SOME CONSTITUENTS OF THE FLAX FIBRE.

Messrs. Cross and Bevan have lately communicated to the Chemical Society a valuable paper on the flax fibre, containing the results of some of their investigations on the subject. They find that the cellulose of the flax is identical in every respect with that of cotton. Most other observers have stated it to have slightly different properties, in particular that it was capable of reducing silver nitrate. Cross and Bevan shew, however, that when flax cellulose has any such power it is due to its not being perfectly freed from other constituents of the fibre. When flax cellulose is oxidised it yields oxy-cellulose, oxalic acid, and several intermediate products of a more or less aldehydic character.

By treating flax fibre with boiling alcohol, the latter extracts from it two distinct portions, one of which separates out on cooling, while the other remains in solution in the cold alcohol. Both contain nitrogenous matter and phosphates, which indicate the presence of chlorophyll.

The portion soluble in hot alcohol was analysed and found to contain a waxy (ceryl) alcohol, and also a number of oily bodies of the nature of ketones. The portion of the alcoholic extract soluble in cold alcohol was found to contain degradation products of chlorophyll. A part was soluble in the water, and this, and also a part insoluble, were found to contain ceryl alcohol and a peculiar oil soluble in alcohol with an orange green fluoresence; this body was found to be a ketone, and it has the peculiar odour of raw flax.

The presence of these bodies must exercise an important influence on the bleaching of the flax fibre, in retarding the action of the alkalies, owing to their being but little acted upon by such reagents; this explains why it is so much more difficult to bleach linen than cotton, and why the former requires so much more energetic scouring than the latter.

A FRENCH PATENT has been taken out for new red colouring matters prepared by condensing amidophenols with aldehydes. These dye wool, silk, and mordanted, cotton, a red which is described as magnificent and of a beautiful aspect. Both the aqueous and alcoholic solutions of these colouring matters have a beautiful fluoresence.

A PATENT has been taken out for a process of scouring cotton waste, wool, and other dirty fabrics. It consists in treating them with a mixture of soap, ammonia, and turpentine. It is claimed that by this process the more valuable constituents—namely, the raw fat in raw wool, or the oil in cotton waste—can be recovered. An addition of potash or soda is made to the mixture when cotton waste is to be treated.

A NEW TEST for the detection of glycerine consists in evaporating the solution of the substance supposed to contain it down to from 5 to 10 c.c. in a porcelain basin; then mixing this with about one gramme of acid potassium sulphate and evaporating the whole to dryness on a water bath. The mixture is transferred to a hard tube and distilled, any volatile portion being collected in a small quantity of water. This aqueous solution is added to an aqueous solution of rosaniline which has been decolourised by sulphurous acid; if any glycerine be present, a red colour will be developed on standing about ten minutes. The rosaniline solution is used cold. One part of glycerine in 6,500 parts of water can be detected by this test.

PRIMULINE, which was introduced into this country by Messrs. Brooke, Simpson, and Spiller, is being thoroughly investigated by German chemists. It is made by heating toluidine with sulphur. One of its constituents is dehydro-thiotoluidine, a body having the formula $C_{14}H_{12}N_2S$, which is white. It is soluble in alcohol, with a blue fluoresence; in hydrochloric acid it dissolves with an orange colour. By using xylidine instead of toluidine, a base of the composition $C_{16}H_{16}N_2S$ is obtained in the form of yellowish-white crystals. It can be converted into azo dyes, which will dye unmordanted cotton in a Glauber salt bath. The sulpho derivatives of the base are colourless. The sodium salt does not dye cotton, but combines therewith, and imparts to it a vivid blue fluoresence. Like primuline, it can be diazotized on the fibre, and then combined with napthol, yielding fine colours.

A PROCESS OF DYEING COTTON with alizarine colours is described in the *Moniteur de la Teinture*. It consists in passing the cotton previously prepared in the usual way into a bath of sulphoricinate of ammonia (oleine); squeezing, drying, and steaming for three-quarters of an hour at ordinary pressure. The cotton is then placed in a dyebath composed of, for 50 kilogrms. cotton, 700 litres water, 5 to 20 per cent. of colouring matter, and one litre of acetic acid. In this bath it is worked half an hour in the cold, then heated to 90—95°C., and maintained at this temperature for some time. The cotton is lifted out, drained, and entered into a second bath containing 700 litres water, and 50—60 kilos. acetate of chrome 18°Be. The bath is kept boiling for three-quarters of an hour, during which the colour develops itself. It is then washed in cold water or in soap. This process is said to answer with all the alizarine colours.

SOME NEW CHROME MORDANTS have been patented in this country by a German chemist. They are made by dissolving chromium hydroxcide, one molecule in three molecules of chromic acid, by which means the normal chromium chromate $Cr_2(CrO_4)_3$ is obtained. A basic chromium chromate—sulphate of the formula $Cr_2O_4\ Cr\ O_4\ (OH)_2$ is obtained by dissolving excess of chromium hydroxide, in a mixture of chromic and sulphuric acids, or by mixing solutions of basic chromium sulphate and potassium bichromate. These bodies are used for mordanting fabrics by impregnating with the solution, squeezing, drying, and steaming; it is preferable to add either sodium or magnesium acetate to the mordant before using. A mordant for printing with is made by boiling and adding thickening to a solution of basic chromium sulphate, allowing to cool, adding potassium chromate and magnesium acetate. The goods are printed, dried, aged, and steamed.

COCHINEAL culture used to be a not unimportant business in Guatemala, but it has now almost disappeared. What little is grown is used for home consumption.

THE export from Bangkok, Siam, of dye-woods, gamboge, indigo, and other dyewares shews no increase. The smallness of the amount of cutch exported is remarkable. In Burmah this article of jungle produce has risen to a very important item in the exports, and there is every reason to believe that there is plenty of cutch in Siam also.

CHLOROZONE is a bleaching liquid introduced by Count Dienheim Brochocki; the inventor obtained it by decomposing chloride of lime with sulphuric acid, and pumping it along with air into a solution of caustic soda; 6 in 1,000. According to Lunge and Lantlodt this body is a feeble solution of hypochlorous acid in chloride of sodium. This product is still manufactured; its bleaching properties are but small.

EAU DE JAVELLE owes its name to its having originally been made at the village of Javel, near Paris. It is a solution of chlorine in alkali, and probably an alkaline hypochlorite. It has usually a pink colour, owing to a trace of manganese. Berthelot proposed to absorb chlorine by means of a solution of carbonate of potash, and this was used for bleaching purposes. The invention of bleaching powder by Charles Tennant stopped the preparation of Eau de Javelle.

The strike at the weaving establishment of Herr During, of Chemnitz, still continues. The operatives demand a 10 per cent. advance, and ten hours work in summer.

On the 12th inst., a fire broke out at Netzschkan, Germany, in the factory of Hofmann and Stark, in the first story of which was the power-loom weaving establishment of Jugel and Stark. The whole building was destroyed.

Apropos of the announcement that the dignity of a baronetcy of the United Kingdom has been conferred upon the Hon. Sir Dinshaw Manockjee Petit, the *Daily Chronicle* notes that Sir Dinshaw's enterprise has made the cotton industry flourish at Bombay, and he still retains an interest in seven of the largest mills there. He is reputed to be one of the richest men in our Indian Empire; but he has put his wealth to good use. He recently gave 100,000 rupees towards a leprosy hospital at Bombay, and it is computed that this benevolent Parsee has distributed £200,000 in charity.

Designing.

NEW DESIGNS.

THE ARRANGEMENT OF FIGURES.

In continuing this subject reference must first be made to *Figure 11* in the last issue of this journal. In order to gain a thoroughly comprehensive grasp of the method of constructing this design, *Diagram B* must be consulted. The repeat is here indicated by the double line, and the construction is readily grasped on consulting the positions of the solid squares A and B on the squares indicated in thin lines. Briefly the repeat is divided into four squares or quarters, consisting of four sections each, then figures are only placed in the two opposite quarters or squares, being placed in exactly the same relative position in each case. This system is often used for distributing spots and small figures completely cut off from each other, such

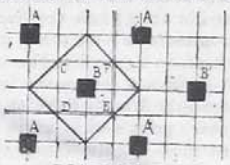


DIAGRAM B.

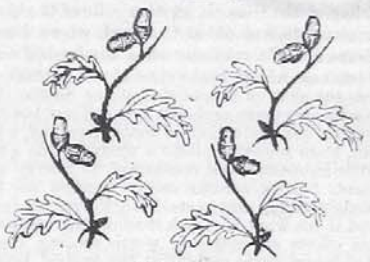


FIGURE 12.

DESIGN 14.

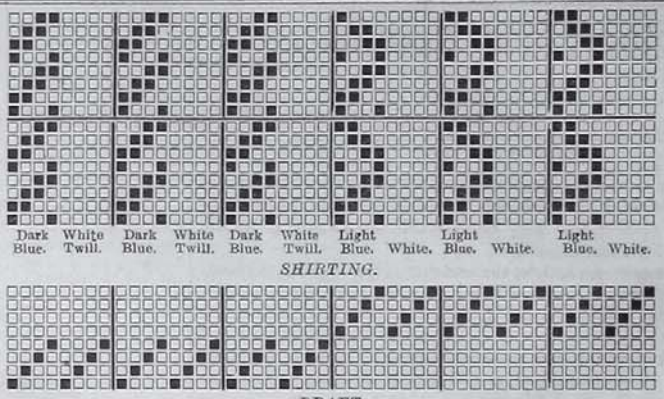
as single leaves, or a riding whip, or tennis rackets, as the case may be. This system is used in *Figure 11* for the central spray of two flowers, but the arrangement of this spray is the simplest matter in this design, the filling in of the sprays, leaves, etc., around being much more difficult. The thick lines, C D, E and F, in *Diagram B*, are purposely introduced to explain this. That the two flowers are surrounded by leaves, etc., is evident at first glance, and it is equally apparent that some such system as that demonstrated by the lines C D, E F, *Diagram B*, has been employed; in fact, there is no reason why this design should not have been produced by arranging sprays of leaves on the lines C D, E F, save this that the two flowers are the centralising objects in the design, and the proper treatment and arrangement of such objects, should always claim first consideration. This design was produced on this principle, the central flowers being first placed in position, and then the sprays introduced, one

spray practically taking the sides C D, and the other E F, though it will be noticed that each spray encroaches on its neighbour. These conditions being thoroughly realised, it need only be stated that the same care is needed in fitting each spray into its neighbour in this design, as in the designs previously given.

We must now proceed to a much more difficult class of figuring, viz., reversed figures, and there probably is not a more important and useful arrangement. In *Diagram A* this system is clearly demonstrated, and a thorough perusal and enquiry into the construction as here indicated is recommended. Little can or need be said about it, since its complete comprehension is only gained by numerous experiments. In the first place the figures may be placed so that they do not over-lap each other, when the use of this arrangement is easily mastered ; thus in *Figure 12* we have thinly clad the skeleton of this arrangement with oak leaves and acorns, a slight modification only being introduced. When the figures are made to over-lap each other, as in *Diagram A*, much more difficulty is experienced. Perhaps the type of design exhibited in *Figure 13* demonstrates the simplest system of over-lapping figures, plenty of space being taken, the figures nevertheless being reduced to such a form that they over-lap without running into one another. The construction of this design should be thoroughly examined by dividing the repeat into small squares, when the method of arriving at this effect will be very apparent.

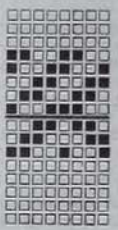
Design 14 is a scroll effect produced on this principle of reversing figures. Little need be said about it except that on close examination repetition will be revealed where not apparent. Wherever there is a chance of introducing a system of arrangement that will not detract from the value of the design being produced this system should be introduced, as it will indicate to those able to perceive it work of an efficient designer.

The thing that will attract attention in these designs is the constant reduction of all systems to the filling in of a square. For example, in *Figures 10, 11,* and *14* the square formation is very evident. If *Diagram B* is consulted it will be evident that even reversed figures may be reduced to the square, for E may be made the reverse of D, and F of C, but we must remember that it is not what *may have been* the arrangement employed but what was the arrangement employed, and as a rule it will be found that the systems of arrangement as here described are the most useful in practice to work by.



SHIRTING.

DRAFT.



PEGGING PLAN.

COTTON SHIRTING.

This design is 72 ends per inch, 50 picks, 20's twist, 14's weft, on 8 shafts, 8 to the round ; cop weft loosely twisted. The stripes may be increased by extending the draft.

Warping.

4 dark blue,	4 white	for 24 ends
4 light blue	4 white	,,
4 red	4 white	,,
4 dark blue	4 white	,,
4 light blue	4 white	,,
4 red	4 white	,,

Total 144 ends.

This order of warping would give a very effective pattern, as the stripes would interchange colours at every repeat of two inches or 144 ends. Any other colours or shades may be used to advantage, such as browns, olive, chocolate, &c.

LOONGEE AND DHOOTIE BORDER.

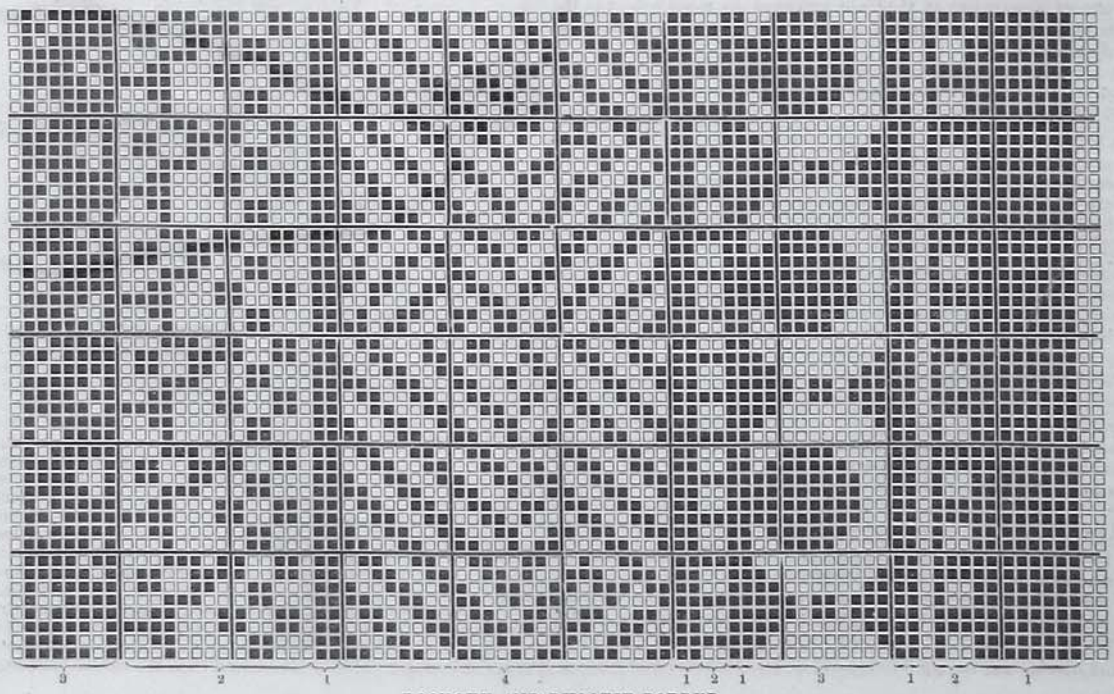
This design is from a loongee and dhootie cloth made at Goodaspore, in the Punjab. Length of loongee, 5 yards ; of dhootie, 3 yards 18 inches ; width, 1 yard 14 inches ; weight, 1 lb. 2 ounces ; borders at sides, 1¼ inch each ; cross borders at each end of the piece, 2¾ inches, of gold metal and blue cotton thread. The numbers at the bottom of the design refer to the colours. No. 1, red ; 2, dark type red, light type yellow ; 3, dark type purple, light type yellow ; 4, dark type blue, light type gold metal. In all these higher-class borders, gold and silver never tarnish, but retain their lustre and colour, even though washed. This is the result of the absolute purity of the metal employed—a point which in Europe is very little considered.

SILK CHECK AND STRIPE.

This pegging plan, straight over on 4 shafts for cotton, and 4 shafts for silk, is for a checked dress material ; warp two-fold 60's and silk two-fold 30's tram ; 60 reed, cotton two in a dent ; silk, four in a dent ; 60 picks per inch warping and draft ; 8 light maize ; 2 maroon, 8 light maize ; 2 maroon ; 8 light maize ; 2 maroon ; 8 light maize ; 38 ends, all to be on the plain shafts marked 1, 2, 3, 4 ; crimson silk, 8 ends on shafts marked 5, 6, 7, 8, blue 20 ends on shafts marked 1, 2, 3, 4, crimson silk, 8 ends on shafts marked 5, 6, 7, 8, completing patterns of 74 ends. Weft same counts as warp, and checked ; 8 light maize ; 2 maroon ; 8 light maize ; 2 maroon ; 8 light maize ; 2 maroon ; 8 light maize, making 38 picks, all on the treads marked *1, 2, 3, 4.*

White organzine silk, 8 picks on treads 5, 6, 7, 8 ; blue, 20 picks on treads marked *1, 2, 3, 4.*

White organzine silk, 8 picks on treads 5, 6, 7, 8, making in all 74 picks ; any other colours of silk may be used if required.



LOONGEE AND DHOOTIE BORDER.