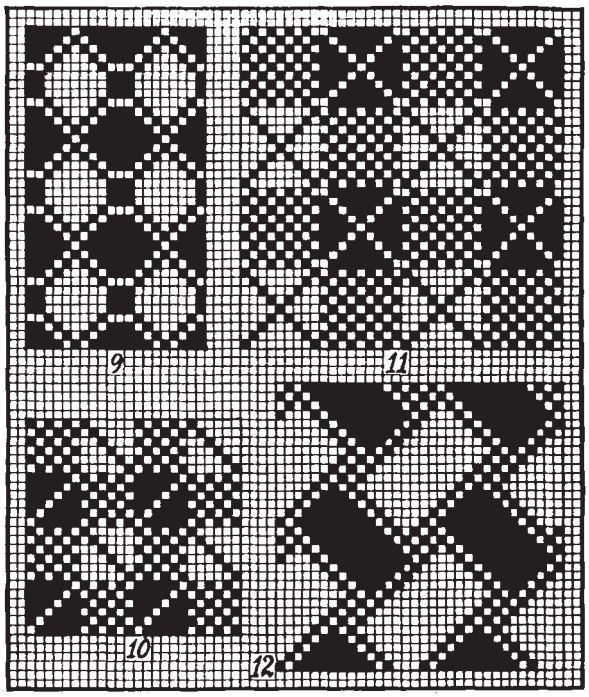
of the fabric a pronounced striped appearance. Repeat of weave 10 warp-threads and 14 picks.

Fig. 10 shows a neat Diamond Effect in a honeycomb weave, warp effect twills alternating in an oblique direction with its mate filling effect twill, both twills



being run in a reverse direction, either sets of effects being separated from each other by 6 × 6 ends interlaced with the plain weave for forming the cells of the comb. Repeat of weave: 12 warp-threads and 12 picks.

Fig. 11 shows a more prominent Diamond Effect. Pointed twills of 9 × 9, warp and filling effects, are made to exchange in horizontal directions, each effect alternating in a horizontal and vertical direction with 9 × 9 ends of plain weave, forming the depressed portion, *i. e.*, cells of the combs. Repeat of weave: 18 warp-threads and 18 picks.

Fig. 12 shows Rectangular warp effects entwined with corresponding rectangular filling effects. 3 × 3 pointed effects, interlaced with the plain weave, are placed between the rectangular floats, in both directions for forming the cells of the honeycomb effect. Repeat of weave 16 warp-threads and 16 picks.

(*To be continued.*)

Testing Comestibles for Aniline Dyes.

M. P. Malvezin recommends the use of methanalsulphonic acid for testing comestibles, and particularly wines, for coal-tar colors. The acid is easily prepared by bubbling SO_2 through 40 per cent. formaldehyde. The wine or an aqueous extract of the food is decolorized with animal charcoal, and a little of the filtrate is warmed with its own volume of methanalsulphonic acid. If the comestible was free from aniline dyes, the color produced will be a pale-pink. Otherwise, it will be a pronounced violet, which may be too dark to be seen properly without dilution.

MANUFACTURE OF NARROW WARES.

Ribbons, Trimmings, Edgings, etc.

(*Continued from page 7.*)

WEAVES AND EFFECTS IN RIBBONS.

Every ribbon, the same as any other woven fabric is formed with two sets of threads; Warp-threads which rest lengthwise in the fabric and Filling threads which cross the former at a right angle, the latter being inserted by the shuttle, hence commonly called picks.

The diagram designed to indicate the interlacing of warp and filling is known as the weave plan.

The paper used for the latter is known as textile designing paper or more conveniently point paper. The same has its surface crossed with numberless horizontal and vertical lines forming either squares or rectangles, depending on the texture of the fabric under consideration.

The space between any two vertical lines represents a warp-thread, that between any two horizontal lines a filling thread, and the small square, where the respective row of horizontal and vertical squares meet, is the point where it then remains for the designer to indicate which of the two systems of threads is to be up (in that spot) or down.

The design, *i. e.*, the weave is then produced by the designer painting or indicating otherwise, on every vertical space, which of the warp-threads are to be up, on the respective pick, and which are to be down, and in turn covered by the filling.

In some instances it may be found advisable to paint the design in the reverse way—in this instance a memorandum must be made on the design paper, *i. e.*, take white or empty for warp up.

Point paper is ruled to conform with the finished texture (warp-threads and picks) of the fabric to be made, for which reason point papers are ruled in an endless combination.

Point paper ruled 8 × 8 or 12 × 12, etc., *i. e.* point paper ruled even, means that warp-threads and picks in the finished fabric will be equal.

Point paper ruled 12 × 6 means that finished fabric is to contain twice as much warp-threads as picks to one inch. Explanations thus given refer more particularly to large figured designs, where the latter must represent a true representation of the general appearance of the design or weave in the fabric.

For the average design on the harness loom the common 8 × 8 paper is the one mostly used, no consideration to the texture of the fabric being then paid.

For convenience of counting, point paper is overlined with heavy squares, to make it easier to count the repeat of the weave.

Example: 8 × 8 paper. 64 warp-threads repeat of weave are easily counted by taking the heavy overruling into consideration and when 8 heavy over-rulings indicate the repeat of the weave, whereas if paper was not over-ruled a mistake might occur, a mistake hard, if not impossible, to correct.

Weave means the method of interlacing warp and filling threads.

The Repeat of a weave comprises the smallest number of threads and picks in which the pattern is once completely contained.

Foundation Weaves.

There are three systems of weaves from which any weave met with is derived. The same are: Taffeta, Twills, and Satins.

Taffeta Weave.

Fig. 1 shows us a portion of a fabric interlaced with this taffeta weave, which in the cotton, woolen, worsted, etc., industries is known as the plain or cotton weave. It is the closest, and at the same time the most simple interlacing of warp and filling. On every pick, half the number of ends are raised, the other half forming the lower shed. In the next pick the positions of the threads in the shed are reversed, two warp-threads and two picks form one repeat of the weave. As a rule 4-harnesses are used, and when harnesses 1 and 3 are raised on one pick, and harnesses 2 and 4 on the other pick. It will be found advisable to have harnesses 1 and 2 rise somewhat in advance of its mate harnesses, which will mix up the warp-threads in their travel from one shed to the other; they will place themselves more equally divided above and below the filling, in turn imparting to the fabric a better cover.

If dealing with a high texture in the warp and using only 2 or 4-harness, this will result in too much friction to the outside warp-threads, in turn breaking these threads more or less on account of the heavy chaffing. Using in this case 6, 8 or more harnesses will considerably remedy this breaking of the outside warp-threads, if not preventing it at all, since then a slightly narrower width of the heddles in the harness is obtained.

Fig. 2 shows in *full* type the weave for a Taffeta ribbon for 18 warp-threads. Below the weave, in *cross* type, the drawing-in draft is given, showing harnesses 1 and 2 to carry each 3 warp-threads, and harnesses 3 and 4 to carry each 6 warp-threads. The advance in raise of the harnesses (previously referred to) belongs in this instance to harnesses 3 and 4.

Twills.

Twill weaves, also called croisè or serge weaves produce in the fabric oblique, in a diagonal direction, running twill lines. On account of the less interlacing of the warp-threads and the filling, compared to the taffeta weave, they produce a looser fabric.

The lowest number of harnesses on which a twill may be designed is 4-harness, after which they can be made on any number of harness.

Twill weaves can be divided into uneven sided and even sided twills. In the first the warp or the filling predominates on the face of the cloth, whereas with evensided twills, warp and filling show up equally if dealing with an even texture and counts of yarn.

Uneven Sided Twills.

Fig. 3 shows two repeats, each way, of the $\frac{1}{2}$ 3-harness uneven sided twill.

Fig. 4 shows a weave-plan for a ribbon, having for its body 19 ends, $\frac{1}{7}$ 8-harness twill and for each selvage 4 ends taffeta. Place the harnesses which carry the selvage threads in front, *i. e.,* next to the reed, since they have to make four changes to every one change of a twill harness, and when then, the nearer to the reed the less high said harness has to be raised, hence the less strain on the thread.

Fig. 5 is the 4-harness, uneven sided (warp effect) twill.

Fig. 6 is the 6-harness, uneven sided (warp effect) twill; direction of twill from right to left, or the reverse direction from that of the former twills given.

Fig. 7 is the $\frac{2}{4}$ 6-harness twill, twilled to the left.

Fig. 8 is the $\frac{3}{1}\frac{1}{2}$ 7-harness twill, twilled to the right, and

Fig. 9 the $\frac{4}{1}\frac{2}{1}\frac{1}{3}$ 12-harness twill.

Even Sided Twills.

Fig. 10 is the 4-harness even sided twill, twilled to the left.

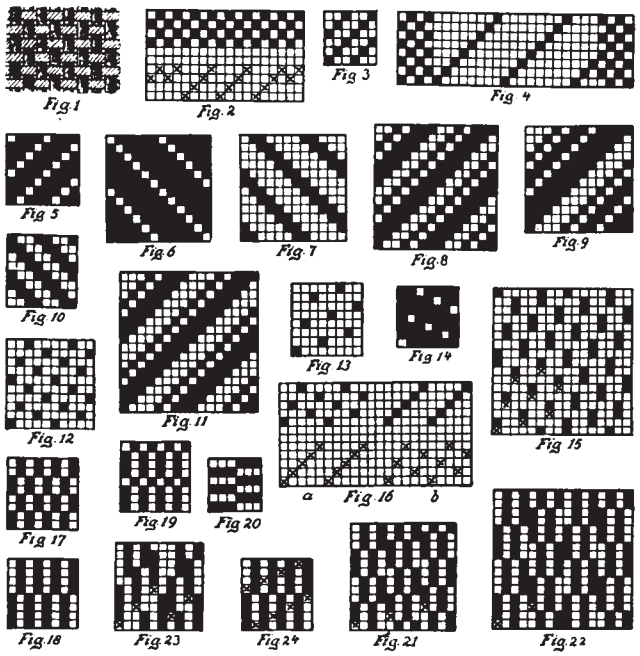
Fig. 11 is the $\frac{3}{1}\frac{1}{3}$ 8-harness even sided twill.

Satin Weaves.

The object of this system of weaves is to produce a smooth lustrous face to the fabric. To obtain this result, arrange the points of interlacing of the warp and filling so that they will be covered by the joining warp or filling floating threads, again be sure to distribute them well all over the repeat of the pattern so that no two points join. The smallest number of harness for which satin weaves can be designed is five, after which they can be made for any number but six (explained by rules given later on).

The number which tells how many warp-threads the point of interlacing must miss on every successive pick is called the *counter,* whereas the number which indicates how many picks the point of interlacing raises on the next warp-thread is called the *grade.*

In order to obtain the number for the *counter* or for the *grade,* divide the number of the repeat of the satin you want to construct in two parts under the following conditions:



(*a*) neither part can be 1.

(*b*) neither can they be equal.

(*c*) neither can they be equally divisible between each other.

(*d*) they must not be divisible equally by a third (1 excluded) number.

Either one of the pair of numerals thus obtained can then be used either for *counter* or for the *grade.*

Example: 8-harness, the following pairs of numbers can be made.

1 and 7 — no good — see rule *a*
2 and 6 — no good — see rule *c*
3 and 5 can be used
4 and 4 — no good — see rule *b*

This will give us numerals 3 and 5, either one of which can be used as *counter* or *grade* numeral for obtaining the 8-harness satin.

It must be mentioned that when one of the numbers of the pair thus obtained is used as *counter*, the other is not always the *grade* number in that example.

Fig. 12 is the 5-harness (filling effect) satin, two repeats each way are given.

No regular satin can be designed for 6-harness, according to conditions *a*, *b*, *c* and *d* previously quoted. To obtain an irregular 6-harness satin, divide the points of interlacing of the weave so that the filling taken successively calls in turn for the 1st., 3rd., 5th., 2nd., 6th., and 4th., warp-thread.

Fig. 13 is the 8-harness (filling effect) satin, one repeat only being given.

Fig. 14 is the 7-harness (warp effect) satin, one repeat only being given.

Double Satins.

are obtained from our regular satins by adding one (or more) additional point of interlacing to the original satin spot, placing the same either on top or on bottom or in an oblique direction to the original spot.

Fig. 15 shows two repeats each way of the 5-harness double satin. In the left hand lower corner, the foundation is shown by *cross* type.

If with a satin chain, a few warp-threads in the fabric have to weave twill, then draw said warp-threads in the harness with a satin draw and the result will be twill in the fabric.

In the same way, if with a plain chain a few warp-threads have to weave satin, then draw the latter threads with a satin draft in the harness.

Fig. 16 explains the subject. *Full* type shows harness chain, *dot* type shows draft; the result in both instances is the same in the fabric—the 5-harness satin; or in other words:

The 5-harness satin as chain, with a straight draw (see diagram *a*) = 5-harness satin in fabric.

The 5-harness satin as chain, with a satin draw = 5-harness twill in fabric.

The 5-harness twill as chain, with a straight draw = 5-harness twill in fabric, and

The 5-harness twill as chain, with a satin draw (see diagram *b*) = 5-harness satin in the fabric. The same affair also refers to any other regular satin than five.

Rib Weaves.

The same have for their foundation the taffeta weave, their characteristic rib lines running either warp or filling ways; hence they are known either as warp or filling ribs.

In connection with warp ribs, the warp forms the face and back of the fabric, the filling resting imbedded between the warp-threads; the rib-lines run in this instance in the fabric in the direction of the filling.

With filling ribs, the affair is reversed, the filling then forms face and back of the fabric and the warp rests imbedded between the filling; the rib lines run in this case warp ways in the fabric.

Fig. 17 is the $\frac{2}{2}$, 2 by 4 warp effect, rib weave.

Fig. 18 is the $\frac{4}{4}$, 2 by 8 warp effect, rib weave.

Fig. 19 is the $\frac{3}{1}$, 2 by 4 warp effect, rib weave.

Fig. 20 is the $\frac{3}{3}$, 6 by 2 filling effect, rib weave.

Fig. 21 is the $\frac{3}{3}$, warp effect rib weave, transposed with four warp-threads in a set, after the 3-harness twill for motive (see *cross* type). Repeat of weave 12 by 6.

Fig. 22 is the $\frac{4}{4}$, warp effect rib weave, transposed with four warp-threads in a set, two picks higher (see *cross* type), repeat 8 by 8.

Fig. 23 is the $\frac{5}{5}$, warp effect rib weave, transposed with two warp-threads in a set after the 5-harness satin (see *cross* type) for its motive. Repeat of weave 10 by 10.

Fig. 24 shows how to strengthen a too loosely interlacing rib weave; the weave used being $\frac{4}{4}$, 2 by 8 rib weave warp effect, the strengthening of the cloth being done with the $\frac{1}{3}$ 4-harness uneven sided twill (see *cross* type). This procedure, however, results in what we technically term a one side fabric.

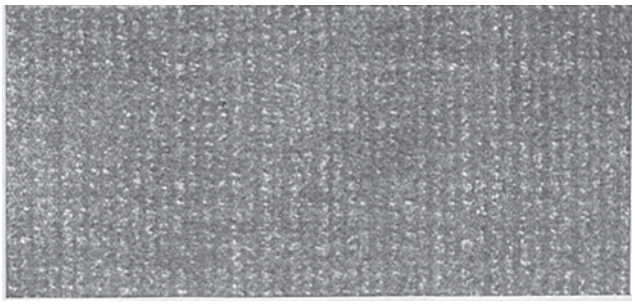
NOVELTY IN MEN'S WEAR FROM ABROAD.

Woolen Melton Suiting.

Warp: 3680 ends.

Dress: 10 sections, each containing 46 patterns @ 8 ends, or 368 ends total.

Weave: $\frac{2}{2}$ 4-harness twill.



Actual Reproduction of Fabric
from which details of fabric structure given, are taken.

Arrangement of Warp:
2 ends 4½ run woolen yarn, black.
2 ends 48's worst. lt. and 6 run wool med. gray, tw.
1 end 4½ run woolen yarn, black.
3 end 48's worst. lt. and 6 run wool med. gray, tw.

8 ends, repeat of pattern.

Reed: 13 with 4 ends per dent = 70¾" width of fabric, exclusive selvage, in reed.

Filling: 46 picks per inch, arranged thus:
2 picks 4½ run woolen yarn, black.
2 picks 48's worst. lt. and 6 run wool med. gray, tw.
3 picks 4½ run woolen yarn, black.
1 pick 48's worst. lt. and 6 run wool med. gray, tw.

8 picks, repeat of pattern.

Insert the single light and gray twist pick when all the black warp is raised, *i. e.* cover its own color in the warp with it.

Finish: Melton finish, scour well, full slightly, clip on shear, press, decatize and steam; 56" finished width.