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## THE JOURNAL'S TEXTILE SCHOOL.

### JACQUARD DESIGNING.

#### Lesson 2.

In our former lesson we mentioned that the finish of the fabric itself plays an all important item in connection with the design. For example, let us consider, in opposition of fabric structures previously referred to, a napped fabric, may it be a cotton or woolen flannel, blanket, shawl, etc., and when it will be readily seen that in connection with these napped fabrics, the face (as well as the back) of the cloth is covered with a pile, completely concealing the threads as well as their interlacing; a feature positively compelling the student to only use a bold and heavy figure, *i. e.*, plenty of ground between the figures as well as their details, remembering at the same time that we have only the difference between figure and ground for designing at our disposal, *i. e.*, we cannot rely to any great extent on any change in weave, to produce certain effects in some parts of the figure, since, as mentioned before, the interlacing of the threads is completely covered by the nap. A blending of the two colors, in portions of the design, will be the only change in effects at our disposal.

Fig. 4 shows us a fabric sketch of such a napped face fabric structure, *i. e.*, a woolen shawl, and which will clearly show the bold massing of figure and ground necessary.

The commercial standard is certainly the prime factor which influences the manufacturer, and in turn the designer, in the production of new styles, fabric structures, as well as the design; for the fact that the commission merchant or dealer practically dictates this point, he in turn being guided by the taste and inclination of his customers, *i. e.*, the buyer, the consumer of the goods, and for which reason, a dealer, and in turn a commission merchant will only order such styles, designs or goods, which experience will teach him to sell. However, there is always a chance for the manufacturer or the designer to make slight changes in the interest of the design and fabric, without offending the taste of the buyer, in fact, some careful suggestions on their part, and as incorporated with the design, actually may meet with the approval of the customer.

To prove this point to the student, we may mention that nobody can have helped but noticed the improvement in designs, coloring, as well as fabric structures in the market during the last 25 years, *i. e.*, since the training given to textile students by the various textile schools in operation since then, has been felt in the market; it being the reason why the designs in every new season, considered all around, are superior to the one passed.

This will also explain that the designs of better grades of fabrics are continually reproduced the next

season in cheaper grades of fabrics; it being the reason why designs in expensive silk fabrics, and which require the height of artistic training on the part of the designer, are the next season frequently reproduced in the best grades of cotton fabrics, seeing them very likely the next season in cheaper grades of cottons. It is the reason, why designs of axminster carpets and which naturally require any amount of skill on the part of the designer, are in turn the next season imitated either in brussels or tapestry carpets; again, the fact, that well taking styles in brussels carpets will surely find their way in tapestry as well as ingrain



Fig. 4

carpets, will indicate that the whole affair, no doubt, is governed by the idea of the customer of imitating the fabrics used in the passed season by the wealthier class, and which class of people naturally have a stronger feeling for style and taste, a feature which, however, is only an advantage to the general product of the market, bringing without trouble, taste in the design to all classes of figured textile fabrics.

In the same way, it must be remembered that fashion to a great extent is set abroad, in connection with imported goods, and when it must be remembered that technical training abroad is of a great deal longer standing than here, technical schools abroad having been started as far back as the '50's, in the past century, all over Europe.

One of the greatest enemies, as we might say, to the designer certainly may be found in the commission merchant, or more so the retail merchant, *i. e.*, the

man who cannot distinguish a good design from a poor one, although he possibly may be able to distinguish a better grade from a lower grade of fabrics he is selling, and when it will be found hard for the manufacturer or his commission merchant to convince him of the additional expense in producing good designs, and which either should command a better price, or anyway drive poorer designs out of the market. This, however, is not the case, as anybody can readily convince himself in connection with any retail store and where good as well as poor designs are offered, *i. e.*, have to bring the same price, the merchant himself either having no taste at all, or not the time to trouble with it, again the whole affair may be left by him in the hands of an incompetent man whose only object is to sell, never taking into consideration that pleasing a customer will bring him back to the store.

**Selection of proper design.** With reference to the selection of design, care must be exercised in this direction, for the fact that not every design or figure is suitable for every kind of fabric, whether within the compass of the jacquard machine or not. In other words, the designer must take into consideration the practical use the fabric is put to, as well as the different conditions the fabric is seen by. By the latter we mean, for example, designs or figures suitable for dress goods will be naturally out of place in connection with carpets; again designs used for drapery purposes, like curtains, must be of a different nature than such as used for floor coverings, for the fact that when in use, the fabric is seen under different conditions; hence each class of fabrics, more or less, calls for its own range of designs and figures.

A most important point for guiding the designer in planning for a design, is the size, *i. e.*, the compass of the jacquard machine at his disposal, as well as the method of the tie-up of the harness, and for which reason, any jacquard designer should be well acquainted with the various systems of tie-ups in use for the various makes of fabrics he may come in contact with. The student will for this reason find the articles on "how to tie up a jacquard harness" in the editor's work "The Jacquard Machine Analyzed and Explained" of the greatest of value in this study.

Considering the affair, *i. e.*, the design, filling ways in the loom, the designer is practically unlimited with reference to repeat of the pattern, whereas in the direction of the warp, he is governed by the capacity of the jacquard machine as well as the texture of the jacquard harness.

A minor importance in both cases is the amount of take-up of the fabric between its set in the loom and that of its finished state. No solid rule with reference to this contraction can be given, for the fact that the same varies with each different class of fabric structure, depending on kind and counts of yarn used, texture of warp and filling, the weave employed, in all its varieties, for ground as well as figure of fabric, and finally the finish. In the latter case we must take in consideration, that, other things being equal, a woolen or worsted fabric will take up more than a cotton or silk structure, again that a structure com-

posed of a thick warp, with a low texture, in connection with a fine count of filling used, will take up more in its width and less in length, than compared to a structure in which equal counts of warp and filling are used. The reverse of the previously quoted case is the result, provided a fine warp, loosely set, is interlaced with a heavy count of filling.

With reference to the various systems of weaves employed by the designer, it will be noticed by him that a filling rib, if used extensively in the fabric, say for example for its ground, the structure then will contract more in width and less in length than if a common twill would have been used. Comparing this filling rib affair with a warp rib selection for the weave used, will show him that in connection with a fabric thus constructed, there will be less shrinkage in width than compared to a fabric structure interlaced with a filling rib weave.

The finishing process, as will be readily understood, is another place, where, a great difference in



Fig. 5

take up in the different textile structures takes place, on account of the different finishes employed in connection with the various textile fabrics, some of them being what we might say finished when leaving the loom, only requiring possibly singeing or shearing or pressing, either of which process will make no material change in width or length of fabric thus treated, whereas fabrics which require fulling, scouring, stretching, wetting, etc., etc., as the case may be, will shrink, *i. e.* take-up considerable. Fabrics which are dried over hot cylinders are pulled out in their length, whereas fabrics dried on tenter frames are pulled out more particular width ways, and when consequently, in connection with the latter system of drying, the finished width of the structure can be more satisfactorily regulated than compared to the drying over cylinders.

Again, we will meet with any number of special fabrics, requiring special finishes, and which may have a tendency to vary the respective take-up of the fabric one way or the other, or both ways, which in turn will change the design proportionately between the fabric received from the loom and its finished state. A good example with reference to this variation in take up between the loom and its finished state may be quoted in connection with a crepon fabric, constructed of a



*Fig. 7*



*Fig. 6*

mohair and a cotton warp, and a pure cotton filling, a fabric which during the finishing process is treated with caustic soda, in order to mercerize the cotton for the purpose of contraction, the process in itself, not affecting the mohair yarn, which naturally then will produce a raised, curled effect upon the face of the fabric, more particular in those places where the mohair warp floats over the ground structure. It will be noticed that fabrics of this kind will shrink up to about 20% both ways and when naturally the designer is compelled, at the start, when laying out his design, to take this contraction warp and filling ways of the fabric during the finishing process, compared to the woven fabric, into consideration. Although this may be an extreme percentage of take-up, still the designer will come in contact with any amount of fabrics, where from 5 to 10%, either warp or filling ways, or both ways, in the fabric, as the case may be, are a common take up to be considered by him.

**Preventing striping of design.** A trouble frequently met with in connection with jacquard designs, for any class of fabrics, is the formation of stripes, either warp or filling ways, or in an oblique direction. It is a trouble caused by the designer, he not having balanced his pattern and which in this instance then, considered in longitudinal, transverse, or oblique section of it, contains more figure effect in one of these sections than in the preceding and following sections of it, said heavy sections, *i. e.*, sections containing more figure effects than others in the sketch, in turn forming the characteristic line effects, *i. e.*, striping in the fabric.

What in the fabric brings up these line effects (striping) prominently to the eye, is those numerous repeats of the design, side by side in every direction, as produced by the loom, and which show up so prominently even the smallest imperfections of a design in the fabric. To overcome this disadvantage of a design showing stripes longitudinally, horizontally or obliquely in the fabric, it is advisable for the designer to always show up more than one repeat of the pattern in his sketch, for the fact that the more repeats he shows, the sooner he will notice a tendency for the design to stripe or streak, as we call it; in fact, he should never be satisfied with showing one repeat only, since in that instance, such a defect to the design may readily escape his notice, or it may not show the trouble. To sketch two, three or more repeats of the pattern, each way, is the best plan for him, and if this was done by every designer, no streaky fabrics would be found in the market.

A good plan to overcome the tendency of streaking in the design, and consequently also in the fabric, is to always try and have figure effects overlap each other when drawing a line horizontally or longitudinally on the sketch, at the same time adhering to this plan just quoted, also as much as possible in connection with details of figures, *i. e.*, in not stopping or starting such details on the same line. Have them overlap and you will prevent lots of trouble, for the fact that it is this starting and stopping of figures or details of figures on one line which has a tendency to show up

streaks, after repeats and repeats of the pattern are shown side by side, both ways, in the fabric.

This sketching of more than one repeat of your design, will always refer more to all-over patterns, yet it may be the means of improving pure-stripe patterns, although in the latter instance the experienced designer will readily avoid any faults in his sketching, even if using only one repeat.

To explain this subject of being liable to obtain poor designs in all over patterns, by sketching only one repeat, and how to correct affair, the accompanying three illustrations Figs. 5, 6 and 7 are given.

Fig. 5 shows one repeat only of an all-over design, which in its general appearance seems perfect.

Fig. 6 shows six repeats of this design, side by side, clearly demonstrating that the design is imperfect, *i. e.*, has a stripe effect.

Fig. 7, by means of similar six repeats, shows the previous design, remodeled to a perfect affair.

The best plan to avoid striping in all-over designs is to take care that some of the parts of the design of one repeat (in our case leaves and flowers—since dealing with a floral design) must properly extend into the other repeats so that the pattern will properly intermingle, or dove-tail. The student must always bear in mind that he is not sketching for one repeat only, he must remember that he is after a design to cover the whole surface of a fabric on account of the weaving process, and therefore textile designing vastly differs from the pure artistic designing, *i. e.*, the work of the artist, who never will be able to understand the value and necessity of a proper repeat for a design, whereas the successful textile designer knows that the ideal design is the one that repeats properly (with the least expense as to loom mounting) and yet successfully hides its repeat.

Lining or stripes, as shown in Fig. 6, produced by bare spaces in one direction (or the other), however, are not the only reason why more than one repeat of an all-over design must be drawn, since two or more figures of the design, of some peculiar shape, size, or execution, in one repeat, may by means of repeats, single themselves out in such a position that they form lines with the same figures in the adjacent repeats, thus causing a chain or line of figures to run in a horizontal, vertical or oblique direction in the fabric. Again, in some instances, the wrong development of a perfect fabric sketch on the point paper, may be in turn the cause of the fabric showing line effects, caused in this instance, either by the wrong selection of weaves or colors, or what is worse, both.

(To be continued.)