in water, alcohol, and acetic acid, to violet solutions. Acids turn the colour of the aqueous solution to an olive yellow; while alkalies gradually decolourise it.

PRINTING BLUE ON CONGO RED.

Prepare the following standards :—

WHITE A.

20 litres acetate of tin, 32° Tw.,
3 kilos. starch,
½ litre acetic acid, 10° Tw.

BLUE E.

Two kilos. starch are boiled with 10 litres water. Add, hot,
3 kilos. yellow prussiate of potash,
1 kilo. red prussiate of potash.
Allow to cool; and add
4 kilos. tartaric acid,
200 grms. oxalic acid,
5 kilos. ferrocyanide of tin paste,
7½ litres of acetic acid, 11° Tw.
Take
10 litres of A.
20 litres of E.

Dye the cloth with congo red, dry, print on the above mixture, steam and dry. Finish with
50 kilos. dextrin water at 6° Tw.,
200 grms. soda,
200 grms. Turkey red oil.
Pass twice over the drying cylinders to brighten the blues.

The ferrocyanide of tin is made by mixing 4 kilos. of yellow prussiate of potass with 5 kilos. tin crystals, both dissolved in water, and draining the precipitate, using it wet.

Another method is to print on *Blue E*, allow to stand till the next day, then steam for one hour: allow to lie for another day, then treat with solution of 10 grms. of potassium bichromate and 10 grms. of soda crystals dissolved in one litre of water. Finish as above.

Another method of printing a dark blue on congo or benzo-purpurine reds is the following: Print on the dyed pieces the following :—

BLUE.

4 kilos. indophenol,
10 litres tin oxide paste,
1½ litres dextrin paste (2½ kilos. in 1 litre of water),
½ litre of water,
3 kilos. soda crystals,
5 litres glycerine.

Heat till the solution is complete, and the indophenol has been completely reduced. Print, steam for one hour, age the pieces for 24 hours, and wash. The pieces may be chromed as in the last method. The oxide of tin paste is made by mixing 15 kilos. of tin crystals in 15 litres of water, and adding 15 litres of ammonia, and draining on the filter, and using wet. The colour may be reduced, if required, by thickening.

THE EFFECT OF OILING WOOL ON THE DYEING PROCESS.

Horwitz, in the *Farber Zeitung*, discusses this important point as follows:—Although the oiling of wool before carding is a necessary preliminary operation to spinning, it is nevertheless of great importance to the dyer, in so far as a proper selection of the material serving for oiling is essential to the production of an even shade. It is usually supposed that an admixture of resinous, mineral, and drying oils with the oiling materials causes some disturbances in the dyeing operations, and this has been proved to be correct, although the action of the substances mentioned has not yet been scientifically established. In practice their presence renders the production, especially of light shades, much more difficult, and is generally considered with some reason as one of the causes of the unevenness sometimes experienced on dyeing. Resin oils and mineral oils being unsaponifiable ingredients of the oil, are certainly injurious, because they cannot be removed from the woollen fibre by the usual process of treatment, and in the after dyeing process they are obstructive to an even impregnation of the colouring matter into the wool fibre. But this effect being probably produced by all other unsaponifiable fats, the condition made hitherto that the oils should contain no resin or mineral oils may be extended so far that they are to be free from any unsaponifiable fatty ingredients.

An unsaponifiable fat that the author has frequently found in wool oils is cholesterin, a sticky matter like pitch, and which easily crystallises. Its chemical formula is $C_{26}H_{44}O + H_2O$. The author has found from many trials that cholesterin is more obstructive to an even fixation of colouring matter on the wool than any other ingredient, and he therefore recommends that all oils used for oiling wool should be tested for cholesterin.

Olive oil is the principal oil used in this connection. The best quality is obtained by pressing the olives in the cold, or a second quality by boiling the olives, and hot pressing them. The latter quality is generally used for oiling wool. It consists chiefly of triolein (about 72 per cent.), palmitin, arachin, arachinic acid, and very little stearin. Schaedler states that it invariably contains cholesterin.* With the usual methods of preparing the oil, the cholesterin passing into the oil will be very small in quantity, and the presence of such small traces will scarcely have any influence on the result. But if the amount of cholesterin should be about 4 per cent., as the author has frequently found to be the case, the oil is of the poorest quality, and has been obtained by unusual ways of preparation. In one instance the author having extracted cholesterin from dyed pieces, which were spotted, examined the olive oil that had been used for oiling the wool, and extracted 3 per cent. of cholesterin therefrom. The olive oils of commerce are, he avers, never pure oils. Adulterations with less expensive oils are very common. An addition of non-drying vegetable oils can only interest the spinner, while in dyeing it can scarcely have any bad result. An admixture of drying resin, or mineral oils, will, on the contrary, create some injurious effects in dyeing. In using adulterated oils it is difficult to say to what extent the oil may exercise an injurious influence on the dyeing operation.

One more point to be observed in connection with wool oils is, that they should not contain any free acid, which attacks the cards, destroying them.

A New Yellow colouring matter is described by Cazeneuve in a recent issue of the *Comptes Rendus*, which is of interest because of its being derived from a hydrocarbon belonging to the terebene series—the hydride of prophylbenzene —which is found as the base of camphor. The latter body is converted into a sulphonated phenol and this is treated with nitric acid, when on crystallisation yellow needles are obtained of a tetranitrated derivative, having the formula $C_9H_9(NO_2)_3(SO_2)(OH)(ONO_2)O$. This body is slightly soluble in water, but more so in alcohol. It melts at 87° C. and solidifies at 80° C. Thrown on a red-hot surface it explodes. It has acid properties and combines with bases forming salts, all of which have an orange yellow colour and are soluble in water. The baryta salt crystallises with two molecules of water, which are driven off by a temperature of 100° C., and turns red on exposure to air. This anhydrous red compound again absorbs water from the air, becoming orange yellow. Both the nitro-body and its salts dye wool and yellow fine yellow or orange yellow shades without a mordant. This is interesting as being a product obtained from a hydrocarbon not hitherto obtainable from coal-tar. Whether it will be so obtained is uncertain at present.

A Method for the valuation of indigo is proposed by Ch. Tennant Lee. It is not exactly new, having been tried before. The details are as follows:—A sample of 0·25 grm. of the indigo is finely powdered, dried at 100° C., and spread evenly on a platinum dish about 7 c.m. in length, 2 c.m. in breadth, and 3—4 mm. in depth, the sides being turned up sharply from the bottom. The dish with its contents are heated on a sheet of iron until crystals of indigotine begin to appear on the surface of the indigo. The dish is now covered with a piece of sheet iron bent to the form of a vault, so that the highest point is about 1 c.m. above the dish. At the same time the heat is gently increased. The temperature rises somewhat rapidly, but care must be taken that only the indigotine be allowed to sublime; no yellow vapours must be allowed to appear, as they would indicate further decomposition. As soon as, on lifting the cover, no further crystals of indigotine are seen on the platinum dish or in the substance it contains, the latter is allowed to cool in a desiccator, and is then weighed. The loss corresponds to the quantity of indigotine in the indigo. The results are said to be exact to 0·25 per cent. Ordinary 50 per cent. indigo requires about 30—40 minutes for one determination, and soft Java indigo about two hours, and requires special attention during the heating.

* We are disposed to be sceptical on this point, and especially as regards another statement—that of olive oil containing 3 per cent.—Ed. T. M.

Designing.

NEW DESIGNS.

SUGGESTIONS FROM THE MICROSCOPE FOR THE DECORATION OF TEXTILES.

Textile decorations consist either in the repetition of geometrical figures, or in the imitation of objects in organic nature. The treatment of the latter forms the subject of this paper. Everything which occurs in organic nature may be reasonably examined to see whether or not it can be used for the purpose of decoration. Success in a given case depends on a large number of factors, but the correctness of the principle will not be called in question. The European decorative art of our century cannot escape the reproach of slackness in its exploration of the fields of Nature. A successful movement in new ways, such as was made in the work of Anton Seder, entitled "The Plant in Art and Commerce," must be noted as an exception, which deserves the highest praise. As a rule, however, people were contented with reviving the patterns of the Renaissance and the French styles of the 17th and 18th centuries. Of the many thousands of species of plants that are known to exist, about 600 are made use of in the decorative arts, mostly those which were employed by the masters of the Italian and German Renaissance and the great French designers. This negligence in the discovery and application of fresh motives is one of the reasons why Japanese art has obtained, and deservedly, so much influence during the last twenty years. Here was found a bold yet disciplined pursuit of new motives, combined with an uncommonly acute observation of Nature, which even managed to gain fresh turns for the old motives.

A large sphere which has not yet been utilised by textile art is furnished in the world revealed by the microscope. Splendid volumes with costly illustrations have been published on micro-organisms, but the textile artist ought to take his materials, not from them, but directly from Nature. Professor Schricker, of Strasburg, who makes this suggestion, has studied the subject for some years, and has just published in the *Centralblatt* a series of eight designs in illustration of his views. These designs are taken from the groups of *Protozoa*, sponges, and *Actinia*. One design is supplied by the *Peridinum*, one of the *Protozoa*. Another is composed by the insertion, alternately with a mussel-form, of *Diffugia corona*, also one of the *Protozoa*, between the meshes of *Aphrocallistes bracagaei*, which belongs to the class of marine sponges. Two designs have been produced with the help of the skeleton of the *Sycandra elegans*, another marine sponge. The *Pterogorgia*, one of the *Actinia*, has suggested a curious and graceful design. By making a cross section in an example of the *Alcyonium palmatum*, a cork polypus, Professor Schricker has obtained a comparatively large pattern, which furnishes a striking contrast to the preceding one. The two remaining designs, which are exceedingly strange-looking, have been suggested by *Geodia gigas*, a marine sponge, and *Tubularia larynx*, one of the *Actinia*, which reminds us of a plant.

The professor adds that a conversation with a manufacturer of materials for cravats and waistcoats had led him to select his patterns in the first instance with reference to that department of textile industry. He is disposed now, however, to regard them as not sufficiently loose for that purpose. They are more suitable for cotton and woollen prints, in which at present the coloured flower-pattern of the style of Louis XVI. is in fashion. He considers them especially appropriate for the manufacture of damask fabrics.

COTTON, WORSTED, OR SILK DRESS STRIPE.

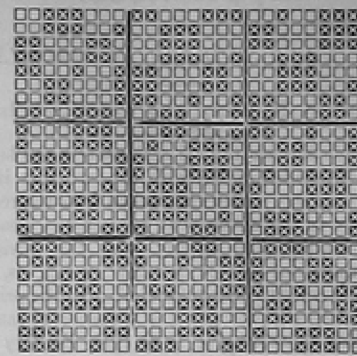
Design 188 is an effective example of producing a stripe simply by figuring one portion and leaving plain another portion of the fabric. As given here it is suitable for using as a cotton warp and lustre weft piece.

Warp.	*Weft.*
2/60 to 2/80's cotton.	25's to 36's lustre mohair.
60-80 threads per inch.	60-80 picks per inch.

The long flushes in the figure in this case should not be allowed to flush more than 10 or 12 threads at most; as a rule for solid figures the 8-end sateen will prove very useful, but the flush to allow in any case must depend on two points: 1st, the sett used; and 2nd, the character of the design. Since setts used vary, often 50 per cent. in the ends per inch, little need be said on this point, but perhaps the effect of the character of the design is not so fully realised. For example, suppose a design to be developed in flushes of say 4—6, then a flush of from 8—10 —save when introduced for some characteristic feature in the design—presents at once a fault to the eye, whereas the same cloth if figured with flushes of from 8—10 entirely, might appear quite perfect. This is a point frequently overlooked by young designers; the importance of it in developing in the best possible manner designs of various types, all experienced designers fully realise.

As an all-silk or all-cotton fabric this figure would be very effective, particularly if developed say three times the size, and characteristic weaves introduced. *Design 189* is a very effective weave for developing a silk figure on plain ground, and would prove very effective if used in this case, the stems of the plant being developed in warp flush.

This figure would also make an effective striped dress fabric; all worsted for the ground and extra silk warps introduced for the figure, will give very effective results.



DESIGN 188.

Repeats on 30 ths. and 30 picks.

DESIGN 189.