

line would run at 125, the third at 175, and the fourth at 275. . . . Putting it in another way, assuming one foot of sliver to have passed through the back rollers, it would become 15 inches long after passing the second roller; 21 inches as it leaves the third roller; and 33 inches as it finally emerges from the front roller."

Now I venture to think this is an error. At least it is not a "common acceleration." The figures he applies to revolutions per minute should be given, slightly modified, as the *draughts between each pair*. Thus, $1.25 \times 1.75 \times 2.75 = 6.015$, and instead of a length of 33 inches being delivered we should have 72 inches.

Of course, Mr. Nasmith is right if he has taken his figures from a Drawing Frame actually at work, but that I question. If he has a draught of $2\frac{3}{4}$ only (as his figures show), how many ends does he "put up" behind?—I am, &c., E. WHITTAKER.

Burnley, January 27th, 1891.

Foreign Correspondence.

TEXTILE MATTERS IN THE UNITED STATES.

NEW YORK, JANUARY 17TH.

With reference to the Passavant case the following letter has been addressed by the firm to the Board of Appraisers:—

NEW YORK, JANUARY 12TH, 1891.

To the Board of General Appraisers:

GENTLEMEN,—You have already furnished to us without the names of the witnesses the various valuations that have been put upon our gloves ex steamer *La Champagne*, up to December 24th, 1890; also we received copy of the other testimony of our witnesses up to the same period.

We understand that there have been various examinations and testimony taken since that date at which we were not present or represented, and we ask for a copy of that testimony and a statement at least of any valuations that may have been made since the above date.

We add that we believe we are entitled to see all the testimony and papers and samples that have been filed in this proceeding, and we ask that you will shew the same to us or to our counsel, who will present this request, and also that we may be permitted to take a copy of the entire record, or that you will furnish a copy of the same, we paying the expenses for making the same.—Very respectfully,

PASSAVANT AND CO.

The Appraisers, in a letter dated the 14th inst., decline to accede to Messrs. Passavant's request, for reasons which they set forth at length. They say that the ascertainment of values is necessarily a summary proceeding under every system of revenue laws known to civilised jurisprudence. The information obtained by appraisers in ascertaining the market value of merchandise is no more public property than that obtained by tax assessors and States Boards of Equalisation under the various laws of the several States. The proceeding is not strictly judicial, but rather administrative and executive in its character.

The Secretary of the United States Treasury, in a letter dated June 9th, 1885, used the following language:—

"It is due to merchants and others called to give such information (as to market value) that their statements shall be taken in the presence of official persons only. It must often occur that persons in possession of facts, which would be of value to the Appraisers in determining market values, are deterred from appearing or testifying by the publicity given to reappraisements proceedings."

Designing.

NEW DESIGNS.

UNION CLOTHS.

The two pegging plans, and draft for both, are given, to produce cloths of linen and cotton, which, if substantially made, ought to meet with a ready sale for jackets, aprons, blouses, and many other requirements among butchers, fishmongers, and greengrocers, making good washing materials if blue and other colours are fast, and for rough-and-ready



No. 1 PEGGING PLAN. No. 2 PEGGING PLAN.



DRAFT FOR BOTH.

wear would be unequalled as fabrics for children. Reed 50 ends on inch; 50 picks per inch, good calender finish. Warp pattern: 12 of blue cotton 16's twist, 12 of 40's linen white; weft: 12 of blue cotton 16's, and 12 of 40's tow white. A good dress material for outdoor wear in agricultural districts, would be 36 reed, two in a dent, of 64's white linen, 24's cotton, 76 ends per inch; weft the same in picks 64's line, 24's cotton. Warp pattern: 30 white linen, 30 brown cotton; weft same pattern; 45 white linen, 45 sea green, for warp, weft same; 15 white linen, 15 dark buff cotton; weft same, 60 white linen, 60 chocolate cotton; weft same; 10 of white linen, 10 green drab; and weft 10 green drab cotton, 10 grey linen.

THE FINISHING OF WOOLLEN CLOTHS.

Of the various methods of imparting character to cloths, perhaps none yields more pronounced results than "finish;" in fact, such is the power inherent in this process that were the textile designers of to-day deprived of this means of obtaining beauty, the loss would be scarcely less felt than the loss of colour. Of course, in the case of worsteds, finish is almost entirely subservient to design from one standpoint, yet the fact must not be overlooked that even in this case finish is imparted as a developer of weave effect, and as such holds a position of considerable importance.

Turning to woollen cloths, here the utility of finish is apparent in a maximum degree, and in order to understand it fully it will be necessary, even at the risk of repetition, to commence from the wool and follow the processes up to the finished cloth, bearing in mind throughout that it is the principles of "finishing" that we wish to demonstrate.

In the first place, then, it is very necessary that the fact should be kept in mind throughout that a fibrous material is being dealt with; that, in fact, the proper arrangement of the fibres is the ultimatum desired. As far as this our remarks are applicable to all materials, whether wool, cotton, or silk; thus our next enquiry will be "in what way and to what extent do the processes of wool manipulation differ from the processes used, say, in the cotton or silk trade, and what is the reason of such dissimilarity?" On this point so much has already been written that we need only call to mind the bare facts involved. It is well known that it is the peculiar characteristics of the wool fibre that cause manufacturers to employ such different principles in each respective case; in manipulating wool for woollen cloth the manufacturer makes his cloth to take a finish, while in the case of cotton, or silk, or worsted the material is manipulated simply to form a cloth, the character of which is apparent in the loom and is little affected by any subsequent operations.

The felting or milling property, which is an attribute of the scale-like structure of the wool fibre, may be considered under two heads—viz., shrinkage and interlocking. The shrinking property of wool cloth is often simply dismissed solely as an attribute of the peculiar cellular structure of the fibre; but such is not the case, as we will now proceed to demonstrate.

Take any ordinary weave, say plain, or two-and-two twill, and weave a cloth entirely of wool. Then if the shrinking property reside entirely in the fibre, and be independent of cloth structure, the more material present in the cloth, that is to say the greater the number of picks inserted, and the more will the cloth shrink. But such is not the case. That the structure of the cloth does materially influence the shrinkage is readily proved as follows:—Set an ordinary woollen cloth as follows:

Warp.
All 26 sk. woollen.
12's reed 4's.

Weft.
Same as warp.
48 picks per inch.

Now weave a length two-and-two twill *Design A*, and then a length four-and-four twill *Design B*, or *Design C*. In weaving, a marked difference will be observed, the two-and-two twill tending to keep the cloth the full width of the reed, while the four-and-four twill tends to narrow the cloth, thus necessitating the use of a temple; and if plain be used in the place of the two-and-two twill, a still more marked difference is observable. Now in the "dolly," in the "milling" machine, and in the "stocks," this tendency to vary in width and consequently in thickness is further developed, and in the finished cloth a marked difference in width and weight is observable, thus proving beyond doubt that the "make" of a cloth does materially influence the amount of shrinkage. This is readily comprehended if reference be made to *Sketches A* and *B*, which are sectional or end views of *Designs A* and *B*. We at once notice that in *A* every two threads are separated by an intersection of weft, while in *B* every four threads only are separated by a weft pick. In the case of *Design C*, which is what is termed a weft rib, every two picks tend to occupy the place of one as shewn in *Sketch C*, while in *Design D*, which is nearly a perfect double plain cloth, there is a tendency for two cloths to be formed, one upon the top of the other. These facts we shall have occasion to refer to later, but for the present we must return to the consideration of the preliminary processes of woollen cloth manufacture.

The manufacturer must bear in mind the type of cloth which he intends making when selecting his wool; if for heavy mill goods, selecting, say Saxony, Port Phillip, or Sydney wool, while if for lighter, less compact goods, say Cape, or some of the English wools, according to the degree of roughness required. If dealing with the first class, much care is necessary in the scouring, since all the felting which takes place here is so much lost in the milling of the cloth. In addition it may be well to remember in all cases that the less severely a wool is treated and the more is the felting property preserved for the final operation.

Since the typical structure of the woollen thread, as distinct from the worsted thread, is known to most in the trade, we need not dwell upon this save to note that this peculiarity is certainly one of the most important means of favouring the milling property of wool.

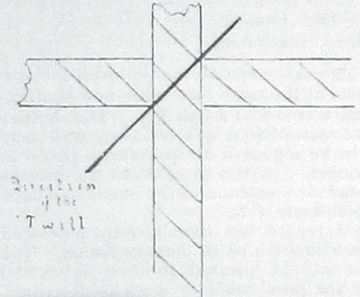
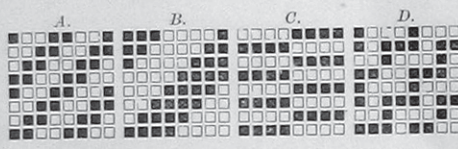
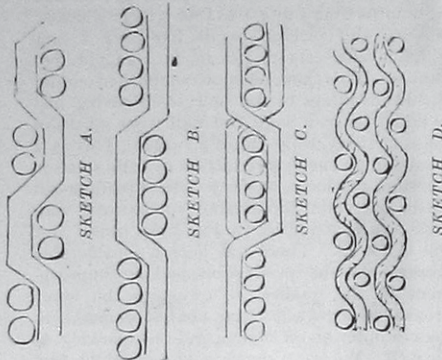
The next thing to decide is the question of twist, and since a correspondent in last week's issue desires information on this point, the subject comes in very opportunely.

The amount of twist desirable in a yarn must of course be decided according to the resultant cloth required, but as a rule the main points to remember are that warp yarn should receive such a quantity of twist as will ensure its weaving well, while weft yarns should only receive as much twist as will enable the shuttle to pull it off the bobbin. Now comes the question asked by our correspondent, viz., "In what direction should the warp and weft be twisted, and why?" Since this question is best decided by considering the twist of the yarns in relation to a twill, we proceed as follows: In *Sketch E* is shewn a warp and a weft thread, twisted as usual in opposite directions. Our correspondent says that to him it appears that if two such yarns be used as warp and weft respectively, he fails to see how the convolutions will fall into each other; but on his consulting *Sketch F* this difficulty should be cleared up, since here the same two threads are placed in the positions they occupy in the cloth. Now when the direction of the twill also is taken in consideration four conditions are possible: 1st. Twill may take direction of both warp and weft twist. 2nd. Twill may oppose both warp and weft twist. 3rd. Twill may oppose warp twist. 4th. Twill may oppose weft twist.

In *Sketch F* the second conditions, which are most commonly in use, are represented, the twill opposing the twist of both warp and weft, which lock together, thus forming a compact cloth with the twill clearly developed. That this is true is readily proved by first sending the twill in a cloth to the right and then to the left, the twill in the latter case being undecided

when compared with the twill going to the right.

These effects of twining and twilling must, of course, be considered in relation to the ultimate results required; in the woollen trade the 2nd conditions illustrated being employed as a rule, the exceptions being in the case of cloths in which weave effect is entirely obliterated, a felt type of cloth being produced, as will be shewn later.



FANCY STRIPES FOR SPRING DRESS GOODS.

No. 1.—Nothing puts new life into a lagging industry so effectively as some striking novelty, and a flow of new patterns into the market. It happens not infrequently that a style obtains and becomes fashionable which has been discarded long ago as defunct and relegated to the limbo of the past, although this may in no way detract from its merits; in fact no matter how ancient it may be, if the taste and demand of fashion requires it, it must be reproduced. Perhaps there is nothing original in the strict meaning of the word, and notwithstanding the ever-recurring desire for change there is and always has been a constant demand by people, both civilised and savage, for old styles and patterns. We therefore give a few examples both of dress goods patterns for spring (which are likely to be in demand) and the union diaper fabrics that always command a sale if properly manufactured with good materials. The design herewith for spring dress goods is on eight shafts, eight to the round, in a 32 reed, two and three in a dent; cotton portion of the warp: 48's two-fold, and the orgazine silk 30's two-fold; weft, one of 20's and one of 16's, either cotton or linen or one of each material.

With a catcher at the selvage two-and-two checking could be used, that is, two in the one thread; one shuttle of 18's may be used. The greatest scope is obtainable in this make of cloth, and the draft can be extended or diminished whenever the necessity of pattern space requires. We offer the following as a guide: 64 chocolate, two in a dent on the shafts marked in shaft and pegging plan, 1, 2, 3, 4, 5, 6; then 12 ends of orgazine silk, three in a dent on shafts 7, 8; this portion of the silk pattern, in fact all the silk in the warp, must be on a second beam; 12 chocolate, 1 maize, 2 chocolate, 1 maize, 6 chocolate, 1 maize, 2 chocolate, 1 maize, 6 chocolate, 1 maize, 2 chocolate, 1 maize, 6 chocolate, 1 maize, 2 chocolate, 1 maize, 12 chocolate. The twelve ends of silk are one of coral, one of maize, or white; this portion of the pattern, including the silk ends, makes 70, which must be repeated three times, and the pattern will then begin again with 64 chocolate, total ends 274. The colours may be varied, but the weft under all changes ought to be of the same shade as the principal portion of the ground. In this pattern it would be chocolate, changing chocolate for cream shade, light green and coral in the silk, and weft cream would give a capital effect; terracotta, dark blue, and white in the silk; terracotta weft would be another good arrangement. Space is too valuable to give all the changes which would produce saleable patterns, but the few given will shew what can be done. A second draft with pegging plan is given for same design to afford more variety, so that scores of samples may be obtained by dividing the pattern warp into alternate sections of each draft and using the two pegging plans at leisure. This will save time and economy in materials.

FANCY DRESS DESIGNS.

No. 2.—This design can be made on 12 shafts, 24 end draft, 24 to the round (see pegging plan and draft). We suggest a 64 reed, two in a dent, or in other word 64 threads per inch, width 30 inches, 30's twist for warp, and 30's weft, 64 picks per inch. Warp all brown, chocolate, blue, or any deep shade of greens, purples, or reds; weft light tints, such as greys, creams, light fawns, pinks, cinnamon brown, or any of the fashionable tints now in vogue, of which the number can scarcely be reckoned. The warp pattern may be a stripe 24 of black, 24 of fawn, 24 of deep blue, 24 of light cream, 24 of myrtle, 24 of light straw. Any of these arrangements would be effective, and if the weft pattern is the same as the warp very handsome checks may be formed. A good and stylish pattern is as follows: 60 of dark bronze, 2 of white or cream, 40 of dark bronze, 6 cream, 24 dark bronze, 12 cream, 12 dark bronze, 24 cream, 6 dark bronze, 36 cream, 2 dark bronze, 48 cream; total, 272 threads. The weft pattern the same in every respect, although a slight variation is permissible by using two different colours as weft—for bronze take deep purple, and for cream light lilac. A very suitable make of cloth for spring dress materials would be warp 24's twist, all dark shades; 40's tow weft, 50 picks per inch. Many changes may be had, both in the materials, colours, and pattern.

No. 3 Design is on 6 shafts, 18 end draft, 6 to the round—a very simple and easily-made cloth; 60 reed, 3 in a dent, or 90 ends per inch of 24's twist for warp, 30's for weft; 56 picks per inch. Stripe pattern as follows:—60 threads of mud or smoke shade, 1 white, 1 bright red, 1 white, 1 red, 1 white, 1 red, 1 white, 1 red, 1 white; 1 red, 1 white, 1 red, 1 white, 1 red; total 72 threads; weft one shuttle all black. Another pattern would be equally as effective by having 72 threads of dark brown, 1 of white, 1 lilac, 1 white, 1 lilac, 1 white, 1 lilac, 1 white, 1 lilac, 1 white, 1 lilac, 1 white, 1 lilac, 1 white, 1 lilac, 1 white; total, 87 threads; weft, all dark brown.

A four-end twill or cassimere in a 72 reed, 2 in a dent, 2 in a heald and weft 2 in a shed, warp, 20's twist, weft, 20's, with 84 picks per inch. Pattern of warp: 12 of white, 12 deep red, 12 black, 4 yellow, 4 sky blue, 4 brown, 4 sky blue, 4 brown, 4 sky blue, 4 brown, 4 sky blue, 4 yellow, 12 black; total, 84 threads; weft pattern, 12 of brown, 12 of grey.

Grid patterns for No. 3 PEGGING PLAN, No. 3 DESIGN, No. 3 DRAFT, No. 2 PEGGING PLAN, No. 2 FANCY DRESS DESIGN, No. 2 SECOND DRAFT, No. 1 PEGGING PLAN, No. 1 FANCY STRIPE, No. 1 DRAFT OF FANCY STRIPE, No. 1 FANCY STRIPE SPRING DRESS GOODS.