous chloride, 1½ per cent. tin salt, 3½ per cent. hydrochloric acid, and 3½ per cent. nitric acid, the amount of cochineal depending on its quality and the depth of color desired. Such a scarlet does not, it is true, look as well as that prepared by the aid of 3½ per cent. saccharic acid and 1½ per cent. tin salt, but it has the advantage of being more permanent in the wash. Rhodamine B is much used for producing rose colors; to prevent it from running, the yarn must have been previously well washed and rinsed.

Pale, pure blue shades can only be obtained by using alkali blue; this color acts best for selvages when the dye is applied, not all at once, but at two or

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