The account of the various starches is also far from being thorough. China clay, barytes, mineral, and Epsom salts, although of so much importance, are dismissed in less than two pages, while ultramarine occupies some five pages, which is out of all proportion to its use in finishing. Antiseptics are dealt with briefly.

Chapter III. occupies some 200 pages, and deals with the machinery used in finishing. This is a satisfactory performance, the author shewing evidence of being well acquainted with finishing machinery, although, as might be expected, he is better acquainted with French than English types. Filling mangles are first described, then follow the drying machines, wherein most of the forms now in use are described, but the author omits the cylinder drying machine, which for spotted figured goods is much used, and is growing in favour among finishers. Stentering frames are next described, and the peculiar motion used in producing the elastic finish is elaborately explained by the aid of several diagrams. The stenters illustrated are all of French or German patterns, which differ much from English models, and should, therefore, be of particular interest to English readers. Stretching machines and rollers are next described, and under this head is noted Birch's scutcher, which is somewhat out of place here, as its object is not to stretch, but simply to open the cloth. Damping mahines follow, and are adequately dealt with. Calenders are described very fully, many of the best English makes being illustrated. Under this head is given one description of a water mangle, a machine which enters very extensively into English finishing, but apparently is not used on the Continent. The chapter then goes on to describe beetles, presses, raising machines, and folding and measuring machines. Chloring and blueing takes up the first chapter of the second part, which deals with the production of the various kinds of finishes. This part gives a very good account of French and German methods of finishing, and is copiously illustrated by patterns, and on this account will be found of value. Of English finishes and the methods of producing them nothing is said. In England the present tendency is to rely on manipulation of machinery to produce certain effects, and to use as little stiffening, and this of as simple a composition, as possible; while on the Continent the opposite seems to be the rule, the composition of the stiffenings being more complex and the cloths not being manipulated so much.

The volume is well got up, and altogether reflects great credit on the author. We can recommend it to those of our readers who desire to know more about the Continental methods of finishing, and hope that sooner or later an English author will give us a similar work on English methods.

Letters from our Readers.

The Editor does not necessarily endorse the opinion of his correspondents.

THE SPINNING OF MEDIUM AND FINE YARNS IN INDIA.

(To the Editor of *The Textile Mercury.*)

SIR,—Several friends, with whom I include myself, have read the letters of your Bombay correspondent, which appeared in your issue of June 28th, with a considerable degree of interest. The point on which this is based is the statement that at the new Union Mills 50's and 60's yarns are being produced with success on a commercial basis. The impression hitherto has been in this country at least that such yarns as these could not be spun in India on modern machinery. If, however, the statement of your correspondent is correct, it simply relieves us from another illusion as to what India can do, and shews us that obstacles, which on this side were believed to be unsurmountable have been overcome. Your correspondent makes no statement on one point in which I and my friends would like some enlightenment, and that is the cotton from which these yarns are being produced. It is almost safe to presume that it is not native cotton, but has really been imported from Egypt. Still, presumptions are not safe things, and I should like to have some light on the subject from a source that can afford it, as it will be well that we on this side should know as soon as possible the risks our trade at home has in the future to encounter.

When it is considered, however, that India was the original home of cotton manufacturing, and that its productions in the way of cotton fabrics, if we may trust historical statements on this subject, have been the finest that have ever been made, and that these have been made from native cottons, I really do not see why she should not again enter the field of competition against us in the finest goods, and even produce these from the growth of her own cotton fields. I am well aware that as our cotton machinery is at present constructed it would not be easy, indeed hardly possible, to spin 50's, 60's, or 70's yarns upon it with the short-stapled article produced in India, but if fine yarns could be spun by the hand process, it strikes me it would be no difficult matter to so modify our machinery that equally good if not better result could be easily obtained. This, however, is entering into another matter. The purpose of my writing is to put the inquiry contained above.—Yours faithfully,

MANCASTRIAN.

NEW ZEALAND FLAX.

(To the Editor of the *Textile Mercury.*)

SIR,—We notice the correspondence in your Journal, anent the question of the future of New Zealand flax, and as we have now perfected an inexpensive machine for the extraction of the fibre, we will be glad to examine and report upon the fibre of any specimens sent to us for the purpose.—Yours, &c., J. H. LAMPREY, for

JNO. B. FEYER, Secretary.

2, Victoria Mansions, Westminster, London.

ANSWERS TO CORRESPONDENTS.

A. P. (Bolton), A. M. S. (Bradford), W. R. S. (Heaton Norris), W. H. (Preston), Guiseppe—(Milan), G .A. (Chemnitz), A. L. Binns (Philadelphia).—Communications received.

R. T. (Brighouse).—Received with thanks. We congratulate you on the results and not least on your own success. Will write you at more length shortly.

A. F. B. (Leeds).—You may send on anything you may think suitable, and if we concur with your views it will be admitted. Regarding the work mentioned it will probably be as you desire; but of this more hereafter.

J. H. H. (Newtown).—We will try to obtain the information you require in the course of the next fortnight. What about your successful Eisteddfod essay; has it been published? If not, don't you think it would do you good in the direction in which your thoughts seem tending? We think so.

GERMAN CHAMBERS OF COMMERCE.—The German *National Zeitung* states that the Imperial Administration has now under consideration a scheme for the formation of German Chambers of Commerce in foreign countries. The Minister for Foreign Affairs intends to establish, in the first place, Chambers of Commerce in the principal commercial centres, and particularly in Rotterdam, Antwerp, Paris, London, Zurich, Milan, Budapest, Odessa, Riga, and eventually at Salonica and New York.

THE NEW DUNLAP TAPESTRY.—The New York *Carpet-trade Review* says:—"James Dunlap, of Philadelphia, had been experimenting on the printing of tapestry carpets on the pile threads after the carpet was woven, whereas the pattern of a tapestry is now produced by printing the yarn on a drum before it is woven. The writer has witnessed the new printing process employed by Mr. Dunlap and has carefully examined a number of samples of tapestry printed by his machine, and it would seem that Mr. Dunlap has discovered a perfect process for printing tapestries on the cloth, a process first attempted many years ago, but abandoned. The samples shew the same effects in figure and colouring as are seen in tapestry carpeting as now made. The pile threads are coloured through to the back of the fabric, and the colourings have the same lustre and bloom as in the present goods. Each colour in ground and figure is clearly defined, and there is no spreading of colour in the samples shewn. Mr. Dunlap rubbed a piece of the new goods with soap and water thoroughly without any of the colour coming out, in order to prove that the colours were fast. He claims that he has demonstrated beyond doubt that he can produce tapestries by his process equal to any now made, and at a reduced cost. He is building ten looms for weaving the plain white tapestry cloth, and says all the machinery will be in operation by August 1st, and that the new goods will be put on the market during that month. The process is the sole invention and property of Mr. Dunlap, and is the result of two years of constant experimenting. The new printing machine is now in the mills of John Dunlap and Sons, Eleventh and Cambria streets, Philadelphia, of which firm Mr. Dunlap is a member."

Designing.

NEW DESIGNS.

DHOOTIE BORDER.

From Madras. Numbers at the side denote colours. All the light type dark green; No. 1, blue; 2, red; 3, purple. Two borders of this design at each selvage, one inch each in breadth. Entire width of cloth 38 inches, made of 40's twist, warp and weft, 40 reed, or 40 ends per inch, 40 picks, or what is termed a square cloth. Length, 4 yards; weight, 12 ounces. The range of colour in these Dhooties is limited, except in one series, which, beginning with green, passes through light blue to a lilac hue. A dull brick red, chocolate brown, and a black or grey, like Indian ink, complete the list, except now and again a little yellow. Another series has a cream ground almost in every case, with a bronze or copper green imposed and turquoise blue. No other colours are used, but a lilac hue occurs in a few specimens. Important lessons may be drawn from a study of Oriental patterns. There is nothing in the way of colour combination so rich and beautiful as the carpets, scarves, counterpanes and Dhooties of Indian manufacture.

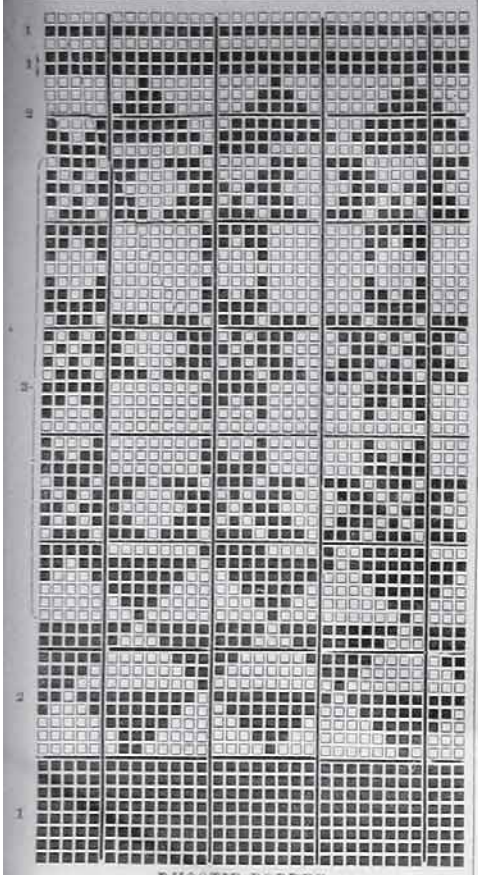
DRESS FABRIC.

A very neat light cloth, soft to handle, may be made in a 72 reed, or 72 ends per inch of 24's twist, 56 picks of 20's weft per inch; four ends of silk in the warp and weft to be 36's two-fold spun silk. The warp must be drawn two in a heald, two healds in a dent; five shafts, four for matting and one for the silk, this shaft to be the nearest to the reed. The pattern we give may be considered a basis to work from, being 70 ends, and 48 to round, 66 ends of black, chocolate, dark brown, dark blue, or any shade of myrtle on the shafts marked in the draft plan 2, 3, 4, 5, and four ends, four in a heald, one heald in a dent, of white, crimson, scarlet, or maize spun silk on shaft marked 1. In checking great care must be used in putting the four picks of silk in the proper sheds. We give for this purpose the treads marked 1, 2, 3, 4 in the pegging plan and 44 cotton picks on the other treads, making 48 to the round; but no matter how the materials may differ in grist of yarn for warp and weft, set of reed, and picks, or whether the squares of the pattern are large, small, or squares within each other, one thing must be borne in mind—the weft ought in every case to square the warp pattern, whatever that may be; the whole effect and object of so doing is to obtain a very neat cross on the angles where the silk of the warp and weft meet. Light colours, shades, tints, and hues may be used for the ground, provided the silk line, vertical and horizontal, is a good sharp contrast, or warp silk may be one colour and the weft silk a contrast. Any other material, such as linen, worsted, or mohair, may be used for weft. This make of cloth is worth notice.

THE ARRANGEMENT OF FIGURES.

(*Continued.*)

Before proceeding to treat on the "Sateen Arrangement of Figures," attention should be directed to means for producing variety in drop patterns, reversed figures, etc. Now, in these systems of arrangement usually one figure is placed in two positions, either reversed or otherwise, and thus it may be said that half the



DHOOTIE BORDER.

FIGURE 23.

figuring capacity of the loom employed is wasted. That this is true in a greater or less degree all will readily admit, but it must be remembered that the object of placing figures as indicated is to distribute as evenly as possible the figure employed over the surface of the fabric and thus prevent an uneven structure or streakiness in the design, the presence of either rendering the fabric unsalable. Bearing these facts in mind, there is still no reason why drop patterns or opposing figures should not differ to a small extent from each other, but the variation must be very limited, since the object should be not to give the idea of two distinct figures, but of variation of one effect.

Figure 22 is supplied as an illustration of reversed figures slightly modified, the dark portion being inserted to assist the analysis of the pattern. Here it will be noticed that the modification simply consists in a slightly different flower being used, all other parts being exactly reversed. Such variation, however, may safely be carried much farther than is shewn in this example, and will very often give such a result as amply repays all extra work necessitated from the conditions mentioned being observed.

THE SATEEN ARRANGEMENT OF FIGURES.

Since this system of arrangement has been very fully demonstrated by many writers, our duty will simply consist in briefly indicating the methods adopted and at the same time calling attention to any peculiarities of treatment which any special author may have adopted.

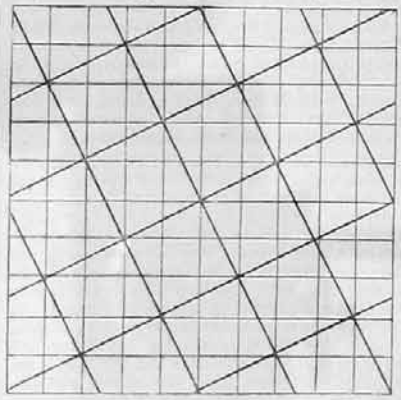


DIAGRAM C.

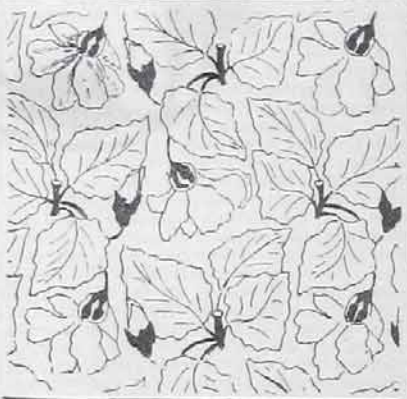


FIGURE 22.

An effective way of dealing with this subject is that demonstrated in *Diagram C*, this system, we believe, being first adopted by Mr. George Washington, and fully demonstrated by him in a lecture on "The Sateen Distribution of Figures," delivered before the Yorkshire College Textile Society.

The squares marked out in thin lines represent the units of space upon which the design is to be developed. In this case the 5-end sateen is being dealt with so that five squares by five squares will be the repeat. Now proceed to put down the 5-end sateen, but instead of counting the spaces count the points where the perpendicular and horizontal lines intersect. Having decided the sateen positions, join them in the two directions as indicated by the thick lines; thus the space, five units by five, will be found to be divided into five equal parts.

On this being accomplished, it is very evident that any given figure on being placed in each of these squares will be arranged in sateen order, and thus equal distribution will be ensured, since it is very apparent that each figure is considerably overlapped by its neighbours. The advantage of this will be fully realised on consulting *Figure 23*, which is simply a diagonal figure arranged in a square. Here we notice that each distinctive portion of the figure comes into line with the same portion of its neighbouring figure, and, therefore, unless the figure shews a very marked diagonal effect and itself consist of what may be termed an all-over effect, distinct and very objectionable lines across will be developed. The remarks made respecting the variety producible by reversed figures are equally if not more applicable to the sateen arrangement of figures, since there are here at least five repeats of the figure in one repeat of the design.

In our next article on this subject our remarks on the sateen arrangement shall be concluded, and we will indicate as briefly as possible systems of producing and arranging figures which are occasionally useful to the textile designer.

WOOLLEN MANTLE CLOTH.

Figure 22, properly developed, will make a very creditable mantle cloth. For a light summer fabric about 30—36 sk. dark woollen should be used with, say 50—56 threads per inch, 4, 5, or 6-end makes being used for the ground. The figure will shew best if developed by means of an extra weft, say 30's mohair, shading being resorted to to denote the various portions of the figure. If the expense of such a cloth be too great, the sett should be closer, the 4 or 5-end sateen (warp up) used for the ground, and the mohair weft brought on the surface when required to form the figure. In the finishing of such cloths as these it must be remembered that uneven shrinkage is likely to take place, therefore means must be taken to overcome this by paying special attention to the selection of materials, tentering, cutting, etc.

Figure 23 will come out well in either all silk, or cotton warp, and silk or mohair weft.

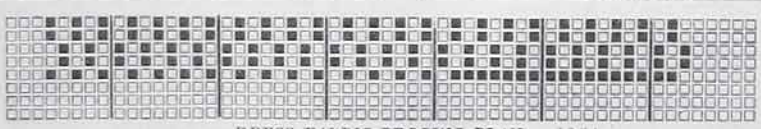
WOOLLEN OR WORSTED TROUSERING.

The following is a suggestion for applying colour in a stripe form for trouserings :—

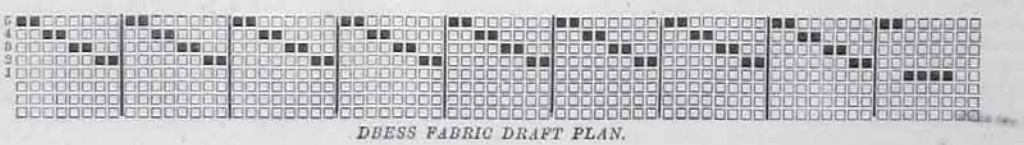
Warp.

12	threads	black,	12	threads	black,
4	,,	white,	4	,,	grey,
12	,,	black,	12	,,	black,
4	,,	white,	4	,,	grey.

For the white and grey, complementaries to different intensity may be employed with the black ground, or, again, the ground may be complementary to the stripes, the stripes in this case being varied by their difference in luminosity.



DRESS FABRIC PEGGING PLAN. 1 2 3 4



DRESS FABRIC DRAFT PLAN.