

C O L O U R and



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C O L O U R is a phenomenon of light. We can have no colour without light. White light contains all colours and may be broken up with a prism into its component parts, producing a perfectly graded rainbow consisting of red, orange, yellow, green, blue and violet. Every spectral colour is elementary or primary, but in dealing with paints and dyes, red, yellow and blue may be accepted as the primaries. By mixing primaries in pairs, secondaries are formed. Thus red and yellow when mixed produce orange, yellow and blue produce green, blue and red produce violet. The hue of a secondary colour is determined by the proportionate quantities of the primaries combined in its production. For example, to obtain a yellowish green, yellow would be the predominating and blue the subordinate colour. If it is required to obtain a bluish or a reddish purple then this is done by increasing the blue or red components of this secondary colour. It is in this way that colours are modified and multiplied.

Tertiaries are obtained by combining secondaries or all three primaries. They are not real colours, but shades of the predominant colour in the mixture, that is, colours dulled by black or dull grey. Their number is infinite. For example, russet is composed of two parts red, one part yellow and one part blue. Citron is composed of two parts yellow, one part blue and one part red. Olive consists of two parts blue, one part red and one part yellow. It will be obvious that by varying these proportions the tertiary colour can be changed. If in the case of russet the proportion of the red constituent is increased, the warmth of the colour is intensified. By increasing the yellow the reddish tone is neutralised, while an increase of the blue would add to its depth and saturation. In all tertiaries there is a saddening of the colour when compared with the primaries and secondaries from which they are obtained. This is due to the fact that red, yellow and blue in equal parts produce

grey, so that by adding one extra part of red, a red-grey or russet is produced. Where yellow is the predominant colour then the tertiary is a yellow-grey or citron. With blue predominating, the corresponding tertiary is slate.

Before dealing with the application of colour to wool, the term "complementary" needs a brief explanation. A colour is complementary to another colour when, together, they include all three primaries. Thus the complement of red is green (yellow plus blue); the complement of yellow is purple (red plus blue); the complement of blue is orange (yellow plus red). In the early days of colour investigation it was found that the greatest effect of brilliance was obtained where a colour was contrasted with its complement, but that when mixed with it the result was dull, and even grey could be made. The result of mixing such complementary colour pigments, paints, dyes or any kind of colours, was to produce a shade darker than the component parts. In fact, with a little care a dyer can produce a quite tolerable black on cloth, or a printer on paper, by the use of the complementary colours in combination.

COLOUR MIXING IN THE WOOL

The actual colouring of the wool fabric may have its beginning in the initial stages of manufacture, that is, in the preparation of the material or blend for carding and spinning. Much attention has been given to the colouring of yarns for weaving by the admixture of dyed wools. From a prepared range of dyed wools the colourist proceeds to build up a range of colour mixtures by mixing together colours of different hues or tones in varying proportions. This provides one of the most interesting fields for the study of colour mixing, particularly when one considers that wools used in the manufacture of wool fabrics may vary in fibre-fineness from 1/400th of an inch to 1/2,000th of an

inch. To produce bright colour mixtures the original colours, of course, must be brilliant, but it is still more important that they must not be divided too minutely for the eye to see them separately, otherwise the result is simply dull, for one colour cancels out the other. Wools of medium fineness, that is, about 1/1,000th of an inch fibre diameter, are usually selected when the brightest of colour mixtures is required, as the fibres are not so fine that the eye cannot distinguish the individual colours near at hand.

COLOUR AND THE WEAVER

In addition to the colour mixtures made in the loose wool, the weaver and knitter has available an extensive range of self-colour yarns dyed in the slubbing or top, or in the yarn. Such a range may include primaries, secondaries, tertiaries and all variations introduced by the dyer in applying the colour to the wool in its different forms. Altogether this could supply an almost infinite range of colours, but generally in mill practice there is made a very carefully chosen range of colours, mixtures and self colours to suit the requirements of the trade and to meet the ever-changing fashion trends. Sometimes, as with Scottish clan tartans, the range of colours is comparatively limited, because most of these are obtained from the primary and secondary colours with a few tertiary colours, and, of course, black and white. Thus the wide assortment of Scottish clan tartans illustrates the skill of the weaver in manipulating this limited range of colours and producing distinctive checks or plaids. Wherever check pattern differentiation is required the range of tartans will supply the weaver with an almost endless range of check pattern schemes which can be modified and extended at will.

Another group of patterns, also of Scottish origin, which provide for the colouring of wool fabrics by the manipulation of coloured threads is the range of Scottish "district" checks, wherein the colours are combined in smaller groups of threads of each colour, and generally with coloured threads and white threads combined in about equal proportions. District checks include the shepherd's, the gun club and the glen checks.

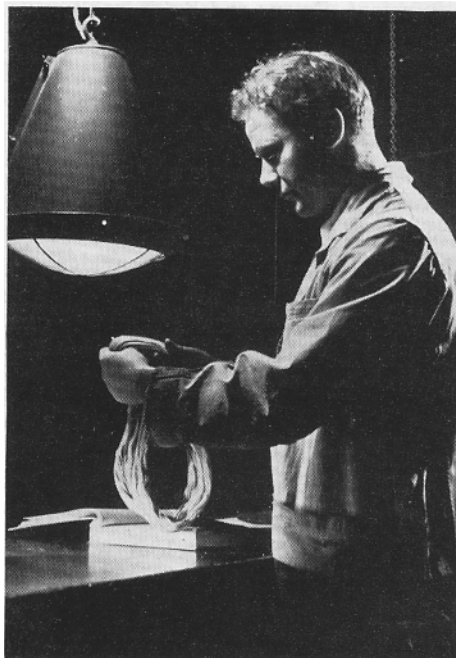
As with tartans, where distinctiveness in the resultant pattern is obtained by the inclusion of a bright coloured

over-check contrasting with the colours of the grounds, so in district checks great diversity is obtained by changing the colour of the overchecking threads in a set of patterns all made from the same ground colours.

COLOUR TWISTS

Although the designing of men's wear suitings may produce results which are less striking than those produced in other directions, this is due to the more subtle blending of the colours and to the use of smaller quantities of the pure colour hues. The basis of the colour range illustrates how carefully the colourist builds up his grades of mixtures, including greys,

browns and blues, either by mixing the coloured fibres or by the twisting together of two or three threads of different colours or tones. Next to the mixing of fibres the combination of fine threads by twisting gives the closest association of the colours used in the resultant cloth. Where lively and sparkling twists are required it is not infrequent to find complementary hues combined, such as blue and orange, or red and green. Such twists, however, would not be used alone but in combination with white, grey, natural, black or brown threads; for example, one thread of white and one thread of colour twist, or one thread of black and one thread of colour twist. By this close association of the colour elements it is possible for the colourist to show how colours are applied to obtain such widely different results in the woven fabric.



A yarn dyer examines dyed yarn under a special lamp to see if it is accurate in shade.

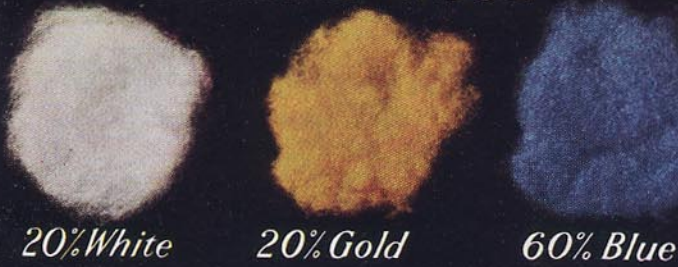
(Photo: Patons and Baldwins, Ltd.)

DESIGNER AND COLOURIST

All of these preparations for colour mixtures and twists are only to bring us up to the stage where real designing and colouring at the loom begins. The designer and colourist appreciates the importance of laying a good foundation with regard to colour selection for the making of patterns for all types of fancy woven textures. It is still good practice to have colour ranges prepared, even with small sections of each colour in warp and weft, so that from the colours originally selected further combinations of colours by warp and weft crossings are obtained. The making of such ranges is a prolific source of colour mixture, almost beyond one's comprehension, and it is quite impossible to visualise exactly the resultant effects of these combinations

COLOUR *and* WOOL

BLENDING WOOL



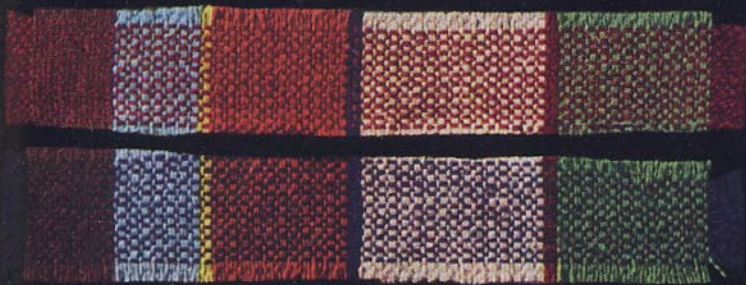
LOVAT MIXTURE

BLENDING YARNS



By manipulating a limited range of colours the weaver can produce a vast range of distinctive plaids and checks

(THE FERGUSON TARTAN IS ILLUSTRATED HERE)



Change of weft colour influences colour of warp



SCOTTISH DISTRICT CHECKS

Dogstooth effect in varying colours



A MAN'S WORSTED SUITING

A subtle blend of different coloured yarns



GREY



RUSSET



CITRON



OLIVE

without actually making the samples. When dealing with colour patterns which have to combine the actual colour hues in their purest forms, and, especially, when these are combined in large checks, as in tartans, we can draw a better picture in our mind's eye of the yield in such combinations.

COLOUR CONTRASTS

Colour combinations are influenced by the law of contrasts, that things unlike each other look most unlike when placed side by side. The utmost brilliance of red is obtained by contrasting it with green. Contrast is the essence of colour styling in practically all types of woven fabrics, and in the application of colour the designer may employ three bases for colours in combination – (1) tone and tone – for example, dark grey and light grey, or navy and lavender; (2) contrast in

hue – for example, crimson and navy, myrtle and brown; (3) contrast in both hue and tone – for example, maroon and lavender, navy and gold. In some of the more complex colour schemes we may find the colours combined so that both contrasting tones and contrasting hues are employed. For example, beige, fawn, brown; beige, cherry and turquoise. In fact, a careful study of colour combinations in woven fabrics for men's wear and women's wear will show that the greatest possible diversity is obtained by the skilled designer and colourist by the application of the limited number of simple colour elements. The colourist exercises the greatest ingenuity in the use of greys and naturals associated with bright, full-toned colours, appreciating the value of the neutral elements when combined with colour elements, thereby producing the most exquisite range of nicely-blended patterns.

Slubbing dyeing. The carded sliver is dyed in these huge vats which are 7 ft. 6 in. in diameter, and hold 500 lb. of wool and 700 gallons of water.
(Photo: Patons and Baldwins Ltd.)

