

weft interweaving as in plain cloth, the interval is increased. For example, the weft may pass over three or more 'ends' (warp threads), then under one, again over three and so on. This long stitch is called a 'float'. As a general rule successive floats should not pass over the same group of 'ends', but each must advance one 'end' before coming to the surface, the result being a more or less pronounced diagonal grain in the fabric, sufficiently well seen in Ch. 00228, Pl. CVI, and Ch. 00232, Pl. CXII. Twill weaving permits of a much closer fabric than does the plain cloth weave, and, by the natural spreading of the relatively long floats on the face of the material, the warp is usually completely hidden and a practically unbroken surface of weft is presented.

'Sateen' weave.

'Sateen' is produced by a slight variation of the twill system, the lustrous surface being due to the length of 'floats' and the covering of the warp. When the weft is of 'tram', that is slightly twisted silk yarn, the sheen is brighter, and most of the polychrome figured silks in the collection have the weft of this kind. In some examples, the width of the weft thread is very noticeable and results in the so-called 'stepped' effect. It is quite obvious that, if a flat band of 'tram' silk passes round a taut warp thread, the line formed by its edge will practically coincide with that of the thread supporting it, that is, it will be straight. The greater the number of such tram threads laid side by side and passing round the same taut thread, the longer the line formed by their combined edges will be. The taut threads being the warp and the 'tram' being the weft, we necessarily have a system of right angles forming the edge of every mass of the figuring silk, and it follows that all curved lines in a design woven in such fabrics must be formed by a succession of advancing or retiring square angles or steps, of which the size will be controlled by the spacing of the warp and the breadth of the weft threads.

'Stepped' effect.

Angularized designs.

To simplify his work the weaver often eliminates curves as much as possible. If this practice be carried too far, the design becomes obscure and, by development through generations on these lines of modification, eventually meaningless, as in the case of many degenerate Asiatic carpet designs. On the other hand, the angularizing of a design often produces an effect of vigorous drawing. An extreme example of 'stepping' tending towards obscurity is Ch. 00230, Pl. CXII. Less destructive is the tendency displayed in other examples, such as the galloping lions in M. I. xxvi. 001, Pl. XLIX, the tapestry fragments Ch. 00166; xlvi. 001; lv. 0034, Pl. CVI, and some of the 'Sassanian' figured silks.

Distortion of design.

Distortion in a design often occurs with the hand-loom as the result of imperfect balance between the width of the warp and the bulk of the weft. This may be due to miscalculation of the number of picks required or to too vigorous or too slack a blow of the reed, or comb, used to compact the weft while weaving, the effect on the design being to elongate or compress it in a vertical direction. This defect is clearly present in the confronting lion design Ch. xlvi. 001, Pl. CXVI, where the bodies are too short for the height of the animals and the rayed border is similarly distorted; and again in the confronting deer, Ch. 009, Pl. CXV, wherein the pearls of the border show the same fault, and in both cases the original circular form of the whole cartouche has become elliptical.

Variations of pattern in twills.

It will be clear from the above description of twill weaving that an infinite variety of pattern based upon the alteration of the twill can be obtained, ranging from the simple diagonal stripe to the most elaborate pattern worked either as a damask or in colourings of most complex kind. The development of the lozenge is merely the diagonal stripe in two opposite directions and is an obvious weaver's design. The concentric lozenge and the thickening of the crossing of the diagonal stripes, whereby a hexagon is formed, are simple variations. In fact all straight-lined geometrical patterns in twill weaving are naturally born of the inevitable crossing of lines necessitated in the production of the fabric. These lines are the vertical warp, the horizontal weft, and the angular track of the twill floats in opposite directions, so that squares and polygons are there in the loom.

Damasks.

Damasks are woven in variations of the twill structure. The ground is usually in warp sateen twill and the pattern in weft sateen twill. That is to say, the ground is formed by the long floats of the warp and the pattern by those of the weft; the two lying at right angles to each other reflect the light at different angles and so cause the pattern to detach itself from the ground. Examples of these, with the complete patterns reconstructed from the fragments available, are shown on Plates CXII (Ch. 00232), CXVII, CXVIII (Ch. 00293. a), CXXI, and others.

Polychrome figured silks.

Several of the polychrome figured fabrics are stout, firmly woven silk cloths, sometimes double, with colours of weft on a warp of thin silk, which appears to have been generally used either in the natural 'gum' state, merely spun, or treated with a stiffening solution. It is in consequence very brittle, in some cases having almost disappeared, leaving the weft of tram with its kink remaining but no warp to keep it together. The weft is beautifully laid, notably in the 'Sassanian' specimens, and the colours are in bands shot across the whole width of the fabric, as may be clearly seen in the reconstructions in Pls. CXV, CXVI, and CXVIII.

Use of 'swivel'.

But in the case of Ch. 00228, 00229, Pl. CVI, and Ch. 0065, 00170, Pl. LV, the use of the 'swivel' is indicated. The swivel in modern weaving is an arrangement attached to the loom by means of which an extra colour required at relatively wide intervals can be applied locally and properly incorporated into the fabric without the necessity of carrying such colours uselessly right across the material. Such spot patterns as those quoted form typical opportunities for this device, which in fact has been employed. In some examples the objectionable practice of carrying long floats on the back and face of the fabric occurs; but they generally show evidence of having been protected at the back by a silk lining. The majority of figured fabrics are well constructed and leave nothing in this respect to be desired.

Gauzes.

In gauzes a different arrangement of threads is observed, having for its chief object the production of an open fabric of more or less transparent texture. Instead of the warp threads lying parallel as in ordinary cloth, in plain gauze they are laid in pairs