

## DESIGNING AND COLOURING OF SCOTCH TWEEDS.

By THOMAS WELSH (Hawick).

It seems fitting that a paper on this subject should be read at a Congress of the Textile Institute meeting in the centre of the Scotch tweed trade.

Scotch tweeds, both for design and colour, are the standard of excellence for the woollen trade of the world. Manufacturers in other parts of the country and in other countries strive to imitate them, and are content if they can produce goods that look reasonably like them. So much is this the case that the name of Scotch tweed is recognised as a synonym for the best, and, although it has not been formally defined, is now jealously guarded. Wherever woollen cloths are worn, not only in the Empire ruled by his Britannic Majesty, but literally all over the world, the name of Scotch tweed is recognised as the designation of all that is best in woollen clothing. A man may not consider himself dressed in the best that can be procured unless his garments are made from tweed made in Scotland, not very far from the river famous in song and story whose name it bears.

It may be that the cloth originally owed something to its name. It was a fortunate error in ordering that led Mr. James Locke, a woollen merchant in London, to order "tweed" instead of "tweel." For about the time that Galashiels tweeds were being introduced Sir Walter Scott was making the name of Abbotsford and Tweed famous in another connection. Every reader who felt the thrill of the wonderful romances that were penned on the banks of the Tweed would instinctively turn with interest and expectancy to anything that bore the charmed name. It is on record that Sir Walter himself was one of the earliest wearers of Scotch tweed. He wore a pair of black and white checked trousers. It was with that design that the tweed trade began. The man who set the fashion wore trousers made from an old shepherd plaid. The first order of tweeds sent to London in bulk was six pieces of black and white check made in Peebles, to the order of Mr. Archibald Craig, of Edinburgh. Coloured checks were introduced by accident. It happened that a manufacturer had made a number of pieces, and the white was so impure and dirty looking from being mixed with grey wool that they could not be sold. Someone suggested that if the pieces were dyed brown the defect would be covered. The suggestion was acted upon, and a new check of black and brown was the result. The new colour was sent to London, and sold rapidly, and repeats were ordered. It was a short step to dye black

and green and black and blue. Another short step was the making of broken checks to be dyed in all these colourings, and the trade increased amazingly.

All this time the cloth was made from coarse, rough wool. In 1833 fine foreign wool began to be used. Coloured tweeds made from foreign wool in granite and heather mixtures in great variety of bright colours were soon put on the London market. Mr. Craig collected ideas for colours in the bed of the river Garry in the Pass of Killiecrankie, mostly granite, porphyry, and jasper, which he found rich in reds, greys, and greens, beautifully mottled and mixed in finely contrasted colours. Heather mixtures were first asked for by some gentlemen of the rod and gun, who enquired for colours which resembled their shooting ground. Galashiels manufacturers went to the hills and gathered heather, ferns, and grasses to give them ideas for the colouring of their ranges.

Scotch tweeds are always made to order. Patterns are made and submitted to the wholesale houses a year before the cloth



FIG. 1.

reaches the consumer. In this month of September, 1912, manufacturers are busy getting out new colours, new cloths, and new designs which will be the very latest things in men's wear in November, 1913. A manufacturer finds it to his advantage to have some new cloths every season. Customers get tired of seeing the same cloth year after year, and it is easier to get a good price for a new cloth than to raise the price of an old one when the price of wool goes up. New colours have to be added. A cloth that is not too old may be made to run another season with the addition of something new in the way of colour and design.

When these are decided upon ranges are made. First of all, trial ranges are made for designs. The designer thinks some idea he has in his mind will look well, and he makes a range to try it. On the same range he makes other four or five designs on similar lines. If they are checks there must be one weft for each warp; if they are stripes one weft of a few inches will show them all. After

one weft, alterations are made; lines are changed or added before each new weft, until the range is complete with some 25 or 30 designs all more or less different.

Figs. 1 to 9 show some designs made in this way. An end and end pattern (Fig. 1) drawn on 16 shafts to facilitate alterations was put into the loom. The other designs were made by changing the weave or by adding stripes. Suppose Fig. 3 is selected for a grey

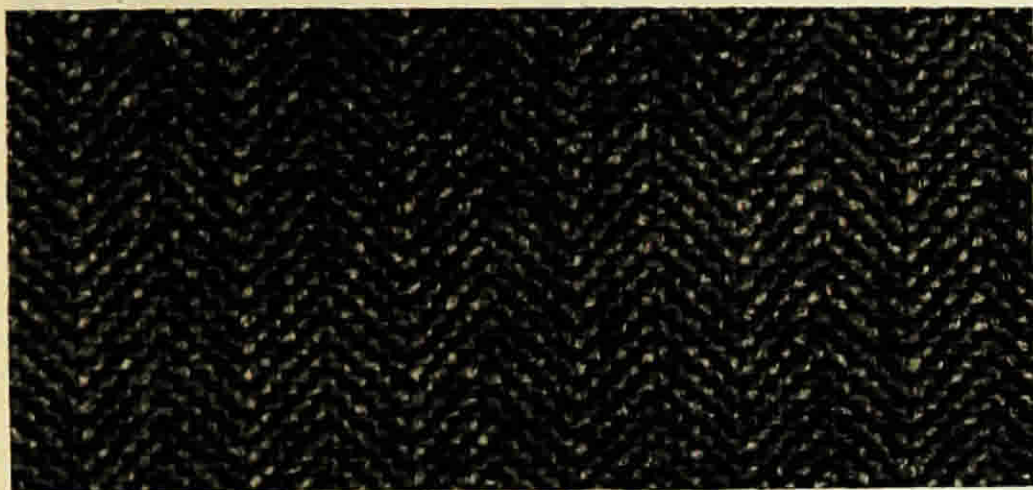


FIG. 2.

range and Fig. 8 for a coloured range. Fig. 3 is wanted in five depths of grey, and Fig. 8 in five different colours, also in different depths.

The warp and weft of Fig. 2 would be—

- I Black.
- I White.

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- I Black.
- I No. 1 Grey.

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- I Black.
- I No. 2 Grey.

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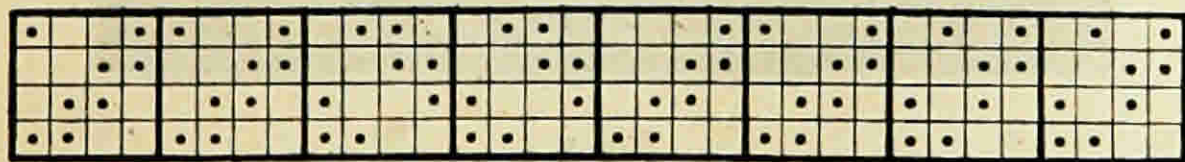
- I Black.
- I No. 3 Grey.

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- I Black.
- I No. 4 Grey.

Wefts the same as warps.

and the design—



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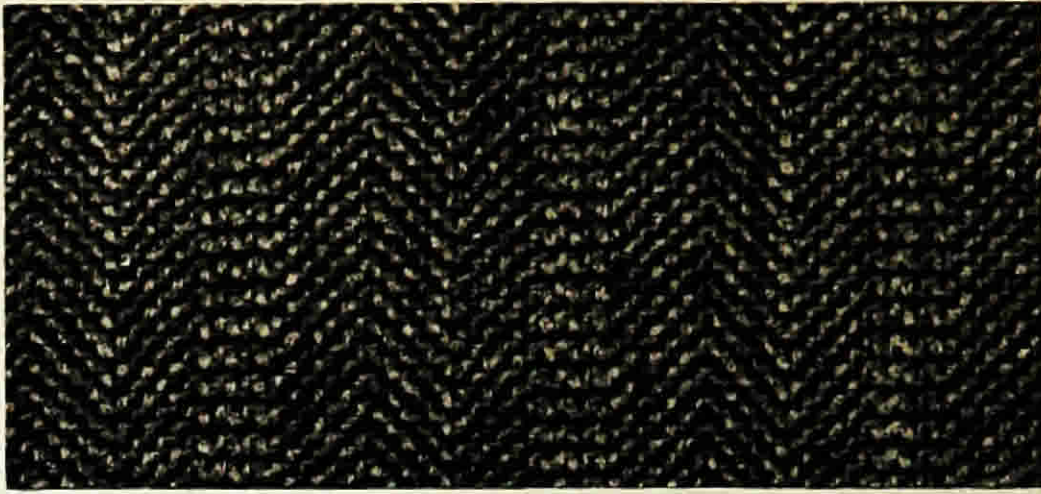


FIG. 3

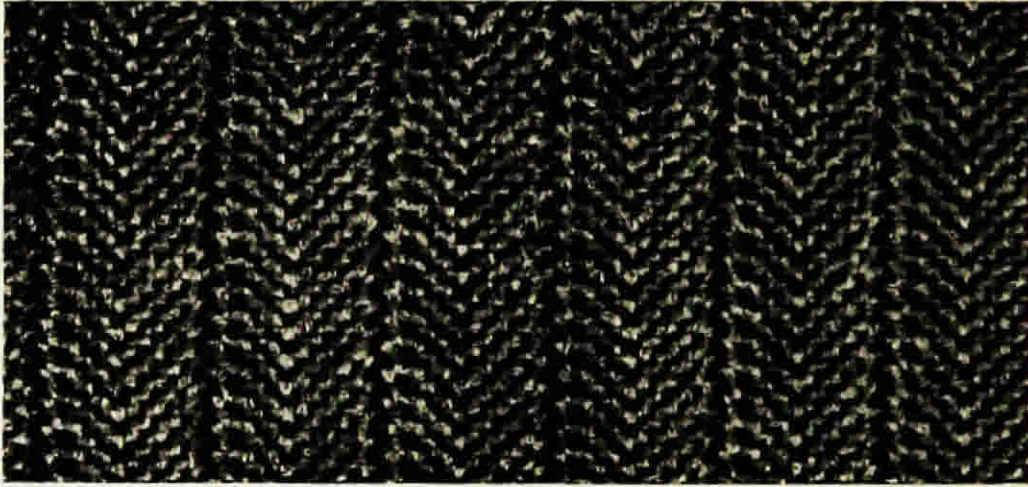


FIG. 4

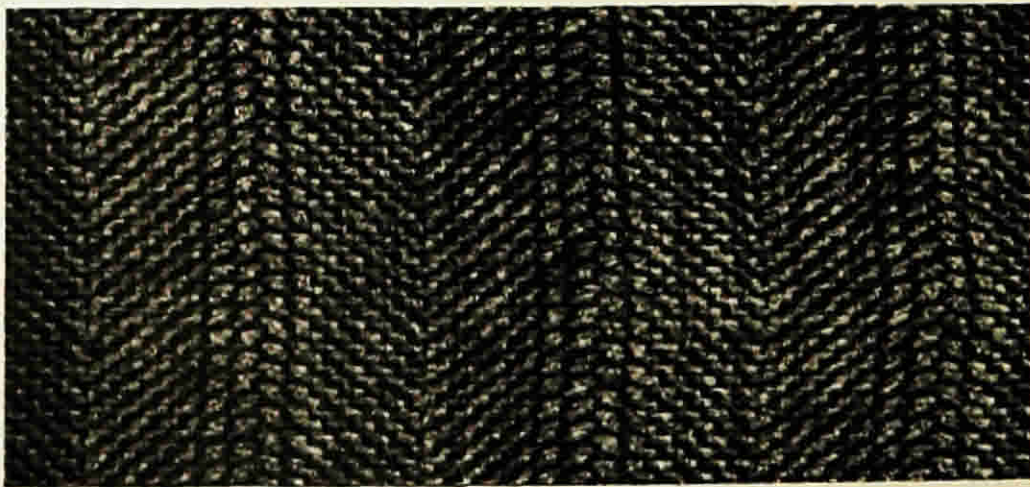


FIG. 5.

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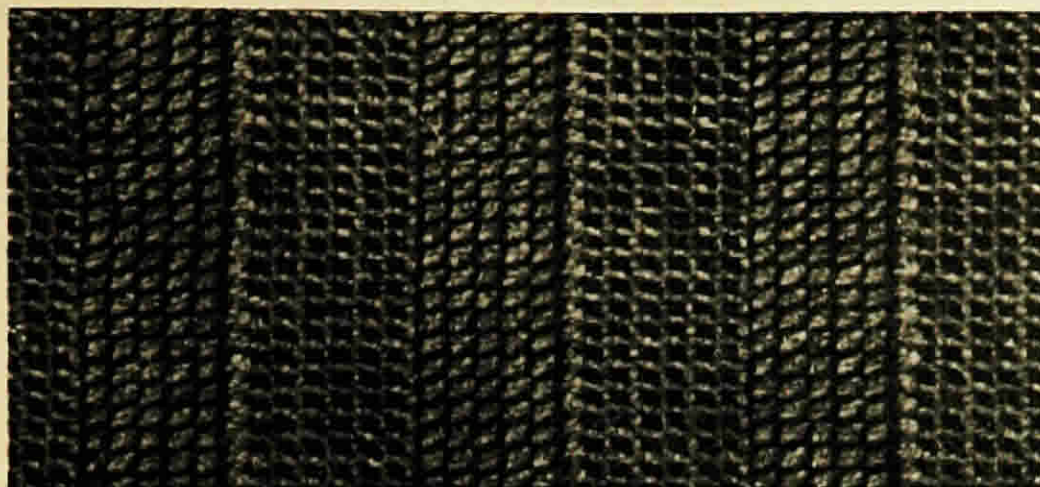


FIG. 6.



FIG. 7.

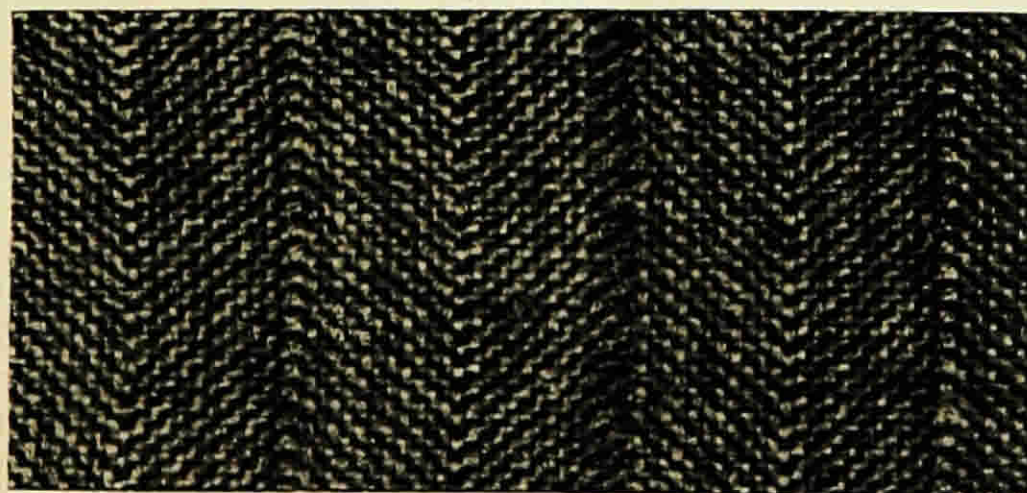


FIG. 8.

The colouring of Fig. 8 presents more difficulty. The warps might be—

- 1st. Black.  
White.  
Black and White Twist.
- 2nd. Brown.  
White.  
Brown and White Twist.
- 3rd. Blue.  
Grey No. 1.  
Blue and Light Grey Twist.
- 4th. Olive.  
Grey No. 2.  
Olive and Light Grey Twist.
- 5th. Green.  
Grey, No. 3.  
Green and Grey Twist.

Wefts:—Colours as warps without the twist.

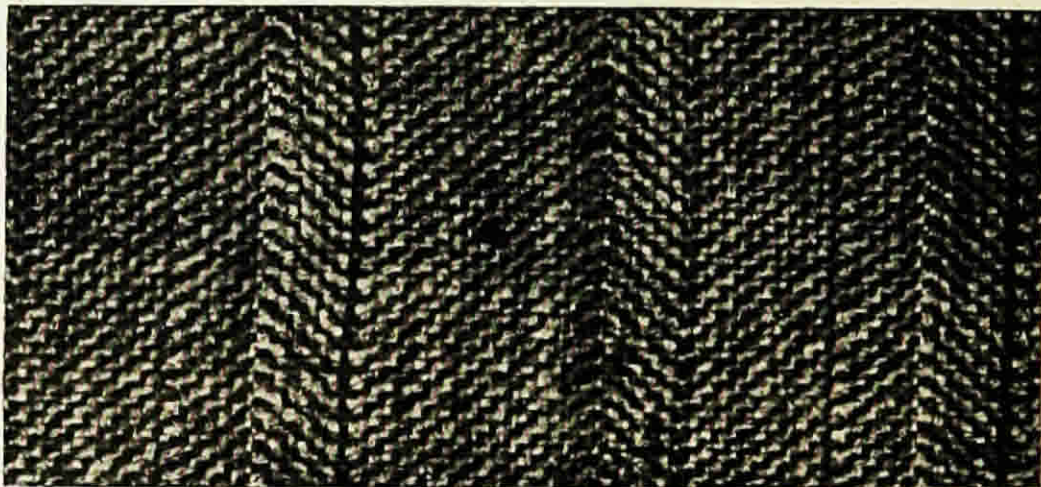


FIG. 9.

This would be the order of the range if it were wanted plain, but in most cases it is an improvement to add a line or check of bright colour, and this has to be done with great care. Each warp must have a colour that corresponds with the ground, and it is best to have all the colours different. And, again, the colours in the several warps must show with the same strength. There must not be some bright and some soft; they must be all alike, strong or weak. To do this successfully the designer requires several depths of the same colour, so that he may have light tones for the light grounds and dark for the dark.

Frequently ranges are made in monochrome—all one colour of ground. Variety is obtained by making different sizes of stripes

or checks. If a range is made in blue ground with lines composed of two ends of white or colour the first warp might be made with  $\frac{1}{2}$  in. space between the lines, the second  $\frac{3}{4}$  in., the third  $1\frac{1}{8}$  in., the fourth  $1\frac{1}{2}$  in., and the fifth 2 in. All the lines may be, white the first weft, lavender the second, green the third, peacock the fourth, and crimson the fifth. The buyer would then have a selection of five sizes and five colours in each size.

In recent years another make of cloth quite distinct from the ordinary tweed has been put upon the market successfully by tweed manufacturers, and has established itself in the woollen trade; that is the Reversible cloth. It first became exceedingly popular in the form of golf capes, and is now used for ladies' coats and costumes, for motoring coats, for men's overcoats, and for rugs. The feature of it is that the face and back are different from each other in colour and very often also in make and quality. It is possible for a lady to have a reversible skirt made up in such a way that she may appear at one time in a modest blue, and at another in the tartan of her clan. A gentleman whose name is Cameron, but who is in doubt whether he belongs to the Lochiel or the Erracht branch of his clan, may have a Lochiel on one side and an Erracht on the other, and feel that in rugs at least it is possible "to have it both ways." It is possible to have woollen on one side and worsted on the other: or Cheviot on the face and Saxony on the back.

The making of reversibles presents a problem that is absent from the making of ordinary double cloths. The later are made with face and back as near each other as possible in colour and design, and are tied to each other by bringing a weft thread from the back over a warp thread of the face or any similar method. So long as the weave on the face is not broken by the tying end no harm can be done, but with reversibles the face and back are different colours, and while being tied to each other must be kept as separate as possible. Reversibles must be as perfect as if they were single cloths sewn together after they are made. If they interweave with each other they are almost certain to show through. The faint indistinct outline of the checked back on a plain face is a fatal defect.

To tie the face and back of a reversible a third warp is employed. This is placed between face and back, and does not appear on either side. The tying is done by passing this centre warp over a weft thread on the back of the face cloth and under a weft thread on the face of the back cloth.








Fig. 10 shows in section the method of tying, and Fig. 11 the full weaving design of an end and end reversible. The dashes  show all the face warp raised while the back is being woven. The spots  the face, and the crosses  the back; the circles  the centre warp lying between the two; the squares  the centre warp sunk to catch the back weft, and the crosses within the circle  the centre warp raised to catch the face weft. Except the  all the marks rise.

Fig. 12 shows the section and Fig. 13 the weaving design, where there are two ends on one side and one on the other. Needless to say, there are other methods of making reversibles. The two

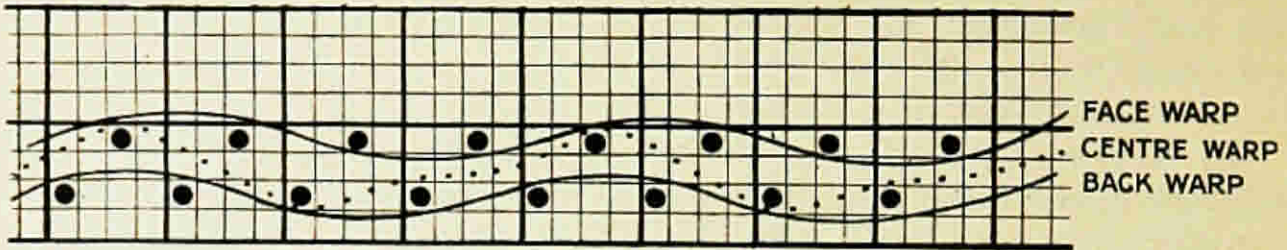


FIG. 10.

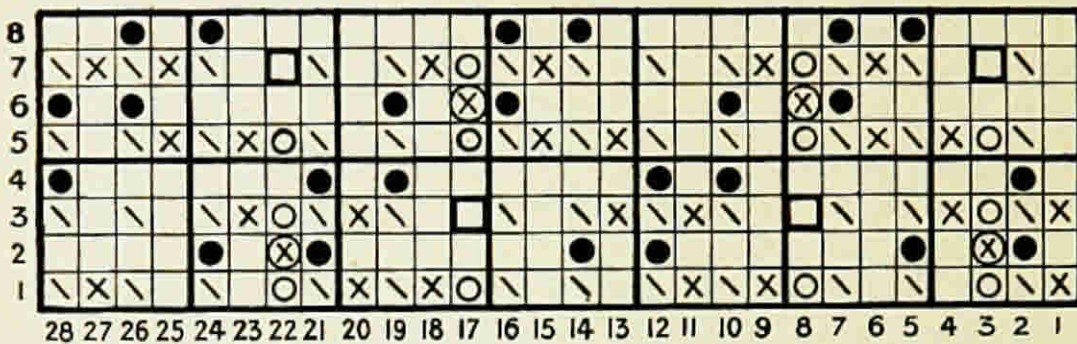


FIG. 11.

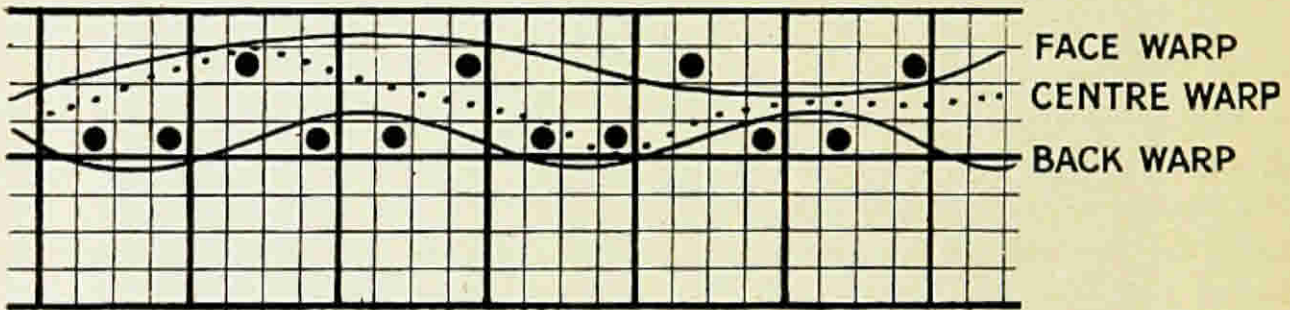


FIG. 12.

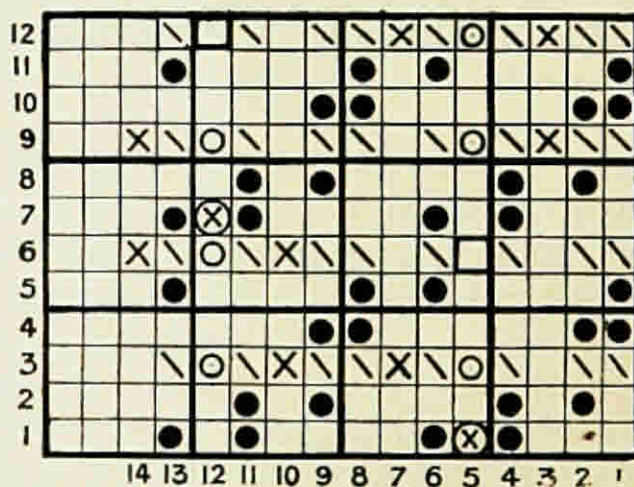


FIG. 13.

weaves will illustrate how it is done. On the make given in Fig. 11 the different sides may be made of different qualities, Cheviot face and Saxony back, or woollen face and worsted back, but the



yarns must be near about the same weight. On Fig. 13 cloth the yarn on the back must be  $3\frac{1}{2}$  or 4 times heavier than the yarn on the face.

When reversibles are plain or have only small patterns on both sides ranges are made in the same way as in single cloths; that is, 3 or 4 or 5 colours in warp and weft. When they are check backs they are made with 3 or 4 or 5 colours on the face and one large check on the back.

Each manufacturer has to make a great number of ranges and selling samples every year. In every factory a staff of pattern workers is kept more or less busy all the year round. It is not far from the mark to say that for every loom in a factory 15 ranges and 100 yards of selling samples have to be made every year. An establishment with 100 looms will on this estimate make 1,500 ranges and 10,000 yards of narrow width cloth, sufficient to make 1,530 suits, each year for patterns only at a cost of something like £1,500.

Merchants do not pay for ranges; even if they ask special ranges for themselves they get them free of cost. Selling samples are paid for at piece price, but as they are woven narrow and are short they cost nearly double the price paid for them.

The great number of ranges made is necessitated by the practice of confining designs to a single merchant. Many buyers make it a condition that all the designs they take up shall be confined to themselves. Some are content if their designs are confined to them in their own country; others insist that no one else in the wide world shall see them. Merchants seldom order from ranges. Having selected the styles and colours they like, they proceed to order selling samples, which may be  $\frac{1}{2}$  yard or may be 10 yards; 2 yards is a fairly common length. Only after these are delivered and found satisfactory are orders placed.

There is great advantage in a good name. But it is not everyone who can live on a good name. It must be said to the honour of the pioneers of the Scotch tweed trade that they lived up to the reputation of their country, and made their productions worthy of the name of "Tweed."

And it can also be justly said of their successors that they worthily sustained the good name handed down to them by their fathers.

They do this successfully by keeping in all essential matters to the traditions of the pioneers—good, pure wool, bright colours, and priority of design. Every process of manufacture has been revolutionised since the days of the billy, the hand jenny, the hand loom, the waulk mill, and the tenters, but the materials put into the best Scotch tweed remain essentially the same. Many new qualities of wool have been introduced; the world has been searched for new qualities. Breeders have exercised their skill to produce new sorts. Experience has taught how to get the best results from the use of each sort. Various qualities have been blended to get different effects. Yet in the production of the best cloths only

pure wool is used. It may be from Australia or from South America or from Africa, or it may be from the Cheviot Hills at our own doors, but in every case it is pure wool. Good wearing cloths, bright sparkling colours, can only be obtained from the use of pure wool. Fibres that have been through all the processes of manufacture, have been woven and been pulled to pieces and manufactured again, are in the very nature of things past their best, and nothing but the best can give the best results. A Scotsman's styles may be imitated, but his cloths and his colours are inimitable, except in the material he uses himself—good, pure wool. Great care and skill are exercised in the selection and blending of the different wools, in order to get the utmost possible value in effect out of each. For heather mixtures, with their wealth of bright fancy colour—reds, yellows, blues, greens, russets, and lavenders—Cheviot and crossbred wools, with their lustrous fibres, give the best result. The famous Bannockburn tweeds are made of Cheviot, and the very best dark heather overcoatings are produced in Sutherland Cheviot wool. For less highly coloured cloths the various qualities of Saxony are employed. These make a finer looking, smoother, and softer handling cloth. The outstanding feature of a good Saxony cloth is the clear and clean appearance of the plain colours that compose the ground, an effect only to be obtained from the careful finishing of good wool. A good Saxony woollen cloth does not need bright colour, and for that matter neither does a good Cheviot, but where bright colour is wanted Cheviot shows it best. A very large proportion of tweeds are made with very little fancy colour and in small designs. The average man does not like a conspicuous colour, and must have his designs rather under than over 2 in. in size, and yet he must have distinction. It is this that constitutes the greatest difficulty of the tweed designer. Everyone knows it is much easier to make something distinctive in a large design and a high colour than to make something different in a small design and a quiet colour. Loudness is easier produced than "quiet go."

With this object new qualities and new cloths are constantly being sought after. Not infrequently two or more qualities are combined in one cloth to get new effects. These qualities may be mixed in the carding and spinning. Camel hair may be mixed with wool to give a new handle, or mohair may be mixed to give a new effect, or they may be mixed in weaving. A Saxony cloth gets a new character when it has a little Cheviot mixed with it in the weft. The warp may be light colour and the weft dark, composed in whole or in part of a good quality of Cheviot. The latter responds to the milling more quickly and in a different way, and gives a cover on the cloth before the Saxony shows any signs of bursting. The clearness of the Saxony shines through the cover of the Cheviot, and the resulting effect is very good.

The most careful attention is given to the production of new

colours. Every season some new mixtures and solids for grounds are introduced. Fresh twists and other new colours for checks and stripes are secured.

Colour is the most important point in Scotch tweed. The first thing a prospective buyer sees when he looks at a range is the colour. After further examination he may not like the cloth or the design or the price, but if the colour does not satisfy him he passes it over. If, on the other hand, the design is not to his taste, he may suggest modifications or he may even be induced to take it as it is if the colours are really well done. Nothing that is not well coloured is of any interest to him.

Very few original designs are made. A young designer may sometimes think he has hit on something new; that is evidence of his youth. An old one never makes that mistake. The endeavour is to find out what is likely to be fashionable in design and colour, and to follow it up.

The Scotch tweed designer produces the right thing in design and colour at the right time. If it is a common design, by means of his good quality of wool and his tasteful colours he produces it uncommonly well. The great bulk of the trade is done on common designs. Quite recently designs on the end and end basis have been very much in vogue. It is one of the oldest designs that can possibly be made, yet produced in good quality and in clear clean colours it sold well. It was varied in all manner of ways—small and large herringbones, small and large stripes, twist stripes, coloured stripes, silk stripes, stripes of 2 and 2 in a vast variety of sizes, and stripes of fancy weaves, diamonds, and diagonals were all utilised to give variety to this commonest of designs. It may be stated as a truism that common designs uncommonly well done are the staple productions of the tweed trade.

It is impossible to say just how a designer gets information as to what styles are likely to be required. He notes what designs have sold best, observes carefully if any one kind of design or any one kind of colour is going better than others. Especially he looks for any signs of change—if emphasis is being laid on any particular class of design or colour that did not receive much attention in previous years, or if any good customer is asking for any special idea. Then the person who sells, who comes into immediate contact with the customers, sometimes gets a hint or he sees something that looks different, and transmits his information to the mill. It is a matter of eternal vigilance; often a matter of intelligent anticipation.

When a hint is given the particular style has to be developed in as many ways as possible. It has to be brought out in all the cloths and colours most suitable. Other designs on similar lines have to be made. Various alterations more or less slight have to be tried. Whether it is stripe or check, it can be made larger or smaller. A little bit of fancy weave may also be introduced to give variety to the appearance. Coloured check or stripe may be put on, or a line or two of silk may be added.

If it is a new colour that is asked for, similar efforts must be made. It must be dyed at once; other shades of the same colour, lighter or darker, must be produced. Mixtures with the new colour for the basis have to be made. Ranges with the new colour for the leading feature in combination with as many appropriate colours as possible in all the favourite styles must be got ready quickly, and thus it is that soon great numbers of ranges on the lines of the original suggestion are quickly made.

The manufacturer who can be first on the market with good ranges of the right thing at the right time has the best chance of success.

I must not, however, be understood to affirm that Scotch tweed designers never produce new designs. While they are eager to get hints from the outside, and put themselves to much trouble to get them, they labour hard to get out new ideas of their own. Whether these ideas are absolutely fresh or are only ingenious adaptations of other designs, they contain some valuable elements of novelty that give selling property to the goods.

Less than other cloth designers do they depend on fancy weaves. All the arts of getting quiet yet effective results from small turns of twill and from cuts, and from the introduction of a few ends of hopsack they thoroughly understand. They are experts at ornamenting their designs with a narrow stripe of mayo or diagonal, and know how to work in a small diamond or diagonal or series of spots to make a difference. They are masters of a host of cunning little artifices by which the common is lifted out of the commonplace, and the old is made to renew its youth.

The Scotch designer is pre-eminently a colourist. He is an artist in the arrangement of colour in mixture, check, or stripe. In 1830 Mr. Craig wrote that the secret of success for the rising trade of his day was "purity of material, durability combined with cheapness, great comfort in wear, and priority of patterns." If to that we add tastefulness and purity of colour we have all that goes to make the Scotch tweed so deservedly famous.

#### DISCUSSION.

MR. C. J. WILSON (Hawick), who opened the discussion, said that the rules laid down by Mr. Welsh were precisely the rules upon which he had worked for a very long time, and therefore Mr. Welsh's experience was of great value. Mr. Welsh had spoken a great deal about colour, which was essential. An old friend used to say that there were three things that a customer wanted—colour, a good design, and a moderate price. The price came last in the Scotch tweed trade. It was a very good thing that it did, because the expenses of the patterns which Mr. Welsh had alluded to were enormous, and customers did not know how heavy they were. Customers would sometimes say, "Look at this which costs 4s. 6d., and yours costs 5s. 6d." It was not the cost, but the initial expense in order to get those enormous ranges and colours that Mr. Welsh had described. An important point,

as Mr. Welsh had pointed out, was to have the colours bright and clear. Many years ago, when he was a young man in charge of the factory for the first time, they had a call from a gaudily-dressed young man, an officer from the Castle of Edinburgh. He said he had taken a violent desire to see through a tweed factory, and asked to be shown round. The request was acceded to, and the young man made several inquiries. In regard to shepherd checks, he asked if it was not of great consequence to get the white clear, and how that was done. He (Mr. Wilson) told him that they had to take a good wool, it had to be scoured properly, and they had to see that the colour remained bright, and then each process was carried out with perfect thoroughness, and when they came out at the finish they would have a shepherd check with a bright colour. The young man asked if no chemicals were used, and a reply in the negative was given, special stress being laid upon the importance of having good stuff and treating it carefully and thoroughly. It turned out afterwards that the visitor was the son of a tweed manufacturer in Yorkshire; he had been sent down to see what was being done in the Border Country, and he was shown. Regarding the making of ranges, he was in entire agreement with Mr. Welsh. He had had considerable experience in the making of ranges. A very little change made what they might call an ordinary thing into a saleable article, and what they were always looking for was to try to produce a saleable article. There was so much waste stuff that they could not do with. They had gone on putting expensive labour on to material without having any result at all. He was asked upon one occasion by a customer how much he would accept for a range which the customer was looking at. His reply was that he would not sell it at any price. He wanted orders; that range was going to sell in large quantities, and he wanted the business from it. Upon asking the man why he wanted to buy it, he was surprised to receive the reply: "To be perfectly candid, I think it is exceedingly well done, and the colours are bright and clear, and I want to take it to my man to show him how to do it." We had gone to great expense in producing that range, and he was not going to give away the products of his brain for the purpose of instructing somebody else's workman as to the way it should be done. He found the same thing in America. It was no use grumbling about this, because on the whole they managed somehow or other to keep the place going, and that was the great thing. They just had to go on trying, taking a hint here, and a hint there, and then producing in the light of those hints. Manufacturers were said to be very unwilling to produce novelties and things that were wanted. It was not for want of trying. They were always willing to try, even though the expense involved was considerable. What they wanted was business, and they knew very well that, in order to get that business, they had to produce the things that would take the eye of the public, and be satisfactory. That could be done in the way Mr. Welsh had shown, and it was for them, as manufacturers, to carry that out.

PROFESSOR A. F. BARKER (Bradford) observed that many points had been brought forward which he thought the Textile Institute might well take into consideration. He would like to ask how they controlled the shrinkage of the face and back fabrics when they employed different types of wool—say, a fine wool, Port Phillip, or one of the Saxony, for the face, and a wool possessing more of the Cheviot characteristics, or the crossbred characteristics, which will not shrink, on the back. That was a point that every double-cloth manufacturer had to deal with. In regard to patterns, it was an interesting question as to what created the desire for large patterns after small patterns had been fashionable. He thought the Textile Institute ought to attack the problem of the definition of the term “woollen.” They would give their Scotch friends credit for producing the right thing, and some of the Yorkshire people were rather ashamed of their shabby reproductions of Scotch cloths. They might go into tailors’ shops in certain parts of Yorkshire and they would be shown what were supposed to be Scotch tweeds. In wearing them, however, they would not be at all satisfied, and ultimately they would find that there was low stuff in the cloth—very different from that employed by the Scotch people. The term “woollen” seemed to be now applied to anything that was spun on the woollen mule principle, but it seemed to him that there should be some means of differentiating between excellent productions and the low productions of certain of the Yorkshire districts. He did not want them to misunderstand him. The products of Batley and Dewsbury were necessary and admirable in their way; the only point was that they had not the same wear as the Scotch Tweed. Then the payment for pattern ranges had been brought up. Only too often there was a tendency for the merchant not to realise the cost and the trouble that the manufacturer had taken in preparing his pattern ranges, and the result was that he was careless with them, or he would actually take one man’s patterns and ask someone else to match them in a lower quality of stuff. In that case a lower cloth of the same pattern was put on the market, to the detriment of the original pattern. Merchants should bear a reasonable proportion of the cost of the pattern ranges, and should also deal honourably with designers and producers of those pattern ranges. Then, being a teacher, he naturally looked at many items from the students’ standpoint. Teachers had to teach students to make much out of little, and he thought that Mr. Welsh’s paper was excellent from that point of view. Mr. Welsh had referred to fine goods for which very fine wools must be employed, and a number of manufacturers were troubled with the shrinking and the felting of those wools in the scouring operation. Was it possible to scour those wools in such a manner that their felting property was preserved for use in the cloth state, and not while the wools were being scoured? If the felting takes place during the scouring it was lost to the cloth—the fibre must be more or less broken. With reference to the value of colour, that again was worthy of the very strongest emphasis.

There was no doubt that they in Yorkshire had a great deal to learn from the Scotch colours. They were learning, he thought, and the exhibit they were able to send from Bradford would show that they were realising the importance of colour and trying to follow the good example of their Scotch friends. The organisation of the selling of patterns so that a manufacturer knew what patterns he was likely to sell in the future was admirable. A few weeks ago he visited one of the most progressive merchanting places in Bradford, and he was astonished with the expense and the care taken in organising sales so that this merchant could tell exactly what was happening to each one of his patterns; which pattern was selling and which was not, and that, of course, meant money to him. The woollen manufacturer very often produced such a large range of patterns that, unless he very carefully organised his selling, and noted carefully what was being done he was liable to make the wrong stuff and have his machinery running on the wrong stuff when he might as well have it running on the right stuff.

MR. WELSH, in reply, said he had been asked how they controlled the double cloth. In making these they made them so that they required very little milling. If they found that a cloth "cockled," they did not make it again. As to what created the desire to change from large patterns to small patterns he could hardly tell, but he would think, from his observation, that patterns went in a kind of cycle; that a design would commence small, and then it would get larger and larger and larger, until people tired of it and began small with something else. Why a man should want to have a small check one year and a large one the next puzzled him. The designers would like to know the year before. In dealing with fine goods, fine wools were employed. Many manufacturers were troubled in the scouring of wools because they shrank, and the value of cloth shrinkage was lost. Fine wool had always more natural grease in it than coarse wool. There was more suint on fine quality than on coarse, and in scouring there was always a danger of the wool rolling when it was floating in the water, and if it did that there was a chance of it felting. That had not been his department in cloth making, and he was afraid he knew very little about scouring except in theory.

MR. J. SCOTT expressed the opinion that the tailor had a great deal to do with the changes in designs. The tailor naturally liked to have a complete change of designs, so that gentlemen as well as ladies might be in the fashion; so that if, in one season, checks were in vogue, they may develop into something entirely different. Many people thought that men's clothes were all the same, but every season there was a complete design change, and the tailor was exceedingly anxious to make a brown season one year, and a grey season the year after, and so on. That was what caused the trouble.