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.**
- 0.5 liters acetate of tin, 35° T.W.
- 3 kilos starch.
- 4 kilos acetic acid, 10° T.W.

**Blue E.**
- 2 kilos starch, boiled with 60 liters water.
- 1 kilo yellow prussiate of potash.
- 1 kilo red prussiate of potash.
- 4 kilos tartaric acid.
- 200 grammes smoke acid.
- 20 grammes tannic acid.
- 75 grammes of tannic acid, 11° T.W.

**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° T.W.
- 120 grammes acetic acid.
- 200 grammes Turkey red oil.

Pass twice over the dying cylinders to bring out the blues.

The ferrous salts of tin are made by mixing 4 kilos of yellow prussiate of potash with 5 kilos of tin crystals, both dissolved in water, and draining the precipitate, using 10 litres of water. Finish as above.

Another method to print on Blue E, allow to stand for the next day, then drain out 4 hours, allow to lie for another day, then treat with solution of 16 grammes of potassium bichromate and 10 grammes of soda crystals dissolved in one litre of water. Finish as above.

Another method of printing a dark blue on benzol-purple red is the following: Print on the dyed pieces the following:

**Blue**
- 4 kilos indigo.
- 10 litres tin oxide paste.
- 14 litres dextrin paste (46 kilos in 1 litre of water).
- 7 litres water.
- 5 kilos soda crystals.
- 2 kilos of glycerine.

Heat till the solution is complete, and the indophenol has been completely reduced. Print, steam, and dry. This method gives a much more beautiful and delicate blue, which can be used in connection with wool, which should not contain any free acid, which attacks the colors destroying them.

**The Effect of Oiling Wool on the Dyeing Process.**

Hovits in the Farber Zeitschr, discuss 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 obtain a good oil oil. A more suitable emulsion of the material serving for oiling is essential to the production of an even shade. It is usually held that an admixture of resins, mineral, and fatty 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. From 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. Emulsion oils and mineral oils being unsuitable ingredients of the oil, are certainly injurious, because they are not removed from the wool fibre by the usual process of treatment, and in the after-drying process they are objection 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 to sulphate of soap, free from any fatty ingredients.

An unsaponifiable fat that the author has frequently found in wool oils is chloroform, a sticky matter like pitch, and which easily crystallises. Its chemical formula is $C_{2}H_{4}O_{2}, H_{2}O$. The author has found from many trials that chloroform is objectionable to the dyer when there is even fixation of colouring matter on the wool than any other ingredient, and he therefore recommends that all oils used for oiling would should be treated for chloroform. With the usual methods of preparing the oil, the chloroform 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 chloroform should be about 4 per cent., as the author has frequently found to be the case, the effect on the dyeing would be great.

Olive oil is the principal oil used in this connection. The best quality is obtained from the olive tree in its natural state, in cold, or a second quality by boiling the olives, and pressing them. The latter quality is good for oiling wool. It consists chiefly of triolein (about 72 per cent.), palmitin, arachin, arachinic acid, and very little stearin. Schneider states that it invariably contains chloroform. By the usual methods of preparing the oil, the chloroform 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 chloroform should be about 4 per cent., as the author has frequently found to be the case, the effect on the dyeing would be great.

A new yellow colouring matter is described by Caravetto in a recent issue of the Comptes Rendus. Its chemical formula is $C_{3}H_{6}O_{2}, H_{2}O_{2}, S_{2}, O_{2}$; it is derived from a hydrosol belonging to the terbene series—the hydrate of prophyllene benzene, which is a compound of new constitution. The latter body is converted into a sulphonic acid and this is treated with nitric acid, when on being heated with yellow needles are obtained of a tetrabenzene derivative, having the formula $C_{12}H_{22}O_{18}$, the compound being insoluble in water, but more alcohol. It melts at 177° C. and solidifies at 80° C. Thrown on a red-hot surface it explodes, and has acid properties and combines with bases forming salts which have an orange yellow or red colour and are soluble in water. The haptor salt crystallises with two molecules of water, which are driven off by a temperature of 100° C. and runs into a thin liquid.

This anhydrous red compound again absorbs water from the air, becoming orange yellow. Both of these two forms are insoluble in water, but the former forms of yellow or orange yellow shades without a mordant. This is interesting as being a product obtained hitherto only by the use of coal tar. Whether it will be so obtained is uncertain at present.

**A Method for the valuation of indigo is proposed by Professor H.** He recently not having been tried before. The details are as follows:—A sample of 0.55 grammes of the indigo, is mixed with 0.1 grammes of the glycerine, and spread evenly on a platinum dish about 7 cm. in length, 2.2 cm. in breadth, and 0.1 mm. in depth. The indigo crystals are heated sharply from the bottom. The dish with the crystals are heated on a sheet of iron until crystals of indigo begin to appear on the surface of the indigo. The dish is now covered with a piece of sheet iron bent to a form of a vault, so that the highest point is about 2 cm. under the dish. At the same time the heat is greatly increased. The temperature rises somewhat rapidly, but care must be taken that the platinum dish be allowed to sublime, no yellow vapours must be allowed to appear, as they would indicate further decomposition. As soon as the platini dish is covered with a deposit of black sludge the indigo is removed and weighed. The less the weight, the more the indigo to be called in question. The European decorative art of our country is being repudiated by the reproof of slackness in its exploration of the fields of Nature. A successful movement in this direction would doubtless result from the study of the art of Antion Soder, entitled “The Plant in Art and Commerce,” must be noted as an example, which deserves the best praise. As a rule, however, people are still more interested in preserving 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 300 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 neglect in the discovery and application of fresh motives is one of the reasons why Japanese, French, and German designs are taken from the groups of Proteaceae, spores, and Actinidae. One design is supplied by the lychens from the plant, which is composed by the insertion, alternately with a wool design, of Dufragenea, also one of the Psychotria, which belongs to the class of marine sponges. Two designs have been produced with the help of the skeleton of the Sycandra, and one of the corals. I, the philosophy of the Actinidae, has suggested a curious and graceful design. By making a cross section is obtained by the work of Professor Schircher, a polypus, Professor Schircher has obtained a comparatively large pattern, which furnishes a strong contrast to the preceding one. The two remaining decorative elements are the strongly long, a discovery, a suggestion by Geolium, a marine sponge, and Tubularia cornuta, one of the Actinidae, which is also 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.

**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 is the more difficult, and the artist must be well versed in the science of botany. Everything which occurs in organic nature may be reasonably examined to see whether or not it would be suitable for the purpose of decoration. Success in a given case depends on a large number of factors, but the correctness of the principle of its use must be carefully avoided. The European decorative art of our country is being repudiated by the reproof of slackness in its exploration of the fields of Nature. A successful movement in this direction would doubtless result from the study of the art of Antion Soder, entitled “The Plant in Art and Commerce,” must be noted as an example, which deserves the best praise. As a rule, however, people are still more interested in preserving 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 300 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 neglect in the discovery and application of fresh motives is one of the reasons why Japanese, French, and German designs are taken from the groups of Proteaceae, spores, and Actinidae. One design is supplied by the lychens from the plant, which is composed by the insertion, alternately with a wool design, of Dufragenea, also one of the Psychotria, which belongs to the class of marine sponges. Two designs have been produced with the help of the skeleton of the Sycandra, and one of the corals. I, the philosophy of the Actinidae, has suggested a curious and graceful design. By making a cross section is obtained by the work of Professor Schircher, a polypus, Professor Schircher has obtained a comparatively large pattern, which furnishes a strong contrast to the preceding one. The two remaining decorative elements are the strongly long, a discovery, a suggestion by Geolium, a marine sponge, and Tubularia cornuta, one of the Actinidae, which is also a plant.
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 woolen 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 189* 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.**
2:50 to 2:50's cotton. 90's to 90'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 satin 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 sets used vary, often 30 per cent. in the ends per inch, little need be said on this point, but perhaps the effect of the character of the figure on the design is not so much realised.

For example, suppose a design to be developed in flushes of say 1-6, then a flush of from 8-10—save when introduced in a more characteristic feature in the design—presents at once a fault to the eye, whereas the same cloth if figured with flushes of from 10-15 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 by 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 189. |
| Repeats on 30 tho. and 30 picks. |

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- **Warp:**
  - 2:50 to 2:50's cotton
  - 90's to 90's lustre mohair
  - 60-80 threads per inch
  - 60-80 picks per inch

- **Stripe:**
  - 8-end satin

- **Design 189:**
  - Suitable for cotton warp and lustre weft piece
  - Effectively produced by figuring one portion and leaving plain another portion of the fabric

- **Characteristics:**
  - Effect of sets used
  - Character of the design on the fabric
  - Importance in developing designs of various types

- **Application:**
  - Effective as a striped dress fabric
  - Can be used for silk or cotton fabrics
  - Extra silk warps introduced for the figure

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**Design 189 Diagram**

- Shows the stripe pattern
- Suitable for cotton warp and lustre weft piece
- Effective for developing a silk figure on plain ground