TEXT BOOKS OF ORNAMENTAL DESIGN.

THE ANATOMY OF PATTERN

Lewis F. Day

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I.

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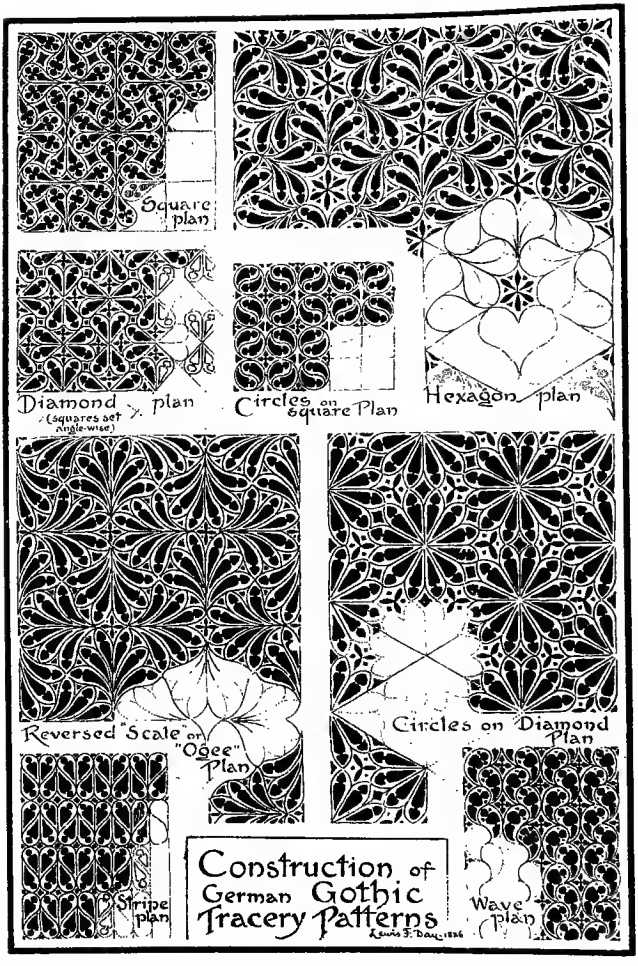
II.

THE DISTRIBUTION OF ORNAMENTAL DESIGN

WILL BE READY SHORTLY.

Plate 1


Square plan
Diamond plan
(squares set angle-wise)
Circles on square Plan
Hexagon plan
Reversed "Scale" or "Ogee" Plan
Circles on Diamond Plan
Stripe plan
Wave plan
Construction of German Gothic Tracery Patterns
Lewis F. Day 1886

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THE

ANATOMY OF PATTERN.

BY

LEWIS F. DAY,

AUTHOR OF 'EVERY-DAY ART,' ETC.

ILLUSTRATED.

LONDON:
B. T. BATSFORD, 52, HIGH HOLBORN.
1887.

PREFACE.

There was a time in my own struggling for artistic existence, when I should have been so grateful for any practical teaching in ornament, that I fancy there must be students who will find it helpful to have set plainly before them what I have had to puzzle out for myself. Hence this series of Text Books of Ornamental Design; in which I have amplified and illustrated the substance of a series of Cantor Lectures delivered in December last before the Society of Arts.

I have assumed no great amount of technical or artistic knowledge on the part of the reader—only that he wants to know. And, elementary as my subject is, I have taken some pains to save him all unnecessary effort in following my meaning.

The illustrations are to be taken literally as illustrations, and not by any means considered as ornamental addenda to the book.

It is only as diagrams that they have any claim to insertion; although, as an ornamentist, I have naturally made the necessary diagrams as interesting as under the circumstances was feasible.

I have tried to make each one of the plates, as far as possible, explanatory in itself; so that from the study of them alone, apart from what I have to say, a fair idea of the construction of pattern might be gained.

LEWIS F. DAY.

13, *Mecklenburg Square, London, W.C.*
March 30th, 1887.

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3. THE LATTICE AND THE DIAMOND—Plaids, zigzags, &c., built on cross-lines.

4. FRETS, &C.—Showing their construction on a network of cross-lines.

5. ALL-OVER PATTERN—Showing the cross-lines upon which it is planned.

6. THE TRIANGLE—Diapers of star, hexagon, and lozenge shapes, built up on the lines of the equilateral triangle.

7. THE TRIANGLE—Diapers composed of the equilateral triangle and its compounds.

8. THE HEXAGON—Honeycomb and other diapers based upon the hexagon and its compound.

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11. CURVILINEAR PATTERNS—Showing the construction of the wave, the ogee, the net, &c.

ERRATA.

Page 36.—Line 14, *dele* from "When" to "upright line."
,, 37.— ,, 2, *dele* from "But" to end of paragraph.

THE ANATOMY OF PATTERN.

I.

INTRODUCTORY.

The dictionary scarcely helps us to a definition of the word pattern, in the somewhat technical sense in which it is used by the designer.

Inasmuch as a pattern signifies a "specimen," one might argue that repetition is implied in ornamental pattern. But inasmuch as any "shape or model for imitation" is quite as strictly speaking a pattern, one cannot exactly define pattern as repeating ornament.

Nevertheless, pattern mostly comes of repetition. Many a pattern bears on the very face of it the evidence that it grew directly out of the necessity of repetition.

It is more than probable that some mechanical necessity gave rise to all geometric

pattern; certainly it is impossible to plait, net, knit, weave, or otherwise mechanically make, without producing pattern. It may be so small, as it often is in weaving, that the warp and weft are invisible to the naked eye; but it is there; and all that remains for us to do is to efface it all we can, or to make the best of it.

Out of the determination to make the best of it has grown much of the most beautiful pattern-work. To neglect this source of inspiration, therefore, to say nothing of the attempt to suppress it, would seem to be wasteful of opportunity to the very last degree.

The very repetition of parts, then, produces pattern; so much so, that one may say wherever there is ordered repetition there is pattern. Take any form you please, and repeat it at regular intervals, and you have, whether you want it or no, a pattern, as surely as the recurrence of sounds will produce rhythm or cadence.

The distribution of the parts need not even be regular. The wave marks on the sand, the veins of marble, the grain of wood, the crystallisation of the breath upon the window-

panes, the curls of the hair, the very features of the human face—resolve themselves into pattern. So distinctly is this last the case, that the ornamentist finds himself continually devising, *malgré lui*, patterns that remind one of faces. There is even room for speculation whether it may not have been with a view of escaping this danger, or anticipating it rather, that the designer first took to the deliberate use of those masks and grotesque heads, which form so prominent a feature in certain styles of ornament.

The popular idea of the process of ornamental design is, that the artist has only to sit down before a piece of paper, and, like a spider, spin out the fancies that may crowd his fertile imagination. Indeed, there is scope in design for all his fancy; but he is no Zeus that ornament should spring, Athena-like, full-grown from his brain.

Ornament is constructed, patiently (I will not say laboriously, for the artist loves the labour), patiently built up on lines inevitable to its consistency—lines so simple, that to the expert it is not difficult to lay bare its very skeleton; and just as the physiologist divides the animal world, according to anatomy, into

families and classes, so the ornamentist is able to classify all pattern-work according to its structure. Like the scientist, he is able even to show the affinity between groups to all appearance dissimilar ; and, indeed, to point out how few are the varieties of skeleton upon which all this variety of effect is framed.

Before enumerating these varieties, let us suppose for a moment a man to imagine (and this is by no means an imaginary case) that he will make to himself a repeating pattern without regard to its logical construction—as though in his domain there should be no skeletons. That would be, from my point of view, a profoundly foolish thing to do ; but, more than that, it is impossible. He may design a unit in which there is no repetition, and no formality, but the moment he repeats that unit, the very order of its repetition proves to be, if I may call it so, the cupboard in which the skeleton will be found.

It might be imagined that by designing in some such haphazard fashion as I have just supposed, the artist would secure to his design a freedom of line, an absence of formality, not readily to be obtained by adopting the more systematic method. But this is not by any

means so. If, indeed, the design be of that absolute uniformity all over, that there is no one feature in it more pronounced than another, it may pass muster, notwithstanding the want of backbone. But that is not to claim much for it as a design. And it was scarcely worth the pains to take exceptional measures merely to this insignificant end.

If, on the other hand, a design be above the level of insignificance, there must be in it some dominant feature or features, which, when many times repeated, will appear more prominent than ever. It is to these features that the eye will irresistibly be drawn; and it is the lines they take in relation one to another, which will assert themselves. It is hardly to be expected that, if these lines have never been taken into consideration, they should come out very satisfactorily—and, as a matter of experience, they always come out awry. Every one must have suffered more or less from wall-paper, and other patterns, in which certain ill-defined but awkward stripes impressed themselves upon him; and he may have imagined possibly, if he thought about it, that this effect of stripes came of working upon vertical, horizontal, or diagonal lines.

It was much more likely, the result of not working upon definite lines at all. A designer who knew the A B C of his business, would make sure of lines not in themselves offensive; he would counteract a tendency to stripes in one direction by features directing the attention otherwards; and he would so clothe any doubtful line that there would be no fear of its unduly asserting itself, as in its nakedness it might. He foresees the danger (it is a danger even to the most experienced) and he is fore-armed against it. The mighty man of valour who disdains to be trammelled by principles, or any such encumbrance, is without defence against contingencies practically certain to arrive. It is only by a miracle, or a fluke, that he can escape failure. The overwhelming odds are, that the petty considerations he has despised, will be quite enough to wreck any venture he has dared in defiance of them.

Since, then, it is practically inevitable that there shall be definite lines in ornamental design—seeing that if you don't arrange for them they arrange themselves—it is the merest common sense to lay down those lines to begin with, and, in fact, to make them the skeleton

or framework upon which you build up your pattern.

You will see, when they are laid bare for you, that these skeletons are after all very few.

II.

PATTERN DISSECTION.

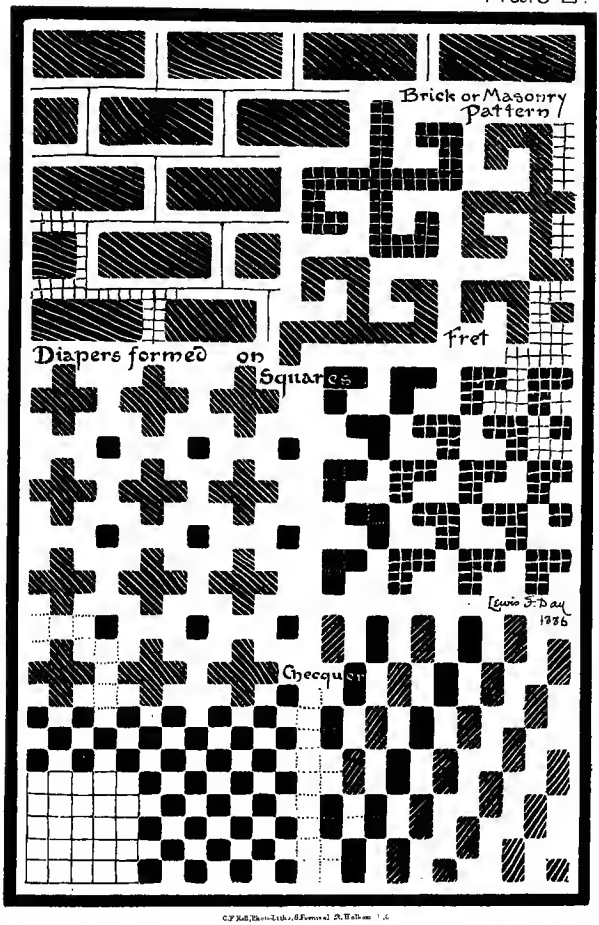
Repeated pattern may be classified according to its structure, I said.

First in order of obviousness comes *the stripe.* It comes also very early in order of invention: the loom must from the beginning have suggested the stripe-pattern, which practically grows out of it.

The stripe, however, carries us only a very short distance in the direction of design. For immediately you make any break in the repeated line, the recurrence of that break gives other lines in the cross direction.

Suppose a series of horizontal bands broken at equal intervals by a series of rosettes. It is clear, that if the rosettes fall one under the other, they give upright lines; or if they are shifted you get diagonal cross lines. If the line itself is broken, as in the case of a series

Plate 2.



C.F. Hall, Photo-Lith., 6 Fenwick St. Holborn E.C.

Plate 3.

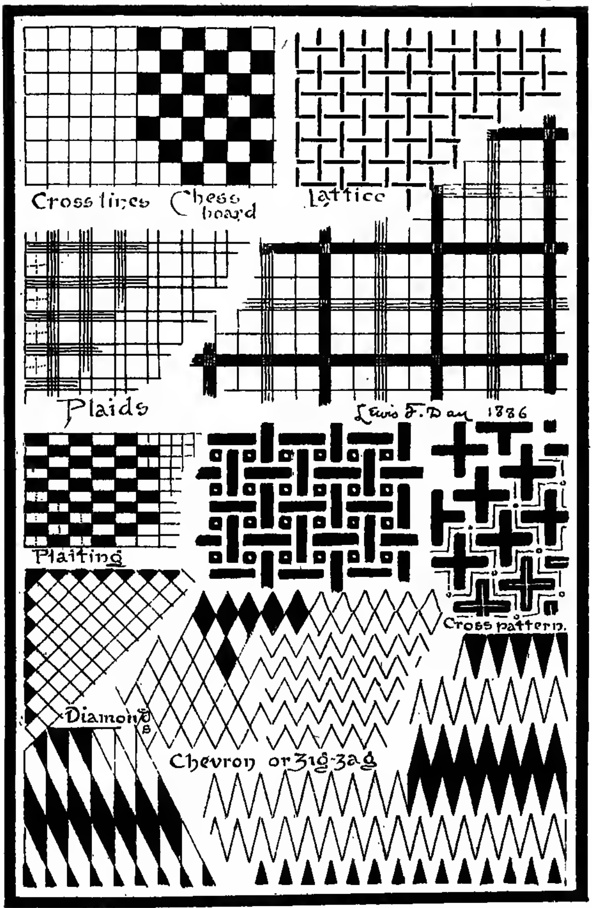


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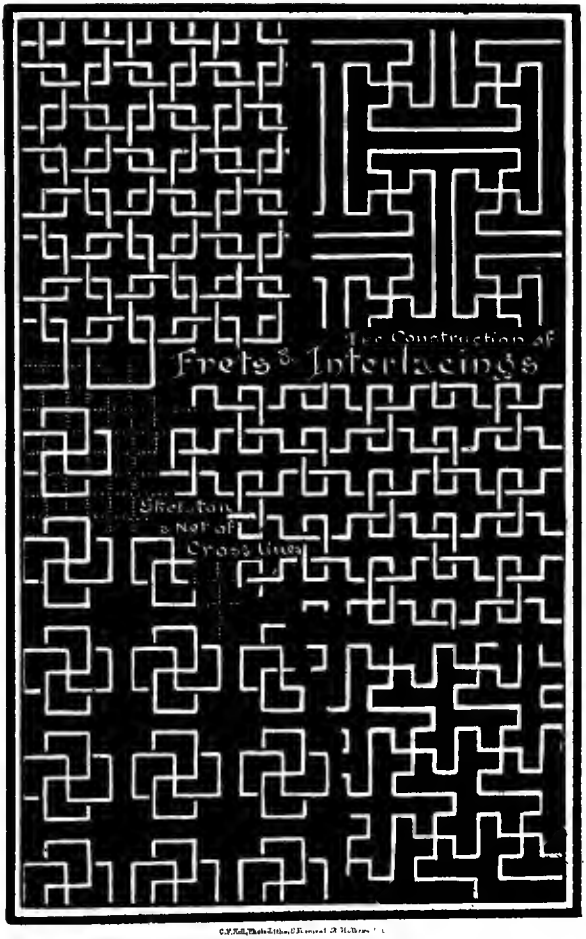
Plate 4.


The Construction of
Frets & Interlacings
Skeleton
& Net of
Cross Lines

of waved lines, or, still more plainly, in a series of vandykes, the turn of the wave, or the point of the zigzag, when it is repeated, gives the cross line just the same.

And so we come at once to the vast order of patterns constructed upon *cross lines.*

This is probably quite the first in point of time, arising as it inevitably does out of the very primitive art of plaiting. You have only to interweave strips of two different colours, and you get at once a *check*, or what is familiar to us in black and white as the chess-board pattern. (Plate 2.)

Suppose the interwoven strips were all of one colour, then *the lines of intersection* would make a *lattice* or basket-work pattern.

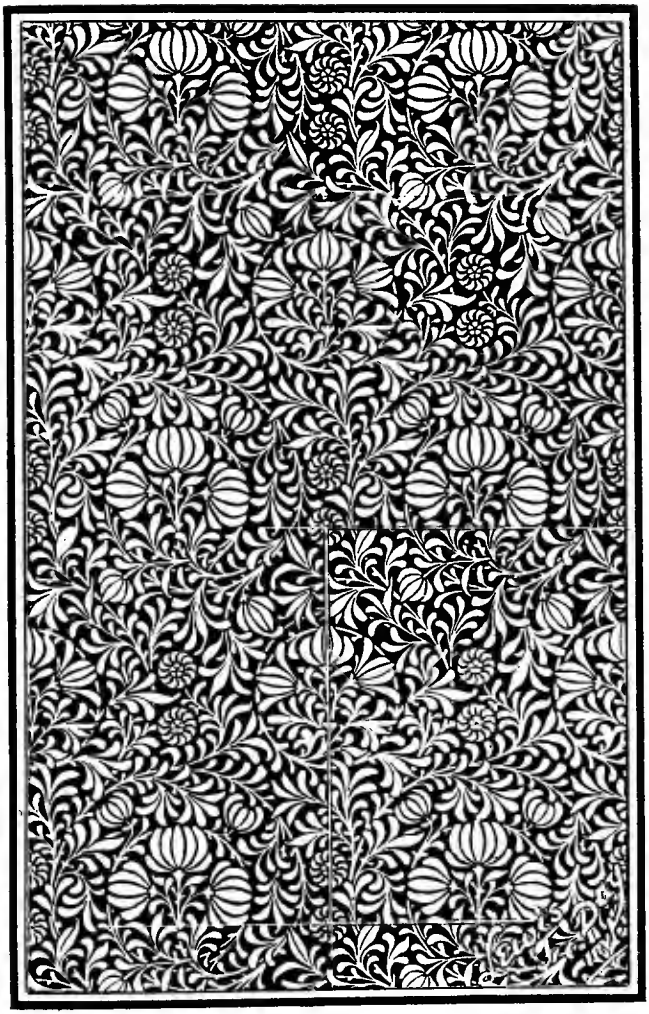
The simplest form of check or lattice is when the crossing is at equal intervals and at right angles. Vary the interval, and you have all manner of plaids and tartans. Alter your point of view (or turn the design 45 degrees round) and you get the diamond. The difference in point of view makes no real difference in plan: a stripe may take any direction, but it is always a stripe. But if we alter the angle at which the lines cross, we get not only a fresh variety of

shapes, but we get also a diamond shape which, for the sake of clearness, I will call *the* diamond, which plays a very important part in the next order of patterns, at which however we have not yet arrived. Various plaids, diamonds, and other developments of the lattice are exemplified in Plate 3.

In the case of a regular network of cross-lines there is no particular reason why they should always be filled in alternately *à la* chess-board. They may just as well be grouped in twos, threes, fives, and so on, resolving themselves into patterns of great variety and even of intricacy, as may be seen in Plate 2.

This theory, however, must not be pressed too hard, or you may squeeze something very like a false idea out of it. It might be contended that all patterns are formed on the square, or all patterns, at least, that can be woven, the threads forming the squares on which the design is laid. This is obviously absurd. The only patterns built on the square are those in which the artist (consciously or not) worked upon those lines. The actual squares apparent in a coarsely-woven scroll, or in the old-fashioned sampler,

Plate 5.



belong, not to the pattern, but to its translation into a textile fabric.

If instead of the chess-board we take the *lines* of the lattice, and work upon them, we get, without departing from those lines (only intermitting them) a wonderful range of interlacements and the like; some of them of exceeding intricacy, as in the case of the "*fret.*" A number of these are shown on Plate 4. There seems no limit to the ever-increasing range of pattern-work thus disclosed, all built upon the same constructional scaffolding.

From the intermission of the lines results a kind of spot pattern, more or less free, which might be mistaken for a distinct order of design. But it is only a variety.

It really matters little whether a design is constructed on geometric lines, or only arranged so that it falls within them. The skeleton, when you come to dissect the two, is the same in either case. Our theory of construction, therefore, applies quite as much to sprigs, spots, and all so-called free patterns, as to those in which the constructional lines actually occur as lines. You have not done away with construction when you have succeeded in keeping the scaffolding out of

sight. Again, the use of the broken line instead of the straight, or of the curved (which we shall have to consider more particularly further on), makes no difference except in effect. The skeleton is the same, though you show no lines at all, as in the "all over" pattern on Plate 5, which is planned on the parallelogram given by lattice lines.

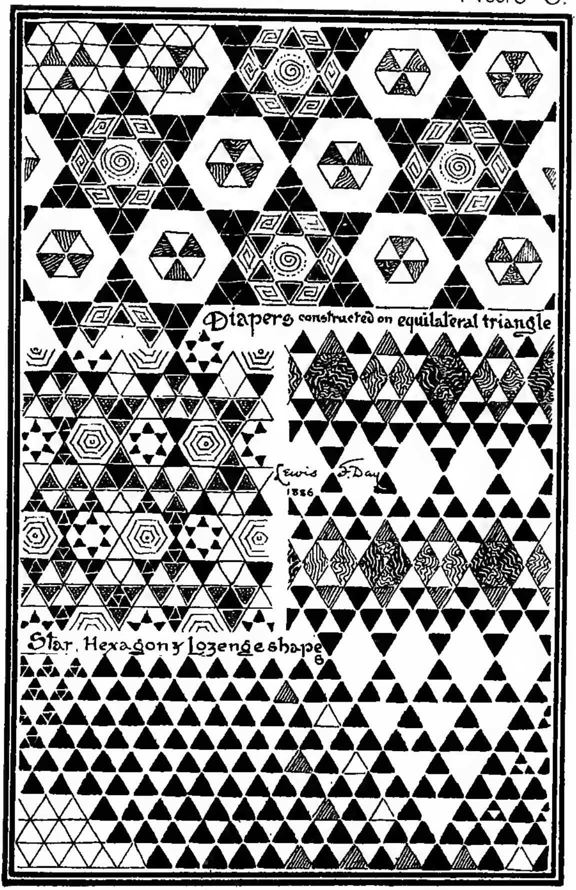
So far we have had to do only with the simplest of all possible schemes, in which at most two series of lines intersect one another. The introduction of a third series of cross lines constitutes a new departure, and a most important one.

Cross the square lattice by a series of diagonal lines bisecting the right angles—cutting the squares in half, that is to say—and we have a new form to work upon, the *triangle.*

If instead of the square lattice, one starts with a lattice of diamond shape, a third series of cross lines bisecting the angles of the diamond produces equally a diaper of triangles.

And if the diamonds of the lattice be of a certain proportion—if, that is to say, two sharp angles be together equal to one of

Plate 6.



C F Kell, Photo-Litho, 8 Furnival St, Holborn, E.C.

Plate 7.

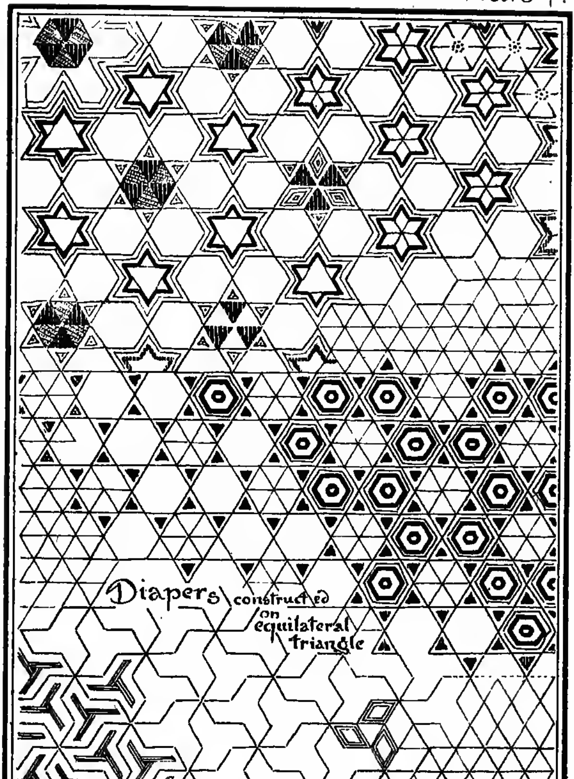


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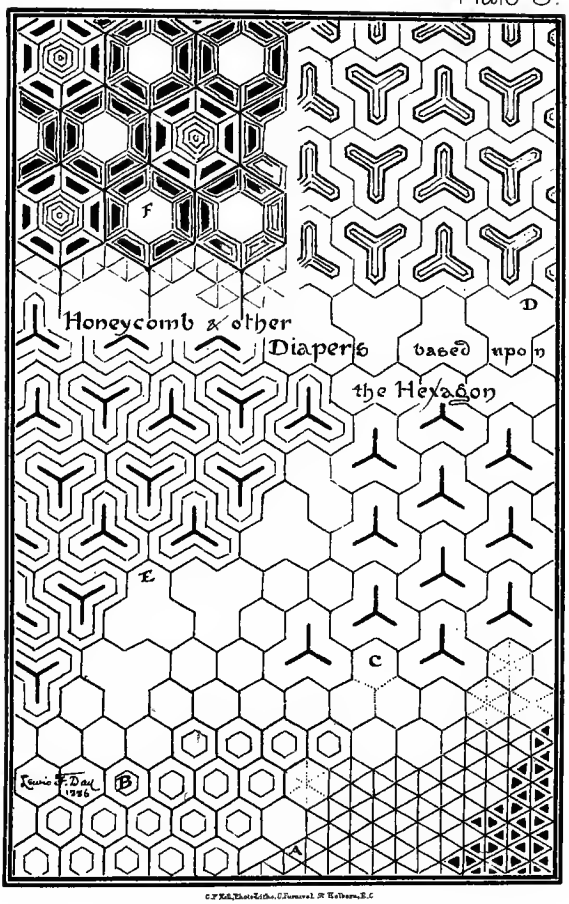
Plate 8.



C.W. Kell, Photo-Litho, 6 Fernival St Holborn, E.C.

the blunter angles, you have only to bisect the blunt angle of the diamonds by this third series of cross lines to arrive at the *equilateral* triangle, which of all triangles is far away the most useful in design.

By merely grouping the equilateral triangles, as in Plate 6, we get the hexagon (a group of six triangles), the star (a group of twelve), and other shapes, such as that on Plate 7, which is made up of seven triangles (i. e. three diamonds and a triangle); or that on Plate 8, which is composed of eighteen triangles or three hexagons.

A glance at the three Plates 6, 7, 8, will show how immensely the designer's scope is now widened.

We have already the basis of all that infinity of geometric pattern which we find in Byzantine mosaic inlay, and in the Moresque tile-work derived from it. It will be seen that the hexagon, the star, and other compound shapes, themselves form exactly-fitting diapers.

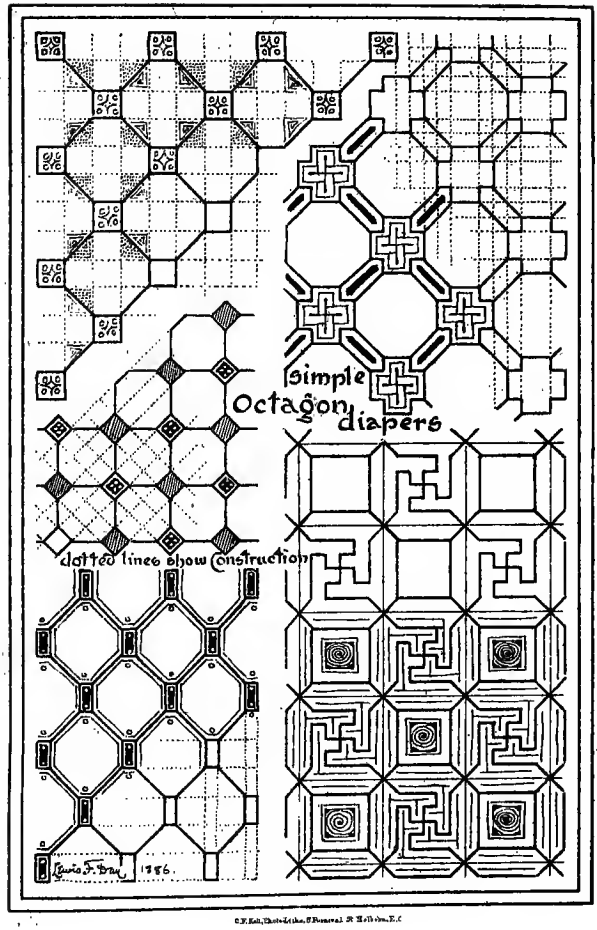
By the use of a fourth series of cross lines another new shape is evolved. Returning once again to the square lattice, if we cross it diagonally *both ways*, cross it by itself,

that is, so that each square is cut up into four, you get out of those lines the *octagon* (Plate 9); but not an equal-sided octagon; that is, built on a cross lattice of different proportions.

The octagon, however, is not a unit which will of itself form a diaper, as the hexagon will. It is only in connection with a square, diamond, or other four-sided figure, that it will repeat. Place side by side a series of octagons, and there will appear four-sided gaps between (Plate 9). Nevertheless, this new series of lines gives us new varieties of radiated patterns: witness once more the elaborate interlacings of the Arabs; all of which, even the most magnificent, are closely related to the seat of a common cane-bottomed chair.

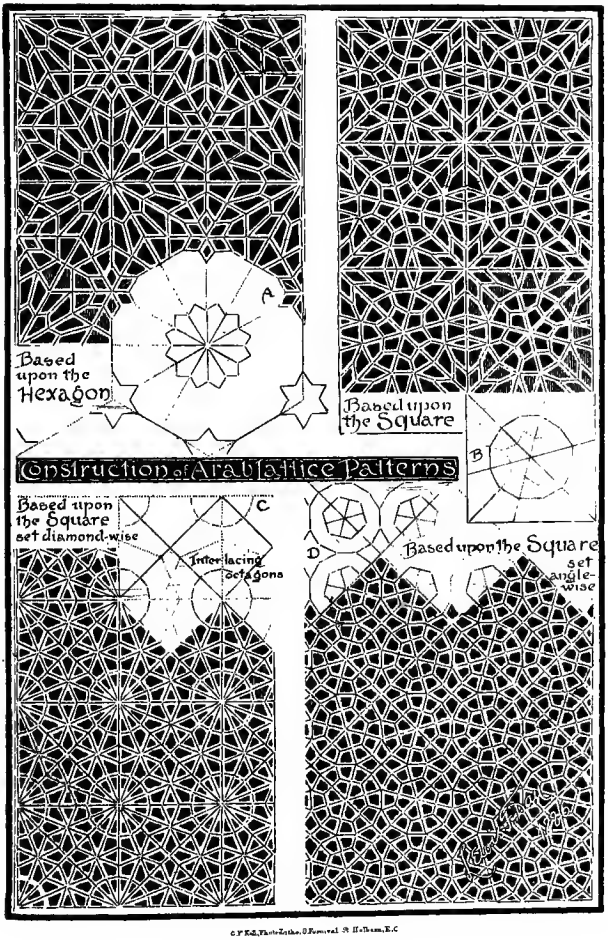
It is possible to carry the principle of *radiation* further still. You may, for example, cross this more elaborate lattice by a lattice like itself; but you get by that means rather intricacy than variety—especially when the intersecting lines are in part interrupted. In certain Arab patterns, where this ultra-elaboration of lines is employed, it appears almost as if a new principle had been introduced (Plate 10); but upon analysis the designs

Plate 9.



B.T. Batsford, Photo-Litho, 52 Bernard St. Russell Sq. W.C.

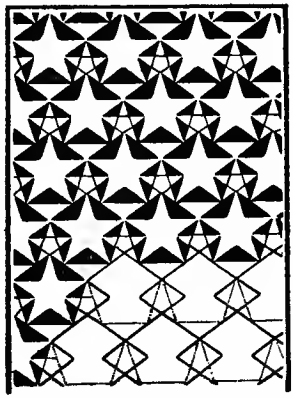
Plate 10.



C.F.Kell, Photo-Litho, 3 Fernival St. Holborn, E.C.

resolve themselves into the elements with which we have already had to deal—so few are the plans upon which pattern is constructed. Already we have come to the end of the straight-lined family.

Why, it may be asked, can you not make a diaper on other lines, on the lines of the pentagon for example? Well, you may put together so many pentagons—and a very respectable diaper they form—especially if you further enrich the pentagons with five-pointed stars. Not long since I came upon just such a diaper, which, for a moment, promised to upset all my neatly arranged theories on the subject of pattern anatomy. However, I had only to dissect it, to discover that it was our old friend the diamond in disguise; but so artfully made up as at first sight to deceive. There it is. It consists of



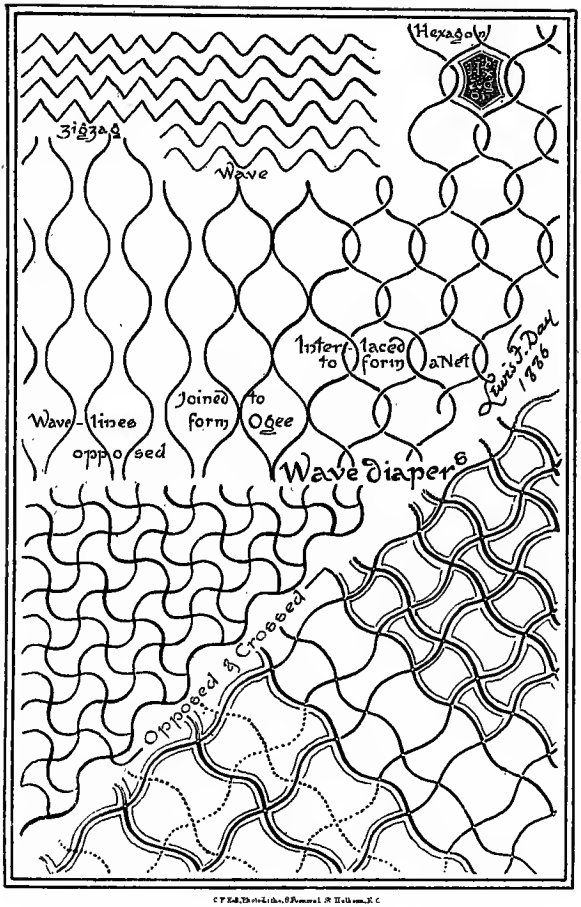
Pentagon diaper and its skeleton.

pentagons put side by side, the interstices between them ingeniously filled with stars and triangles, much as the pentagons themselves are filled—so that one does not readily distinguish between the parts. It wants no telling that shapes of any kind may be put together to form a pattern; but that does not alter the fact that the *lines* on which they are arranged, or into which they fall, must be those I have already laid down; which are indeed the base of all possible pattern.

For further variety in design, we must resort to the use of the *circle.* The circle itself must, indeed, be arranged on one or other of the foregoing plans. It must be struck, that is to say, from centres corresponding to the points of intersection of lines, such as have already been described. In so far it is only one of the innumerable arbitrary shapes that may be so arranged. But the circle is so important a feature in itself, it so entirely alters the scope of geometric pattern, that it deserves to be considered apart. One cannot simply ignore the element of curvilinear design in ornament.

Whether or not the idea of flowing patterns originated in the circle, is of no great conse-

Plate 11.



quence. Instinct must have preceded geometric principles in the mind of man.

One may very easily deduce many of the common curvilinear patterns directly from *angular* motives. (Plate II.)

The wave, for example, is a zigzag, just blunted at the points. Soften the lines of the hexagon, and you have the ogee. Interlace straight rods, and you get waved lines, as may be seen in the perspective view of the common hurdle. Round the corners of the hexagon or octagon, and you arrive at a rude circle. The relation of the hexagon or octagon diaper to the diaper of circles is obvious. Presumably, the busy bee, if one may suggest such a thing without irreverence, only works in a circle, and the hexagonal form of the cells of the honeycomb is simply the result of gravitation; just as you find that cylinders crowded all become hexagonal prisms.

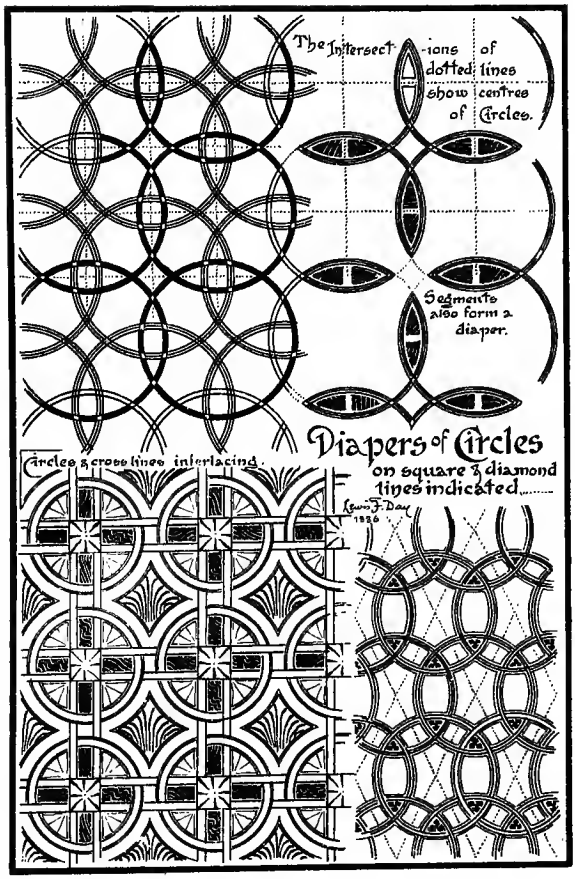
The circular form is familiar to man from the moment he first sees the sun or moon like a disc in the sky, as also the principle of radiation is perceived in the stars. For all we know, the very first pattern ever traced by human hand may have consisted of circles. The primeval artist had only to pick up the

nearest dry twig and indent the damp earth with the end of it, to get a series of round impressions, which would pass for a very respectable diaper. I don't say that was so. I only mean to insist upon it, that the ways in which patterns are formed can be reduced to the simplest; and that they practically force themselves upon the workman—making him, as it were, an artist in spite of himself.

The circle, with its segment the curve, and its compound the spiral, assumes extreme importance when we come to the consideration of the scroll (with which just now we are not concerned); but it will be seen that even in mere diapers it leads to an apparently new order of things.

The simplest form of circle diaper is when the circles are arranged on the *square* or the *diamond* plan; and so as to touch at the edges. By the intersection of the circles, one by another, an effect of much greater elaboration is at once obtained; and it makes all the difference whether you determine the proportions of the circle according to the lines on which they are struck (as in Plate 12) or not (as on the upper part of Plate 13).

Plate 12.


The Intersect ions of dotted lines show centres of Circles.
Segments also form a diaper.
Diapers of Circles on square & diamond lines indicated.
Circles & cross lines interlacing.
Lewis F. Day 1886

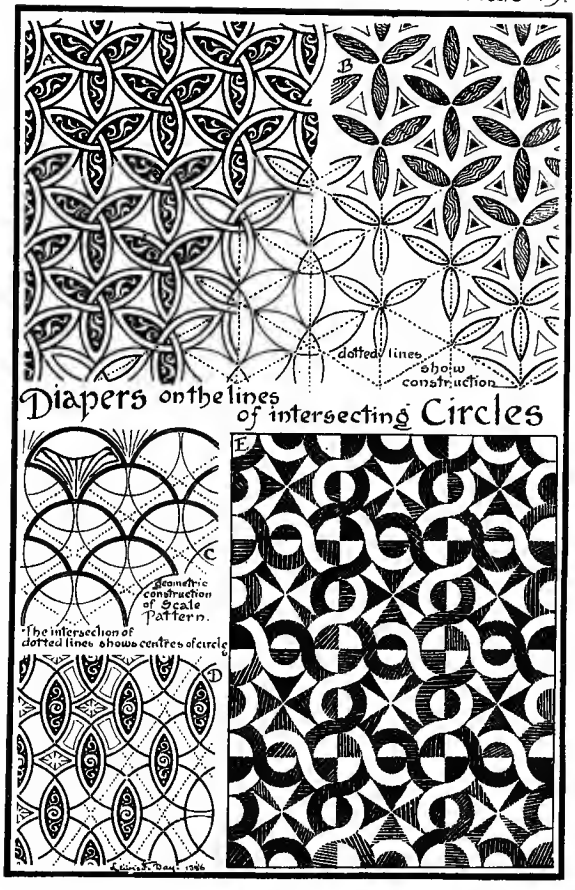
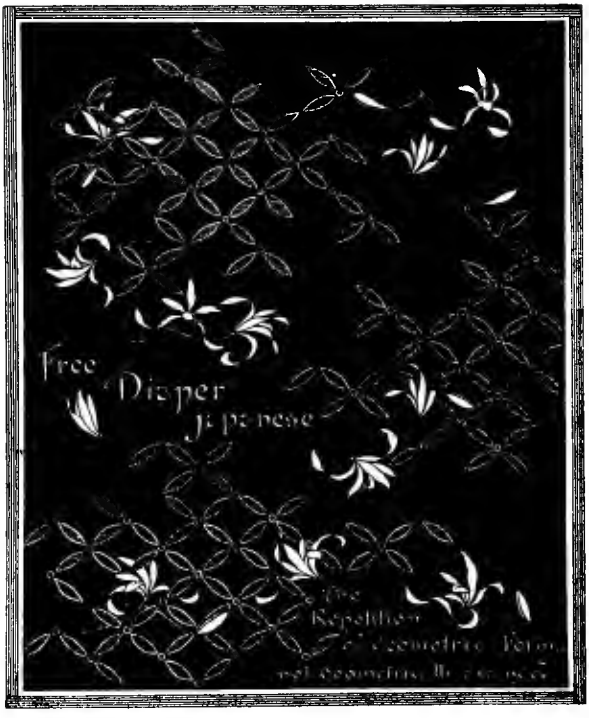

B
dotted lines show construction
Diapers on the lines of intersecting Circles
C
Geometric construction of Scale Pattern.
The intersection of dotted lines shows centres of circle
D
E
Lewis F. Day 1896

Plate 14.



Out of the circle, or its segments, we get also the trefoil, the quatrefoil, and all manner of cusped shapes (Plate 15), which also must needs be put together on one or other of the plans already propounded.

Further, out of the segments of the circle you can construct the scale pattern, which (as you may see on Plate 15) might equally have been derived from the scales of a fish or the plumage of a bird's neck. The scale may also be considered as a translation of the diamond into curved lines. Re-arrange the scales and you have a more graceful, as well as a more complicated, diaper (same plate)—in which appears the ogee shape, once before referred to as being a curvilinear modification of the hexagon.

The hexagon itself may be deduced from it. Suppose a network of interlacing wave lines or ogee shapes—it amounts to the same thing—and the result is a series of six-sided figures (Plate 11), very nearly approaching the straight-lined hexagon.

In this way the straight-lined series might be derived from the curved; and so once more, by a very different road, we reach always, in this maze of pattern-work, the same point,

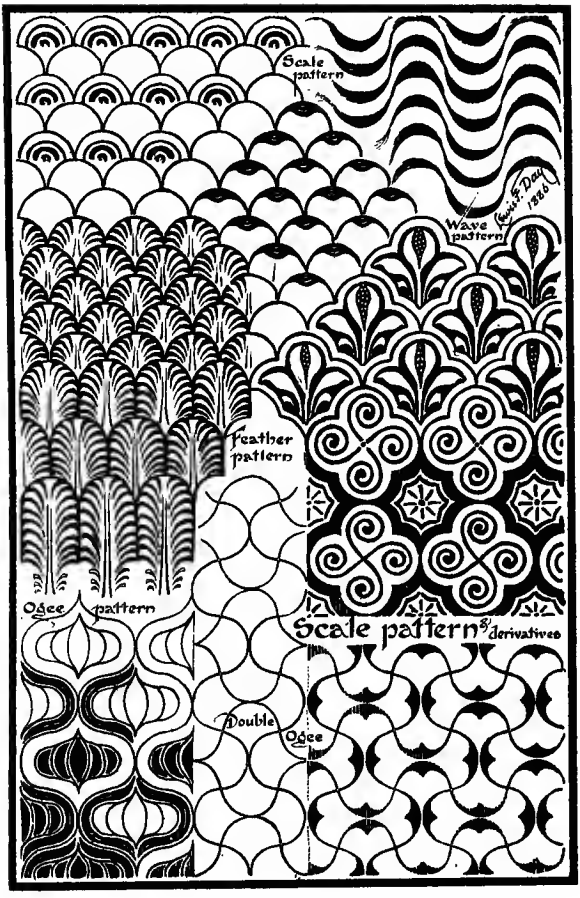
which is, the limited variety of the skeleton on which pattern is built.

From the combination of straight lines with curved (Plates 12 and 13) result all manner of new diaper forms; which, however, present nothing very new in the way of skeleton.

You might start a scroll pattern, such as was common in the sixteenth or seventeenth centuries (Plate 17) on the lines either of the hexagon or of the ogee, or of a mixture of curved and straight lines which I may call the broken ogee; and in the end it would not be very clear which of them you had taken for a groundwork; or even whether you had not founded your design upon the diamond—such close kindred do those various skeleton lines betray.

I have dwelt at some length upon rudimentary diaper forms, for reasons quite apart from anything intrinsically interesting or beautiful in them, although they may be both one and the other. More especially is this likely if tender colours be employed to soften the forms, or if the colour variations do not quite follow the pattern, as in the case of marble inlay, where the accidental colour of the material is a relief from the geometric

Plate 15


Scale pattern
Wave pattern
Louis F. Day 1888
Feather pattern
Ogee pattern
Scale pattern & derivatives
Double Ogee

monotony of the shapes. The Japanese sometimes go so far as to interrupt the pattern, wiping out a bit of it here and there, anticipating, indeed, the softening effect that age might impart to it. (Plate 14.)

But it is more as a *basis of design* that we have at present to consider geometric forms. The basis of all repeated patterns is, as I said, geometric. And, this being so, it is as essential that the designer should be acquainted with simple geometric principles, as it is that a figure draughtsman should have some knowledge of superficial anatomy.

For all the simplicity of the skeleton lines he has to deal with, the pattern designer's art is not such a simple thing as you might suppose. He has not merely to invent pretty patterns, but patterns that can be conveniently worked—and the lines mapped out for him by the conditions of his work, are, in most instances, not just those which beauty would have decreed.

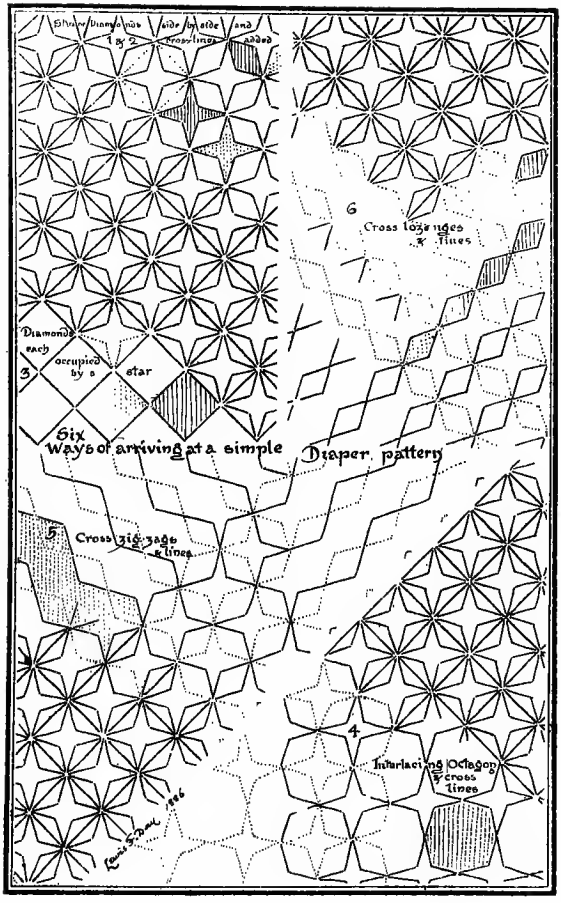
They prove, however, to be identical with the lines already shown to be the basis of all recurring pattern-work; and so we begin to see that, had there been no such thing as pattern design before, and no traditional forms of

design for us to follow, those very forms must have been evolved as certainly out of the more complex conditions of modern manufacture as they were out of the simple contrivances of primitive handicraft. That is to say, that the lines first given to us by the primary processes of netting, plaiting, and so on, would equally have been prescribed by the printing roller or the power loom.

It is one of the most interesting points in the analysis of pattern design to see how regularly we work round, again and again, to identically the same shapes. You cannot safely dogmatise as to the origin of this or that pattern; there are always so many ways in which it might have been suggested. Put side by side a series of waved lines so that their curves are opposed (Plate 11) and the effect is exactly the same as though you had opened out an ogee diaper; you can deduce either pattern from the other. Or, again (same plate), if the ogees interlace, it is impossible to say whether this was the outcome of the ogee, or of waved lines, or simply of the process of netting.

On Plate 16 are shown six different ways in which one and the same simple star pattern may be arrived at.

Plate 16.


Six ways of arriving at a simple Diaper pattery
1 & 2
Diamonds each occupied by a star
3
Cross lozenges & lines
6
Cross zig-zags & lines
5
Interlacing Octagon & cross lines
4

1. By the juxtaposition of stars and the addition of cross-lines.

2. By the juxtaposition of diamonds and the addition of cross-lines.

3. By the juxtaposition of right-angled diamonds, each occupied by a star.

4. By the interlacing of two series of octagons, and the addition of cross-lines.

5. By the crossing of two series of zigzag lines, and the addition of cross-lines.

6. By the crossing of two series of diamonds or lozenges, and the addition of cross-lines.

And this does not by any means exhaust the number of ways in which the same result might have been reached.

To take another instance, of a very different kind, you know how common it is to see a waved line with leaves alternating on each side of it. It appears on the face of it, a quite mechanical and arbitrary arrangement; but you have only to note how, in nature, the alternate leaves on a slender stem, pull it out of the straight to see the natural and inevitable origin of the idea. By merely exaggerating the slight wave of the natural stem, you get one of the most conventional of ornamental border patterns.

So it would seem that, whether you begin with mechanical construction or with nature, it works round, in the hand of an ornamentist, to the same thing in the end—only in the hands of an ornamentist.

Plate 17.

C.F. Kell, Photo-Litho, 8 Furnival St. Holborn, E.C.

III.

PRACTICAL PATTERN PLANNING.

Pattern design is very seriously affected by the circumstance that the possible lines of construction are not in all cases practicable.

In practical design for manufacture the limitations are strict; and it is only by submission to them that success in ornamental design is possible. Nor is it only the style or character of the design that is affected, but its plan also.

The Oriental mind, delighting in geometric intricacy, has availed itself largely of the triangular unit, and has built up with it all manner of delightfully elaborate patterns. The modern European finds it more convenient to him to adopt the simpler parallelogram. He may now and then use hexagonal or other many-sided tiles, but he prefers the square. So also the weaver's cards are inevitably in the shape of parallelograms, and the printer's blocks; and though

the printer make use of the roller instead of the block, the conditions of design remain unaltered; for the roller is, for all practical purposes of design, only a block bent round in the shape of a cylinder.

Even the bookbinder of the Renaissance, who was comparatively free to do what he liked in the way of "tooling," was led, whether by instinct or by his tools, to adopt a rectangular repeat, as in Plate 18; in which also is exemplified what may be done in the way of reversing, and again reversing, the unit of design—so as with comparatively little drawing to produce the effect of an extensive pattern.

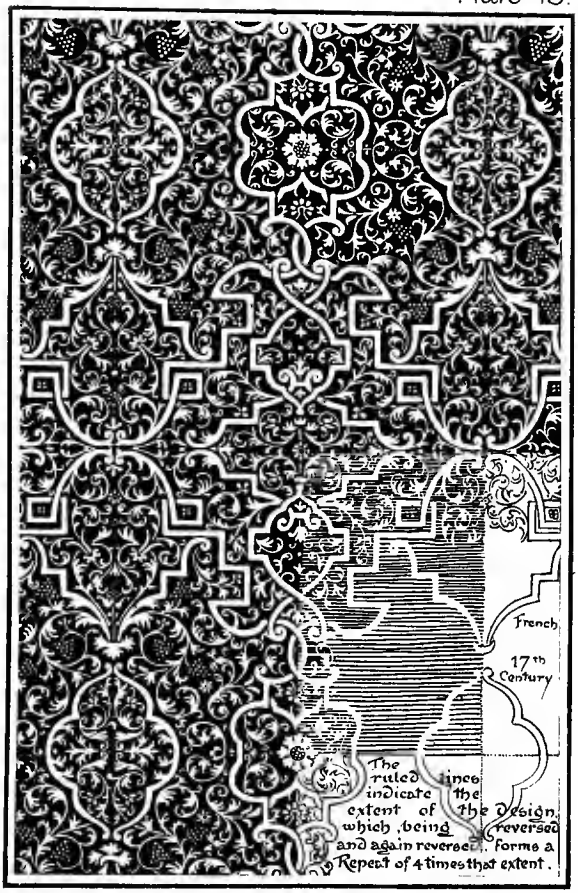
We have, ordinarily, to reconsider the possible lines of pattern construction in their relation to the rectangular figure, which is the repeat determined for us by the conditions of nearly all modern manufacture.

The base of our operations is then usually a parallelogram.

Furthermore, this parallelogram is in all cases restricted in size, and in most cases of more or less arbitrary proportions.

For example—in the case of wall-paper printing, it is practically determined for us

Plate 18.



C.F.Hill, Photo-Litho, 9 Furnival St. Holborn, E.C.

that the printer's block shall be rectangular. Custom has further fixed its width at 21 inches. And, since a block of greater length than that would be unwieldy, we are restricted to a square of 21 inches by 21 inches.

The block may represent a fraction only of the design, which can theoretically be made up of as many blocks as you please. But in practice the expense of such a proceeding would make the paper-hangings cost more than paper-hangings are ordinarily worth; and, apart from commercial considerations, which would be enough to prevent that kind of extravagance, it is contrary to craftsmanship so to misapply labour. The most capable artist is he who can apply his art to most purpose, and get full value out of his materials.

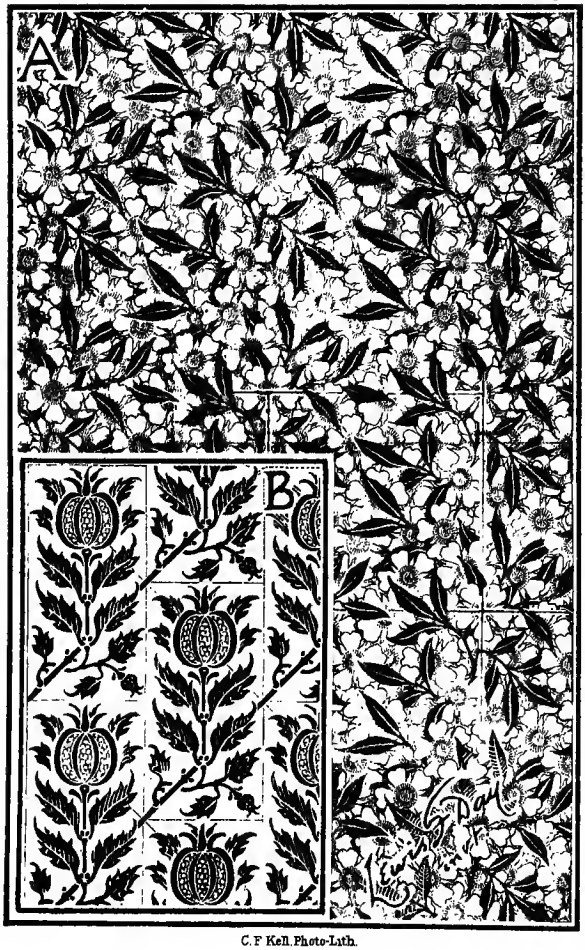
As a matter of fact, the wall-paper designer has to content himself, then, except in very few instances, with a repeat of at most 21 inches square.

Within those limits he is comparatively free; but, as I have already shown, do what he will, his repeated pattern *will* fall into geometric lines, if only those of the parallelogram on which it is built. A pattern, such as

A, on Plate 19, may seem at first sight to conform to no conditions of restraint; but the actual lines of the repeat are apparent on closer inspection in any single feature whose recurrence is to be traced. It is based, you will find, upon the square.

Apart from the conditions of actual manufacture it is found commercially expedient to adopt certain fixed dimensions for the tile, block, roller, or whatever it may be—and we are thus constrained to design tiles (if they are to be of any use) on the usual three, six, eight-inch or other accepted scale; textiles to a width fixed by the loom, and a length controlled by the consideration of economy; block-printed fabrics under very similar conditions; and roller-printed to a length as well as a width prescribed. The proportion of the parallelogram within which our design must be confined varies, that is to say, with the manufacture for which we are designing. An experienced designer could often tell, from its proportion and scale alone, for what particular manufacture a design was made. And it is in the impracticability of his ideas that the novice most infallibly betrays his lack of experience.

Plate 19.



C. F. Kell. Photo-Lith.

There is no occasion to enter more fully into all the various technical reasons for the limitations to which the designer is subject. The practical convenience of them, however, is patent. It is as desirable that the architect, for example, should know what sized tiles may be available, as that he should be able to reckon upon the "bond" of his brickwork; and it is equally clear that without some uniformity in the width of materials (such as silks, velvets, carpets, chintzes, and so on), it would be difficult to estimate, off-hand, the relative cost of each.

As it is, the public is not seldom misled in that way. The difference between 18 and 21 inches in width, is not so apparent to the eye that the purchaser of a French wall-paper need realise, when he selects it, that it is actually nearly seventeen per cent. dearer than an English paper nominally at the same price! Something very like a swindle is perpetrated when facts of this kind are deliberately kept from the buyer. There is a further fraud in withholding from him the information that certain foreign goods sold *by the piece* are only about three-quarters of the length of English goods competing with them.

To return to the subject—the upshot of it is, that the designer has habitually to shape his design according to a rectangular plan, and that of limited, if not fixed, dimensions.

It becomes, then, a very serious question with him how far he can avail himself of any other basis.

The student might with advantage set himself to tabulate the possibilities in the way of adapting the various units of repeat to repetition, within the square. It would then be seen that, though all things are possible, there are schemes the artist would like to adopt, which, in order to be brought into the repeat permitted, would need to be worked out upon so small a scale as to become quite too insignificant for use.

One instance of this it may be worth while to give.

Suppose a square block of 21 inches, and you wish to adapt a hexagonal design to it. Only those who have tried the experiment have any notion how small the hexagons would come. If you made your hexagons 10½ inches wide, so as to get two in width, they would not come true in the length ; they would be too long. If you made

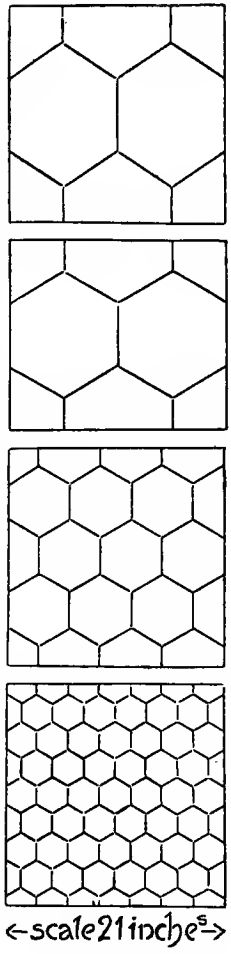
Plate 20.

I.F. Kell, Photo-Litho, 8 Furnival St, Holborn, E.C.

them true, they would not fill the square, but only a space about 21 inches by 18.

Three and a half hexagons in the width would work, but only as a "drop" pattern: that would give hexagons of six inches across. In order to occupy the square with true hexagons repeating without a "drop," they would need to be reduced to half that size; that is to say, there would have to be seven hexagons to the width, measuring each only three inches across.

It will plainly be seen, in this instance, how very strictly the artist is bound by considerations which scarcely occur to the



uninitiated, considerations which have always had a great deal to do with the design of pattern-work. Fashion has had her say in the matter, too, no doubt—it is a wicked way she has; but though certain lines have been generally adopted at certain periods and in certain countries, I think it will invariably be found that there was some technical or practical reason for their adoption in the first instance.

Out of the conditions of weaving came, for example, the adoption of upright patterns and cross colouring (as in the silks of Byzantine, Sicilian, and early Italian design), as well as the turning over of the design on the two sides of an upright stem, or purely imaginary central line. This is shown in Plates 20 and 21, the one taken from an old Sicilian silk—the other from a coarse woollen fabric of the 15th century.

In Plate 22 may further be seen what influence the material may exercise upon pattern. There was a whole class of patterns of this kind schemed in the 15th and 16th centuries, with the obvious purpose of disturbing as little as possible of the rich pile of the velvet for which they were designed.

Plate 21.

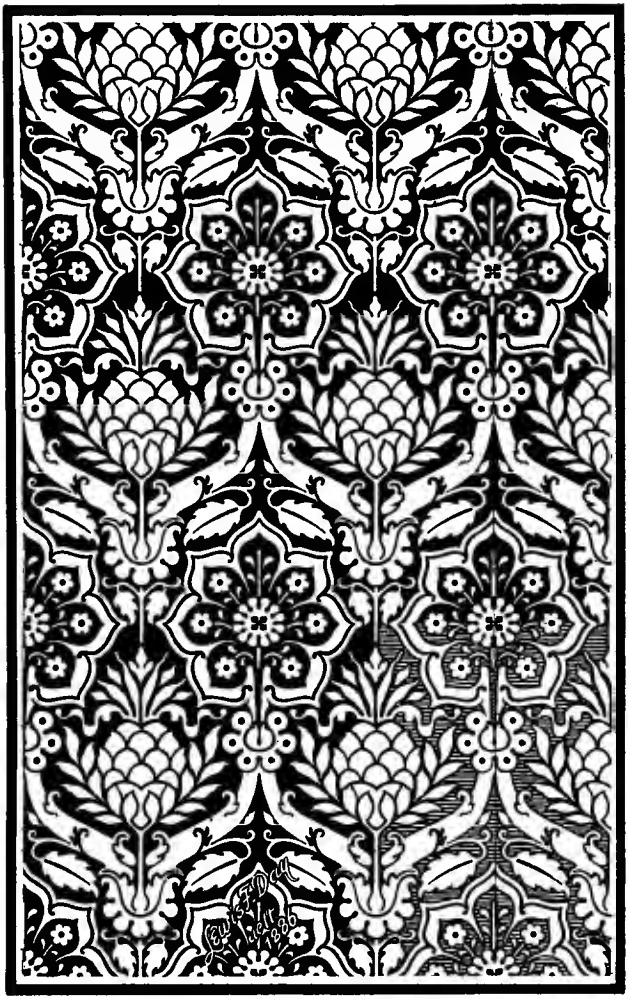


Plate 22.

C.F. Hall, Photo-Litho, 9 Foresight St Holborn.)

The turning over of the pattern is essentially a weaver's device. In a pattern similarly planned for *printing* there is no occasion for that same rigid symmetry of the two sides. On the contrary, it is desirable rather to introduce some variations, as I have done in Plate 23.

IV.

THE "DROP" PATTERN.

The most useful skeleton to work upon, all things considered, is the diamond. For it is on the basis of the diamond that "drop" patterns are most readily designed.

The "drop" is a device by means of which the designer is enabled, without reducing the scale of his work, to minimise the danger of unforeseen horizontal stripes in his design, a danger which is imminent when the repeats occur always side by side on the same level.

The printer's block, we will say, is a square; or the roller is its equivalent; or the cards take that form. In the printed or woven strip, whether paper, cretonne, silk, or what not, the end of one repeat must tally with the beginning of the next, in order that the pattern may be continuous throughout the piece. Equally of course the design must

Plate 23.

be so schemed that the right side of one piece of the stuff will fit on to the left of another, and so on.

But it is clear that the design may be so contrived that each succeeding breadth has to be *dropped* in the hanging.

If this drop were only very slight—say three inches—it would take seven breadths, in a pattern of 21 inches deep, before a given feature in the design occurred again exactly on the same level. There would be no danger then of any *horizontal* tendency in the lines, but, on the other hand, great likelihood of a *diagonal* line developing itself, with even more unfortunate effect. The design steps downwards; and the shorter the steps, the more noticeable is the line they take. This difficulty is avoided if you make the "drop" just one-half the depth of the pattern, so that every alternate strip is hung on the same level. Then the diagonal lines correct one another. If any line at all asserts itself, it is a zigzag (instead of a step), which, in connection with corresponding zigzags above and below, may very possibly form a trellis of diamonds.

There is good reason, therefore, for saying

the diamond is a useful plan to work on; for upon it is formed the safest variety of drop pattern—that, namely, which drops one-half its depth.

Instances of drop patterns are given in Plates 17, 24, 29, 32, 33, and others.

One has heard persons, more familiar with the forms of ornament than expert in practical design, complain of the difficulty they experience in scheming a "drop." If they would only think of the problem as the filling of a diamond shape, it would come very easily to them.

When the pattern within the diamond is symmetrically disposed on the two sides of a central upright line, the artist has the opportunity of working out a design which is apparently twice the width at his disposal.

If you subdivide a block of 21 inches thus, so that the two smaller divisions A and V together equal the larger division $\frac{A}{V}$, it amounts to precisely the same thing as though you designed upon the basis of a squat diamond 21 inches high by 42 inches wide. You have only to

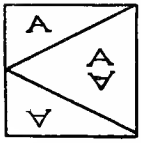
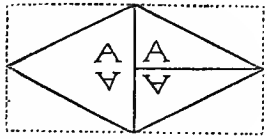


Plate 24.

C.F.Kell Photo-Lith

transpose the component triangles to produce the squat diamond. But, in order that the design shall be practicable, it must be symmetrically disposed on either side of a central line: the one side of it must be an exact reverse of the other, or it would not work.



The advantage gained in this way is, of course, only apparent—what is put into one strip is taken out of the other—but in the case of a pattern appearance goes a long way. From the practical point of view, it is difficult to over-estimate the value of this expedient in design, the common property of designers for all manner of fabrics, but undreamt-of in the philosophy of the amateur.

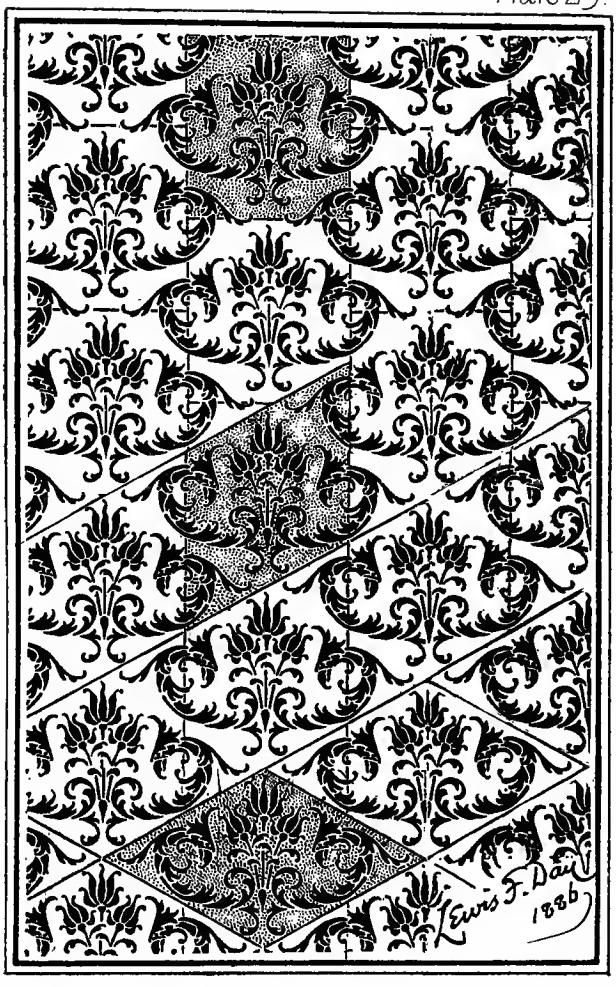
Theoretically, it is all the same whether you design a drop on the lines of the square, on the slant, or on the diamond, you may arrive in either case at identically the same result. This is plainly shown in Plate 25, in which the dotted portions of the ground will explain how the same pattern might be built on either one of three plans. You might snip

pieces from the four corners of the square and make with them the diamond; or if you dispose them differently, you might produce the oblique shape; which last would amount to the same thing as though you had cut off only two corners and transposed them.

For all that, it makes practically all the difference in the world which plan you adopt. Your design must be influenced to a very considerable degree by the shape you set yourself to fill. It would never occur to you, for instance, to stretch a festoon, or wreath, across a width of space you did not see before you. So it may be fairly said, that such extension of the design, beyond the width of the material, is the direct result of working on the lines of the diamond: whilst you are designing within the lines of the square, you have naturally no impulse to go beyond its limits.

In designing for tiles and such like, where the material is not continuous, the conditions are somewhat different, and the possibilities accordingly. Where the unit of design can conveniently be turned round, or half-way round, or three-quarters of the way, the scope of the designer is increased — out of four

Plate 25.



repeats of a six inch tile he can get, for example, a circular design 12 inches in diameter. So again, the bookbinder, with a comparatively limited set of tools, has very considerable scope in design; but even then the lines he can work upon are always the same —although more of them may be open to him than to another.

V.

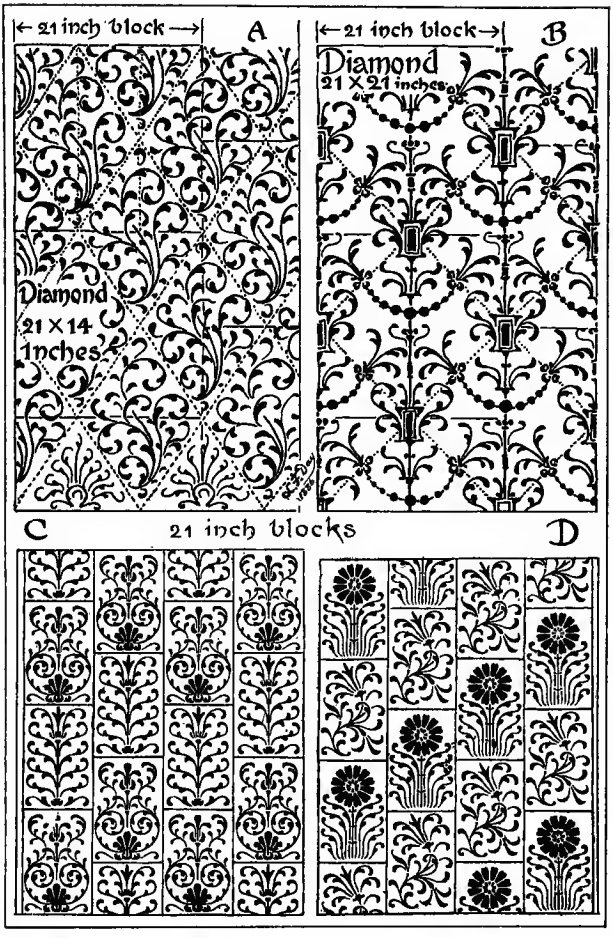
SKELETON PLANS.

The designer finds it ordinarily more convenient to design at once upon the diamond lines, because their simplicity enables him better to keep in view the effect of his pattern in its repeated form than any other lines (there are others) on which the "drop" can be worked.

Even though one may have no intention of taking advantage of the full width of a block, it may still be found convenient to design within the diamond, if only in order to economise design: and, mind you, economy is an absolute necessity of the case. But for economic reasons there would be no weaving, printing, stamping, and so on; we should confine ourselves to embroidery, tapestry, painting, and other work of our own hands.

If you begin by dividing the width of 21 inches into two, and make your pattern a "drop," 21 inches long by 10½ wide, it is the same as though you had worked upon a

Plate 26.


← 21 inch block →
A
Diamond
21 X 14
Inches
← 21 inch block →
B
Diamond
21 X 21 inches
C
21 inch blocks
D

diamond 21 inches from point to point, as may be seen at B in Plate 26, although, as I said before, the same pattern would probably not have occurred to you in either case. Designing on the diamond such a pattern as the last-mentioned might very likely occur to one; on the lines of the dropped parallelogram, more likely such a one as B on Plate 19.

Again, if you divide the width of 21 inches into three (A, Plate 26) and on those lines set out a series of diamonds 21 inches long by 14 inches wide, so that the block contains one and a half in the width, this will work as a drop (to fall one-half its depth) if only the diamonds were all filled alike. Variously filled diamonds would not repeat.

If you still divide your 21 inches into three, and institute a series of stripes or panels of seven inches wide, each of which drops at the same interval (whatever it may be), it is likely to result in a diagonal stripe more or less pronounced; which might, of course, equally have been designed upon diagonal lines. (D, Plate 26.)

If of the three stripes only one were dropped, the design would also hang as a

drop, revealing very likely a zigzag line on the principle already laid down. (C, Plate 26.)

Further explanation of the ways in which a given space may be subdivided (what is said of the supposed 21 inches applies equally to any given parallelogram) would be superfluous. Enough has been said to show how by such subdivision the utmost variety of scale may be obtained.

Although, however you start, you come back always to the same few schemes; and although in any case your pattern might equally have been designed upon other lines, working on those lines it never would have occurred to you.

The diagonal stripe pattern on Plate 27 resolves itself into a diamond repeat, but it is tolerably certain that the designer did not work upon the lines of that diamond, but probably upon a network of diagonal and horizontal cross-lines—as did also the inventor of Plate 20.

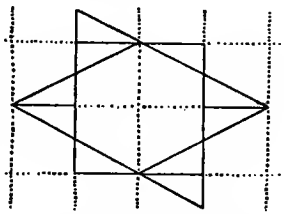
The inevitable influence on your design of the lines upon which you start, is the excuse, and the only excuse, for puzzling over all the various skeletons upon which pattern can be laid out.

Plate 27.


Diagonal Stripe
formed upon the basis of the Diamond
15th Century

It is a good test of your design, when you have roughed it out on one plan, to make the finished drawing on another. By that means you see it, as it were, from two points of view, and can form a very fair idea as to how it repeats, without drawing much of the repeat.

The practical designer, who has learnt not to attach great value to the appearance of his design as a drawing, often cuts it up deliberately, and re-arranges the parts, in order the better to prove his repeat. A design on the square he cuts into four equal parts, and re-arranges the quarters, so that what were the corners of the design come together and form the centre, and so on. The accompanying diagram shows how the parts of the diamond may be re-arranged.



But the best of all possible tests is to cut ever so rude a stencil of the broad masses of the design, so as roughly to multiply it indefinitely. A child can be taught to apply that test for you; and it is infallible.

Whatever the lines of the skeleton, in any important work they are usually disguised. Sometimes (as often in Arab art) they are so crossed and interlaced that it is difficult to follow their intricacy. The really very simple patterns on Plates 1, 10, and 28 are at first sight very puzzling.

Or the lines may be interrupted so that you lose the thread of the design. Or, again, two or more schemes of ornament may be, so to speak, interwoven, the one asserting itself here, the other there, so that neither thread of idea is too conspicuous. The effect of this is to be seen in Plate 29, a drop pattern, in which the attention is diverted from the formal lines of the scroll by a conventional growth of much freer character overrunning it.

Further, features may be introduced of such importance in the design that the eye is drawn to them, and fails to perceive the connecting lines between them.

In Plate 30 the strongly marked bird-forms counteract to some extent the simple ogee or diamond lines on which the pattern is set out. In fact, the birds emphasise the actual repeat of the block, just as the scroll

Plate 28.

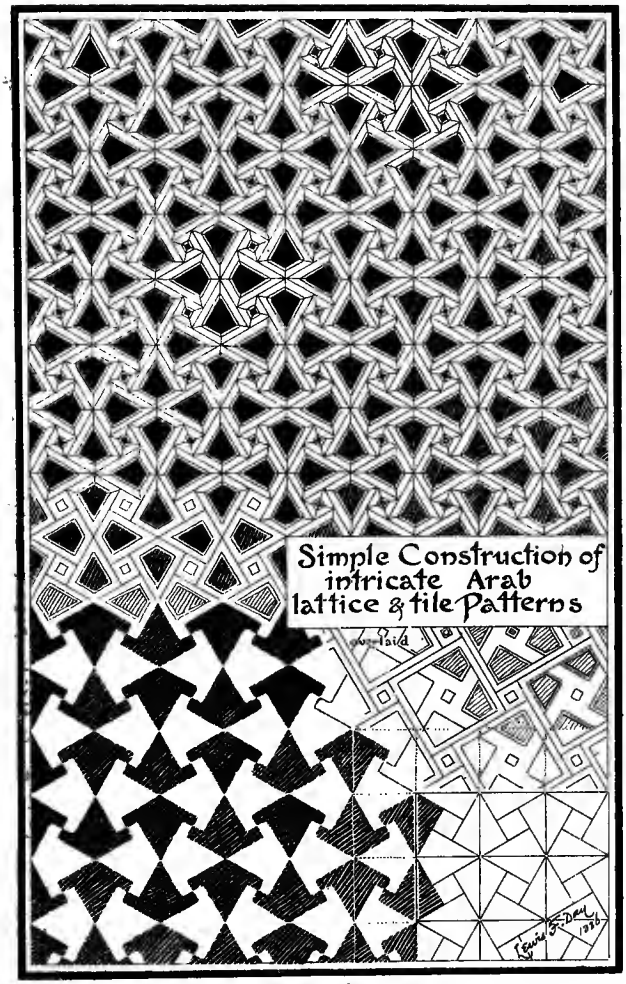

Simple Construction of
intricate Arab
lattice & tile Patterns
Guido Dessi
1916

Plate 29.

INK-PHOTO, SPRAGUE & C° LONDON

reveals the unit of the ornamental repeat ; and out of the two contrasting schemes arises a certain confusion, which is of some artistic account in design.

Obviously, however, the most effective way of disguising the skeleton is to clothe it, as nature does; and the most natural way of doing this is, with something in the nature of foliation ; beneath which the bare constructional lines are as little noticeable as the stiff branches of a tree under their burden of leaf and blossom. (Plates 31, 32, &c.)

By this means, you get at once life, interest, and variety so great, that one might continue this already lengthy explanation until it became tedious, and yet fail to make the sceptic quite believe in the absolute simplicity of the skeleton forms underlying all pattern.

The foliated scroll, as you see it, for example, in Roman or Renaissance Arabesque (or even in Plate 32), looks almost as though it were impossible of geometric construction. And, of course, it never is mathematically built up. But, for all that, it falls into the familiar lines. The spiral itself is only a series of segments of circles ; and if you dissect any

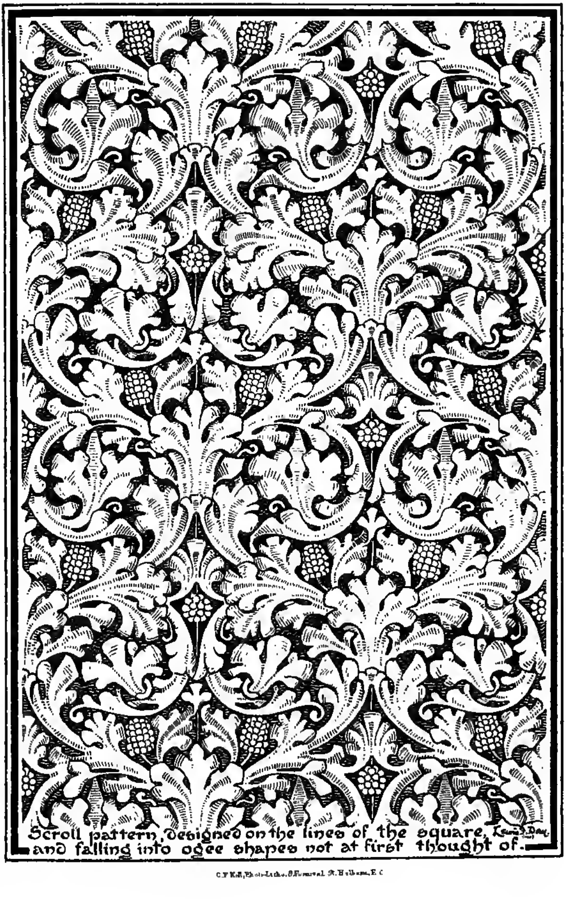
repeated scroll-pattern, you will find most likely that its back-bone is a wave line or spiral. Certainly you will find it has a back-bone. Pattern is a vertebrate thing; and in a scroll the spinal cord is very decidedly pronounced. You can easily see when a scroll is broken-backed.

Plate 30.

Plate 31.

C.F.Ell, Photo-Litho, 6 Fernival St. Holborn, E.C.

Plate 32.



Scroll pattern, designed on the lines of the square, and falling into ogee shapes not at first thought of. Lewis F. Day.

C. F. Kell, Photo-Litho, 8 Furnival St. Holborn, E.C.

VI.

APPROPRIATE PATTERN.

It is only by experience that a designer learns to know what may, and what may not, be done within given lines. Many a notion which one had a thought of adopting, turns out to be practically quite unamenable to existing conditions.

You cannot draw a bold, flowing scroll without considerable allowance in the way of length in the blocks, cards, or whatever it may be ; nor can you well avoid a certain upright tendency in patterns where the width is very much restricted. The fact of the matter is, the characteristic lines of time-honoured patterns are mainly the direct result of the restrictions under which the craftsman was working.

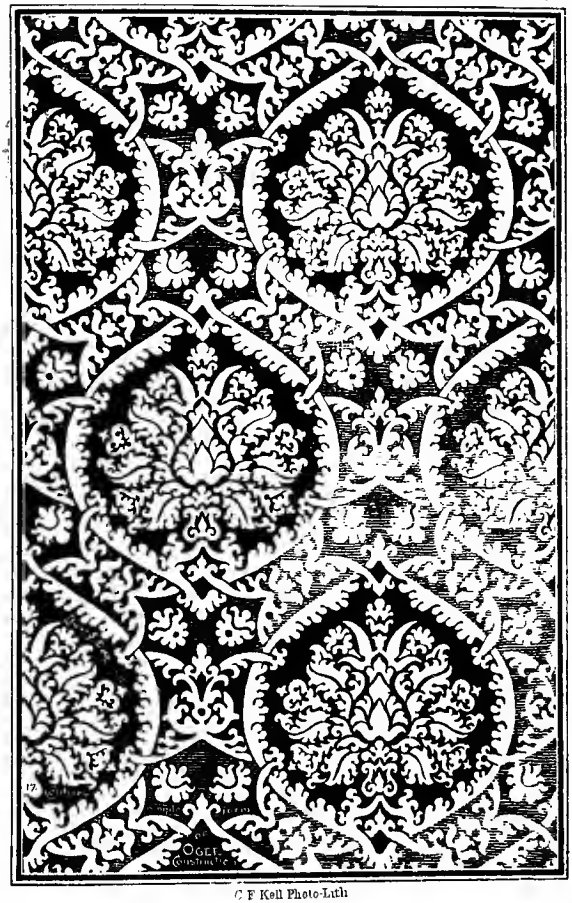
It is owing to the facility with which triangular cubes of tile can be manipulated, that the peculiarly geometric character of

much Oriental ornament is due. So also with us, the proportions of the square tile have resulted in a distinctly characteristic form of ornament.

I do not pretend to say whether the turning over of the design which prevails in early silks, was suggested by the fact that such turning over could be so readily done in weaving ; but it looks, at all events, as though the Sicilians, and, in fact, weavers generally, until comparatively recent times, adopted that plan of design, because by means of it they could at once double the scale of their pattern.

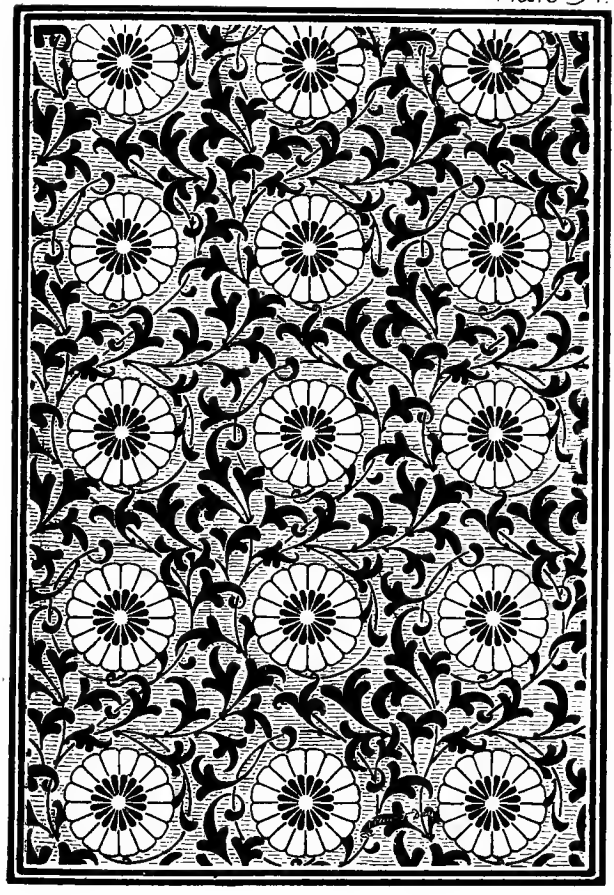
In the Renaissance silk, figured on Plate 33, and in all such reversible designs planned upon the diamond, hexagon, or ogee, one-half the labour of designing and card-cutting is saved. Naturally, the nineteenth century manufacturer has not been slow to adopt a plan so obviously economical. It has been said, that the idea of reversing a pattern owes its origin to the circumstance that you may double a sheet of paper, and so, with one action, cut out the two sides of it. If that is not so, it well might be—except that, probably, reversed patterns were common long before paper was. Very possibly it is derived

Plate 33.



C F Kell Photo-Lith

Plate 34.



from the practice of folding or doubling. One may put together, for example, several sheets of veneer, or even several planks, and, with one action of the saw, fret all of them alike. That facility gave rise at all events to Boulle's characteristic inlay patterns; and in the balconies of Swiss châlets one still sees a very effective kind of pierced pattern-work, which is accounted for in a similar way.

Bands or stripes of different colours are so common in Eastern curtains, blankets, &c., because they can be so easily woven. Even in more elaborate silk and other designs, certain of the colours are very often distributed band-wise. The variety of colour so obtained, is obviously due to the ease with which the weaver can change his shuttle.

At the same time, economy is thus often effected. If in such a design as that on Plate 34 the flowers were meant to appear in gold, or only the eyes of the flowers, the gold thread need only be used in the bands where the flowers or eyes actually occur. You have but to look at the back of any old piece of many-coloured silk damask to see the changes of the shuttle very plainly marked. The aim of the designer is usually to

disguise them more or less in his pattern. But in the early days of silk weaving the unsophisticated artist had no fear of a horizontal line. In such a pattern as the Sicilian silk in Plate 20, he would boldly make the various bands of animals in various colours. He would sometimes even carry bands of colour straight *across* the animals, regardless of their shape. And the effect of this rough-and-ready proceeding, in the silk itself, certainly justifies him.

In early examples of weaving both the turning over of the pattern, and the banded arrangement of the colour are very frequent; indeed, so much so, as to form quite marked features in the design of the eleventh and following centuries, whether Sicilian or Italian. (It was from Sicily, you know, that the art of weaving was introduced into Italy.)

Designers would be the more ready to adopt, and to adhere to, the plan suggested by the loom, in that the horizontal line, due to it, was not anyways injurious to the effect of a fabric meant to fall in folds. The dim vertical line, which was also likely to occur from the turning over, was calculated to lose itself in the more strongly marked verticality of the

Plate 35.

folds; and the horizontal band emphasised by the change of the shuttle had an absolute value in marking the fulness of the hangings.

In flat decoration the horizontal band is less unobjectionable; and it is for that reason that so many of the wall-paper patterns, borrowed or stolen from good old stuffs—by their stripes you shall know them—are altogether unsatisfactory on the wall. To me, horizontal stripes always suggest the ample hanging, and seem to want the folds.

The bold and beautiful effect of such a damask pattern as that in Plate 35 would be lost if it were rendered in flat decoration, especially without the charm of the texture of the stuff: those waving lines and bands of big rosettes would be unendurable. That pattern, by the way, although it actually works on the principle of the parallelogram—was obviously arrived at by carrying across a series of waved upright lines a broad horizontal band of rosettes.

Many an admirable textile pattern, otherwise in every way suitable, is inapplicable to flat decoration, whether in the shape of silk, or chintz, or wall paper.

Some persons appear to be of opinion that,

a pattern, according to Dr. Johnson, being "something to be copied," design consists therefore in copying what has been done before. That is all very well so far as concerns the definition of the word pattern; but how about the meaning of the word design? I would go beyond the lexicographer, and say: *not every pattern* is an "exemplar."

In adapting a design, from one material to use in another, it is not enough to copy it, it needs to be translated; which translation is not so easy, but that an artist gifted with any invention of his own, will find it, on the whole, better worth while to say what it is in him to say for himself, and not go on harping on the old, old tunes, melodious though they be.

The most perplexing thing about modern design is that we are asked to design, to-day under these conditions, to-morrow under those. We have no traditions and no style. And yet in the very variety of the efforts demanded of us there is relief of a kind; and in the presence of difficulties our ingenuity, if we have any, is excited. The more difficult the conditions, the more they provoke solution. A designer must have in him something

of pugnacity; he must enjoy attacking a tough problem. A man proves himself a designer, not when he has somehow arrived at a design, but inasmuch as out of unpromising material and untoward circumstances he can shape a thing of beauty.

LONDON: PRINTED BY WILLIAM CLOWES AND SONS, LIMITED,
STAMFORD STREET AND CHARING CROSS.

WORKS ON DECORATIVE ART

PUBLISHED BY

B. T. BATSFORD, 52, HIGH HOLBORN, LONDON.

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