

distance for repeat, both warp and filling ways, but some figures, as previously referred to, may require

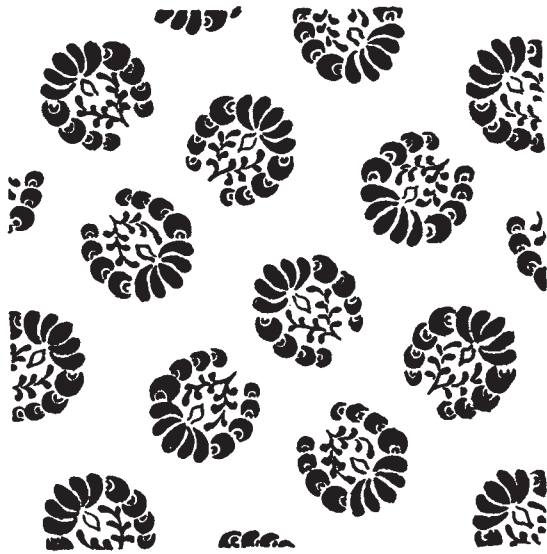


Fig. 7.

more space filling ways than warp ways, a system of designing which we will treat in another article.

## Dictionary of Technical Terms Relating to the Textile Industry.

(Continued from page 37)

**MULE-DOUBLER**:—A doubling and twisting machine built after the principle of a spinning-mule.

**MULE TWIST**:—Cotton yarn spun on a mule, to distinguish it from cotton yarn spun on the ring frame. It is used for weaving the finest kinds of cotton goods.

**MULL**:—A thin soft kind of muslin used for dresses, trimmings, etc., known as India mull, French mull, Swiss mull, etc., also Mulmul, Mullmull. Mull has the softest of finishes, and no stiffening. It is much like a Parisian lawn, except that the latter does not have so soft a finish. The latter has more of an India linen finish, with a little calendering. China mull, or silk mull, is a light plain union fabric, made usually of varying percentages of cotton and silk, according to the grade.

**MUMMY CLOTH**:—A fabric resembling crape, having the warp of either cotton or silk, and the filling of wool; used for mourning when in black, on account of its lustreless surface.

A cotton cloth or print which presents a momied or crinkled effect upon its surface.

**MUNJEET OR MUNGEET**:—Indian madder. The root of a plant of the madder family. It comes in bunches of stalks nearly a yard in length, varying from the thickness of a finger downward. It does not contain much coloring-matter. It is used for making low qualities of garancine.

**MUREXIDE**:—A rich purple color obtained by the action of nitric acid upon uric acid.

**MURIATIC ACID**:—Hydrochloric acid, spirits of salt, marine acid.

**MURRAY TARTAN**:—A Scotch tartan having marine blue, green and black to form the plaids, while

single red bars, three by three, cross the material in both directions.

**MUSA-ENSETTE**:—An East African fibre similar to the famous Manila hemp.

**MUSHRU CLOTH**:—A washable, durable material, made in India, having a glossy silk surface and a cotton back, and usually decorated with loom-embroidered flowers. It is used for wearing material by the Mohammedans.

**MUSLIN**:—A thin, plain woven cotton cloth, brown or bleached, of any width. The first muslin woven in this country was at Pawtucket, R. I., 1780, by Samuel Slater.

Swiss muslin is a shade heavier than organdie, averaging 16 to 20 square yards to the pound, and having a finish similar to organdie but of less gloss. In Switzerland and Scotland the goods are frequently woven with figures and dots, known as Swiss dots, or sprigs. The figures or dots of the Swiss muslin made in Scotland and the United States are either embroidered or produced by the lappet loom.

**MUNGO**:—Is obtained by disintegrating to fibre, pure woolen rags, from cloth originally heavily fulled (hard rags) and when the natural consequences of the strong resistance to disintegration offered by felted fabrics, results in that short fibres, about  $\frac{1}{8}$  to  $\frac{1}{4}$  of an inch in length, are obtained. Mungo, for this reason, can never be worked up again alone into yarn, and is mixed with new wool or cotton, and generally spun into low counts of filling yarn. On account of mungo referring to a



MUNGO.

fibre once before having been heavily fulled, the same has lost its capacity for further felting.

**MYRABOLANS**:—A fruit produced in the East Indies, extensively consumed as a source of tannin, shape and size like a dried plum. The tannin is very variable in amount.

**MYSORE SILK**:—Soft, fine undressed silk, of Hindoo manufacture.

There are indigenous to Brazil and growing wild in certain regions, two well-known species of trees which are of interest to the commercial world because of their possibilities as producers of cotton fibre. To those who know the cotton-growing industry as it exists in the United States and in other countries, the idea of cotton being produced from trees presents a decided novelty. Not the least remarkable about these trees is their occurrence in precisely those regions where it has seemed to be impossible or at least difficult to grow ordinary cotton.

governed by the firmness of the fabric, close woven silks require longer time than soft fabrics.

Hard water is a serious disadvantage in boiling-off piece-goods. Where hard water is unavoidable, the bath should be boiled up with a little soda before the soap is added. Distinctly hard water does not respond to this treatment altogether, and in this case a sufficient amount of soap must be added to the bath to combine with the lime of the water, and after boiling up for a few minutes remove all scum that rises. Lime soaps readily attach themselves to the fabrics and are a detriment when the goods are to be dyed for discharge printing.

After the pieces have been stripped, they are thoroughly washed in water containing a small amount of soda crystals, to effect removal of the soap remaining in the goods, afterwards finally washed in clean water. Where pure whites are required, bleaching is necessary and this process always follows the boiling-off. The most satisfactory results are obtained by bleaching with the common commercial peroxides. Sulphur bleaching was formerly quite common, but the process possessed a number of disagreeable features which caused it to be practically given up.

For some classes of printed tissues, bleaching is not required, and it only becomes necessary to neutralize the natural yellow tint of the silk with methylene blue, which is applied by running the goods through a weak soap bath. Fabrics to be printed with designs in which blue predominates, it is not necessary to resort to *white dyeing*. Pongees do not require any treatment after boiling-off, except to give them a run through a weak muriatic acid sour, for the purpose of killing any traces of soda which remain after the soap bath. They are then well washed to remove any traces of acid. Drying is the final operation, and of course, the goods must be carefully handled; the machine tender and his helper looking well after the spreaders and see that no creases or folds occur. Careful handling during drying has much to do with good printing.

Whether printing of the fabrics is done by hand blocks, or on a cylinder machine, the blanket should be soft and yielding to ensure sharpness of outline and proper penetration.

After printing, the goods should be allowed to hang from rods to dry out slightly before being passed through the dry-box proper, previous to steaming, excessive steaming should be avoided. The actual fixation of the colors is done in the steamer, and wet steam should not be used, as it impairs the sharpness and clearness of outlines. For the average line of colors, adapted to silk goods printing, a pressure of  $3\frac{1}{2}$  pounds is quite sufficient.

After steaming, the goods should be immediately washed with plenty of water, and if the washing machine is provided with jets supplied with ample water, the possibility of blurred patterns and clouded whites is remote. The color may be brightened by passing through a weak acetic acid bath, whizzed, and dried.

During the past few years cotton piece goods have been decorated by colors applied by means other than

printing, and certain fanciful designs have been in a similar manner applied to silk goods, and which show a peculiar softness, which lends itself to decorative stuffs. Reference to this form of decoration here seems to be proper, although the *modus operandi* is slightly different from the usual printing process.

The *style* in question requires the use of either stencils or the air-brush; if the former is used, the separate colors are limited to the perforations of the stencil, and several stencils, each for its own color, are required to make up the complete design. Air-brushes are sometimes used in connection with stencils.

The use of the air-brush alone permits the production of various color effects and schemes upon fabrics, showing beautiful blendings of one color with another, and their use allows the freest play for the imagination of the colorist. The application of colors through stencils requires the use of either water or alcoholic solutions, with or without shellac. As a general rule, the colors mostly employed for this class of work, are selected from the group of cerasine colors, products that have a wax base, and which have been but little studied by colorists.

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CIRCUIT COURT OF THE UNITED STATES.

*Final Decree.*

The case of the Draper Company, of Hopedale, Mass., against the American Loom Company for infringement of "Rhoades" patent 454,791, dated June 23, 1891, has been disposed of by the entry of a final decree on January 30, and *the payment to the Draper Company by defendant of a very considerable sum in lieu of damages, profits and costs of suit.*

The patent expired in 1908, just after the decision of the Court of Appeals sustaining the patent, so that the only question between the parties was that of a money payment; but *the Draper Company desire, in this connection, to warn purchasers of looms that they have other infringement suits pending against the Stafford Company, the successor in business of the American Loom Company, which they are actively prosecuting.*

They wish it to be fully understood that, if any of these patents should be sustained, they will have a right to injunction, not only against the continued manufacture and sale of the infringing devices by the Stafford Company, but *against the continued use of such devices by purchasers from the Stafford Company, and they will feel obliged to enforce these rights.*

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RECORDS OF THE NORTHPROP LOOM.

The Draper Company shipped in 1909 and 1910, *45,244 Northrop Looms,*

Their unfilled orders January 1, 1911, were for *10,662 Northrop Looms.*

They received orders during the five weeks ending February 4, 1911, for *10,128 Northrop Looms.*

Total orders for 1911, to and including February 4, *20,790 Northrop Looms.*

great demand eight or nine years ago, are again coming into line, and it is ventured that these, together with Scotch and mannish effects will constitute the bulk of the fall business on this end of the market. Fancy mixtures and Polo cloth, as well as imitation of the latter, are being shown, but it is a question as to their attractiveness.

One point is evident, however, and that is, that on a number of the lines that are being shown, the weight has been greatly reduced, in order to bring the cost of the fabric to an attractive price, somewhat after the same principle as was operated in the men's wear trade.

A novelty fabric which is attracting considerable attention is the new Knit-wear cloth. It is designed for outer garment wear, and combines the appearance of a knitted fabric with the strength of the woven fabric.

#### REVIEW OF THE SILK TRADE.

The fall season is a subject which, to many manufacturers, is extremely hard to solve, and while the market is progressing slowly, there are many interesting developments. To those who are well in touch with conditions, it seems that the competition for fall business is going to be extremely keen.

A very encouraging feature of the market is the increasing demand for spot deliveries.

On most of the business that has been booked, the prices were slightly in advance of those of last season, but in view of the increasing values on raw silk, it is doubtful whether the business will yield any greater margin than last year.

There is considerable demand for 36 in. skein dyed cotton back satins, and mills making this class of fabrics are booking orders to keep them employed well into the fall. These fabrics have the preference over the cotton back piece dyes, because they present a better body, and for this reason are extremely well adapted for lining the long woolen coats for ladies' wear, which promise to become so popular during the fall and winter season. On most of the business that has been booked, a fair price has been obtained, which careful calculation shows to be of slightly better advantage than staple lines.

Taffetas have had a great setback, due to the reign of the narrow skirt, which greatly restricts the use of this fabric in the petticoat trade.

Marquisesettes are looked upon as good for another season, and buyers are operating on this class of fabrics without hesitation, but it is extremely hard to get deliveries.

The same situation exists with reference to printed foulards; printers, in many cases, being so congested with work as to stop receiving orders until work on hand has been cleaned out.

Satin crepés, wool back satins and desirable dress satins, continue in good demand, but deliveries are very uneven.

On spring lines there is considerable duplicating being done, deliveries being accepted for late in April, which is surely a good sign.

Tub silks, on which large orders were placed early in the season, are being called for in increasing quantities.

The Woonsocket Machine & Press Company, Woonsocket, R. I., have awarded a contract for another large addition to their plant to the Eastern Construction Company of Rhode Island. This new addition is the third large one which has been added to the manufacturing plant of this progressive company in the last ten years. This is a fitting testimonial to the high quality of the machinery which they turn out. The extra space will be devoted to increasing the output of their popular roving frame with its patented improvements, and also to the manufacturing of an entirely new drawing frame of the very latest design which is meeting with praise at every hand.

This Company has also secured the right to manufacture the Boozer & Hill doffing machine for spinning frames and a large market is looked for for this ingenious machine which was developed to its present stage at the Tucapau Mills, Tucapau, S. C. A speed of from 100 to 125 bobbins has been obtained by this machine.

From a statistic, showing the rates of wages paid to textile workers in Coburg, Germany, it is shown that the average wages paid, per working day of 10 hours, to cotton weavers is 64c, while that of the woolen weavers is 52c.

The 90th meeting of The National Association of Cotton Manufacturers will be held at the Massachusetts Institute of Technology, Boston, Mass., April 12th and 13th, 1911.

President Maclaurin of the Massachusetts Institute of Technology will speak at the opening session, and during the meeting papers are expected on the following subjects:—

- Arbitration on Cancellation of Orders.
  - By-Products in Cotton Manufacture.
  - Doffing Machines and their relation to Child Labor.
  - Electric Power Transmission to Cotton Mills.
  - Executive Management of the Textile Plant and its Relation to the Market.
  - Gas Producers and Gas Engines for Cotton Mills.
  - Illumination.
  - Law of moisture in Cotton & Wool.
  - Methods of Cost Finding in Cotton Mills.
  - Moisture in Cotton.
  - Renaissance of the Waterfall.
  - Rewinding Weft Yarn.
  - Sandwich Island Cotton.
  - Textile Education from a Manufacturing Standpoint.
  - Weaving Shed Roof Construction.
- Also reports on standard specifications and other subjects by special committees.

#### SILK MANUFACTURE IN CHILE.

A Chilean company has on exhibition in the Industrial Exposition in Valparaiso, looms weaving various kinds of silk fabrics. This concern produces silks of the cheaper grades, the business being in charge of Jose Canziani, an Italian. The company has been established for three years with success, they having no difficulty in selling everything produced, since the duty on manufactured silks, in Chile, varies from 5 to 60 per cent, while raw silk enters free, coming from Italy. The imports of silks of all kinds, into Chile, in 1909, amounted to \$1,247,184 United States gold, against \$842,131 in 1908.

are too closely packed together; again the distance from the porcupine roller to the nip of the pair of front rollers must be as short as possible, so short fibres, after they are released by the pins, will not pass in lumps. In order to obtain these results, it may be necessary to have the porcupine roller set as near as possible to the nip of the front rollers. If such is the case, the question of distance of setting back and front rollers will be similar to setting drawing rollers in drawing-boxes of the English system.

The surface of the porcupine roller varies from  $\frac{1}{8}$  to  $\frac{7}{16}$  of an inch above the nips of the front and back drawing rollers, as well as that of the carrying rollers. The sliver should rest on the surface of brass rings on the bottom of the pins.

The condensed sliver, after leaving the pair of front rollers, is then in rather a flat condition, and if any attempt were made to wind it onto a bobbin in that condition, if once wound, it would never unwind again, since the loose fibres at the edge of these flimsy slivers would become entangled with each other. To overcome this, we find arranged between the front rollers and the balling head, a device known as the rubbing motion, a most ingenious arrangement of two rubbing leathers or aprons, each of which has a double movement, viz: (1) they run continually forward at a corresponding surface speed to that of the drawing rollers, *i. e.*, that at which the sliver moves through the drawing head, (2) they, at the same time, move sideways, going backwards and forwards for perhaps the distance of an inch, or rather more, some sixty times a minute. This double motion of the aprons, rolls the sliver until it appears as if it had some twist in it, although for a fact it has none. During this rubbing process, the sliver travels continually forward at a corresponding speed of that of the drawing rollers, towards the balling head of the box. As will be readily understood, the mechanism by which this ingenious rubbing motion is obtained, is rather complicated, but being strongly constructed, works satisfactorily.

Having seen the advantage of the porcupine roller as the superior means for straightening the fibres in the sliver in a French draw box, the question might arise in the mind of the reader, why not use them in the place of carriers in cone and open, *i. e.*, the English system of drawing? We then must remember that fibres going through a porcupine roller must be parallel, and that when twist is present in the sliver, slubbing or roving, things are changed at once. The twist which they contain when passing the back roller, cannot pass through the pins of the porcupine roller without fibres, being broken, and other forming knots.

The consequent advantages of French drawing over English drawing are that the first permits in many ways using shorter fibres; again longer drafts are possible than is the case with the larger rollers and the fast running flyers of the English system. The latter means cheaper production, if other parts are set to coincide.

In the same way as French drawing differs from the English system, in theory, since slubbing and

roving in the former contains no twist, so differ radically the construction of the boxes, in that they have no spindles.

As a rule, two ends are wound on each bobbin throughout every box used in the process of French drawing, although some spinners use only one end per bobbin for the first, or the first and the second box or frame, after that using double end bobbins. Single end bobbins are put in the creel, leaving the machine with two ends on the bobbin, whereas in other instances, double end bobbins put into the creel on the next frame leave the machine with two ends on the bobbin. In this way, placing, for example, 32 balls, as taken from the finishing gill box in the creel of the first French drawing frame, and each bobbin on the delivery end of the machine containing two ends, will indicate to us that there are 32 ends in the creel drawn into 16 ends, with two of these ends on each of the 8 bobbins delivered, in turn, giving us a doubling of two into one. Using the same number of bobbins as balls before, in the creel of the second drawing frame, and delivering again onto 8 bobbins, will in turn indicate to us a doubling of four into one.

The number of boxes used in a set of French drawing frames varies with the grade of wool used, as well as the count of roving to be produced, and may call, in connection with an ordinary set, for nine operations; in some instances, seven or eight operations may only be required with coarse counts of yarn, whereas high counts of yarn may call for twelve or possibly thirteen operations or processes. In every instance, these operations or processes are identical, the only difference being that in every instance the sliver is drawn finer, with the fibres resting more and more parallel to each other; the construction of the machinery used being in conjunction with it of a more and more delicate nature. According to their fineness of construction, the boxes are called either drawing frames, reducer, slubber, intermediates, roving frame, until the last machine and which is termed the finishing roving frame, and from where the roving is then taken to the worsted mule.

(To be continued.)

### The Manufacture of Linen Yarns.

(Continued from page 138, Vol. VII.)

After the flax has been broken on either one of these flax brakes, the same is submitted to the power scutcher, of which we give illustrations of two styles of machines as used, in Figs. 15 and 16. Fig. 15 illustrates the most simple specimen as to construction, consisting of a wooden shaft, having five scutching knives set in it similar to the spokes of a wheel. These scutching knives must be set perfectly true so that each strikes exactly the same spot as the previous one. They are thick at the back and tapering on one side to a pretty sharp edge, the plain side being placed next the stock. The scutching knives revolve close to a wooden or metal upright stock or scutching board, at the back of which the man stands, putting the flax over the top and allowing the blades to strike it and so clear off the wood. Fig. 16 illustrates a more prac-